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CONTENTS

Research Papers

INTERNATIONAL COOPERATION FOR CLEAN ENERGY: AN INDIA'S WAY OF LIFE TO CULMINATE THE CLIMATE CHANGE	1 – 6
Pankaj Kumar Yadav	
STUDENT TEACHERS' ATTITUDES TOWARDS SUSTAINABLE DEVELOPMENT (SD): A CASE OF MANIPUR	7 – 10
Chongtham Khogendra Singh and Dr. H. Ibomcha Sharma	
A STUDY ON ENGINEERING STUDENTS KNOWLEDGE SHARING BEHAVIOUR IN A LEARNING ENVIRONMENT	11 – 16
Vidya R and Dr. R. Krishnaraj	
CHARLES TAYLOR'S CRITIQUE OF THE CONCEPTION OF SELF IN MODERNITY	17 – 23
Nelson Kho K. P.	
WOMEN, HEALTH AND GENDER DISPARITY: A GLOBAL PHENOMENON	24 – 29
Haseena Nighat Khan and Zahid Rehman Mir	
A FRAMEWORK FOR INTELLIGENT TRANSPORTATION SYSTEM BASED ON INTERNET OF THINGS FOR VEHICLES	30 – 35
Gagan Deep Singh	
ORGANIZATIONAL RESILIENCE OF THE SMALL AND MEDIUM FAMILY ENTERPRISES IN THE COVID-19 ERA: A SYNTHESIS OF THE LITERATURE REVIEW	36 – 42
Brahim Ouzaka, Mohamed El Gouch, Saïd Ouhadi and Abdillah Kadouri	
THE STATUS OF THE GOVERNMENT HEALTH PROGRAMMES IN THE GOVERNMENT SCHOOLS OF IMPHAL WEST DISTRICT, MANIPUR	43 – 45
Bob Dev Waikhom and Dr. Yengkhom Santikumar Singh	
DYNAMIC ADAPTIVE SECURE ROUTING FOR MOBILE AD-HOC SENSOR NETWORKS (MASNET): A COMPREHENSIVE REVIEW	46 – 49
Dr. J. Viji Gripsy and Dr. A. Jayanthiladevi	
USING PYTHON FOR VOICE ENABLED PERSONAL ASSISTANT	50 – 54
Mr. Aayush Jain, Mr. Karan Shah, Ms. Varkha K. Jewani (Ms. Pragati V. Thawani)	

THE EFFECT OF WORK STRESS AND JOB SATISFACTION ON THE PERFORMANCE OF WOMEN EMPLOYEES	55 – 64
Helda Y.F. Adu, Rolland E. Fanggidae, Apriana H.J. Fanggidae and Paulina Yurita Amtiran	
THE RELATIONSHIP BETWEEN THE PERCEIVED PARENTING STYLE AND SOCIAL INTERACTION ANXIETY IN ADOLESCENTS	65 – 72
Khushi Chauhan and Samiksha Jain	
DETERMINATION OF VEHICLE REGISTRATION PLATE USING DYNAMIC IMAGE PROCESSING TECHNIQUES: A REVIEW	73 -77
Rajesh. S. Devkar and Dr. Keshao D. Kalaskar	
DETERMINANTS OF TOTAL ANNUAL INCOME OF PADDY FARM HOUSEHOLDS IN MYANMAR	78 – 85
Nilar Aung, Theingi Myint, Yu Yu Tun and NyeinNyein Htwe	
APPLICATIONS OF INDUSTRY 4.0 IN SERVICE/MANUFACTURING SECTOR	86 – 93
Ammar Bagdadi, Ajay Gangrade and Vijay Bhosale	
IMPACT OF COVID-19 ON MICRO ENTERPRISES IN INDIA - A COMPARATIVE STUDY OF RAJASTHAN AND UTTARAKHAND	94 – 99
Ms. Deepali Tomar	
VIDWAN SUBJECT EXPERT DATABASE: A STUDY AMONG THE MUSLIM MANAGEMENT ARTS & SCIENCE COLLEGES OF TAMIL NADU	100 – 105
Dr. N. Abdul Latheef	
IMPLEMENTATION OF A BATTERY ELECTRIC VEHICLE CHARGER FOR TWO-WHEELERS	106 – 113
Sheetal Parmar and Dr. Pritesh Mankad	
PRESCRIPTIVE ANALYTIC'S EFFECTS ON IMPROVING STUDENT ACADEMIC PERFORMANCE	114 – 119
M. S. Sassirekha	
COMPRESSION AND DECOMPRESSION ALGORITHMS- A COMPREHENSIVE REVIEW	120 – 133
Arjun Guleria, Ankit Bhatt, Ashwini Singh, Animesh Bhardwaj and Jagdish Chandra Patni	
INCLUSIVE TEACHING AND LEARNING IN THE INDIAN CONTEXT – A SPECIAL EMPHASIS ON HIGHER EDUCATION	134 – 140
Avil Saldanha and Rekha Aranha	
ELUCIDATION OF PREDICTIVE BIOMARKERS FOR THE DIAGNOSIS OF NON TUMOR BRAIN LESIONS THROUGH MAGNETIC RESONANCE SPECTROSCOPY ALONG WITH HISTOPATHOLOGICAL FINDINGS	141 – 147
Smitha. H, Meena Devi. V.N, Sreekanth K.S and Vinoo Jacob	

DESIGN THINKING IS A BUSINESS SOLUTION PROCESS	148 – 151
Dr. Vishal Mahajan, Dr. P. S. Aithal and Dr. Shailly Mahajan	
ACUTE TOXICITY EVALUATION OF HERBICIDE ON FISH (POECILIA RETICULATA)	152 – 157
S. Siva Shankar Prasad and D. Easwaramoorthy	
TRACING INDICATORS OF SUSTAINABLE TOURISM MARKETING: PROPOSING ‘HRSM’ SCALE	158 – 167
Dr. Partha Naskar	
AN OVERVIEW STUDY ON PRE-PROCESSING TECHNIQUES IN DATA MINING	168 – 174
Karuna Khobragade	
WEIGHT OPTIMIZATION OF HAT-SHAPED COMPOSITE T-JOINTS IN AUTOMOBILES BY USING ANSYS	175 – 180
Prashant Saxena and Rashmi Dwivedi	
A STUDY OF ONLINE PURCHASE INTENTIONS OF CUSTOMERS	181 – 184
Charu Rastogi and Dr. Sanjay Mishra	
A STUDY ON FOREIGN TOURIST ARRIVAL IN INDIA AND ITS IMPACT ON THE GROWTH OF FOREIGN EXCHANGE EARNINGS	185 – 193
Dr. R. Jayanthi	
ALGAE AS A BIO SOURCE-A REVIEW	194 – 196
Sadeeya Shaheen and Rajakumari K	
ARECA CATECHU CONSUMPTION AND ITS MEDICINAL PROPERTIES - A COMPREHENSIVE REVIEW	197 – 201
Upendra Sharma U. S and Dr. R.Shanti Iyer	
ARTIFICIAL INTELLIGENCE MORE INTUITIVE IN THE MYOELECTRIC PROSTHESIS FOR UPPER LIMB AMPUTATION PATIENT—A SINGLE SUBJECT RESEARCH STUDY	202 – 209
C. Nageswari, Dr. N. Meena and R. Prasath	
CONSTRUCTION OF HISTORY FROM THE PERSPECTIVE OF TOPOGRAPHY: DELIBERATIONS ON DR. S. RAJASHEKHARA’S WORK.	210 – 211
Mr Virupaksha and Dr. S. K. Kallollikar	
CORPORATE SOCIAL RESPONSIBILITY: CURRENTLY TRENDS, PRACTICES AND WAY FORWARD	212 – 225
Dr. Satish Kumar and Ms. Neha Dubey	

IMPACT OF DIGITAL MARKETING ON PURCHASE DECISIONS OF CUSTOMERS IN BENGALURU CITY	226 – 234
Dr. M. Rama Kumari, Dr. S. Mohana and Mr. M. Babjan	
IMPLEMENTATION OF LABOUR LAWS IN INFORMATION TECHNOLOGY INDUSTRY IN BENGALURU	235 – 241
Prof. H N Anuradha and Prof Dr. M R Ranganatha	
MODERNIST PATRIARCHAL DISCOURSE IN SYLVIA PLATH’S SELECTED WORKS	242 – 246
SK Abdul Hasinur Rahaman	
POLITICAL PHILOSOPHY OF Dr. B. R. AMBEDKAR	247 – 249
Mr. Praveen Chalawadi and Dr. S.K. Kallolikar	
QUALITY ASSESSMENT OF GROUNDWATER POTENTIAL ZONES IN BANAS RIVER BASIN OF RAJSAMAND DISTRICT, RAJASTHAN	250 – 256
Singhvi Keerti, Choubisa Riya, Dulawat Mangal Shree, Rathore Renu	
QUANTITATIVE ANALYSIS OF CRITICAL FACTORS AFFECTING THE IMPLEMENTATION OF QUALITY MANAGEMENT SYSTEM IN MANUFACTURING INDUSTRY OF DELHI-NCR REGION	257 – 267
Sandeep Kumar Dubey and Murali Krishna.M	
REVERSIBLE WATERMARKING FOR SECURITY OF BIOMETRIC IMAGES	268 – 273
Dr. K. Santhosh Kumar	
SPECTRAL FEATURE BASED EMOTION CONVERSION IN HINDI LANGUAGE	274 – 279
Satrughan Kumar Singh and Jainath Yadav	
TO ANALYZE THE IMPACT OF OTT PLATFORM ON SCHOOL STUDENTS IN THE AREA OF KALYAN, ULHASNAGAR, AMBERNATH & BADLAPUR	280 – 289
Sunil N Shah and Padmavati Deshpande	
TOXIC MASCULINITY AND STIGMA REGARDING ASKING FOR HELP IN INDIAN EMERGING ADULTS: A MIXED METHOD STUDY	290 – 303
Kashika R and Maheshbabu N	
WOMEN EMPOWERMENT IN INDIA - CURRENT SCENARIO	304 – 309
Advocate Sweety Jain	
CORONAVIRUS ANXIETY AS A SOURCE OF MASS PSYCHOLOGICAL DISTRESS: A STUDY OF ITS DEVELOPMENT AND IMPACT	310 – 315
Sejal Kumari, Dr. Sneha Nathawat and Dr. Sneha Nathawat	

A COMPARATIVE ANALYSIS OF MACHINE LEARNING ALGORITHMS FOR PREDICTION OF DIABETES MELLITUS	316 – 323
Ms. C. Kalpana, Dr. J.C. Purswani, Dr. Khushbu Purswani and Mr. Deepak Moolpani	
BLOCKCHAIN: PLATFORMS FOR IMPLEMENTATION	324 – 328
Geet Kiran Kaur	
CULTURAL HERITAGE OF THE ‘KHIAMNIUNGAN’ TRIBE OF NAGALAND AND SOME OF ITS UNEXPLORED ASPECTS	329 – 332
Dhritee Tapati Dey	
CYBER-CRIMES: A CHALLENGE FOR CYBER-SECURITY IN THE 21ST CENTURY DIGITAL ERA	333 – 337
Fr. Baiju Thomas	
DATA MINING FOR INVASION DISCOVERY	338 – 342
Prof. Muskaan Kursija	
IMPACT OF DIGITAL MARKETING STRATEGIES ON THE MARKETING EFFECTIVENESS AND CUSTOMER SATISFACTION: A STUDY WITH SPECIAL REFERENCE TO MYNTRA	343 – 347
Dr. P. Jayarani and Mrs. Sonti Sushila Kishor	
KUNDALINI SHAKTI AND TECHNOLOGICAL APPROACH FOR COMING OF AGE	348 – 352
Kimaya Gupta, Siddhartha Sarkar, Ayushi Jhanwar and Rakhi Gupta	
PSYCHOLOGICAL DISTRESS IN FIRST-TIME EXPECTANT FATHERS: A QUALITATIVE STUDY	353 – 358
Ms. Pooja Gahlot and Ms. Ashwini Shetty	
STUDY ON THE IMPACT OF JOB SATISFACTION ON PRODUCTIVITY IN TOPI VAPPA FOODS PVT. LTD. CHENNAI	359 – 365
T. Ahamed Haalidh and Dr. S. Chandrasekar	
A STUDY ON EMPLOYEE ENGAGEMENT IN AKR INDUSTRY PRIVATE LIMITED, TRICHY	366 – 371
Arul Arokiam Milton G and Dr. S. Chandrasekar	
A STUDY ON WORKING CAPITAL MANAGEMENT AT SRI KAMALAMBIKA CO-OPERATIVE URBAN BANK LTD, THIRUVARUR	372 – 377
Ms. Atchaya T and Mr. Arulprakash I	
A STUDY ON EMPLOYEE WELFARE MEASURE AT AMMAIYAR MILK DALRY AT KARAIKAL	378 – 382
Ms. Divya S and Mr. Arulprakash I	

A STUDY ON EMPLOYEE STRESS MANAGEMENT IN RAMTEC CONSTRUCTION COVERS AND BLOCKS PRIVATE LIMITED AT THIRUVARUR	383 – 386
Ms. Gowri M and Mr. Arulprakash I	
A STUDY ON CAPITAL BUDGETING IN TASTY FOOD AT NAGAPATTINAM	387 – 393
Ms. Jashar Ahamed J and Mr. Arulprakash I	
A STUDY ON TRAINING AND DEVELOPMENT AT VELICHAM FINANCE PVT LTD KATTUR, THIRUVARUR	394 – 399
Ms. Kavya R. T and Mr. Arulprakash I	
A STUDY ON EFFECTIVENESS OF THE EMPLOYEE WELFARE MEASURES IN DECCAN PUMPS PRIVATE LIMITED AT COIMBATORE	400 – 405
Mohamed Azarudeen S and Dr. S. Chandrasekar	
A STUDY OF HR POLICY AND EFFECTIVE STRATEGY IN GAIL INDIA LIMITED AT KARAIKAL	406 – 408
Sivasankari K and Mr. Mohamed Naina Maraicar	
EFFECTIVENESS OF E-RECRUITMENT AND SELECTION PROCESS AFTER COVID -19	409 - 414
T. Thirumurugan and Dr. S. Chandrasekar	
THE CAUSES OF ENVIRONMENTAL DEGRADATION AND THEIR REPERCUSSIONS: AN ENVIRONMENTAL AWARENESS PERSPECTIVE	415 - 420
Prasanta Mujrai	
IMPACT OF COVID 19 FOR THE MICRO-ENTREPRENEURS OF KHARGARH CITY IN NAVI MUMBAI	421 - 427
Dr. Sharmila Bose	
A STUDY OF RETELLINGS IN INDIAN MYTHOLOGY WITH SPECIAL REFERENCE TO RAM CHANDRA SERIES BY AMISH TRIPATHI	428 - 431
Ashish Agrawal	
INVESTIGATING THE GENDER-SPECIFIC PERCEPTION OF CULTURAL ECOSYSTEM SERVICES CONCERNING A HISTORICAL SITE IN INDIA	432
Kalikinkar Das and Dr. Arijit Das	
IMPACT OF BROMOSUBSTITUTED AROMATIC ALDEHYDE ON THE SYNTHESIS OF 3-AROYLFLAVANONES	433
Choubisa Riya, Singhvi Keerti, Dulawat Mangal Shree and Rathore Renu	
EXPLORING WETLAND TRANSFORMATION IN THE MORIBUND DELTAIC INDIA	434
Satyajit Paul	

HYDROLOGICAL ALTERATION AND ITS ECOLOGICAL IMPACT ON THE LOWER TANGON RIVER BASIN, INDIA	435
Pankaj Singha	
SETTLEMENT OF CLAIMS IN LIFE INSURANCE POLICIES: A COMPARATIVE STUDY BETWEEN LIFE INSURANCE CORPORATION OF INDIA AND RELIENCE NIPPON LIFE INSURANCE COMPANY	436
Sunil Kumar	
WATER RICHNESS AND HABITAT SUITABILITY STATE AND THEIR SPATIAL LINKAGES IN THE WETLANDS OF INDIAN MATURE GANGES DELTA	437
Sandipta Debanshi and Swades Pal	
A SEM APPROACH TO GAUGE THE Z GENERATION INTENTIONS TOWARDS THE ENTREPRENEURIAL SPIRIT	438
Dr. Rachana Jaiswal	
APPLIED ASPECTS OF SUSHRUTA'S ETHICS IN EVALUATION OF EFFICACY OF SIRAVYADHANA (BLOOD LETTING) IN VENOUS ULCER CASE SERIES	439
Dr. Devyani Dasar (Jaiswal)	
SYSTEMATIC REVIEW OF HOW ECO-ENVIRONMENTAL TRANSFORMATION DUE TO URBANIZATION CAN BE INVESTIGATED IN THE SUSTAINABLE DEVELOPMENT OF INDIAN CITIES	440
Tirthankar Basu and Arijit Das	
PRELIMINARY PHYTOCHEMICAL STUDIES ON THE BARK EXTRACTS OF THE HIMALAYAN TREE: CORNUS CAPITATA	441
Praveen Kumar Chaturi and Manisha Nigam	
PRELIMINARY PHYTOCHEMICAL STUDIES AND TLC ANALYSIS ON THE RHIZOME EXTRACT OF HEDYCHIUM COCCINEUM	442
Anjali Gusain and Nisha Singh	
AN INVENTORY MODEL FOR CONVERTIBLE ITEMS	443
Uttam Kumar Khedlekar	
E-SERVICE ATTRIBUTES BUNDLE: A CONJOINT ANALYSIS APPROACH	444
Ms. Pooja and Dr. Kshamta Chauhan	

INTERNATIONAL COOPERATION FOR CLEAN ENERGY: AN INDIA'S WAY OF LIFE TO CULMINATE THE CLIMATE CHANGE

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ABSTRACT

Climate change is the topmost concern issue of the 21st century at the global level. At the advent of this century, it is a common and inter-related problem of every individual and country. All living and non-living entities of the earth's environment are co-related to energy. Energy is the base of human development; nobody can move a single step without the energy supply. The economic growth of any state purely depends on energy; further, it develops human beings in a new way and democratizes the world.

Climate change and environmental issues are becoming increasingly important in the arena of International relations because it is a global and multidimensional problem. In the globalized world, the economy and culture are connected, and point-based problems become globalized. So solutions should be globalized also. At the dawn of the 2015 Paris conference, provide understanding about the complex relationship between International relations, energy, the environment, and climate change. Recently in Glasgow COP26, presented the global stand of every country to fulfil the energy requirement and tackle down climate change. Every country projected its strategy and way forward in the coming years on its knowledge, culture, and resource availability.

The researcher's goal in this paper is to find the solution to climate change and energy requirement problems in India's living life by collaborating with climate. How has India developed continuously under the earth's atmosphere for thousands of years without harming the climate and environment and fulfilling their energy requirement? How do these local thoughts and standards provide strategy in the climate change world as a tool to mitigate?

The methodology of this research paper will become descriptive through the archival, classical ancient literature review, and observation of India's culture and living pattern of life in day-to-day survival, interview of local individuals, Etc.

Keywords: Climate Change, Environment, Energy, Development, Mitigation, Globalized, Local, International Relation.

INTRODUCTION

Climate change is the result of changes in the atmosphere triggering periodic changes in the Earth's climate. Unfortunately, these dynamics make it challenging to continue economic growth. Climate change has led to an increase in global average temperatures, the melting of polar ice, and a rise in sea level. The increasing demand for energy consumption by humans, for which a massive chunk of fossil fuels are being used, is the cause of rapid climate change. Global climate change will have significant impacts on the global environment and human living patterns in multiple ways over the rest of the twenty-first century.

Depending on future economic growth and fossil energy use, the global average surface temperature will increase between 1.7 and 6.4 degrees Celsius between 1990 and 2100. A massive portion of climate change is global warming, which is really a long-term rise in the average temperature of the earth's climate. Climate change is primarily caused by anthropogenic factors, such as the usage of multiple fossil energy sources, which increase global surface temperatures.

India's engagement in global climate politics over the last three decades reflects its commitment to addressing the adverse effect on the environment. The Stockholm Conference, conducted in 1972, was the first of a series of international environmental treaties aimed at promoting collective debates and discussions on climate change. For the first time after two decades, countries gathered in Rio de Janeiro in 1992 for the Rio Earth Summit to agree on the United Nations Framework Conventions on Climate Change (UNFCCC), the United Nations Framework Convention to Combat Desertification (UNCCD), and the United Nations Convention on Biological Diversity (UNCBD). These agreements act as a foundation for current international environmental cooperation. For example, countries signed the Montreal Protocol in 1989, agreeing to phase out chemicals that degrade the ozone layer. Likewise, the Kyoto Protocol in 1997 and the Paris Agreement of 2015 established an international framework for climate action by 2030. The Rio Earth Summit functions as the ideological foundation for India's environmental policy. Rio Summit influenced the following report of the Centre for

Science and Environment (CSE). "Developed countries have been accused of 'carbon colonialism,'" according to the report (Agarwal & Narain 1991).

Considering energy approaches have multi-dimensional and multi-layered aspects, they have dominated any country's foreign policy in changing geopolitical requirements and objectives. As a result, a country's energy diplomacy is shaped to achieve strategic expansion as well as a holistic character that focuses on many interconnected components of strategies such as political, economic, technological, and environmental. From the United Nations to regional groups, many institutions have made it a top priority in the present situation. As a result, several countries are increasingly involved in shaping global strategic thinking on energy challenges and attempting to form international energy cooperation. By 2030, global energy consumption is predicted to increase by 30%. With the growth of economies, population, industrialization, and urbanization, developing countries will become the driving force behind this demand. The entire globe is coming together to address the common challenge of unfavourable climate change, environmental preservation, and sustainable growth. The evolution of sustainable energy sources has become a global priority as a result of these factors.

Clean energy is a source of energy that does not release pollutants or greenhouse gases into the atmosphere throughout its production. Clean energy prioritizes greenhouse gas emissions which are either zero or even very minimal. Renewable energy sources such as wind, solar, geothermal, and hydropower is used to generate it. Nature provides renewable energy sources on a continuing basis. We are primarily dependent on non-renewable to fulfill our requirements. To meet our energy needs, vast volumes of crude oil, coal, and natural gas are consumed, but there is limited availability of these fossil fuels on the earth. Natural resources for renewable energy are vast. Technological innovations could be used to extract resources more efficiently from multiple sources. Renewable energy sources will assist us in strengthening our energy security. Clean energy can help humanity to reduce our dependency on fossil fuels even while assisting in the reduction of greenhouse gas emissions. Clean energy is revolutionizing the energy sector around the world today, and this is steadily expanding towards new geographies. That has become the central focus of every world's energy landscape.

India's view on Energy and Climate Change: The '123' Agreement between India and the United States was signed in 2005 with the aim of empowering comprehensive civil nuclear energy cooperation for peaceful purposes. India was acknowledged as a responsible nuclear power as a result of this pact. By helping and supporting the use of nuclear power, the agreement would serve to eliminate the pressure of energy scarcity to a significant degree. Article 11 of the 123 Agreement emphasizes the need for environmental protection in these terms, "the parties shall cooperate in following the best practices for minimizing the impact on the environment from any radioactive, chemical or thermal contamination arising from peaceful nuclear activities under this Agreement and in related matters of health and safety" (U.S. Department of State Archive, August 3, 2007).

The International Solar Alliance was launched by the Indian Prime Minister and the French President at the 2015 Paris Climate Conference (ISA). This step highlights the seriousness with which both of these nations and other countries throughout the world consider the need to cut down the global emissions of carbon dioxide and promote the use of clean energy.

"Mātā Bhūmih Putruhan Pṛthivya:"

"Earth is My Mother, and I am her Son."

The above Sanskrit shloka indicates the symbiotic relationship that exists between humans and earth. From a careful and broader reading of this shloka, the researcher infers that there lies a mother-child relationship between humans and earth. Further, this hymn refers to the relationship as not only emotional but also interdependent, i.e., the way mother nurtures her child, earth nurtures humans as her children, and similarly, the way child never harms her mother, humans need to protect the earth as their mother. On the one hand, the mother, i.e., earth, has kept humans safe and provided them with all the resources for their development; however, humans, on the other hand, surrendered to their wants and exploited the earth for their greed.

"Do not harm the environment, do not harm the water and the flora, the earth is my mother, I am her son, may the waters remain fresh, do not harm the waters---- Calmness be to the atmosphere, to the waters, to the crops and vegetation."

This Vedic prayer narrates the divine intervention to bliss and protects the environment. Rig Veda says about to protect the environment is-----

"Madhu vātāḥ ṛitāyate madhu kṣaranti sindhavaḥ

Mādvih naḥ santuṣadhi.

Madhu naktamutusāsu madhumatpārthiva rajah

Madhu dyaurastu nah pitaha.

Madhuman nao vanaspatimardhumanastu suryah

Mādhirgābo bhavantu naḥ"

(Rigveda, 1/90/6, 7, 8), (Griffith, 2009)

The meaning and essence of the following prayer is—

"The winds waft sweets, the rivers pour sweets for the man who keeps the law, so may the plants be sweet for us.

Sweet is the night, and sweet is the dawn, sweet the terrestrial atmosphere, and sweet be our father heaven to us.

May the tall tree be full of sweets for us and full of sweets be the Sun, may our milch-kine (cow's milk) be sweet for us".

(Environment provides bliss to people leading their life ideally. Rivers bliss us with sacred water and provide us health, night, morning, vegetation. Sun bliss us with peaceful life. Our cows provide us milk).

Climate change is an environmental crisis. It has become a serious international concern. Clean energy will help to shape the sustainable future of human beings. According to UNDP'S Goal 7 (Affordable and clean energy), robust economic growth would be an absolute necessity to meet the demands of an ever-growing population. This economic development would entail the usage of fossil fuels on a larger scale, thereby forcing drastic changes in the global climate debate. So, investing in clean energy like solar, nuclear, hydro, biofuel, and wind fulfills the need for a growing economy and helps in achieving SDG 7 by 2030. Clean energy has not been precisely defined, but academic efforts have been made to define it in some concrete sense. The International Energy Agency (IEA) defines renewable energy resources as those "derived from natural processes" and "replenished at a faster rate than they are consumed" (IEA 2001, OECD, IEA and Eurosta, 2005). The IEA definition includes the following sources as renewable energy, "electricity and heat derived from solar, wind, ocean, hydropower, biomass, geothermal resources and biofuels, and hydrogen derived from renewable resources" (IEA 2002).

There is a significant rift between developed and developing countries like India over the possible ways to meet the challenges of climate change. These differences are also reflected in various international forums like UNFCCC (United Nations Framework Convention on Climate Change), WTO (World Trade Organization), etc. Discussions have now moved on to exploring various clean energy sources and developing modern technologies. The vision documents of these forms envisaged a future where governments, non-state actors, NGOs (Non-Government Organizations), private entities, civil societies, and multinational companies would come together to brainstorm viable solutions to various challenges of climate change. Today we see different regimes and parties coming together to collaborate to reduce the negative environmental impact of climate change and switch over to environmentally friendly energy sources. These efforts are in line with achieving the goals of SDG (Sustainable Development Goals) and meeting various COPs (Conference of Parties) targets.

International Solar Alliance (ISA) is India's most extensive initiative to use clean energy for economic development. The speedy development of robust technologies and skills to efficiently exploit solar energy will make India a world leader in this solar energy sector. These phenomena will also help India and World for fulfil energy requirement and prepared to culminate the climate change. Along with solar power, nuclear power plants, wind power, and bioenergy can also be used for energy generation as the carbon emissions; the nuclear power plants for fulfilling the civil energy requirement are significantly less in India we have to develop more in numbers and quality-oriented plants, but there is also a need to learn from the past accidents of the nuclear plants from the various nations that faced it by human mismanagement or by natural cause as disastrous.

Environmental security is not treated as a core concept in the larger strategic and national security paradigm. However, the massive devastation of physical and social infrastructure brought in the wake of natural calamities, not to speak of innumerable human and animal lives lost, has forced us to make a course correction. Also, huge investments would be needed to create a conducive ecosystem for the research, production, and sustenance of this altogether new energy paradigm and architecture.

The ancient and indigenous Indian literature is full of information and prior knowledge about humans and their surrounding atmosphere. In Vedic tradition, Earths' Universe is called "Rita" (In Sanskrit and Indian

Philosophy, "Rita" is present as "ṛta" that means "truth" or "order"). Rita is present the cosmic order of the human universe; it is the doctrine of dharma (duty) and karma (which is the effect of the collection of the good and bad actions) in the human context, and the other reference of Rita is in the context of the physical order of the universe (that present the order of the sacrifice, and the moral law of the physical world). Rita becomes the cause of the sun and moon; they follow their daily journeys across the sky and the seasons come up in regular movement due to Rita. Rita is more than the universe; it has no any limitation or any boundary like the universe. Rita is everywhere in every moment. Each and every cause and action of the earth's universe follow the Rita. The violation of the path of Rita becomes the result of natural disturbance that harms the mother earth and its components in the form of disaster, so to follow the path of Rita without any disturbance in it is the conservation of the earth.

Ancient literature of Hindu tradition in India primarily recognizes the sun as the core of the world's energy source in a different form. Ancient literature of Indian thought is basically mentioned the energy source from nature that built the world as a living entity. In Vedas, energy is mentioned by the name of "Agni." When the same Agni involve in various spaces is named in variously as Avi, Indra, VĒyu, JĒtavedas, VaivĒnara, PavamĒna, PĒvaka, Ava, Gau, AjĒ, Etc. Nearly 200 SĒktas ('suktas,' which means 'Hymans' used in prayer chanting) have been dedicated to Agni (energy) in ṽgveda. Agni is recognized to devour his parents (matter) soon after its birth. It is nothing else but the transformation or conversion of matter into energy. Aitereya BrĒhmana (2.3) and TaittirĒya Br. (1.4.4.10) confirms as following---

"Agniṁ sarvĒ devatĒṁ."

"All material bodies in the universe originated from Agni (that is energy)."

"Sarvadevatyo agniṁ" (f.Br. 6.1.2.28)

"Energy involves in creation of all entire material."

"eka eva agniṁ bahudhĒ samiddhaṁ"

Aitareya BrĒhmana (2.6) described that all the physical matter particles (material objects) which are visible in the observer space are the creation of Agni (energy).

God created all the material objects from the mouth of Agni (energy).

Fatapatha BrĒhmana (6.1.4.12), mentions:

"Sarve pa, avo yadagniṁ. TasmĒdagnau pa, avo ramante".

"All physical particles (material objects) are converted from the energy, so it means that all the particles exist in energy." (Chand).

Is Culture Decides the Future of Climate: Every culture comes in its highest form through the masses, by their daily behaviour. The people's behaviour is in the form of a series of links that is in momentum and static at the same time (every link denotes behaviour at a certain point, and hence several links denote different behaviour which is moving as well as static), this momentum shapes the ever-evolving culture in the shade of time and space. The culture is a set of social and ecological cycles that include many subsets in different forms of human actions. Borrowing from Jain's philosophy, the human being is at the uppermost level of consciousness on Earth; hence it can be derived from this concept that humans somewhat give the direction to this Universe. The repetitions of human action shape a unique thought-behavioural culture in the long term that becomes a civilization. In the context of society, we can see India's culture from past to present (these are nature-centric, or there are many norms and festivals in India that are governed/influenced by nature or at the periphery of the core), which evolves in tandem with environmental sustainability to achieve/build more balanced future of Sustainable Earth. (Note: not anthropocentric but also include deep ecological perspective).

The plant ecology has great importance in keeping the environment in balance. The Rigvedic people exploited nature in a very sensible way, making full use of the Indian psyche; they compared trees to human beings, Gods, etc. They prayed to Indra (God) not to separate trees from the forests and the sons from their fathers (Rigveda, 8/1/13).

The Vṛkṣāyurveda says that planting a tree is equally beneficial as having ten sons.

"Dasakūpa sama vāpi dasa vāpi sama hradah"

Dasahrada samah putro dasaputra sama drumah"

(Vrksayurvedah-5).

Tulshi, Pippala, and Vatavr̥kṣa have great importance in our culture. About the importance of Tulasi, Vatavr̥kṣa, there are many slokas found in the Vedic literature. Some of them are:

“Jābadināni tulashi rūpitāpi jad grihe grihe.

Tābadvarṣha sahasrāni vaikunthe sa mahīyate”

(Vṛkṣhāyurveda-9).

(He will live in Heaven for so many years as the Tulsi Plant will be in his house for an equal number of days).

About the Pippala and Vatavr̥kṣa, Atharvaveda says,

“Aśwathu devasadanastriyashamityo divi.

Tatramṛitayasyo śakhan deva kushthamavanwat”

(Atharvaveda,5/4/3).

(It was prohibited to cut Vatavr̥kṣa because gods live in this tree, and no disease where this tree is situated.).

This is also supported by Shrikr̥ishna in the Shrimadbhāgavadgītā—

“Asswathu sarvavrikhanam.”

According to modern scientists, the pippala and Vatavrikhya consume carbon dioxide from the air and give us oxygen, thus balancing the atmosphere. The Oṣodhi sukta of Rig-veda addresses plants and vegetables as a mother, 'O mother! Hundreds are your birthplaces, and thousand are your shoots.

“Śatan bu ambā dhāmoni sahashramutta tu ruhaḥ”

(Rig-veda,10/97/2).

Similarly, India's Hindu traditions have worshiped Bilva, Kadamba, Rudraksha, Champaka, Bakula, etc. In the Maitrāyani Samhitā, the Earth has been described as "devajayani", adorable by deities and aushadhinam mulam, the source of all kinds of medicinal plants. During the Vedic age, *yajnas* were conducted for the purification of the environment. Perfumed haven material and ghee were used during these *yajnas*.

The Vedic sages also know that mountains cause rain and fresh air and provide medicines-"parvateṣu bhesajam" (Rig-Veda-8/20/25). Therefore they gave importance to saving mountains and said that it is better to live in the forests or mountains than the villages-

“Iman jibebhyah paridhin dadhāmi meshaṇ nu gādaparu arthametat.

Satan jibantu saradaḥ puruchirantamṛstun dadhatan parvatena”.

Tuje nastane parvatah santu svaitavo na virah.

Panita aptyoada no vardhannah sansan naryo ahistou”.

(Rig-veda, 5/81/9).

CONCLUSION

A sustainable society as social mobility always accommodates the Universe as a whole, not in the part or fragile. This concept of 'Oneness' indicates towards a unit (this is not one). Advaita (Non-dualism) of the Universe includes the ecological diversity on the Earth environmental as Oneness. It means there seems to be variety in the ecology, but it is not entirely accurate or the whole picture. The Universe and Earth's environment and its components are combined as one unit like thread and cloth (we can see the diversity of thread in parts and the combination of thread as the form of one cloth that is Oneness of thread and cloth or Advaita of thread and cloth).

Today's our social culture transform/influence/determine Earth's future. India's Vedic and Advaita cultural living patterns always see this Universe as the Oneness of present and future. Our present living pattern decides our Earth's future. Ideally, the social community's sustainable thought about other ecological beings paints the Earth's future when translated into human actions.

Social and civic unrest is a big hurdle for the sustainable future of the ecology. The social and civic harmony depends on the sustainable life culture inherent in India's life pattern; this comes from the eco-centrism

(Earth/ecology is the center of the Universe), unlike western thought of anthropocentrism (human is the center of the Universe).

The culture and future are coexisting at a time that constructs the human journey on the Earth in different situations and shapes the healthy Ecology. Our cultural standards decide our living pattern, and this residing pattern saves/conserves the environment, which projects our future. So it's all in our hands.

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Vrksayayurvedah-5

Vṛkṣhāyurveda-9

STUDENT TEACHERS' ATTITUDES TOWARDS SUSTAINABLE DEVELOPMENT (SD): A CASE OF MANIPUR

¹Chongtham Khogendra Singh and ²Dr. H. Ibomcha Sharma¹Research Scholar, Department of Teacher Education, Manipur University, Canchipur, India²Associate Professor, Department of Education, NG College, Imphal, Manipur, India**ABSTRACT**

This paper analyses the attitudes of student teachers towards sustainable development (SD) in the Indian state of Manipur. It was hypothesized that there would be a significant difference between the dichotomy variables: age, gender, birth order, place of residence, and subject stream. The participants (N=625) were a group of student teachers undergoing 1st Semester B.Ed. course in different teacher training institutes affiliated with Manipur University during the academic year 2019-20. The authors use a 20 items ASD Scale developed by Biasutti and Frate (2017) to collect the data from the participants. The data were analysed with IBM SPSS Statistics Version 22. Results of the t-test and the one-way ANOVA indicated significant differences among student teachers on dichotomy variables: age, gender, place of residence, and birth order. While no significant difference was observed for the subject stream of the student teachers.

Keywords: Sustainable Development (SD), Education for Sustainable Development (ESD), Student teachers, Attitudes, B. ED, Manipur University.

INTRODUCTION

Education for Sustainable Development (ESD) is a critical component of education at all levels across the world because it provides the information, skills, attitudes, and values needed to assure a sustainable future. The United Nations designated the decade 2005-2014 as the "Decade of Education for Sustainable Development," and UNESCO played a key role in this endeavour. ESD arose from a process that began with the Tbilisi Intergovernmental Conference on Environmental Education in 1977 (UNESCO, 1978), continued through the Brundtland Commission Report (WCED, 1987), the Rio Conference in 1992 (UN, 1992), and culminated in the United Nations resolution establishing the United Nations DESD (UN, 2002). Teachers at all levels should understand the relevance of ESD and be able to incorporate environmental problems into all topics. ESD should be a continuous topic for students at all stages of school. Student teachers, in particular, should be able to teach and instil in young students the necessity of having information about sustainable development as well as good attitudes toward it. As a result, the field of sustainable development and its problems has piqued the interest of researchers and policymakers. Many studies have been undertaken on the topic of sustainable development, examining it through the eyes of student teachers. Some of the research focuses on student instructors' attitudes, awareness, and views about sustainable development. (Birdsall, 2014; Burmeister and Eilks, 2013; Corney and Reid, 2007; Corney & Reid, 2007; Nickel, 2007; Maidou, 2015; Soysal and Ok, 2016a; Ull, Agut, Piñero and Minguate, 2014; Soysal & OK, 2021). Student teachers were shown to have favourable views toward sustainable development in these studies. However, there is a knowledge vacuum in the literature when it comes to analysing viewpoints on socio-demographic characteristics.

After reviewing the literature, the authors attempted to analyse the Attitudes of Student Teachers towards Sustainable Development.

THE OBJECTIVE OF THE STUDY

The objective of the study is to analyse the difference in attitudes of student teachers towards sustainable development according to their age, gender, birth order, place of residence, and subject stream.

THE HYPOTHESIS OF THE STUDY

It was hypothesized that there would be a significant difference between the dichotomy variables: age, gender, birth order, place of residence, and subject stream.

METHOD**Participants and Procedure**

Six hundred and twenty-five student teachers were enrolled to complete the questionnaire. The participants were a group of student teachers undergoing 1st Semester B.Ed. courses at 12 teacher education institute affiliated with Manipur University during the academic year 2019-20. Their age ranged from 25 to 45 years. The questionnaire was administered to the student teachers at the end of the routine period. The data were collected

over five months from 15 November 2019 to 15 March 2020. The socio-demographic characteristics and sample size have been shown in table no. 1 as follows:

Table no. 1: Participants’ socio-demographic characteristics

Category	Variables	Frequency (%)
Gender	Male	274 (44%)
	Female	351 (56%)
	Total	625 (100%)
Age	Older (above 35)	251 (40%)
	Younger (below 35)	374 (60%)
	Total	625 (100%)
Order of Birth	First born	175 (28%)
	Middle born	190 (30%)
	Last born	260 (42%)
	Total	625 (100%)
Place of residence	Rural	325(52%)
	Urban	300(48%)
	Total	625 (100%)
Subject streams	Arts	249 (40%)
	Science	276 (60%)
	Total	625 (100%)
Sponsorship	Government	75 (12%)
	Private	550 (88%)
	Total	625 (100%)

THE TOOL

The authors use a 20-item ASD Scale developed by Biasutti and Frate (2017) to collect the data from the participants. All the items (20) are marked on a five-point Likert type scale except on the socio-demographic information of the respondents. Scoring was summative and agreements and disagreements for each item were done as strongly agree (5), agree (4), neutral (3), disagree (2), and strongly disagree (1). The midpoint value for the scale was 60. For the five negative items, the scoring was reversed. Higher the score one obtained means a positive attitude.

DATA ANALYSIS AND RESULTS

Group comparison was performed with a t-test to compare the student teachers who belong to dichotomy variables such as age, gender, place of residence, and subject stream. In addition, a one-way ANOVA was done to differentiate student teachers who were born as the firstborn, middle born, and last born.

Age and Student Teachers’ Attitudes

Table 2: Attitudes of student teachers according their age

Age group	N	M	SD	t	p-value (two-tailed)	d
Older student teachers	251	64.92	3.98	2.49*	.01	0.51
Younger student teachers	374	62.54	5.26			

*significant at 0.05 level

The results indicated a significant difference between older student teachers ($M=64.92, SD=3.98$) and younger student teachers ($M=62.54, SD=5.26$) with $t(623) = 2.49, p\text{-value} = .01, d = 0.51$. It is concluded that the older student teachers possessed better positive attitudes than their younger counterpart.

Gender and Student Teachers’ Attitudes

Table 3: Attitudes of student teachers according gender

Gender	N	M	SD	t	p-value (two-tailed)	d
Male	274	62.24	5.26	2.83*	.005	0.49
Female	351	64.62	4.39			

*significant at 0.05 level

The results indicated a significant difference between the male ($M=62.24, SD=5.26$) and female student teachers ($M=64.62, SD=4.39$) with $t(623) = 2.83, p < .05, d = 0.49$. It is concluded that the female student teachers possessed better positive attitudes than their male counterpart.

Place of Residence and Student Teachers’ Attitudes

Table 4: Attitudes of student teachers according place of residence

Place of residence	N	M	Std. dev.	t-stats	p-value (two-tailed)	d
Rural	325	64.50	4.42	2.48*	.01	0.44
Urban	300	62.38	5.26			

*significant at 0.05 level

The results indicated that a significant difference between the rural ($M=64.50, SD=4.42$) and the urban student teachers ($M=62.38, SD=5.26$) with $t(623) = 2.48, p = .01, d = 0.44$. It concludes that rural student teachers have exhibited better positive attitudes than their urban counterparts.

Subject Streams and Student Teachers’ Attitudes

Table 5: Attitudes of student teachers according subject streams

Subject stream	N	M	Std. dev.	t-stats	p-value (two-tailed)	d
Arts	249	63.67	4.92	1.72	.09	0.29
Science	276	62.21	5.23			

The results indicated a non-significant difference between arts students teachers ($M=63.67, SD=4.92$) and science student teachers ($M=62.21, SD=5.23$) with $t(623) = 1.72, p\text{-value} = .09, d = 0.29$.

Birth Order and Students Teachers’ Attitudes

Table 6: Student teachers’ attitudes according to birth order

Birth order	N	M	Std.D	F-ratio	p-value
First born	41	65.02	4.17	4.19*	.02
Middle born	71	62.45	5.16		
Last born	38	62.29	5.36		

*significant at 0.05 level

The results indicated that the mean score and standard deviation of the first-born, the middle born, and the last born student teachers were ($M=65.02, SD=4.17$), ($M=62.45, SD= 5.16$), and ($M=62.29, SD= 5.36$) respectively. The observed mean score difference was found to be significant, $F=4.19, p = .02$. Post hoc analysis (Tukey’s) revealed that last-borns have better attitudes than both the first ($p = .02$) and the middle-borns ($p = .03$). However, no significant difference is exhibited between the middle-borns and the first-borns ($p = .12$).

DISCUSSION

The study’s results indicated that dichotomy variables such as age, gender, place of residence, and birth order have to turn out to be a predictor of significant attitudes toward sustainable development. While the subject stream of student teachers had nothing to do with the dependent variable. This study fits into the previous literature on sustainable development and education for sustainable development.

The current study has limitations in terms of the features of the group of subjects. One limitation may be the participants attended a similar B.Ed. training institutions affiliated with one University in the state of Manipur, which has drastically reduced the generalizability of the study. The use of the cross-sectional approach is also another limitation. Caution is advised when generalizing the results to other university students who are different from those who participated in the current research. When extrapolating the findings to other university students who aren’t participants in the current study, caution is urged.

The findings, on the other hand, provide a foundation for future research on SD attitudes. It may, for example, be presented to recognized groups to see if persons with similar attitudes toward SD score differently. The suitability of the tool employed in this study could also be explored while evaluating programmes and identifying changes in SD attitudes among Manipur university students who have participated in ESD-focused programmes and courses.

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A STUDY ON ENGINEERING STUDENTS KNOWLEDGE SHARING BEHAVIOUR IN A LEARNING ENVIRONMENT**Vidya R¹ and Dr. R. Krishnaraj²**¹Research Scholar and ²Professor, College of Management, SRM Institute of Science and Technology, Chennai-603203**ABSTRACT**

In the academic field, knowledge sharing is the most interesting area to be researched [31]. Knowledge sharing is key component for any intellectual interchange of ideas. But knowledge sharing can be challenging task as to identifying factors that can influence knowledge sharing in learning groups requires individuals' determination and willingness to participate in the process. To explore the factors that can impact knowledge sharing, existing works on student's knowledge-sharing students in learning environment are reviewed and identify the factors influencing knowledge sharing amidst students, besides offers opportunities for further investigation for future works. Thus, this paper, aims to identify the variables that affects knowledge sharing among engineering students both at undergraduate and post graduate level. The study variables are grouped under personal, environmental, technical factors and socio-cultural factors. Quantitative research design was employed to collect data through questionnaires from 230 engineering students from different engineering colleges across Chennai participated in this study. SPSS-26 software was used for data analysis and testing of the hypotheses. The statical technique, multiple regression was deployed to investigate the impact of personal factors (willingness to share, ability to share), environmental factors (mentor's guidance, competition intensity), technological factors (technology availability, technology support) and sociocultural factors (language, values and beliefs) associated with knowledge sharing. The findings suggested technology support, students' ability to share, willingness of the student to share knowledge affects on knowledge sharing amid students in a positively whereas and competition intensity has negative influence on knowledge sharing process between students. On contrary, technology availability and, mentor guidance has no influence on student's knowledge sharing. Language, beliefs and values do not have an impact on students sharing of knowledge. The findings provide valuable insights to educationalists, students, and academicians to comprehend the elements which can affect knowledge sharing amid students in learning environment. This, will be useful for them to eliminate factors that negatively impacts by bringing in necessary actions and interventions to develop and enhance knowledge sharing among students.

Keywords: learning environment, engineering students, knowledge sharing, technology, sociocultural

INTRODUCTION

Knowledge is attained through learning and experience by developing understanding in the subject [4]. New knowledge can be created by the process of knowledge sharing among individuals [29]. Organizational performance is positively influenced by knowledge sharing. Enhancing knowledge sharing increases organizational performance. But not all individuals will share their knowledge in all situations. There can be many factors that inhibits them to share their knowledge although the organization motivates them to share [9]. Recent studies indicate in knowledge management, the researchers and HR managers show more interests. Many research studies [14,17,18,25] have observed various factors in an organizational setting that can influence knowledge sharing process. Unhealthy competition has decreased the positive attitude of the students to share knowledge [1]. It is evident, that there exists an association among individual's attitude and knowledge sharing [5]. Prior studies reported that use of technology directly influence students' motivation, attitude to share knowledge. Truly, technology is observed to be key organizational component that can affect knowledge sharing. Use of technology is a most important factor of the knowledge sharing [5]. Interestingly only a few research studies have been carried out to identify and explore components which can affect knowledge sharing in learning environment setting. As the result, the focal object of this investigation was to explore elements which affects knowledge sharing amid engineering students in a learning environment

1. THEORETICAL BACKGROUND

Organizations can reap the benefits of knowledge sharing by improving knowledge sharing ability among their people, improving competence level, skills and knowledge [32] Factors influencing knowledge sharing is grouped into personal, environmental, and technological [25]. Knowledge sharing among students in a learning environment is not basically different from the knowledge sharing of people in organizational environment [7]. Researchers found that knowledge sharing among students is significantly related to personal and environmental

elements. As the objective of this paper focuses on studying engineering students' knowledge sharing in universities or colleges, the environmental factors which is usually organizational factors are altered to the learning environment factors.

1.1 Personal Factors

Many researchers have suggested that knowledge sharing process happens mainly verbal and written communication [25]. People are highly motivated to share their knowledge with others when they are self-assured that they have the capacity to share useful and meaningful knowledge [9]. Ability and willingness of the individual to share knowledge has a positive impact on knowledge sharing [29].

1.1a Willingness

Personal factors influence knowledge sharing significantly [21]. Many researchers in the research have observed that was carried out in educational institutions and organization observed that one's willingness to share the knowledge he or she possess, influences the knowledge sharing among the individuals [11]. Willingness to share knowledge affects knowledge collection and donation [26]. Outcomes from other research works also established significant positive link between individual's willingness for sharing knowledge and knowledge sharing behavior exhibited by them. [22].

1.1b Ability

Individual need to have trust their abilities to share knowledge that is meaningful and valuable to others [8]. Ability of a person to share knowledge is one of the determinants that affects the intention of the person to share knowledge [2]. Notedly, there is a need to develop one's ability for knowledge sharing to enhance behavior of the individuals to share knowledge [24]. It also has been observed those people having greater ability to give solutions for problems have the capacity to share more knowledge with others compared to individuals with lesser ability [6].

Drawing Hypotheses from the Above Literatures

H₁: Student's willingness to share has a positive impact on knowledge sharing in learning environment.

H₂: Student's ability to share has a positive impact on knowledge sharing in learning environment.

1.2 Environmental Factors

Intellectual discussions in a learning environment can facilitate knowledge sharing. The mentor's style of class handling can also affect students' behavior to share knowledge [7]. Competition among the students is one more factor that has been studied. Individuals fear that they might lose their elitism because of sharing their knowledge. Moreover, the knowledge which is held by the individuals as their own asset is considered as an intellectual capital of the organization that can be leveraged for both personal and organizational advantage [9]. In a learning environment to gain a personal competitive advantage in exam results the students do not share knowledge among others.

1.2a Mentor's Guidance

Sharing knowledge among students is influenced by teacher's support [22]. Another research observed rewards positively affects knowledge sharing behavior of students [27] and students also believed support of teachers influence their willingness to share their knowledge [22,24]. It is identified teacher's role plays an important part in impacting students' knowledge sharing [21].

1.2b Competition Intensity

Competitive environment has a high level of association with the knowledge sharing behavior of the students. It has been identified as barrier in knowledge sharing with other individuals [3]. Alternatively, a study [15] has reported that knowledge holding reduces when competitiveness exists. It can be concluded competition is an obstacle to knowledge sharing as students evade the tendency to share knowledge since, they feel that their classmates might achieve better.[30]

Subsequently, the Following Hypotheses are Drawn

H₃: Mentors guidance impact positively on knowledge sharing in learning environment.

H₄: Competition intensity among the classmates has a negative impact on knowledge sharing in learning environment.

1.3 Technological Factors

Readiness to communicate is the individual's capability to connect with one and other directly in a social context [29]. Technology is considered to be an important tool for connecting with each other over long

distance. Moreover, technology supports knowledge sharing process easily and effectively [25]. Also, it is identified technology accessibility and usability impacts knowledge sharing [14].

Subsequently, the Following Hypotheses are Drawn

H₅: Technology availability impacts positively on knowledge sharing in learning environment.

H₆: Technology support impacts positively on knowledge sharing in learning environment.

1.4 Socio -Cultural Factors

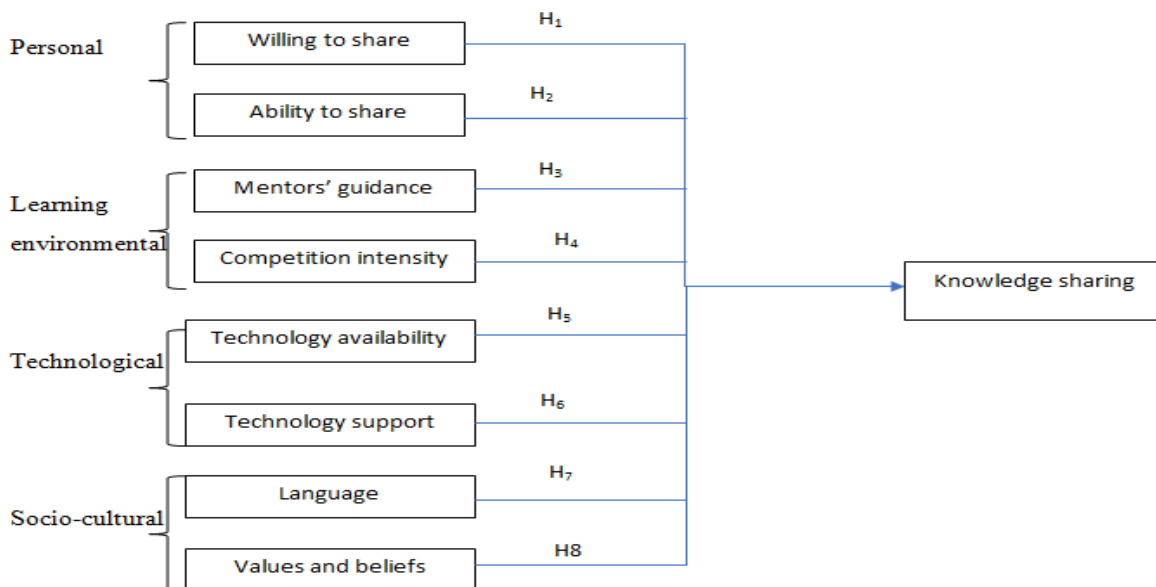
Culture is identified to be a very important component that has the capacity to influence knowledge sharing in any learning environment. Hence the need to understand the influence of culture within the learning environment, and trying to alter the culture for supporting knowledge sharing in learning environment will be most effective. Still, trying to alter the pre-existing, leading culture is very difficult. The sociocultural views, within any specific context students’ involvement in social activities is the central point [10]. These factors help shape thoughts, beliefs and actions of an individual. The sociocultural factors like region, language and cultural upbringing of an individual can influences values, beliefs and actions of an individual

H₇: Language has no impact on knowledge sharing in a learning environment.

H₈: Values and beliefs have no impact on knowledge sharing in a learning environment

2. RESEARCH MODEL

A conceptual research model is developed based on the existing literature of study.



3. RESEARCH FRAMEWORK

3.1 Survey for Data Collection

The target population is engineering students from any engineering college in Chennai and data was collected using purposive sampling method. Questionnaires were distributed to students.

3.2 Survey Questionnaire

The questionnaire was divided into two segments. The segment one consists of questions to gather the demographic details of study population and the second segment of the questionnaire consisted of total 23 items with a 5-point Likert scale. The items that were used for this study was based on the from previous research works [7,14,16] and was modified to suit environment context of this study i.e. the teaching learning environment. Internal consistency and reliability were determined using Cronbach’s alpha value 0.70. Table 1 represents the analysis for reliability. The result of the analysis presented alpha level above .70 except for competition intensity, language and values and beliefs. As suggested, acceptability limit may be reduced to .60 for exploratory study [13]. Consequently, the items measuring the factors were accepted.

Table 1: Analysis of Reliability

Variables	Number of Items	Cronbach’s Alpha
Willingness to Share	3	.797
Ability to Share	3	.780

Mentors' guidance	3	.756
Competition intensity	2	.653
Technology accessibility	2	.704
Technology Support	3	.819
Language	2	.625
Values and beliefs	2	.610
Knowledge Sharing	3	.731

4. FINDINGS

4.1 Demographic Details of the Respondents

The data was collected from 230 engineering students from both undergraduate and postgraduation in different departments. Table 2 displays the respondent's demographic details of all those who contributed to this particular study.

Table 2: Demographic details of respondents

Characteristics	Frequency	Percentage
Gender		
Male	163	70.87
Female	67	29.13
Age		
< 21	73	31.74
21-25	31	13.48
26-30	57	24.78
> 30	68	30
Engineering Departments		
Computer Science	92	40
Electronics and communication	69	30
Mechanical	31	13.48
Civil	58	25.22
Graduate level		
Under graduate	187	81.30
Post graduate	43	18.70
	230	100

4.2 Testing of Hypotheses

Multiple regression analysis is used to test the proposed Hypotheses. All assumptions were tested and indicated no violation. .05 level of significance was used for all statistical tests. The results of analysis of multiple regression are displayed in Table 4. The result of the analysis for regression reports for a variance of 48.2% on knowledge sharing ($R^2 = .482$, $F = 29.347$, $p = .000$).

Table 3: Regression Analysis on Knowledge Sharing

Multiple regression result of Knowledge Sharing model	$R^2 = .482$, $F = 28.945$, $p = .000$
Individual Factors	
Willingness to Share	$\beta = .022$, $t = 1.921$, $p = .049$
Ability to Share	$\beta = .271$, $t = 4.440$, $p = .000$
Environmental Factors	
Mentors' guidance	$\beta = .119$, $t = 1.976$, $p = .053$
Competition intensity	$\beta = .129$, $t = 2.160$, $p = .030$
Technological Factors	
Technology Availability	$\beta = -.013$, $t = -.161$, $p = .879$
Technology Support	$\beta = .401$, $t = 5.523$, $p = .000$
Socio-cultural Factors	
Language	$\beta = -.003$, $t = -0.007$, $p = .927$
Values and beliefs	$\beta = .026$, $t = 0.423$, $p = .062$

5. CONCLUSION

The main objective is to analyze the various components that have an impact on sharing of knowledge amongst engineering students in a learning environment. The results conclude technology support to share knowledge,

ability to share knowledge, willingness to share and competition intensity factors significantly impact knowledge sharing. Notably, technology support, willingness to share and ability to share have positive impact on knowledge sharing while competition intensity has a negative impact on knowledge sharing. The findings confirm technology support is vital factor to promote knowledge sharing among engineering students as it has been used as a medium or tool for communication or for sharing information. Technology facilitates student to collaborate for sharing knowledge. The development of one's ability for sharing knowledge is also very crucial.

6. LIMITATIONS

Self-reporting bias is a limitation in this study. There is always a leeway for the respondents to misreport their willingness to share knowledge to project a good image look. Additional limitation is that the study was conducted in Chennai region alone. Future research need include respondents from all fields of study like medical, law, arts and humanities etc. Lastly, social economic factors like economic background, educational background etc. can also be considered in the future study as the respondents come from different social and economic background.

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CHARLES TAYLOR'S CRITIQUE OF THE CONCEPTION OF SELF IN MODERNITY

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ABSTRACT

Without completely rejecting modern values such as individual freedom, rights and the human search for higher meaning or ends in life, Taylor is ontologically critical of the foundationalist conception of self in modernity which is primarily based on the epistemological interpretation of the self that separates the self from the world by objectifying the world and idealizing the self, and the naturalistic interpretation of the self that reduces the self to a mere physical body based on the mechanical laws of cause and effect. Unlike in modernity, Taylor believes in an embodied world with no division between the self and the world, or between the mind and the body. As a phenomenologist and moralist, he insists that human beings with a moral personality are inextricably embodied within the cosmological order though the order is dynamic and not fixed. By way of situating the human agent within the cosmic-based moral order, Taylor presents the view that the existential crisis in the conception of self in modernity itself has a transcendental meaning.

Keywords: Self, Embodied World, Human Agent, Individualism, Modernity

1. INTRODUCTION

Taylor accuses epistemological and naturalistic interpretation of the self for causing the birth of modern individualism. Modern individualism disengages the self from the cosmic order against the traditional metaphysics where everything, including man, in the universe is constituted within the cosmological framework. He sees the height of moral decadence, materialism, spiritual disquiet and identity crisis in the modern society as the offshoot of modern individualism. However, he views that the individual-centered conception of the self in modernity is not accidental without any ends. Rather, it is rooted in the cosmic-based morality to understand the self. He, therefore, views that the good has a transcendental existence and the activities of the agent should be strived to attain the higher good. Moral evaluation and reflection is a self-evident truth to human agent. Human agents evaluate their actions and beliefs. On the other hand, as a situated being in the world, humans live with both reason and animal desire. As a result, Taylor has rejected a disembodied world we see in the Cartesian mind-body dualism and the reductionist approach of the natural science that reduces everything, including the self, to mechanical explanation. Human has a sense of comparison, competition, recollection, reflection, evaluation, choice and preference between two things or actions which is not fixed but dynamic. Taylor therefore does not reject the reality of one value or idea replacing another over time as human is reasoned towards perfection. Taylor, however, thinks that human existence cannot be found outside the particular background or framework. Freedom in modernity too is realizable only when the agent lives within the society having a certain framework. Searching for qualitative meaning in life, moral evaluation and reflection of our actions can be done only when we have a lived experience in the world. Human is never neutral but always do a qualitative discrimination when judging things in the world. According to Taylor, human existence itself is a mystery, and any attempt to give a definite description of the human existence based on the principle of certainty we see in the theory of foundationalism is therefore not sufficient.

2. Spiritual Disquiet in Modernity

We have witnessed a good deal of scientific and technological advancement in the last century or so, however, it does not meet both the material and the moral needs of the moderns. The modern life seems to have become less structured or ordered as compared to a premodern life. We have started to experience a sense of loss and despair in the midst of modern scientific and material progress, and multicultural society. This new state of affairs is inducing us, the moral agents, to cut ties with the mysterious universe where we are also the parts within its vast expanse. The human agent in modernity experiences an inner void that causes the agent to search for a new authentic life. According to Taylor, the agent's desire to fulfill a meaningful life in the midst of despair in modernity has an ontological explanation. He offers the moral agent an alternative explanation that the spiritual disquiet going through by the agent is an expression of the agent's unfulfilled desire to be free (*The Ethics of Authenticity* 8-10).

Taylor claims that the language of nature has changed in modernity. In the earlier time, the human agents acted according to the laws of nature, and obeying the laws of nature was considered moral. The agent felt that he is constituted within the laws of nature like other objects in the world. Nature was considered a standard for human actions. In modernity, the language of nature has become a subjective standard depending on how the

agent interprets it (*Nietzsche's Legacy* 171-187). In other words, modern agent sees himself as the maker of his own destiny without being influenced or dictated by the laws of nature. The language of nature has become more of what we see within ourselves and how we make ourselves more human by listening to our own inner voice. And Taylor would call this transformation an ideological shift from traditional enchantment with nature to modern disenchantment from nature. Modern sense of authenticity, according to Taylor, is pursuing for self-fulfillment, to be individual and to be a human independent of the outside elements and influences. Therefore, to be authentic is to be individual. It is a world where one has a right to choose and determine his own way of life following his own conscience, and protected those rights by the modern legal institutions. Hence, in modernity, individual tries to break a relationship from the traditional moral orders, as well as from the social, political and religious orders where the agent is originally constituted as a part within the larger order or horizon. The resultant is the birth of relativism and secularism in modernity where one interprets and chooses one's own values, meaning and right by undermining the role of the higher cosmic moral order that encompasses every part including the agent. And the desire for self-fulfillment and modern sense of authenticity has become so strong and articulate that it has turned blind to the greater reality that there is a higher value that transcends than just meeting the desire of the self in this world where everything is crisscrossed (*The Ethics of Authenticity* 14). Modernity places individualism at the highest value and no one can challenge the rights and values of anyone by giving a higher regard to the order of life, social structures and the will of the greater cosmic force. What was traditionally considered structured and rigid for change, order of things, is now made changeable and flexible in modernity. Taylor argues that modern individualism is also the offshoot of instrumental reason pursuing for higher production, material profit and economic growth based on the principle of natural science (*The Ethics of Authenticity* 93-108). Instrumental reason would even claim that human control over the nature itself has its own moral reason to meet a human better living standard from the past human sufferings and struggles for survival. However, Taylor makes a counter response that instead of freeing human from misery of life, modern technology threatens or engages our lives more miserable by losing a contact and relationship with the environment and its rhythm. Also, instead of modern technology controlling us, we should control and use technology for the right moral reason (*The Ethics of Authenticity* 98, 106). All this pursuit by individualism for self-fulfillment is getting into a conflict with the larger horizon such as environment, social structures and family. Instead of meeting the desire, it isolates the self further from anything good. Hence, according to Taylor, the self pursuing for self-fulfillment without connections to the larger cosmic framework itself is a contradiction in terms. He, however, understands that the pursuit for authenticity in modernity should not be totally condemned or stopped as it has its own moral reason behind its current malaise. He therefore argues that being authentic in modernity means being in search of the higher mode of life which does not strive for what we desire, but striving for what standard we ought to desire as a moral agent (*The Ethics of Authenticity* 16). In this sense, Taylor asserts that authenticity in modernity would, by coursing along the cosmic order, become the highest moral principle in actualizing human towards a transcendental world and reality. But, before providing modernity a solution to live an authentic life, he explains how epistemological and naturalistic interpretation of the world and human existence has been responsible for the malaise of modernity.

3. Epistemological Self in Modernity

Taylor argues that the epistemological interpretation of the world and the human existence based on disengagement and objectification that the human agent is capable of disengaging from the world and objectifying the world is very appealing to the moderns (*Philosophy and the Human Sciences* 4) because this approach reduces the world to a neutral object existing only to serve the ends of the agent which is already determined in the mind without the influence of our lived experience and outside forces. He argues that the values of modernity have been influenced by such epistemological explanation. This influence is found not only in the field of natural science but also in the discipline of social sciences, ethics, morality and politics. However, modernity solely depends on the method of epistemology to study about the problem of knowledge, about the world and the meaning it carries for man is the central problem in modernity. Taylor thinks that the attitude of modernity that considers epistemology as the only correct method available to tackle the problem of knowledge consequently leads modernity to even think that epistemology has the legitimacy to say about God, the world and human life (*Philosophical Arguments* 1-8). He, however, asserts that such claim made by modernity that epistemology can provide us the foundation for the whole knowledge structure is illusive simply because all our lived experiences can never fully be articulated. Lived experience itself is a mystery which no any scientific method can dissect and understand it with certainty. Taylor credits the birth of epistemology mainly to Descartes, Locke and Kant. Epistemology, unlike the other philosophical systems, as a new theory of knowledge and as the foundation of all other sciences, claims to have a legitimacy to measure the authenticity of all other truth claims (*Philosophical Arguments* 2). Taylor states: "If I had to sum up this understanding in a single formula, it would be that knowledge is to be seen as correct representation of an independent reality. In

its original form, it saw knowledge as the inner depiction of an outer reality” (*Philosophical Arguments* 3). Taylor attempts to overcome this kind of epistemological enterprise, because it is inadequate and insufficient for an accurate description of reality. He claims that the two different kinds of epistemological foundation, the mind and the body, laid down by Descartes have attributed absolute autonomy to the human mind in knowing truth or reality. In other words, Cartesian dualism has completely cut off the interaction between the mind and the body by attributing the mind of having the sole capacity in attaining the knowledge of the world or reality. However, this division offers only a partial and not a fuller picture of reality. Taylor sees the epistemological thinking in modernity as based on a sharp distinction between the human mind and the world, which he calls the “Inside and Outside” division (*Foundationalism and the Inner-Outer Distinction* 118-132). What concerns Taylor is not the distinction of the mental and the physical world per se, but how the nature of their interaction is being explained. What is more challenging is also to explain the location or meeting boundary where interaction takes place between the mind and the body, because mind and body have to interact, also because mind is always found within the body and not outside of the body. In other words, mind has to be where the body is (Atkins 9). Taylor is worried and against of the gradual development of this division of mind and body into a value in itself that later becomes visible in modernity, ethics, politics, etc. Hence, he rejects those values considered valid and real by the epistemological self or Cartesian self for the fact that epistemological self has ignored the actual state of affairs of the thinking agent that the agent is already and deeply entangled with the world as an acting body, like in Merleau-Ponty’s embodied world, and thinks only through forms such as language, social practices, etc. which the agent shares with others. Hence, as also found in Hegel, mind is, according to Taylor, always in the world and always social (*Comment on Jürgen Habermas* 158).

Taylor further argues that this division of the inside and outside world in epistemological method assumes the later as a disenchanted inanimate nature that is simply laying there for human to either define it with meaning or refute it. Taylor means the existence of the world out there is dependent on the views and interpretation of the inner world or mind though impression to the mind is first received from the outside world (*Foundationalism and the Inner-Outer Distinction* 106). In Taylor’s interpretation, Descartes is of the view that our certainty of the knowledge of reality depends on the reflexive clarity and examination of our own mind in abstraction, that is independent from what is being presented to our mind by the outside world. In other word, certainty is something that the mind has to generate for itself without needing the help of tradition, language, history, opinions or anything from outside but except the content of his own mind. This position of Descartes has moved away from the general epistemological understanding that the outside objects first do the impression on the mind as seen in Locke’s epistemology. Taylor claims that Descartes has laid an epistemological or theoretical foundation through the mind-body division into two separate independent entities and at the same time taken away the autonomy of the body or world. This epistemological division appears attractive to many that it promises the human agent a higher level of self-fulfillment and new level of freedom. It becomes problematic only when we start talking about truth, reality, morality, right and wrong, relativity and the absolute. Despite its moral and theoretical flaws, this state of affairs of mind-body division, claims Taylor, has made a tremendous influence in both the natural science and the social science for the last three centuries. The idea of individual freedom and right in modernity draws its justification from this epistemological project of dualism which Descartes is largely responsible. However, Taylor strongly feels the necessity to redefine the agent’s interaction with the world against the traditional epistemological interpretation of the human self and the knowledge of reality independent of the phenomenological world.

4. Naturalistic Self in Modernity

Taylor is of the view that naturalism cannot adequately explain the nature of the human agent because it treats man as part of nature and therefore defines or understands man based on the principle of the mechanical laws (*Philosophy and the Human Sciences* 2). The outcome of this is attributing man the property of neutrality and objectivity like we see in other natural objects. However, according to Taylor, human is a mysterious being who is much more than to be seen like other material objects and should therefore be understood outside of the framework of naturalism. Even the agent himself cannot fully understand who he is and why he is here. He, therefore, argues that it is implausible for the natural science to study and explain the human science which is much more complex than the natural science (*Philosophy and the Human Sciences* 1). Human life is not value-neutral like other objects, but value-based. The methods employed by natural science to understand the nature of human life are reductive in nature and even the scientific language used in the project are not value free. Moreover, scientific theories avoid certain questions of the human existence on the ground that those questions are irrelevant, not serving a purpose or have no value by undermining the bigger picture of human existence. Taylor objects this over-simplification in the examination of human life by the natural science. He claims that the use of reductive and simplified method in understanding human existence in the natural science has

profoundly shaped the mindset of modernity. The consequence of it is treating human as good as other material objects without discrimination but a neutral being. In fact, a purely material object and the human existence are two different realities. According to Taylor, natural science model of interpretation as the primary model for every kind of interpretation to comprehend reality was started in the 17th century scientific revolution which thinks the universe and everything in it works according to the laws of nature (cause and effect). Another interpretation is made by mechanist psychologist that there is a correspondent relation between the human brain and nervous system on the one hand and the human behavior on the other hand. However, Taylor argues that such attempts based on the mechanical laws are many times taken for granted and based more on faith than a scientific research (*The Explanation of Purposive Behaviour* 63). Even the scientific languages used in the research are neither neutral nor objective but just a wish and not a reality. Hence, he is against the view that mechanist psychologist or neuroscience can offer the only possible explanation.

Another interpretation is found in behaviorism which claims that there is no difference between the behavior of man and natural process that is undergoing in the inanimate beings. Behaviorist thinks that the same natural laws that explain about the inanimate things can also explain the behavior of the animate beings, because humans and animals are both the parts of nature and mechanistic principle should be sufficient to explain all aspects of human existence as well. Taylor argues that human behavior, and in some cases animal behavior, is fundamentally different from the processes that take place in the inanimate things which are the objects of study for natural science. The behavior of human is purposive and goal oriented which is not found in inanimate nature. Humans and some animals are conscious of their behaviors and actions, they have the power in themselves to change and direct their behaviors in a way that find no counterpart in animate nature (*The Explanation of Behaviour* 3). Taylor takes this reality of human nature as a starting point in addressing ethics, humanism and in the search for higher forms of human life.

Another interpretation of the human existence is found in atomism that tries to explain human life and behavior on the basis of how natural atom is being explained in the natural science. Atomism comprehends man as an atom whose nature is self-sufficient. The atomistic principle has been adopted by the modern political theorists such as Hobbes, Locke, Rousseau and Nozick, and used in their political philosophy of the social contract theory. Taylor argues that a political philosophy based on atomism which considers man as a self-sufficient being is incoherent and not acceptable because man cannot live outside society and needs social nurturing to realize his inherent capacities. He further argues that the atomistic theory has helped assert the primacy of individual rights as a fundamental principle of political theory (*Philosophy and the Human Sciences* 188-192). The primacy of individual rights have been made an absolute right undermining the background, belongings, relationships and the society of which the individual is a part. Primacy-of-rights theory of the individual has become a central factor in determining the political structures and institutions in modernity. Taylor's main concern is not how important the rights of individuals are in the society, but the claim that the primacy-of-rights theory is absolute and enjoys an indisputable status in any given political structures or institutions. Taylor argues that the primacy-of-rights theory is ignorant of the fact that man needs social relationships and society as the necessary conditions for the development of human rationality and realization of man's full potentials. Human existence is not about a mere physical survival like other living beings, but about a moral agent with evaluation, choices and standards. And human development to a full moral agent can only take place in the social context. Therefore, he argues that man lives without a social relationship in the original state of nature as stated by Hobbes, Locke and Rousseau is simply a fiction. He agrees that human being does have certain rights and it is not wrong to claim and practice those rights, but we cannot start the argument first with rights before we know what is to be a human being. We should first understand the concept of human being, and then the human rights should be based on the human nature that commands certain respects from others and vice versa. For Taylor, human rights must reflect human nature. When we talk about rights, it also refers to freedom to practice our rights. Freedom becomes a subject matter in the discussion of human rights. Taylor is against of the kind of freedom understood and professed by the ultra-liberal thinkers that says any choices made by the individual by using his or her freedom are equally worth and therefore cannot be judged morally better or worse in the principle of freedom (*Philosophy and the Human Sciences* 196). He argues that freedom too like the primacy of individual rights is not absolute (*Philosophy and the Human Sciences* 196-206). Freedom cannot be exercised outside the social conditions and structures. To enjoy and exercise freedom and develop human self-sufficiency and potentiality, one has to be placed within the social context. To exercise freedom, there should have choices, and choices are provided only within the social structure or framework. One cannot have choices outside society. Taylor argues further that, for a child to exercise his freedom, he should be first nurtured by parents and families and later by society and institutions through imparting knowledge of polity, history, ethics, science, theology etc. Hence, social context comes before any political theory. Following this fact, conferring

primacy of individual rights or freedom an absolute status is weakening a social structure which is the source of our right and freedom. Taylor concludes that individual rights and freedom should be limited or restricted in order to protect and uphold our own rights and freedom.

Taylor sees all these scientific methods are opposed to the conception of the universe as the instantiation of forms that set the framework and standard we find in the Platonic-Aristotelian world which human alone, among all other beings of the world, is the only being that questions, that cares for qualitative discrimination, and that is not value-free in encountering the world or in the quest of reality. The truth is the languages of human science are neither neutral nor objective but complex and always being informed by personal judgment. And while carrying out our personal judgment, choices, desires, intention, social force, etc, we base our moral discrimination on the certain order of good as a standard or framework. Hence, according to Taylor, all these accounts prove the limitation of the naturalist approach to understand the human existence.

5. Human as an Embodied Agent

Taylor views that human own existence is situated in the world. Therefore, the human self which includes not only the physical features but also the human thoughts is always embodied in the lived world. Human is essentially an embodied agent. In other words, what we understand human as subject is embodied in the nature. The essential feature of the subject is to undergo an experience in the lived world. Taylor calls this lived experience a perception of the subject referring to the theory of perception of Merleau-Ponty (*Philosophical Arguments* 22-25; *Merleau-Ponty: Critical Essays* 3-8). Perception points to the existence of the perceiver. The perceiver has to be situated in the world with his senses to experience the world. Perception of the subject takes place only within a particular background such as located position, culture and spatio-temporal dimensions such as up-down direction, back and forth direction etc. But the background has no meaning in itself without the subject's consciousness of the background and his activities and capacities to act within the background or field. And Taylor thinks that only the embodied agent or subject can experience or be aware of the structure of this background. This background is the perceptual field of the situated agent (*Philosophical Arguments* 24) and to define his own existence, the agent is inescapably entangled with and in this world of perception. Perception of the embodied agent means to be conscious of his own articulation and experiences while perception is taking place in the field. Hence perception is relative to the existence of the embodied agent. In other words, there is neither perceptual background nor perception without the embodied agent or conscious perceiver. Therefore, Taylor argues, the subject himself and his perception is simply the constituents of his awareness of himself as an embodied agent (*Merleau-Ponty: Critical Essays* 14). Self-consciousness or consciousness of the self himself and his perception is what matters at the end. This position could lead to a conclusion that we therefore know nothing of the things in themselves but understand as we experience them. And the answer to it could be yes. However, Taylor's concern is to understand and interpret the world and our own existence the way we experience. This leads him to a conclusion that all the theories of the human sciences are not independent from the perception of the embodied agents as everything and every understanding, including social science theories that try to explain human existence based on the mechanical laws of cause and effect, is taking place within the perceptual field of the embodied agent or perceiver (*Philosophical Arguments* 27).

Taylor asserts further the validity of the argument of the subject's experience and the perceptual background of the subject by stating a coherency between the subject or the perceiver, the object or the perceived and the perception of the subject. He argues that to be perceived or experienced, firstly, there must have an object so that experience is an experience of something and not of nothing or of experience itself which is a self-negation. Secondly, the experience must be coherent and rational which therefore requires the agent's own understanding of the experience based on or assisted by the transcendental or ontological ideas or values which are a priori and self-evident, and not contingent (*Philosophical Arguments* 27-28). The question that arises is if human understanding is a priori or self-evident, why do we still need experience? Taylor answers that experience would facilitate the agent a chance to reevaluate and reflect the already concluded view now and next time when the agent experiences in the perceptual field. It is through agent's own experience or activities that the embodied agent is able to articulate and perfect those categorical or ontological ideas which are self-evident but not fully perfected or realized or conscious of yet by the embodied agent without or before experience. To some extent, this self-evident is like a chess-player who knows the rule of the game as a necessary condition before he plays the game. However, in reality, in our perception of the world, our understanding or self-evident of the world is not as clear as the chess-player has of the chess-game. Our perception or experience as an embodied agent is a lot more complicated and mysterious therefore opens to an endless articulation, dialectical discourse, formulations and understanding (*Philosophical Arguments* 29- 33). The same experience can be articulated differently depending on the use and understanding of the language the agents use as the tools to articulate the experience. Also, the agent is always entangled in the world with his mind, culture and language that helps the

agent in perceiving and understanding the nature of the world and human existence, hence an impartial, neutral, objective and independent description of them is an insufficient theory in relation to the human science.

6. Relationship Between the Human Agency and the Good

Taylor believes in the objective existence of the good. He, at the same time, claims that humans are moral beings who always undergo a moral experience and make moral reflection out of that lived experience. The self is inherently embedded in the moral givens and, therefore, has some moral essences in the self which do not change irrespective of the culture they are being expressed or interpreted. The self and the moral givens are entangled in the world. Taylor does not want to remain in a too ideal position when it comes to morality. He rather gives importance to both the moral theory as well as the practical experience of the given morality. In other words, thinking and living presuppose each other. Starts with the very fact of human existence as a moral being who is capable of having the sense of morality as well as capable of experiencing morality, Taylor, however, thinks, the best way to understand morality is to take the absolute existence of goods as real and independent of the human subjective interpretation. He argues that it is unequivocal that every normal human being by nature has a moral intuition and power of moral evaluation (*Sources of the Self* 3, 14, 15). This moral instinct found in human transcends itself from the other human basic desires for survival, sex, food etc. The moral intuition found in human also does a strong moral evaluation or qualitative discrimination. This strong evaluation is similar to the cosmic idea or order of the good that, after a temporal association with the self and the worldly desires, transcends the self and other corporeal desires (*Sources of the Self* 20, 58, 68). This narration shows a clear assertion of Taylor in favor of the independent existence of the goods. In other words, he places the goods in the transcendental realm separated from the basic animal desires as well as from the self.

According to Taylor, to experience morality requires man to be in the world and have a dialectical process of debates, deliberations, reflection, articulation, evaluation, decisions and actions which is to be found only within a certain moral framework. And this moral framework is not empty. The moral framework is, but, constituted of many goods that are coherently and rationally connected with one another. These goods and their coherent relationship in the given moral framework in which we are a part make us to understand that we are the morally self-constituted beings in a morally embodied world. The moral self who is within the moral framework is in a dialectical relationship with that moral framework. Hence, the relationship of the self with its framework is not static or fixed but dialectical which is therefore dynamic and changeable. The relationship is developmental and progressive (*Sources of the Self* 17-18). Taylor argues that there is one good out of many goods in the competition or conflict within the framework which, by virtue of moral evaluation, stands above the other goods. He calls that good a hypergood. Hypergood influences and regulates other goods within the framework. Hypergood is likened to the queen monad of Leibniz or the monad of monads. It is this hypergood that gives a definition and meaning to a set up framework. In other words, the hypergood defines and bears the whole character of that particular moral framework (*Sources of the Self* 63-73). Here, Taylor believes in the plurality of framework and hence believes in the plurality of hypergood as well. In other words, there always exists one hypergood within each moral framework. The hypergood therefore, always comes to the central picture in discussing about the moral self. The autonomous nature of the hypergood, however, transcends the self and not subjected to a subjective interpretation of the self. However, this general tendency of striving for the life good is grounded in the strong moral source which Taylor calls a constitutive good. The constitutive good does a moral motivation on the moral agent in pursuit of the hypergood and other goods within the particular moral framework (*Sources of the Self* 93, 122).

7. Human Aspiration for Spiritual Liberation

Taylor claims that objectification of things and disenchantment of the human agent from the world has given the notion of freedom to the human agent by giving a special space to human consciousness as the sole and independent determiner of the meaning of things, meanings of our own existence in the world without listening to the voice of the outside forces such as communal narratives and well-ordered cosmic ideas (*Philosophy and the Human Sciences* 5). He argues that despite the foundational theories (epistemology and naturalism) have even applied to social theories for all the practical purpose that it helps humans in material advancement and justifies our actions in the world for our better living (*Philosophy and the Human Sciences* 92), the case of the hidden desire of the agent for freedom remains untouched and unfulfilled. In other words, this shipping of theories to social sciences is a material and practical driven and not spiritual driven. The agent's aspiration for freedom has made disengagement and objectification so attractive to the moderns because we generally think of a man as independently having a moral personality, rights, values, choices and life-goals, self-identity etc (*Human Agency and Language* 97). Taylor is of the view that it is a mistake for the intellectualist to think that our consciousness has the power to frame and represent things of the world clearly independent from the process of representation of things which involves the desires, aversions, strong moral evaluation, emotions,

language, social interactions, ends and self-perception of the socially situated agent (*Human Agency and Language* 103). According to him, the importance of human consciousness is not the power of framing the self as the representation of the world, but enabling man to evaluate and reflect his goals, values and meanings of life. However, instead of rejecting them, Taylor would like to view that the epistemological and naturalist interpretation of the world in terms of objectification, neutrality and disengagement is actually an attempt and aspiration for spiritual liberation and rising human agency above the level of a mere human. In this way of reinterpreting the naturalist and epistemological approach, Taylor tries to introduce the spiritual dimension of the human agency in the interpretation of the world which has been ignored by the foundationalist thinkers. He therefore views that not only his embodied theory of the world, but also the reductionism and naturalism unconsciously, aspire for spiritual freedom of the human agency (*Human Agency and Language* 113). Therefore, according to him, the question is not about how we know this reality, but about whether or not we accept this reality (*Human Agency and Language* 114). And this reality of the agent aspiring for spiritual liberation is a social essence that helps the agent in the evaluation of values. Taylor, in this way of interpretation, has widened the horizon of understanding the world and human existence. His understanding of the world is not one of epistemological, but one of moral. Taylor's points towards the existence of the moral source that ultimately transcends the world by introducing spiritual dimension into the interpretation of the world and the human agency.

8. CONCLUSION

Taylor concludes that humans are the embodied beings in the world who alone amongst the other beings have the power to perceive things around them. Therefore, the perceiver should not be excluded from the description of the world. The perceiver or the subject is intrinsically embodied in the world with his mind, articulation, language, culture, sense of morality, sense of strong moral evaluation, reflection, motivations and intentions as the constituents and information of his perceptual field which makes the world even more difficult to be seen as neutral and independent. Hence, any theory of human sciences, be it intellectualism or naturalism, which attempts to describe the world as neutral, impartial, objective and independent of the subject is insufficient. Also, an attempt to disenchant the human agent from the world in order to define the meaning of human existence and liberation which Taylor finds in modernity is untenable.

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WOMEN, HEALTH AND GENDER DISPARITY: A GLOBAL PHENOMENON**Haseena Nighat Khan and Zahid Rehman Mir**

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¹Orcid: 0000-0003-0442-7311**ABSTRACT**

Women continue to be in a state of marginalization. Providing basic fundamental rights to every human being is considered to be gender equality. Nevertheless, the world has seen great strides toward gender equality, but a wide gap remains and unfortunately may be widening. The World Economic Forum (WEF: 2017) in their most recent report, gender inequality continues to be a persistent problem with the gender gap in economic participation and health. Gender Stratification has led to gender discrimination which has manifested itself in different forms (Rogers:2006). Historically, there are social, economic, and political factors that are responsible for the marginalization of women. Across the globe, many women are still economically dependent. However, poor access to information, early marriages, and lack of decision-making power continue to increase among women. Gender norms and prejudices both hinder the development of women (Hazel and Kleyman:2019). Limited autonomy or powerlessness of women in family roles and lack of health-seeking behavior were found to be the major factors adversely affecting women's health. In India, women suffer from low health status and are vulnerable. Feminists have tried to make understand the differences between sex and gender and need to explore the concept of the intersectionality of sexuality, gender, and class, viewed as it shapes our experiences (Reverby:2002). Although, feminists' opinions revealed that society is gendered oriented hence there women and men have essentially different experiences and access to power. Feminism is mainly concerned with gender disparities issues and views that emerge from the structure of patriarchy. However, the rapid increase of intersections between the environment and political crises across the world has a direct impact on local contexts. These variations and connections emerged due to the increasing global mobility (Philips:2009). This work is primarily based on secondary sources such as Books, Reports, Journals, Census, and Online sources. The present Research Paper is striving to analyze women's issues and challenges and to illuminate the marginalization of women concerning their social life and health status.

Keywords: Empowerment, Feminism, Gender Inequality, Health, Stratification.

INTRODUCTION

"Women are not born but become one" (Simone de Beauvoir). Since the inception of life, there has been a considerable differentiation between genders. Adam and Eve represent two different genders. Gender is a social construct and is an ascribed status, one is born as male and female which is a biological reality but one only becomes male or female based on socialization and other factors. Simone de Beauvoir explained how a woman is made socially rather than being born as one. Gender stratification has led to gender discrimination which has manifested itself in different forms. It is very important to make understand how these differences may be shaped by cultural factors and how they may contribute to inequalities in wealth and power (Khanyan, Krawczyk, and Wilamowski:2021).

Global level, if we examine the women contributes the half of the population and their social, economic, and political issues are being a matter of concern. Health inequalities persist negatively and people live in poor conditions. There is no equality in society. However, National culture and traditions often operate to justify the exploitation, domination, and marginalization of religious, and ethnic minorities, socially subordinate castes, and the poor. These cultures and traditions are used to dismiss a variety of political demands for justice, equality, rights, and democracy. Some reported similarities between Western and Indian cultures are hierarchical social systems, huge economic disparities between members, and inequality among women with systematic ignorance. Here presented some identical aspects of an Indian woman: sexually constrained, ignorant, poor, uneducated, tradition-bound, domestic, family-oriented, victimized, etc. contrast to Western women as educated, modern, having control over their bodies and sexualities and freedom to make their own decisions. During ancient times, women enjoyed equal status with their counterparts but in the post-Vedic era, the fault lines started to emerge. Veena Das has given the concept of the Devi-dasi dichotomy wherein she has explained how women are trapped between the two. Women are treated as demi goddesses but at the same time she is treated as dasi (slaves). This paradoxical nature has left her confused and pained. There are female names of goddesses but at the same time, there are Nirbaya-like incidents day in and day out. Women face discrimination in their jobs as well. They have to deal with unfair wage disparity. According to the World Bank, women get paid less than men for the same job profiles. Women get hardly any chance to move up the ladder.

Their personal and professional mobility is hindered and discouraged. According to periodic labor force surveys, 90 percent of the workforce is concentrated in the informal sector and women form the major chunk of that population. Women are expected to be docile and submissive; they are forced to work in inhuman conditions and are paid lesser wages. Many women also face abuse and sexual harassment in the workplace. Their representation in jobs is very less. In the 17th Lok Saba, women's representation is only 14.3 percent, this highlights how women are represented abysmally in our political structures. In the local governance models, women face the problem of pan chapati, wherein women are forced to contest elections, and later their husbands' command power is vested through panchayat raj institutions Utsa Patnaik in her economics of dowry mentions that women under menace of dowry feel worthless and are subjected to societal trauma. Amartya Sen talks about the missing women. He mentions that sex determination has led to foeticides which involve the killing of a fetus. Women also face many challenges during the infant stage like infanticides, during childhood they face issues of child marriage and child labor. Social issues like early marriage also have psychological problems for women. According to Talcott Parsons women are made for expressive roles and males are made for instrumental roles. This stereotyping of roles has reinforced traditional aspects. The patriarchal nature of society has ensured that women are subjected to the fancies and whims of their counterparts. Women face violence, dogmas, and other orders from elders because of patriarchy. Recently Supreme Court in the Arunachala gounder case 2022 maintained that ancestral property is equally divided among women also. In the Shah Bano case, the Supreme Court declared that the maintenance of widows is the obligation of the husband. Whereas, in the Triple Talaq case, the Supreme Court ruled that women aren't subjected to arbitrary laws for divorce.

The feminist political economy of health emerged as a term that connected a lens with a focus on health disparities among women. The analysis signifies that women have experienced health disparities because of women's social, economic, cultural, and political conditions. Feminists' political economy of health infers that material and cultural discrimination are traced as primary factors that determined the social conditions and health of women.

During the pandemic of Covid 19, the crimes against women increased manifold. Domestic violence, sexual harassment, physical abuse, mental torture, and marital rape were some noticeable crimes reported during the pandemic. According to National Crime Records Bureau(NCRB), there was a 10 percent increase in violence against women and many cases went unreported due to the lockdown. According to the Oxfam report 2022(inequality kills), women faced the major brunt of destruction and poverty unleashed by the pandemic. According to un-women there was a pandemic within the pandemic and called violence against women a shadow pandemic.

On the other hand, women are second to none and have outshined their counterparts in every field of their life. Women have set glaring examples in all the fields. Sarojini Naidu, Sushmita swaraj, mother Teresa, and Benazir Bhutto have proved that women are second to none. In the field of sportswomen like Sania mirza, Maria Sharapova, and Sania Nehwal, Mary Kom has even outshined their counterparts. Women are bringing changes in all domains and there have been movements led by women. Pre-Independence the movements led by women were lesser but these movements gained traction and became more vociferous post-independence. Chipko movement was a watershed movement that showed how women played an important role. There have been many positive legislations that have been brought in to improve the standards and life of women. Prevention of sexual harassment in the workplace has been brought in to fight sexual discrimination and harassment of women in the workplace. The national commission for women has been formed to look into the causes of violence and discrimination against women. Reservations brought in by acts like 73rd and 74 the constitutional amendment act have ensured that political offices are accessible to women. There is a reservation of 1/3rd for women at the level of panchayats. Reservations in educational institutions have ensured an increased gross enrollment ratio of girl children. Right to education act 2009 has ushered in a new era of providing free education to children up to the age of 16 years. Social reformers like Raja Ram Mohan Roy, Dayanand Saraswati, Ishwar Chandra Vidya Sagar, and Sir Syed Ahmad Khan have played quintessential roles in raising awareness about the rights of women, they fought gender discrimination and inequality to the hilt. It was because of their efforts women were freed from the encouragement of social ills like sati, child marriage, and other such issues. The international women's day of 2022 was celebrated with the theme of breaking the bias. Thus it is high time to end the gender inequality and let women enjoy the equal freedom to explore themselves, women constitute 50 percent of the world population and in today's day and age it is a sin to treat women as second class citizens, it is time to break the chains of patriarchy, male chauvinism, and other societal maladies.

LITERATURE REVIEW

Feminism prime concerned with equality, oppression, subjugation, and justice. Equity is an essential principle in public health ethics, making apprehensive understanding of the inescapable nerve between power. Feminism is primarily concerned with gender disparities that emerge from the structure of patriarchy. Although feminists' opinions revealed that society is gendered oriented hence there women and men have essentially different experiences and access to power. Feminist materialist ideology examines chaos concerning women's paid and unpaid work. It seems those women's reproduction and unpaid caregiving and expressive roles are not mentioned. Moreover, feminists strongly argued that women's health is directly impacted by determinants of health such as age, income, residence, and social status. However, cultural and societal norms and attitudes generate ideologies that define feminine and masculine positions. Subsequently, the process of socialization, how the internalization of partial ideas and the social exclusion of women based on sexual stereotypes, may lead women vulnerable to any social problems (Syed: 2021).

THE FIRST WAVE OF FEMINISTS

The first wave of feminism emphasized women's emancipation and equality. First Wave Feminism emerged in the nineteenth and early twentieth century as a feminist movement. Their foci were struggling for women's rights to vote and participate. Mary Wollstonecraft (she) is considered a mother of first-wave feminism. She stated that women could be equal to men in every aspect if they are provided the same education and opportunities as men. One world women's movement: This is a very useful survey and critical of International debates amongst academic feminists regarding global patriarchy, race, and gender. Thus, the first wave of feminism is concerned with Inequalities, political interest, and Self- Determination of women. The Second Wave: Feminism originated in the mid- 20th from the writings of the British feminist, Juliet Mitchell with an ideology of radicalism based on economic and social conditions. Many feminists, in the 1960s to 1990s, were particularly connected and social movement. The feminists mainly strife for women's reproductive rights, make abortion legalized and there should be birth control. Moreover, they analyzed the gender difference, focused on attaining equal rights in the political and economic sphere, and gaining sexual liberation as well. They focused on Social-Economic issues like equality in social status, Sexual harassment, and discrimination based on caste, class, race, sexuality, age, ethnicity, religion, and political consequence.

THE SECOND WAVE FEMINISTS

The second wave of feminism focused on female oppression and the liberation struggle. From the mid-twentieth century concentrated on the cultural features of female oppression and the structural, social, and psychological transformation to achieve women's liberation.

THE THIRD WAVE FEMINISTS

The third wave stressed individual empowerment. The third wave of feminism emerged with the contribution of American feminist writer, Rebecca Walker which aimed at social and economic equality. The third wave of feminism suggested women's issues like the representation of female empowerment as individual transformation. However, feminists are mainly struggled for reproductive rights protection from violence at home and in the public sphere to provide equal social and economic rights. No doubt, the majority of the feminists have focused on middle-class women and struggled for their emancipation.

THE MARXIST FEMINISM

Marxist Feminism: Focused on the struggle for women's rights. Though, Marxist feminists affirmed that power has nothing with sex. They strongly argued that the family maintains a patriarchal structure and class Inequality and capitalist affair is an obstacles in the way of women's struggle for equality.

Karl Marx Quoted that "when each individual is set to free development, there will be the chance for all". He argued that Gender roles and the shaped by forms of Economic status. Marx believed that the patriarchal structure in society is the major source and cause of the growth of male and capital dominance. Marxist feminism is concerned to struggle for providing rights and opportunities to all sections of women. In every society, all women do not share the same class interest.

THE SOCIALIST FEMINISM

Marxists and socialist feminism explained the conditions of women within the framework of social class and private property. Socialist feminists have argued that family and its relationship is oppressing the role of women through unequal opportunities and unpaid work of women. Both Marxist and Socialist feminism advocate that there should be changes in Economic and material conditions.

THE LIBERAL FEMINISM

Liberal feminism Struggled for the empowerment and public participation of women. John Stuart Mill has focused on issues of education and equal rights for women. Feminists focused on individual freedom and struggle to achieve equal status in social, economic, political, and legal rights, access to education, health, and welfare with equal job opportunities. Liberal feminism is a moderate form of feminism that emphasized society rather than revolutionary change. In formal sectors, men have prestigious jobs. Whereas women engaged in the private sphere got unpaid work and in the public sphere they have the least productive paid activities.

THE RADICAL FEMINISM

Radical feminism: Bounded by an entire change in the social structure for equality. Germaine Greer is a well-known academic writer, journalist, and scholar who gave significant but controversial voices of radical perspective in the 20th century. It is a widely accepted situation that male power and privilege are the basis of social relations. Women are deeply oppressed, widespread and the most suffering group in the society. Patriarchy believes that men are biologically stronger than women and that women are meant for reproduction only. In this society, men are dominant and have their autonomy, and superiority, particularly in capitalism with benefits (Foord and Gregson, 1986). Men oppress women through girdles, false eyelashes, high heels, makeup, and different slogans about patriarchy. Therefore, the radical feminists worked for consciousness. . The radical feminists, postmodern feminists, and post-structural feminists rigorously argued that the body projects or represents the patriarchal oppression of the female body. Radical feminists argued that society is psychologically structured on the need of males and maintain that women's needs are subjugated. Therefore, radical feminism is expected to change the social structure beginning with the equal relationship between men and women.

THE BLACK FEMINISM

Black feminism: Struggled for equality within the races and Dalit within casts. Black feminists struggle for the emancipation of black women, to provide such civil rights to every black individual who is under the domination of whites' higher class. Women can bear the suppression of race, sex, and domestic violence. Therefore, black feminists forcefully raised the issues of existing social divisions for women differences based on race, ethnicity, disability, sexuality, and age. They have represented three key themes: self-definition, self-valuation, and nature of oppression. Further, examined a black woman's journey from oppression, subjugation, violence, male domination, emancipation, and happiness.

WOMEN'S HEALTH IN INDIA

India is on the path to becoming an economic superpower but its performance index in the health component of human development, particularly that of women is not at all impressive. Therefore, an attempt is made to analyze the health issues of women in India concerning their work environment, productivity, and welfare. However, the causes of the persistent inequality between men and women are only partially understood, be it in the education or health sectors. There is domination and exploitation of the high class where people feel distressed and are in a state of powerlessness. (Behera: 2016). Women's health issues are prevailing across a span of centuries not restricted to India only. Women's low status is intrinsically linked to the existing patriarchal society. Women often receive inadequate health care facilities. Women in India face many challenges to their health concerns such as maternal and reproductive health, nutritional status and malnutrition, maternal mortality, morbidities mental health issues, menopause, and menstrual issue, violence against women, and unequal treatment. Due to the patriarchal structure, women bear discrimination within their private sphere. They have no such authority to make decisions. They get humiliated by the male domination power somewhere. They cannot access proper resources like food, health benefit, and education (Anbu: 2020). Research revealed that structural and intermediary determinants such as gender, economic status, caste, social class, education, and age caused health inequalities. They generate social stratification in terms of differential socioeconomic position in society. In human existence, Society has a patriarchal structure that makes women to adhere restrictions and norms. More or less the societal structure impacts women's welfare, particularly on health. Health is a social phenomenon without comes that is influenced by contextual factors. These create social hierarchies in societies that produce maternal health inequalities. History revealed that the maternal mortality witnessed among women is due to the gender gap in socio-economic status and facilities for health services (Muzaffar: 2015). In India, a high level of fertility is linked to poverty, low education, low female participation, and other measures of social and economic development. Somehow, the high fertility rate raises serious health challenges in Indian women. Due to multiple pregnancies, women get undernourished which affects a child. They are not able to require adequate care for a child in terms of food (Scanneving: 2015). But in India women mostly suffers from no such proper care. On the other hand, early marriages and childbirth are also responsible for the prevailing wide variations in the women's status (Kowsalya and Shanmugam: 2017).

Marginalized sections of society in India face numerous challenges and issues in their living habitat. Due to their traditional living, they have some kind of myths and practices to their lifestyles. They are not getting proper medical facilities they do not have a good hygienic environment and sanitation. These all lead to poor conditions, especially regarding their health position. In the tribal states of India, there is the number of pregnancy-related deaths is reported highest number (Khanday and Akram:2016). However, structural and intermediary determinants caused health inequalities. They generate social stratification in terms of differential socioeconomic positions in society (Hamal and Dieleman: 2020).

The decision-making process within households is surviving through a normal life cycle is a resource-poor woman's greatest challenge. The persistence of hunger and abject poverty in India and other parts whether it is health and nutrition or any other field, women are noticed to be the worst sufferers. Women are suffering from poverty and ignorance at a greater level rather than men. One of the guiding principles adopted by the Bhore Committee appointed in October 1943 for evolving health policies and services in India was that the health services, provide benefit to all sections of people who need such requirements. In India, both in rural and urban areas, there is no such conducive and productive social environment that leads to risks to women's health, particularly in those areas where pollution concentration is reported high. There is a reported high incidence of mental ailments such as depression, anxiety, neurosis, and psychosomatic disorder, and an increasing rate of suicides among women is also emerging as a major problem in the women-health domain.

SUGGESTIONS

Women's empowerment is a new phrase in the vocabulary of gender literature, a the phrase used to empower women refers to being independent, access to freedom and opportunities. In addition, attain their position in the power structure of society. The word women empowerment essentially means that the women have the power or capacity to regulate their day-to-day lives socially, politically, and economically – a power that enables them to move from the periphery to the center. In public health, empowerment has traditionally been defined by its Gender Equity and Economic equality without gender equity is impossible and gender equity without health empowerment is irrelevant. Being an educated and independent women can contribute and serve their families and take care of their children. Though, she merely makes such inspirations to the next generation. Inclusive policies for women's development – in terms of health – should take into account the rights-justice perspective of health and human development. Similarly, the Beijing Declaration and Platform for Action (1995) brings into focus the holistic view of health and the need to include women's full participation in society. To attain optimal health, and equality, including the sharing of family responsibilities, development, and peace are necessary conditions.”

CONCLUSIONS

Gender equity is required for enhancing the productivity and performance of women in various roles in society. It is on India's agenda for sustainable livelihood(Hans:2009). Marxist feminism was confined to a united struggle for women's rights. Socialist feminism exposed the gender aspects of the welfare state. Whereas, the liberal feminist struggled for the empowerment and public participation of women. However, radical feminists bounded entire change in the social structure for equality, and the black feminists struggle for inequality within the races. Unfortunately, women's issues persist in every society. Global level, if we examine the women contributes the half of the population and their social, economic, and political issues are being a matter of concern. Women's health must be considered as a crucial element to bring the change in developing as well as developed countries, there is a need to increase quality and equal accessibility for every woman and provide proper reproductive health care as well(Muzaffar: 2015). This all can be done by the proper implementation of the policies and to address social factors that may lead to dismal the status of women and make them vulnerable. To provide civil rights to every woman, provide education in general and in specific also regarding health, make women participate, and create awareness for their empowerment. These are such initiatives for gender equality and the development of any nation.

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A FRAMEWORK FOR INTELLIGENT TRANSPORTATION SYSTEM BASED ON INTERNET OF THINGS FOR VEHICLES**Gagan Deep Singh**Assistant Professor SS, School of Computer Science, University of Petroleum & Energy Studies (UPES)
Bidholi, Dehradun INDIA 248007**ABSTRACT**

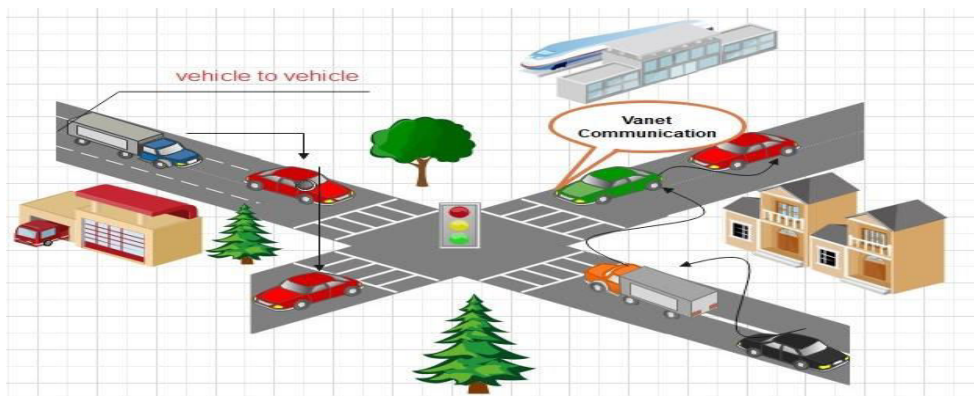
The vehicles have been increased by 170 times in India since its independence, on the other side the roads and its related infrastructure has only developed by less than fifteen times till then. The growing rate of automobiles are increasing around 25 lakhs per year and it's a very rapid growth in terms of automobiles population. The road fatalities are thousands of times greater than rail/air and terrorism. The road accidents are expected to be the fifth largest killer of humans by 2030. So, countries where, there are challenges of road infrastructure and development, technology can play a game changing role with the advancement of Internet of Things based Intelligent Transportation System, ITS. The problems related to safety and issues of transportation may be resolved through upcoming technologies. International consortiums can work together to develop a solution that best fits for present challenges. The paper presents and highlights the statistics of Indian transport and road accidents. Then, an Intelligent Transportation System is proposed that works on IoT based transportation system which is able to provide smoother and better transportation facility. This system will also help to lower the rate of accidents in near future. This proposed system is named as Internet of Things for Vehicles i.e. IoTV. In this paper a solution is presented for future ITS that is based on upcoming technology of IoTV.

Keywords: automobile, road infrastructure, IoT, road accidents, Intelligent Transportation System, IoTV.

1. INTRODUCTION

The advancements in wireless communication technology and devices have opened a new dimension of research which is capable to repair and organize, rearrange the networks without the need for any centralized authority or infrastructure. Recent enhancement in wireless adhoc technologies and dedicated short-range communication devices have made vehicle-to-vehicle communications (V2V) and road vehicle communications (RVC) developed using Mobile Ad hoc Networks (MANET). From this entirely a new network has been evolved and called as Vehicular Ad hoc Network (VANET). This emerged new technology of VANET is a subset of Intelligent Transportation System (ITS) architecture, which aims to improve road safety, optimize traffic flow, reduce congestion, and so on. VANETs are a special case of MANETs [1].

VANET can be used as a driver's assistance for communication and coordination among each other to avoid any critical situation through V2V communication e.g. random braking, obstacles, accidents on road, bumper to bumper jams, random increase in speed, pathways for emergency vehicles like fire, police, and ambulance, etc. Along with these precautionary applications, VANETs are also useful for comfort applications to the drivers and passengers. For example, multimedia applications, internet connectivity, weather forecast, and infotainments during drives. The "Crash Avoidance Matrices Partnership (CAMP), Advance Driver Assistance System (ADASE), FLEETNET and CARTALK" are some of the famous applications which was developed by various automobile manufacturers and governments through Public-Private Partnerships [2]. Figure 1, shows the overall working structure of VANET.

**Figure 1: VANET Structure**

These days there is a rapid growth in technologies, the Internet of Things (IoT) is important for a wide range of scientific and industrial processes and research. Aspect to the future of the Internet, IoT will comprise millions

of intelligent communicating ‘things’ through using the Internet, and the connectivity will be in anything, anyone, anywhere and anytime. With increased sophistication in the IoT, it is expected that about 50 billion devices will be interconnected by 2025 and traffic data flow will grow 1000 times than before [3].

IoT is basically a combination of network devices communicating each other and gathering data from various sensors, data processing and web based applications. The sensors are used to detect the data and gathers the relevant information. These data is transmitted through the network equipments on the clouds for further processing. Various web technology is applied for data mining techniques and through this relevant information is derived. Then by using an application on a physical device, the processed information will utilize[4]. Devices availability in the IoT which will be related to the connectivity of those devices must be fulfilled in the hardware and software planes to provide anytime and anyplace services for customers. The ability of IoT applications indicates as software availability will provide the services for every person at different places and at the same time. Meanwhile, hardware availability indicates the presence of the devices all the time [5].

The Internet in near future will also consist of interconnected vehicles and its related infrastructure i.e. stationary and mobile devices) moreover, this will sustain the borders of the world with physical entities and virtual components. Recently, a major paradigm shift has been on the way toward using IoT in the vehicular domain, e.g., vehicle-to-person (V2P), vehicle-to- vehicle (V2V), vehicle-to-sensors (V2S), vehicle-to- roadside (V2R) and vehicle-to-transportation infrastructure (V2I), also referred to Vehicular-to- Everything (V2X)[6] . In this chapter the author proposes Internet of Things for Vehicles i.e. IoTV.

The IoTV architecture and its framework can be applied on to connect V2V, V2I, ITS and for managing and processing autonomous vehicles within VANET [7]. With the high ability of these vehicles, the disposal will be much better and faster than the human and decision will be best in many cases, like of natural disasters such as earthquake, landslides occurs then the autonomous vehicles is able to diagnose the affected region and in finding the vacant routes to inform the ambulance and in that way free passage can be provided. The same can also be applied for efficient routings in Intelligent Transportation System where VANET deploys Swarm Intelligence techniques like ACO [8], PSO, firefly etc.[9].

Through this paper authors propose IoTV paradigm through a framework that is capable to provide efficient autonomous automobiles communication. The paper focus basically as per the following major points.

- IoTV framework with layered architecture is proposed that focuses on the functionalities, operational and representations of the different layers.
- A communication framework is proposed that compromises four fundamental aspects of IoTV which are automobiles, user, network communication, and cloud technology.

2. Network Model of IoTV Environment

IoTV network model represents the complete system for communication in the IoTV network environment. The network environment model as shown in Figure 1, illustrates the communications and interactions between various components and networks within the system such as V2V, V2R, V2S and V2I [10]. IoTV network model presents the four important major elements: user, connected-vehicles, network connection, and cloud computing, illustrated in Figure 2.

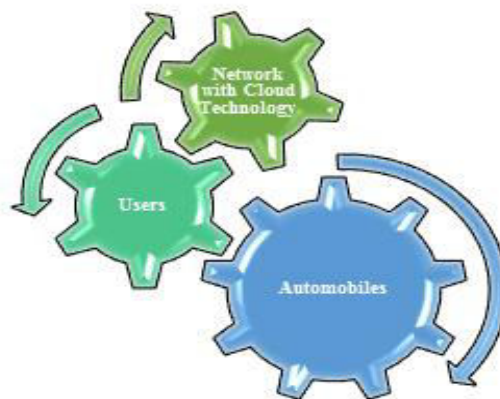


Figure 2: Major Components of Internet of Things for Vehicles

2.1 Users

In this model users are represented as the beneficiary of the IoTV services. These users can be a car driver, commuters, passengers and any other person that are connected to the vehicle or another vehicles. Thus, IoTV

can provide different services to the users that facilitates the drivers in getting route information such as congestion and traffic jam information, statistics on carbon emissions and during emergency like calling ambulance, police and fire services in case of accidents [11].

2.2 Automobiles

In this model automobiles are referred as the connected vehicles with preinstalled sensors. These sensors offer the data collection functionality such as detecting road conditions, driver habits and autonomous control [12]. With the growth of industrial, nowadays different automobile manufacturers have two options for supporting the internet to the vehicles: brought-in and built-in. In brought-in connectivity, cars can connect to the internet through user smartphone networks via wires (e.g., Universal Serial Bus (USB)) or wirelessly (e.g. wireless fidelity (Wi-Fi) or Bluetooth) so that the vehicle achieves direct access to the Internet and also extra benefits by using smartphone applications. Built-in connectivity supports the cars with the internet by consolidating the on-board system with cellular service, which lets the cars connect to the Internet through the cellular network such as Fourth Generation-Long Term Evolution (4G-LTE). As a comparison built-in option offers a strong connection to the vehicles and passengers, but the cellular connectivity cannot be changed when established [13].

2.3 Network

In this model the most important element is the third element i.e. network connections in IoTV, and this is responsible on how other elements in the IoTV environment can be connected together by using one of the network technologies. IoTV can be connected to the short-range communication networks, such as Bluetooth and ZigBee in the intra- vehicle communication (i.e. inside the car; e.g. V2S) and for long or medium-range communication network for VANET (i.e. outside the car, e.g. V2V, V2I, V2R, and V2P) such as Wi-Fi, Wireless access in vehicular environment (WAVE), Ultra-Wideband (UWB), 3rd-Generation (3G), 4G/LTE and 5G [14], which that 5G will be the suitable one for IoT services [15]. According to the mobility of the vehicle, the most prevalent technology used in intra-vehicle communication is the vehicle ad-hoc network (VANET). The excellent feature of VANET is a self-organized communication network whereby the pre-infrastructure network is not required as the vehicle is considered as a wireless access point (AP). Furthermore, the full infrastructure is updated periodically depending on the position of the vehicles. The driver/vehicles can get updated information about the new external environment from some hints, such as red lights [16].

2.4 Cloud Technology

The proposed IoTV is not complete if it not includes cloud technology. The last element proposed is the cloud technology that may acts as a brain of the system. The functions of the cloud are numerous including intelligent decision making, analytics, central computing processing, analysis of the payoff services to modify or update the applications using different tools for critical analysis such as flowcharts, graphs, reports, etc. [17].

3. Proposed Architecture of IoTV

To avail the services of ITS and VANET in the proposed IoTV environment, IoTV need to perform the following functionalities: first of all, data is collected by one of the sensors inside or outside the vehicle. Then, the data is broadcasted to other elements of the IoTV environment for further processing. This may be performed by connecting to one of the network technologies available inside or outside the vehicle. The vehicles are connected to cloud computing to process the captured data. Finally, the best decision is taken by one of the artificial intelligence algorithms and selected to provide smart service from the vehicle to the user/vehicle. In order to recognize these functionalities. The present study was designed to exemplary them as a group of layers in new proposed universal architecture for the Vehicular IoT named as IoT for Vehicles (IoTV), which will be applied as powerful platforms for different and heterogeneous communication models. There are four main components of the proposed architecture such as IoTV Services, Network Communication, Cloud Technology, and Clients/users Figure. 3 shows a diagram of the IoTV layers and their main functions.

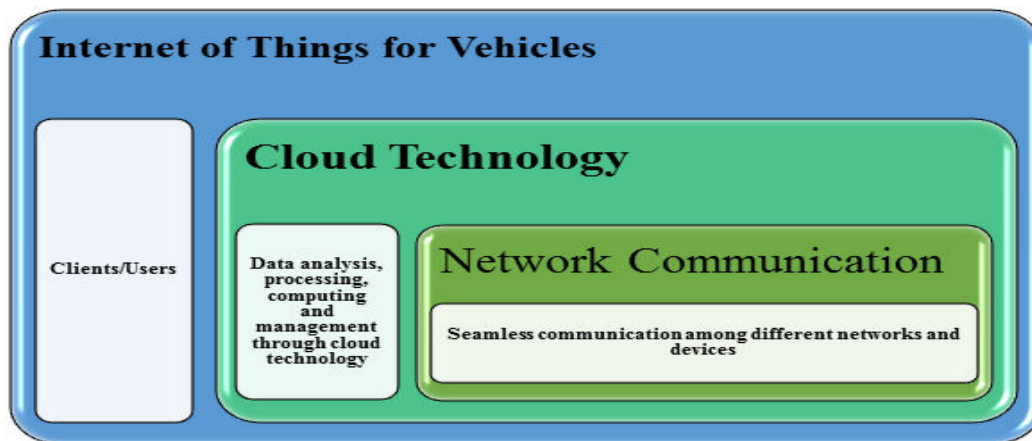


Figure 3: The layers of Internet of Things for Vehicles

The proposed IoTV is able to synchronize with all previous technologies as per TCP and OSI model to avail the services in present IOT enabled VANET environment. Though, security is also a major concern but presently it is not in the scope of the chapter. So, security may be taken care and will work as among all layers as individual protocols in each layer. As per the proposed IoTV architecture it will consolidate the different network characteristics regarding the accuracy, interoperability, scalability and has the capability to connect vehicles to heterogeneous networks. The following is a detailed discussion on each of the component.

3.1 IoTV Services

This component of IoTV architecture will be a services oriented layer that facilitates users and automobiles with smart applications, which provides information, infotainment, safety and non-safety services to the vehicles and end-users in an efficient manner. The layer gets accurate and rational analysis of information through the cloud technology over a network communication.

3.2 Cloud Technology

This component of IoTV architecture incorporates by smart cloud infrastructure. It performs the gathering of data, saving of data, analysis and further processing to make a decision based on the critical analysis and cloud based computations. As illustrated in [18], the primary responsibility of this layer are analysis and computing like Vehicular Cloud Computing (VCC), intelligent transportation, Big Data Analysis (BDA) and Expert Systems. This will be used for the deduction of toll taxes in India in all major national highways and express ways.

3.4 Clients and Users

This is the one of the most important component of the IoTV architecture as it is responsible for various actuators and sensors installed at roadside units (RSUs), vehicles and other available VANET infrastructure. The main function of this layer is to capture data and information of the vehicles in VANET and traffic environment. It collects data from other devices of the IoTV ecosystem and broadcasts it to cloud setup through available network. The data may have information related to speed, location, status of the vehicles and route related information, traffic condition, weather condition, infotainment, security and other relevant information of drivers and commuters. The main responsibility of this layer is that the collected information is to send it in an efficacious and secure manner and then deliver it to the Network Communication layer so that it can be process at cloud layer.

3.5 Network Communication

This component of IoTV architecture is mainly responsible for the seamless communication among heterogeneous and different networks in an IoTV environment. This facilitates network communication for IoT based sensors, Bluetooth, WAVE, mobile GSM network, 4G/5G, and for satellite networks like Elon Musk's Starlink to provide secure, reliable and fast communication between different VANET equipments. Then the collected information further transmits over to the cloud for next level of data analysis and processing.

In proposed IoTV architecture the presented network depends on the types of connection in VANET. This can be inter-vehicular communication and/or intra-vehicular communication. The inter-vehicular communication is mainly focuses on the network that is outside the vehicle and responsible for long-range communication. Hence, WAVE communication technology is proposed in this as it is best suited for the environment where high mobility of the nodes are observed such as in road transportation. Through this high data rate services will be achieved for IoTV [19].

The intra-vehicular communication is proposed for the short-range of communications which can be achieved through Zigbee/Bluetooth. So, for this high-frequency range is not required hence the high and random mobility of the vehicles will not get disturbed. This has been proved from the previous studies, that the selection of a suitable network depends on the assessment of single property such as Received Signal Strength or Signal to Interference Noise [20]. In this, the selection depends on the requirements of the service and the network availability. The most challenge was to design a smart technique that selects the most appropriate network depending on some related information such as vehicle velocity and routing techniques.

4. IoTV scenario based study

This section is focused on IoTV based scenario that will illustrate the working of proposed IoTV framework. Let's assume a scenario where emergency vehicle like of Ambulance needs fastest communication in the IoT ecosystem for some emergency case. The steps will be as follows.

- The vehicle sensor forms the client layer will collect information about the need of the Ambulance vehicle to communicate using a standard protocol such as Ethernet and start to alert the signal to disseminate data such as vehicle velocity to a nearby base station (BS).
- As a part of the communication layer, the client will select the suitable access technology for data dissemination and begin the broadcasting process to the BS using a standard protocol such as WAVE technology. The received BS notifies the vehicle to start the connection.
- All the data and knowledge that disseminated in the system stored and processed in the cloud layer using a standard protocol to process reports about the case which will be useful in other similar cases and overcome future connection and service failures.
- Finally, the vehicle gets the service which is a connection to the hospital unit through any user interface inside the vehicle, and all the data will be transmitted in a secure manner (security layer).

The proposed IoTV environment is best suitable for where the platooning of vehicles are required [16] like in the convoys of VIPs. The routing algorithms in VANET are also need to be re-evaluated for synchronizing with the IoTV. In near future it will be observed that the Intelligent Transportation will be implemented and deployed in real time scenarios and the proposed IoTV architecture may be adopted by the industry and various consortium that fulfil the need of the smart traffic management and transportations.

5. CONCLUSION

Internet of Things for Vehicles (IoTV) is formulating from VANET to achieve the principle of intelligent transportation through interconnected vehicles and other infrastructure. This chapter contributes by proposing an IoTV structure that is IoT enabled management of traffic and future transportation system. Due to the emergence of VANET, IoT and satellite internet connectivity e.g. starlink, world will observe a revolutionary change in transportation system.

The chapter presents the proposed IoTV architecture, consisting of four major components, clients/users, Network communication, cloud technology and IoTV services. The integration of these will covers the four main functions of Intelligent Transportation System that enables combination and transaction between different heterogeneous objects and networks. The real-time scenario based working of the proposed IoTV is also discussed through which it can be concluded that the IoTV will be very beneficial for the implementation of Intelligent Transportation and hope this may reduce the day to day problems of road commuters. These types of technologies are very helpful for the developing countries like India as the huge development of transportation infrastructure is in progress. Due to the sudden rise of vehicles in coming years may raise the problem of traffic management and VANET with integration of IoTV may provide a complete solution for it.

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ORGANIZATIONAL RESILIENCE OF THE SMALL AND MEDIUM FAMILY ENTERPRISES IN THE COVID-19 ERA: A SYNTHESIS OF THE LITERATURE REVIEW

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The family business (FB) is the oldest and most dominant business form in economies (Bauweraerts and Colot 2014). They represent between 60 to 90% (Maria Jose Parada 2014) of all businesses in the world. Similarly, the presence of these firms has taken several forms VSE (very small enterprises), SMEs, MSEs (Larioui 2021). Their important contributions to wealth production and job creation are widely supported by the conceptual and empirical studies (Basco, Stough, et Suwala 2021) ; (Bauweraerts and Colot 2014).

However, the environment turbulence caused by the technological change, the propagation of crises: economic, social and sanitary like the health crisis caused by Covid-19 (Calabrò et al. 2021), calls into question the well functioning and the continuity of the businesses. Family (Larioui 2021) and non-family (Messaoudi and Lmoussaoui 2021) SMEs are known for their vulnerability due to their lack of sufficient financial, human and technological resources. This reality makes the issue of organizational resilience of family and non-family businesses a fertile field of research that interests the research community.

This complex reality, marked by the evolution and hostility of the business environment, encourages business leaders to adopt resilient and adaptive behaviors in order to adjust to this continuous contextual metamorphosis. In this sense, the family business research community recognizes the specificity of these entities compared to their counterpart's non-family business (the familiness model, the emotional capital model, the stewardship theory, the three circles model of family businesses). Through, the predominance of family logics based on tight social connections and apparent emotional ownership that shape family business behavior (Larioui 2021) (Berrone, Cruz, et Gomez-Mejia 2012) ; (Basco 2013). In this perspective, (Calabrò et al. 2021) admit the proactive behavior and organizational resilience capabilities of the FB towards the crisis. Therefore, the family's continuous control over the firm process tends to shape its behaviors, choices, and outputs (Bauweraerts and Colot 2014).

Our paper proposes to shed light on family-owned behaviors and strategies in times of crisis. To do so, our main research question is: To what extent the Family Business firms are resilient during the Covid-19 crisis?

To answer this main research problematic, we expect the following to explore the:

- **Organizational Capabilities of Family Firms;**
- **The FB Resilient Strategies Duraing the Covid 19 Crisis.**

To do this, we will conduct a theoretical and conceptual analysis of the literature review conducted on the organizational behavior of FEs in the context of the Covid crisis, in order to understand their managerial strategies, their decisions, and their choices on the one hand, and on the other hand, how these actions have enabled them to overcome the crisis and absorb their economic and non-economic effects. Or perhaps the family organization draw lessons from this health crisis to better relaunch again with new perspectives of growth and development.

2. Conceptual Framework**2.1. Organizational Resilience**

Research on resilience dates back to 1973 with the pioneering work of Holling considering this organizational behavior as the ability of the organization to regain equilibrium and return to the normal state after situations of shocks and disruptions of the environment (saad et al. 2021). It is an umbrella concept that is difficult to define (Messaoudi and Lmoussaoui 2021). Resilience is multidimensional; it has been developed in different disciplines such as health sciences, ecology, psychology and biology before being transposed to economic and management sciences (Lotfi and Saghiri 2017). This multitude of approaches according to which the resilience has been defined is explained by the hostility of the environment and the changing social context in which people and organizations evolve in the sense of researchers (Linnenluecke 2017). So it makes sense to give it specific meanings depending on the context of its use.

Therefore, the authors do not claim to propose a single, common definition for the concept "organizational resilience", but rather to highlight the diversity of meanings that can be attributed to this concept in different disciplinary fields. Following the economic perspective, (Bigg et al. 2015) the organizational resilience is defined as "*the capacity of a firm to survive, maintain performance, income, employment, adapt to challenges by minimizing vulnerability situation facing them (i.e., disaster threats)*". Similarly, other studies approach this concept from the perspective of the firm's strategy. According to (Hamel and Välikangas 2003), "*strategic resilience is distinguished by its continuous temporal character, and its objective is to reduce the impact of a disruptive event in order to avoid a crisis situation. Strategies of anticipation and permanent innovation are the basis of strategic resilience*" quoted by (TROUSSELLE 2014 P.38).

Certainly, the literature presents a multitude of definitions to approach "organizational resilience" that differ from one typology of enterprise to another (SME, large structure), from one economic, social and political context to another (saad et al. 2021). However, the conclusions of the systemic study on the conceptualization of the resilience of Small and Medium Enterprises (SMEs) conducted by (saad et al. 2021) argue that despite the diversity of meanings attributed to this concept by the literature, they generally tend to share some commonalities in judging the resilient capacities of such structure. "*Most of the common characteristics including adaptability, maintaining positive performance (growth), responsiveness, competitiveness and firms ability to minimize vulnerabilities as well as their fast recovery from a disruptive state*" (saad et al. 2021). Furthermore, the conclusions of this same systemic analysis judge the organizational resilience of a structure not only on the basis of its ability to absorb crisis and adopt defensive strategies to establish equilibrium, but rather on the power to transform threats into opportunities (saad et al. 2021).

2.3. Family-Owned SME

The definition of the family firm is a major issue for researchers in business management (Basly 2005), following the absence of a commonly accepted meaning attributed to this organization typologies (Handler 1989). Research shows the multitude of single and multi-criteria definitions proposed to approach the concept of the family firm (Allouche and Amann 2000). However, there is still a lack of consensus on how to define them. This challenge accounts for the youthfulness of research on this field of the family firm (Basly 2005 P.35); (Rovelli et al. 2021). Synthesis works of the literature review on the concept "family business" conducted by (Allouche and Amann 2000); (Harms 2014) distinguish between monocriteria and multicriteria definitions. The first category approaches the FB by retaining one of the following dimensions (family-firm overlap, management control and ownership of the firm by members of the same or several families, intergenerational continuity of the firm). On the other hand, the second typology of definitions tends to retain these different criteria at the same time to properly identify FB. Lately, researchers tend to adopt multi-criteria definitions rather the uni-criteria ones according to scholars (Allouche and Amann 2000); (Harms 2014). This is in order to better conceptually frame the concept of "family business", which is considered complex and heterogeneous (Harms 2014) due to the continuous and dynamic interaction between the family and the business (Basly 2005).

Indeed, family businesses transcend all forms of enterprises (VSEs, SMEs and GEs) (Larioui 2021); (Azizi and Habba 2018). We focus in this study on the analysis of the resilient behavior of family SMEs vis-à-vis the crisis. So we judge appropriate to define the notion of SME before attributing this family quality (family SME). Generally, researchers use quantitative (workforce, turnover) and qualitative (managerial practices, organizational structure, objectives) approaches to define the SME (EZZIADI 2019). In Morocco, public organizations (for instance: central bank, investment charter, etc.) are increasingly interested in the issue, through the proposal of many definitions. In this sense, the 1st article of the law 53-00 defines the SME as "*any enterprise managed and/or administered directly by the natural persons who are its owners, co-owners or shareholders, and which is not held at more than 25% of the capital or voting rights by an enterprise or jointly by several enterprises not corresponding to the definition of the SME..., in addition SMEs must meet the following conditions: for existing companies, to have a permanent staff not exceeding two hundred people and to have realized, during the last financial years, either an annual turnover excluding taxes not exceeding seventy-five million dirhams, or an annual balance sheet total not exceeding fifty million dirhams*".

To conclude, we retain the definition proposed by (Ouhadi and Ouzaka 2021) which attributes this family quality to the SME through the interweaving of the definitions of the two concepts developed separately. According to these researchers, "*the family SME can be defined as a company whose workforce does not exceed 200 employees and annual turnover does not exceed 75 million DH on the one hand, on the other hand the capital structure, transmission and management are influenced by the family dynasty*".

3. Organizational Resilience in Family Enterprises: Theoretical Framework and Results of the Literature Review

3.1. Dynamic Capabilities Theory

According to (Mahmoud-Jouini and Mignon 2009), the dynamic capabilities perspective is an extension of the resource-based approach (RBV) developed by (Wernerfelt 1984; Barney 1991). This theoretical approach falls under the strategic intent paradigm. Theorists of this current admit that the competitive advantage of the firm is mainly based on its resources and internal capabilities, rather than on its ability to continuously adapt to the demands of the environment, which is considered to be turbulent and undergoing rapid change (Tece 2007); (Barney 2001).

(Grant 1991) quoted by (Tywoniak 1998) proposes to define the firm "on the basis of what it is capable to do". The proponents of this new paradigm of strategic management of the firm link the firm's behavior to its internal potential, both tangible (organizational, financial and technological resources) and intangible (know-how, knowledge, human capital and background) (Penrose 1959; Barney 1991; Wernerfelt 1984). In this sense (Mira Bonnardel 2000) admits that "Competencies do not appear as a state - or a product to be acquired - but as a construct balanced on four pillars: know-how in action, knowledge mobilization, knowledge integration of heterogeneous knowledge, and knowledge transfer to invent solutions to new situations". Indeed, the effective articulation of this portfolio of resources through learning and organizational routines generates idiosyncratic skills and abilities that are difficult to imitate, rare, relevant and non-transferable, and which are the source of the firm's competitive advantage (Puthod and Thévenard 1997).

In this perspective, the theory of dynamic capabilities was developed. It is a logical continuation of Resource Based View (RBV), whose basic premise is to continuously and dynamically update and develop the competencies and capabilities that are the basis of the firm's competitive power (Tece 2007). Indeed, the hostility of the environment, the rapid technological revolution that is difficult to grasp and the openness of economies challenge the performance and continuity of companies (Tece 2007). These challenges make the development of internal capabilities a strategic response to the changing environment. "Enterprise success depends upon the discovery and development of opportunities; the effective combination of internally generated and externally generated inventions; efficient and effective technology transfer inside the enterprise and between and amongst enterprises; the protection of intellectual property; the upgrading of 'best practice' business processes; the invention of new business models; making unbiased decisions; and achieving protection against imitation and other forms of replication by rivals" (Tece 2007).

This theory of dynamic capabilities supports the role of reconfiguring the firm's internal and external capabilities, learning, and innovation capabilities, as well as developing continuous adaptive capabilities to changes of the environment (Naffakhi, Boughattas-Zrig, and Schmitt 2008). The two dimensions, technical (material and technical resources) and evolutionary (evolutionary and adaptive capabilities), are the basis for the development of dynamic capabilities (Tece 2007). However, this evolutionary dimension of firm capabilities is widely supported in the literature as the source of their competitive advantage (Naffakhi, Boughattas-Zrig, and Schmitt 2008); (Tece 2007); (Ait Razouk 2007).

3.2. Organizational Resilience of FB: A Synthesis of the Literature Review

3.2.1. Agility as an Antecedent of Organizational Resilience of the FB

The concept of agility was first developed in the United States of America in 1991 following the scientific work carried out by the *Iacocca Institute of Lehigh University* (Nagel 1991). This organization proposes the establishment of a flexible management system and an agile organizational structure as a strategic response to the challenges of environmental change (Barzi 2011). In the face of the rapidly changing business environment marked by the excessive use of communication media and the increased adoption of digitalized devices, economic and health crisis, etc. adaptability and flexibility are the guarantee of the future continuity of American factories in the sense of the researcher (Nagel 1991). According to (Woltjer, Johansson, and Berggren 2015) agility stems from risk management. It reduces and controls the adverse effects of the environment on the company functioning (Shekarian, Reza Nooraie, and Parast 2020).

From this perspective, the issue of agility is gaining scientific curiosity from the research community. Scholars in organizational management consider agility as "*the critical capability that organizations need to meet the challenges of complexity and uncertainty*", (Alberts 2007). Moreover, studies in supply chain management acknowledge the agile behavior of the company by the efficiency and optimization of their production and distribution processes in times of crisis, "the capability to sense changes, rapidly respond to changes, rapidly reduce product development cycle time or total lead time, rapidly increase the level of product customization,

rapidly increase the level of customer service, rapidly improve delivery reliability, and rapidly improve responsiveness to changing market needs" (Shekarian, Reza Nooraie, and Parast 2020).

In addition, other research works in the field of corporate strategy propose broader definitions for the concept of "agility" that go beyond its narrow sense, closely linked to the development of capabilities and flexibility of organizations by taking into account other dimensions related to strategic agility and the ability to adapt their managerial practices (Barrand 2009). This author considers agility as "*managerial models that allow flexibility or the principles that support innovation. It is in fact a perpetual search for balance between an active dimension (doing and proving that one knows how to do), a reactive dimension (being opportunistic in the face of observed changes in order to build loyalty) and a proactive dimension (seeking innovation)*".

From these pre-developed conclusions, we can retain that the different theoretical perspectives developed in the literature assume the organizational agility as an antecedent and a basic premise for establishing a resilient organizational structure.

- **Proposition 1** : organizational agility is a premise of the resilience of FB in a crisis context

3.2.2. The Strategic Behavior of Family Businesses

The complexity of the environment following the evolution of market structures, the demands of customers, the increased use of technology and the multitude of economic and social crises makes the resilience of organizations and individuals a major issue within a research community (Messaoudi and Lmoussaoui 2021).

Indeed, risk management is a toolbox and strategy for any structure to master the crisis impacts. Indeed, the risk management allows anticipating and managing uncertainties by analyzing the current state of the context and the performance of the company, in order to develop possible scenarios on future events. However, with the remarkable evolutions of the environment, crises are generated by improbable events (Reymen et al. 2015); (Messaoudi and Lmoussaoui 2021), which makes their prevention especially by mobilizing the classical tools a difficult objective to reach. To react in an effective way to the turbulence of the environment, studies support the adoption of resilient behaviors and strategy as relevant solutions no longer to avoid the crisis but rather to reduce, absorb and mitigate their adverse effects that tend to jeopardize the survival of organizations (Messaoudi and Lmoussaoui 2021).

Family entities are considered resilient as their non-family counterparts (Larioui 2021). (Hoy and Breton-miller 2005) distinguish 4 strategic priorities (called 4Cs) that largely distinguish FBs, they are: **Continuity** (the continuity of the firm across generations is considered a priority), **Command** (the control and decision-making system of FB tends to be creative, participative, innovative and fast in order to ensure strategic regeneration), **Community** (the reason of existence of the family business is not only to achieve economic and financial results (a selfish logic focused on the financial interests of shareholders), but rather to create a climate of trust, cohesion, teamwork and satisfaction among the different actors of the company), **Connection** (it is about developing close and welded social connections).

- **Proposition 2** : The strategic behavior is a premise of the resilience of FB in a crisis context

3.2.3. Organizational Resources and Capabilities: The Indispensable Premises of the Resilience of Fbs

The lack of sufficient financial resources and human capacity exposes SMEs to the risk of disappearance and makes them vulnerable, especially in times of crisis according to (Pal, Torstensson, and Mattila 2014). However, the organizational structure of these business structures are their source of advantage and strengthens (Sullivan-Taylor and Branicki 2011), which allows them to be flexible, to be able to adapt easily and in a flexible way to the changing environment by adopting resilient and proactive strategies (Pal, Torstensson, and Mattila 2014). An empirical study conducted by (Salavou, Baltas, and Lioukas 2004) among 150 Greek SMEs confirms the significant effect of learning and market orientation of the firm on their creativity and innovation capacity. Consequently, this has a positive impact on their resilience capabilities. Besides, the conceptual model developed by (Pal, Torstensson, and Mattila 2014) distinguishes three main antecedents that underlie the development of resilient organizational behavior of firms, these are: **resource portfolio, dynamic competitiveness and learning capabilities**. According to resource-based scholars, the acquisition of both tangible (financial, material, technological resources) and intangible (human capital, culture, strong social relationships) resources influence positively the performance of SMEs (Pal, Torstensson, and Mattila 2014) and they consequently increase their adaptive and resilient capabilities (Freeman 2004). In this same line of ideas, this author specifies, on the one hand, that sufficient financial resources tend to absorb the effects of the crisis, and on the other hand, the acquisition of qualified human capital and the maintenance of close and welded social relations, whether between internal actors or with external stakeholders, facilitate the management of the

crisis and the mitigation of its harmful effects on the company through positive communication and the development of common ground. These hypotheses are widely supported especially in the context of the family business where emotional and collective values and social ties significantly shape the resilient behavior of the family entity (Larioui 2021).

In addition, the continuous and dynamic competitiveness of the firm is another antecedent of organizational resilience of firms in the sense still of the model of (Pal, Torstensson, and Mattila 2014). This antecedent is declined according to the literature by: flexibility (rapid decision making, effective communication, ability to understand and grasp change as well as to adopt the firm's processes and routines to the new requirements imposed), the development of a strong resource and competence portfolio, the development of strong social and relational capital and the firm's ability to bounce back from shocks and absorb their effects (Sullivan-Taylor and Branicki 2011).

According to (Pal, Torstensson, and Mattila 2014), these dynamic capabilities are the main determinants of the establishment of an agile and flexible organizational structure that tends to react effectively towards the crisis through the implementation of resilient strategies (Shekarian, Reza Nooraie, and Parast 2020); (Ismail, Poolton, and Sharifi 2011); (Hatun and Pettigrew 2006). However, organizational resilience is a behavior contingent on the size of the firm, (Sullivan-Taylor and Branicki 2011) show the non-existence of a single model and the same resilient practices adaptable to all typologies and sizes of organizations. These authors confirm the flexibility of the SME management system, but their lack of resources and required capacities does not allow them to be sufficiently flexible, especially on the technical and operational level, as is the case with large organizations. This is a limitation of SMEs in the literature.

Furthermore, the culture and learning capabilities of the firm are widely supported by previous studies as another determinant of organizational resilience. This antecedent is strongly fueled by the intangible resources, knowledge and capabilities developed within the firm (Adama 2019). (Beer and Nohria 2000) explain "*the role of non-technical aspects, i.e., human capital, motivation, communication, coalition building and training, etc., are critical to creating resilient firms through a process of change*" cited by (Pal, Torstensson, and Mattila 2014). This point to the definitions proposed for the concept of organizational resilience, the learning dimension of which is widely emphasized as a primary condition for judging the resilient behavior of a structure (Zougrana 2017). It is the capacity of the organization to develop knowledge, learn from previous experiences and prepare to face future events.

- **Proposition 3** : Organizational resources and capabilities are the premises of the FB resilience in a crisis context

CONCLUSION

This paper presents a synthesis of the literature review on the resilient organizational behavior of family-owned SMEs in the context of a Covid-19 crisis. It is critical analyses of the previous studies conducted on the theme of the behavior of the FB during the health crisis propagate in early 2020.

The theory of dynamic capabilities constitutes the theoretical framework for analyzing the phenomenon of organizational resilience of FBs in the context of a Covid-19 crisis. Indeed, organizational agility is an antecedent of FBs resilience as revealed by the theoretical analysis conducted. Similarly, the strategies and strategic behavior as well as the capacities, resources and internal potential of the structures are the guarantee of their organizational resilience in a crisis context.

However, this theoretical analysis and synthesis of the literature review about the resilient behavior of the FBs should be deepened by an exploratory and empirical research in order to understand the reality of the social phenomenon studied thereby to confirm the theoretical propositions developed.

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THE STATUS OF THE GOVERNMENT HEALTH PROGRAMMES IN THE GOVERNMENT SCHOOLS OF IMPHAL WEST DISTRICT, MANIPUR**¹Bob Dev Waikhom and ²Dr. Yengkhom Santikumar Singh**¹Research Scholar and ²Assistant Professor, Department of Physical Education & Sports Science, Manipur University, Canchipur, Imphal- 795003, Manipur (India)**ABSTRACT**

There is overwhelming evidence that healthy children do better in school. Because a child spends a significant portion of his or her day at school, it is the school's responsibility to guarantee the safety of all students in every manner feasible throughout their time there. The purpose of study is to find out the status of Health Education Programmes in the government schools. The study was cross-sectional survey conducted during January 2020 at government schools in Imphal West District, Manipur. One hundred (100) schools were surveyed for ascertaining the status of Health Education Programmes in the government schools. The survey was completed by the headmasters of the respective schools. A self-constructed questionnaire was used to collect information from the participants. The results indicated that the schools 1) train their teachers as Health & Wellness Ambassadors; 2) provide age appropriate information about health and nutrition to the children; 3) promote healthy behaviours among the children that they will inculcate for life; 4) detect and treat diseases early in children and adolescents; 5) the schools promote use of safe drinking water in schools; 6) promote safe menstrual hygiene practices by girls; and 7) promote yoga and meditation through Health & Wellness Ambassadors. However, the result also indicated that the schools do not 8) encourage research on health, wellness and nutrition for children and 9) keep an electronic health record for each student.

Keywords: Health & Wellness Ambassadors, Health Programmes, Headmaster, government school.

INTRODUCTION

Healthy children are the cornerstone for a healthy nation, and the future of the country is dependent on their well-being. School is an important place where children learn behaviour skills for physical, emotional, and social well-being, according to international leaders. Apart from the family, no other social institution has a larger impact on children's lives than schools. Every day, millions of children around the country attend school and spend a significant amount of time learning, developing attitudes and abilities, and forming behaviours with their peers and instructors. Behavioural patterns formed throughout childhood and adolescence are carried over into adulthood. As a result, schools play a critical role in the development of healthy countries all over the world (MHRD & MHFW, Government of India, 2018). There is overwhelming evidence that healthy children do better in school. Because a child spends a significant portion of his or her day at school, it is the school's responsibility to guarantee the safety of all students in every manner feasible throughout their time there. (MHRD & MHFW, Government of India, 2018). Recognizing the value of schools as a platform for health promotion and illness prevention, the Indian government developed the "School Health Programme" under Ayushman Bharat. It is a collaborative endeavour of the Ministry of Health and Family Welfare and the Ministry of Human Resource and Development's Department of School Education and Literacy. Against this backdrop we conducted a study to ascertain the status of government health programmes in the government schools in Imphal West District of Manipur.

Main Objective: To study the status of Health Education Programmes in the government schools.

Minor Objectives: To ascertain whether the schools: 1) Train teachers as 'Health & Wellness Ambassadors' to transact health promotion and disease prevention information in the form of interesting activities for one hour every week; 2) Provide age appropriate information about health and nutrition to the children in schools; 3) Promote healthy behaviours among the children that they will inculcate for life; 4) Detect and treat diseases early in children and adolescents including identification of malnourished and anaemic children; 5) Promote use of safe drinking water in schools; 6) Promote safe menstrual hygiene practices by girls; 7) Promote yoga and meditation through Health & Wellness Ambassadors; 8) Encourage research on health, wellness and nutrition for children; and 9) keep an electronic health record for each student.

Statement of the Problem

The purpose of study is to find out the status of Health Education Programmes in the government schools.

HYPOTHESES

- **H₀:** An equal number of headmasters support each statement.

- **H₁**: An equal number of headmasters do not support each statement.

MATERIAL AND METHODS

In order to realise the objectives, 100 schools were surveyed for ascertaining the status of Health Education Programmes in the government schools. The survey was completed by the headmasters of the respective schools. The participants were selected through snow ball sampling technique. The survey instrument was 9 item self made questionnaire (closed-ended) which the questionnaire was constructed under popper norms for construction of questionnaire. The questionnaire items was involved specifically for purpose of the current study based on the objectives of Operational Guidelines for School Health Programme under AYUSHMAN BHARAT.

DATA ANALYSIS AND INTERPRETATIONS

The data collected through the 9 closed-ended items were analysed with the help of descriptive statistics like percentages and inferential statistics like Chi Square Test by using Microsoft Excel and SPSS Statistics Version 22. The results of the data analysis are shown in table no. 1.

Table 1: Chi Square Test results of the responses of the headmasters on the status of Health Education Programmes in the government schools

Item No.	Items	Yes (%)	No (%)	χ^2	Sig. 2-tailed
1	Does your school train teachers as 'Health & Wellness Ambassadors' to transact health promotion and disease prevention information in the form of interesting activities for one hour every week?	71	29	17.64**	.00003
2	Does your school provide age appropriate information about health and nutrition to the children in schools?	71	29	17.64**	.00003
3	Does your school promote healthy behaviours among the children that they will inculcate for life?	76	24	27.04**	< .00001
4	Does your school detect and treat diseases early in children and adolescents including identification of malnourished and anaemic children?	61	39	4.84*	.02781
5	Does your school promote use of safe drinking water in schools?	100	0	100**	< .00001
6	Does your school promote safe menstrual hygiene practices by girls?	61	39	4.84*	.02781
7	Does your school promote yoga and meditation through Health & Wellness Ambassadors?	71	29	17.64**	.00003
8	Does your school encourage research on health, wellness and nutrition for children?	49	51	0.04	.84148
9	Does your school keep an electronic health record for each student?	48	52	0.16	.68916

Source: Calculated from Field Survey data.

*Significant at 0.05 level

**Significant at 0.01 level

Statement-1. A Chi Square Test result indicates that the schools train their teachers as 'Health & Wellness Ambassadors' to transact health promotion and disease prevention information in the form of interesting activities for one hour every week, $\chi^2(1, N = 100) = 17.64, p = .00003$.

Statement-2. A Chi Square Test result indicates that the schools provide age appropriate information about health and nutrition to the children in schools, $\chi^2(1, N = 100) = 17.64, p = .00003$.

Statement-3. A Chi Square Test result indicates that the schools promote healthy behaviours among the children that they will inculcate for life, $\chi^2(1, N = 100) = 27.04, p = < .00001$.

Statement-4. A Chi Square Test result indicates that the schools detect and treat diseases early in children and adolescents including identification of malnourished and anaemic children, $\chi^2(1, N = 100) = 4.84, p = .028$.

Statement-5. A Chi Square Test result indicates that the schools promote use of safe drinking water in schools, $\chi^2(1, N = 100) = 100, p = <.00001$.

Statement-6. A Chi Square Test result indicates that the schools promote safe menstrual hygiene practices by girls, $\chi^2(1, N = 100) = 17.64, p = .00003$.

Statement-7. A Chi Square Test result indicates that the schools promote yoga and meditation through Health & Wellness Ambassadors, $\chi^2(1, N = 100) = 17.64, p = .00003$.

Statement-8. A Chi Square Test result indicates that the schools do not encourage research on health, wellness and nutrition for children, $\chi^2(1, N = 100) = 0.04, p = .841$.

Statement-9. A Chi Square Test result indicates that the schools do not keep an electronic health record for each student, $\chi^2(1, N = 100) = 0.04, p = .841$.

DISCUSSION OF FINDING

From the elaborate statistical analysis of the data the Chi-square and percent analysis significantly revealed that School teachers need to train to transact health promotion and disease prevention information in the form of interesting activities for one hour every week, most of the school provide age appropriate information about health and nutrition to the children in schools, it is also revealed that most of the school promote healthy behaviours among the children that they will inculcate for life, most of the schools detect and treat diseases early in children and adolescents including identification of malnourished and anaemic children and every school promoted safe drinking water in schools, most of the school authority required to promote safe menstrual hygiene practices by girls, it also reveals maximum of the school required to promote yoga and meditation through Health & Wellness Ambassadors, it also revealed most of the school are not keep an electronic health record for each student, so the school authority required to promote electronic health record for all students.

CONCLUSIONS

On the basis of the results, it is concluded that the schools: 1) Train their teachers as 'Health & Wellness Ambassadors' to transact health promotion and disease prevention information in the form of interesting activities for one hour every week; 2) Provide age appropriate information about health and nutrition to the children in schools; 3) Promote healthy behaviours among the children that they will inculcate for life; 4) Detect and treat diseases early in children and adolescents including identification of malnourished and anaemic children; 5) Promote use of safe drinking water in schools; 6) Promote safe menstrual hygiene practices by girls; 7) Promote yoga and meditation through Health & Wellness Ambassadors. Whereas, it is also concluded that the schools: 8) do not encourage research on health, wellness and nutrition for children; 9) do not keep an electronic health record for each student.

Therefore, it is suggested that the schools need to encourage research on health, wellness and nutrition for children and to keep an electronic health record for each student.

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DYNAMIC ADAPTIVE SECURE ROUTING FOR MOBILE AD-HOC SENSOR NETWORKS (MASNET): A COMPREHENSIVE REVIEW**Dr. J. Viji Gripsy¹ and Dr. A. Jayanthiladevi²**¹Post- Doctoral Research Fellow, Department of Computer Science & Applications Srinivas University, Mangalore, Karnataka, India²Professor, Computer Science and Information Science, Srinivas University, Mangalore, Karnataka, India**ABSTRACT**

The rapidly evolving wireless service needs and deployment demands over the last several decades have demanded the use of Mobile Ad hoc Networks in a variety of applications. A Mobile Ad-Hoc Sensor Networks (MASNET) is a collection of wireless mobile nodes without any pre-defined topology and infrastructure. This does not rely on any centralized access point, or administration. Due to this nature and characteristics, it affected by severe network overhead and energy based issues. Environmental monitoring, disaster relief operations, military communications, and other safety-critical sectors are among the application areas. The underlying routing protocol has a considerable impact on the effectiveness of an ad hoc network deployment in a given situation. As a result, establishing an efficient and secure routing protocol for MASNETs is a critical challenge for meeting service level criteria and efficiently meeting deployment objectives. In this paper reviewed about MASNET, sensor network, features, current challenges, applications, obstacles of MASNET security, and Security of Routing Protocols in MASNET.

Keywords: Mobile Ad-Hoc Network, Sensor Network, MASNET, Security Routing, Recent Challenges, Obstacles of MASNET

I. INTRODUCTION

In this era, wireless Mobile Ad-Hoc Sensor Networks (MASNET) has captured tremendous attention in the research. MASNET has unique features such as instant topology, easy and cheap deployment. It does not need infrastructure and it can be setup anytime, anywhere. Dark side of this network is that there is lack of clear line of defense in regards to nodes participation. MASNET has resource constraint, imprudent structure and no centralized authority. Any node can enter in MASNET, participate in data transmission, and behave maliciously. This participation leads to deteriorate network performance for specific purpose or selfishness.

The applications where the information or data is considered as its asset, security to data comes up with peak value. Routing is done in the MASNET through cooperativeness of nodes, so nodes, which participate in the network, need to be authenticated [2]. The data packets should reach to the destination without any modification or without revealing any secret information. Providing security to data is a challenging job. We can restrict nodes participation by distributing public keys and private keys among the nodes but sometimes they may act maliciously. In such cases, their malicious behavior should be detected and prevented in the routing.

1.1 FEATURES

- Cheap and instant deployment: MASNET has gained popularity because of economically cheap and on the spot deployment. It does not require any costly infrastructure such as copper wires, cables, so deployment time is very less and cheap.
- Easy Deployment: It can be easily deployed in hostile terrains. This type of network can be set up anytime, anywhere.
- Distributed Network Control: There is no centralized authority, so network control among various nodes is distributed. Nodes are connected with each other in co-current challenges operative basis. Nodes act as relay, which perform functions like data forwarding, receiving, security etc.
- Multi-hop Routing: When nodes are not in the communication range of each other, they forward data through intermediate nodes, which is called multi-hop routing.
- Autonomous Network: Nodes in the network build network autonomously. They are independent of each other. Each node acts as a router, which forwards data as well as receives data security challenges in wireless networks.

1.2 APPLICATIONS

In most sensitive and emergent area such as military or war area, people used MASNETs with prominence on security, spanning area and incorporation with current mechanism [1].

- **Military Scenarios:** MASNET is a strategically network that enables secure communications and battlefield automation.
- Information about military activities are sensitive and confidential, for the sake of security Ad-hoc network is better.
- **Rescue Operations:** Whenever disaster arrives, it is impossible to provide services and build infrastructure due to lack of communication such as in case of earthquake or war area etc. In such scenario, MASNET is good replacement over the fixed infrastructure [5].
- **Data Networks MASNET:** It is used to exchange data between more than one mobile nodes or devices without wired connection. So different mobile nodes can communicate with each other.
- **Free Internet Connection Sharing:** - It is possible to share the internet with different mobile nodes.
- **Sensor Network:** It comprises set of devices that have an ability of sensing, monitoring, and wireless networking. It also records conditions like temperature speed, sound, etc. Some examples of sensors similar to smoke detectors, electricity, and gas and water meters.
- **Battlefields Sensor Network:** Remote sensors for weathers, earth activities etc.
- **Emergency Services:** Revival from the disaster, earthquakes, mass control and commandant rescue operations etc.
- **Educational Applications:** In construction of virtual classroom & Instant meeting and conference rooms etc.

II. RECENT CHALLENGES OF MASNET

The most challenging issue in MASNET is routing. There are also some other issues but we have mainly focused on secure routing in MASNET.

- **Resource constrained:** Most probably, size of Ad-hoc devices is small, so MANNET has small memory storage area and limited battery supply. Nodes behave selfishly when they find limited power supply.
- **Dynamic topology:** Nodes in MASNET are movable. They are changing their position, so topology of MASNET vary from time to time. Link breakage occurs frequently.
- **Network size:** Mobility of nodes results in varying size of network. While security is a concern, scalability is one of the major issue [2].
- **Security:** No clear line of defense, nodes can easily participate in the network transmission and implements number of active as well as passive attacks.
- **Cooperativeness:** In MASNET, all nodes are considered legitimate so it is very easy for malicious attacker to become one of legitimate member of network and disturb communication.
- **Heterogeneity in nodes:** In MASNET nodes may have different size, memory capacity, battery, etc. (e.g. laptops, PDA, cellular phones etc.) that may affect communication performance.

III. OBSTACLES OF MASNET SECURITY

Weakness in the security system is called vulnerability. MASNET is more vulnerable than a wired network.

- **Mobile Ad-hoc Network** has very constrained network compared to the traditional computer network. It has different characteristics like imprudent structure, dynamic topology, and promiscuous behavior. Resource-constrained environment (memory, energy or battery power, CPU capacity and bandwidth) poses new challenges about security in MASNET.
- **Imprudent structure:** -MASNET has lack of central authority. System allows anyone to access data without verifying authorization.
- **Scalability:** -Nodes in MASNET are mobile which results in scalability of topology all the time. While concerning security, scalability is a vital concern. So security techniqueable to handle versatile networks from small to big ones.

- Promiscuous mode: -When sender node transmits the packets, its neighbor nodes can overhear the transmission. If among them one node is malicious, it can corrupt the whole transmission.
- Resource constrained: It is resource constrained in terms of data memory space, power supply etc. If power supply is limited, then nodes may behave selfishly.
- Asymmetric links:-In wired networks, links are always fixed. However, in case of MASNET, due to mobility of nodes links are not fixed. For example, consider a source node sends a signal to destination node. However, sometime there may not always connection between destinations to source.
- Dynamic topology: Due to mobility of node, relationships between the nodes changes from time to time. Establishing of trust becomes very difficult. When nodes are compromised, trust is disturbed. Adaptive security mechanism is a solution for this dynamic behavior. It is very difficult to detect malicious attacks because of lack of centralized management and highly dynamic environment.
- Ease of snooping data:-While transmitting data in the MASNET, other devices acknowledges about transmission of data. Therefore, it is easy for intruder to snoop data or information, which is transferred over the network.
- Routing: -Various demands like uncasing, multicasting, and geo-casting from the network lead to performance degradation in MASNET because network topology is unpredictable and dynamic.
- Packet loss:-In MASNET packet loss occurs due to transmission error (limited transmission range) and frequently pathway breakages. There is no restriction on the nodes in network participation, so malicious nodes can capture or drop packets for its personnel benefit.
- Lack of a Clear Line of Defense and Secure Communication:-There is an absence of a clear line of defense; attackers can enter from any directions. However, cryptography is a good solution but they consume lot of resources. Compromised malicious nodes may send fake alerts which leads to IDS become hopeless. Communication in network may be obstructed by and jamming network transmission secure routing protocol.

IV. SECURITY OF ROUTING IN MASNET

The security of MASNETs is very important due to its increasing deployment in various applications and requires constant innovations and upgradations [6]. The ideal security solution should provide comprehensive security at every layer of the protocol stack. However, MASNETs have the distinctive requirement of security at network layer as compared to infrastructure wireless networks, because of lack of centralized control, dedicated infrastructure for routing, resource constraint nodes peer-to-peer operation and the assumption that all nodes are trustworthy. Security was not the major design objective of most of these protocols and their emphasis was on simplicity and efficiency so that the routing protocols are light on resources [3].

The protocols were not addressing the issue of provision of security against often-unpredictable attacks and reliability of the protocol under such circumstances became a suspect. Both the legitimate nodes and the malicious nodes can access the wireless medium [8]. In

MASNETs, there is no central mechanism for access control and traffic control and therefore it is hard to discriminate a malicious node from a legitimate node. An attacker therefore, can easily gain access and disrupt the network operations [4]. The security solutions for MASNETs should therefore meet the following security objectives:

- Confidentiality: It ensures that the authorized user only has access to the data and a malicious node is not able to eavesdrop and get the confidential information. The confidentiality is normally achieved by encryption of the data.
- Availability: The requisite resources, like bandwidth and connectivity with other nodes of the network are available in timely manner to the legitimate nodes. This can be achieved by authentication of legitimate nodes and exclusion of non-authenticated nodes from the network.
- Integrity: It guarantees that the data being transmitted has not undergone any modification or alteration by a malicious node. The integrity of data is confirmed by computing the hash of the data at source, which is transmitted to the destination through secured channel and compared with the hash of received data at destination or through digitally signing the data at source and verification of the signatures at the destination.
- Authentication. It ensures the correct identity of the node transmitting the message. The authentication of the node or the routing messages is achieved through digital signatures or through keyed hash systems [9].

- Non-Repudiation. It confirms the ownership of the data to the originator. The originator digitally signs the data and cannot deny the authenticity of its signatures on the data.

To achieve the security objectives in MASNETS, two fold security systems are required. Firstly, the confidentiality of the data is required to be maintained and protection against disclosure is to be ensured [7]. Secondly, the routing messages are required to be protected from impersonation, modification, manipulation, or denial of service attacks. The security of routing protocols can be ensured by allowing authenticated, well-behaved nodes to participate in the routing process. This can be achieved either through cryptographic techniques or by monitoring the behavior of the participating nodes. Monitoring the behavior of participating nodes alone is not a very reliable method, since, assigning of threshold to declare trustworthiness of the node is complex procedure. In addition, it is time consuming and may not yield accurate results due to dynamic topology of the network [1]. Cryptographic techniques on the other hand have been used in several protocols for authentication of the nodes; however, these techniques add computation and communication overhead. Symmetric key cryptography using keyed Message Authentication Code (MAC) have been proposed for authentication of routing messages to keep the authentication process computationally light. However, the symmetric cryptography requires extensive key management; additional storage for storing pair-wise secret keys and does not provide non-repudiation. The asymmetric key cryptography using public key and digital signatures has been effectively used for securing the routing protocols.

V. CONCLUSION

Developing an effective and secure routing for Mobile Ad-hoc Sensor Networks (MASNETs) is a significant challenge in order to efficiently achieve secure level criteria and deployment objectives. Moreover, due to the general unique features of such networks and the strong requirements for a given application environment, developing such a routing has proven to be difficult. This paper presents adaptive secure routing for MASNET, which dynamically configures routing processes depending on various requirement criteria and situational characteristics as required by the application environment. Several security routing methods have been developed in recent years to secure the network in MASNET. This article analyses and presents the features, applications, obstacles in MASNET security, current challenges in MASNET. This work will be very useful for the researchers who all are working under MASNET and its application areas.

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USING PYTHON FOR VOICE ENABLED PERSONAL ASSISTANT**Mr. Aayush Jain¹, Mr. Karan Shah², Ms. Varkha K. Jewani (Ms. Pragati V. Thawani)³**^{1,2}Student, B.Sc. (IT), K.C College, Churchgate³M.Sc. (IT), M.Phil. (IT) Assistant Professor, K.C College, Churchgate**Rationale and Gap Analysis**

Personal or virtual assistants have become an integral part of our lives today. All businesses or individuals are switching to these types of technologies to make their jobs easier. This system is based on desktop applications. The system includes a virtual assistant that can accept, understand, analyze, and perform the appropriate tasks from users. This saves a lot of time for the user. Each developer at an intelligent assistant company applies their own methods and approaches to development, which impacts the final product. One assistant can synthesize speech more qualitatively, another assistant can perform tasks more accurately without additional explanation or modification, and the other assistant can perform a narrower range of tasks, but most accurately. It can be done according to the user's wishes. Obviously, there is no one-size-fits-all assistant that does all the tasks equally well. The properties of the assistant are entirely dependent on which areas the developer paid more attention to. All systems are based on machine learning techniques, using large amounts of data from different sources to create and train them, so the sources of this data are search systems, different sources of information, and social. It plays an important role such as network. The amount of information from different sources determines the types of assistants that can emerge from it. Despite different learning approaches, different algorithms and methods, the principles for building such a system are about the same. The most important technologies are voice activation, automatic voice recognition, Text to Speech, voice biometrics, dialogue manager, natural language understanding, and recognition of named entities.

OBJECTIVES

- 1) Main objective of building personal assistant is to answer questions that users may have.
- 2) This may be done in personal computer where the virtual assistant is available as a service where a voice asks the user "What can I do for you?" and then responds to verbal input.
- 3) Virtual assistants can tremendously save user time. When user needs to search something while working one can just give a voice command and HARRY can do it.
- 4) Provide a topic for search and continue with tasks while HARRY does the searching. Also before user go out it can ask Harry for the weather.
- 5) While user is busy in some work Harry can send Mail, WhatsApp messages on user voice command. One of the main advantages of voice searches is their rapidity. In fact, voice is reputed to be four times faster than a written search. Whereas one can write about 40 words per minute, Humans are capable of speaking around 150 during the same period of time.

RESEARCH METHODOLOGY

In this proposed concept effective way of implementing a Personal voice assistant, Speech Recognition library has many inbuilt functions, that will let the assistant understand the command given by user and the response will be sent back to user in voice, with Text to Speech functions. When assistant captures the voice command given by user, the under lying algorithms will convert the voice into text. And according to the keywords present in the text (command given by user), respective action will be performed by the assistant. This is made possible with the functions present in different libraries. Also, the assistant was able to achieve all the functionalities with help of some API's. These APIs were used for several functions, such as performing calculations and extracting news from web sources. Send a request and get the appropriate output via the API. APIs like WOLFRAMALPHA are very useful for performing calculations and small web searches. In this way, you can extract messages from a web source and send them as input to a function to further achieve your goals. There are also libraries like Random and many others, each compliant with a different technology. I used the library operating system to implement operating system-related features such as system shutdown or reboot the system.

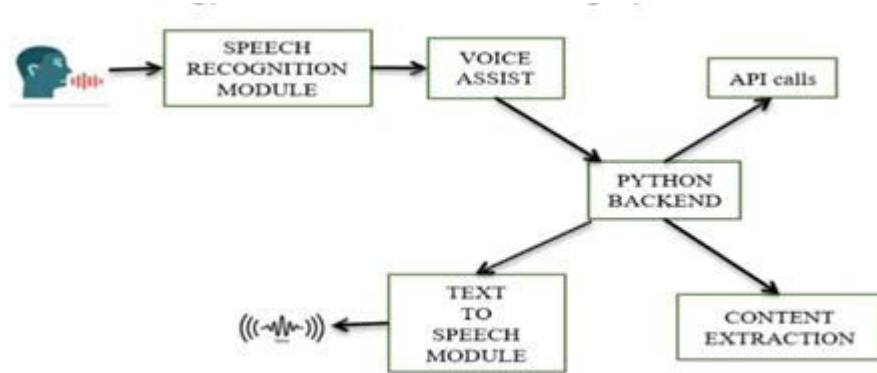


Figure-1: Detailed Workflow

Expected Outcomes

- **Showing Time** — if the user asks the assistant to show time, the assistant will display the current time.

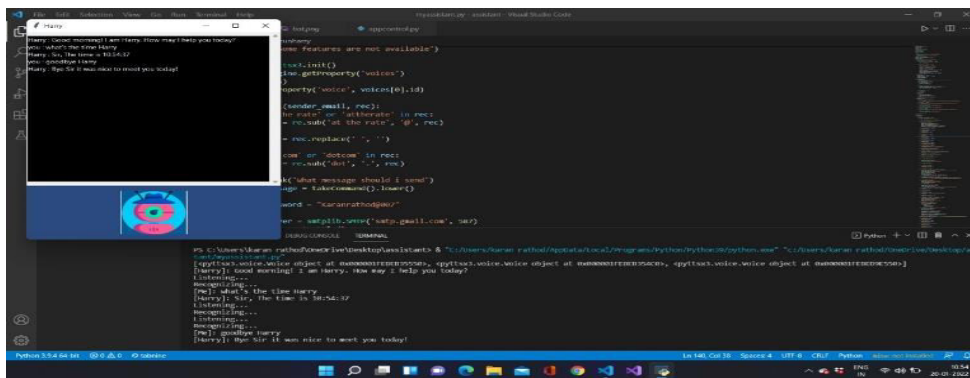


Figure-2: Showing Time

- **Showing Time** — if the user asks the assistant to open the Notepad, the assistant will open the Notepad.

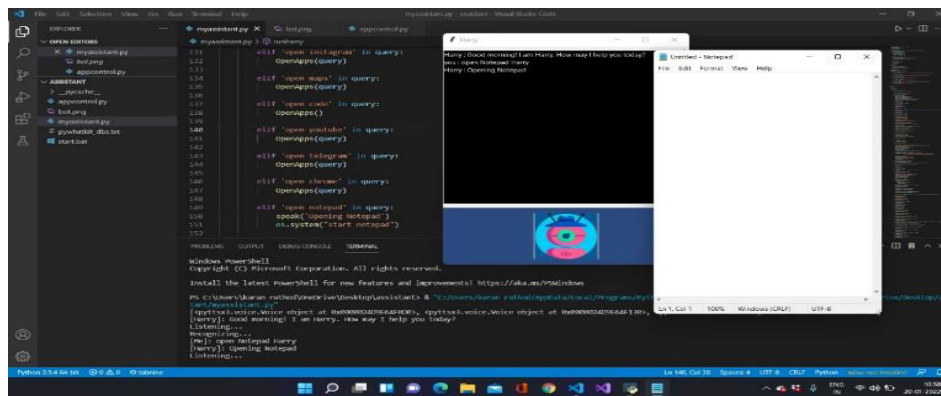


Figure-3: Opening Notepad

- **YouTube searches**—if the user asks the assistant to do some YouTube searches, the assistant will do that. It will ask the user, what to search in YouTube. After receiving the input, it will open the YouTube page with that respective search

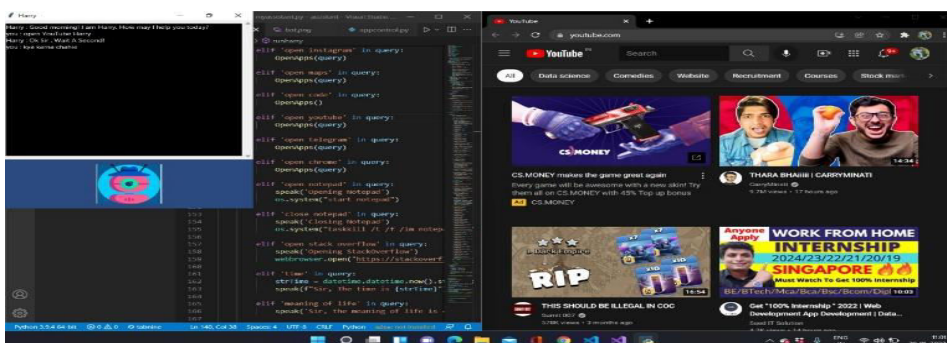


Figure-4: Opening YouTube

- **Youtube Searches**— if the user asks the assistant to send WhatsApp message the assistant will ask the number of the receiver and the message you want to send and then it will send the message on the respective number.

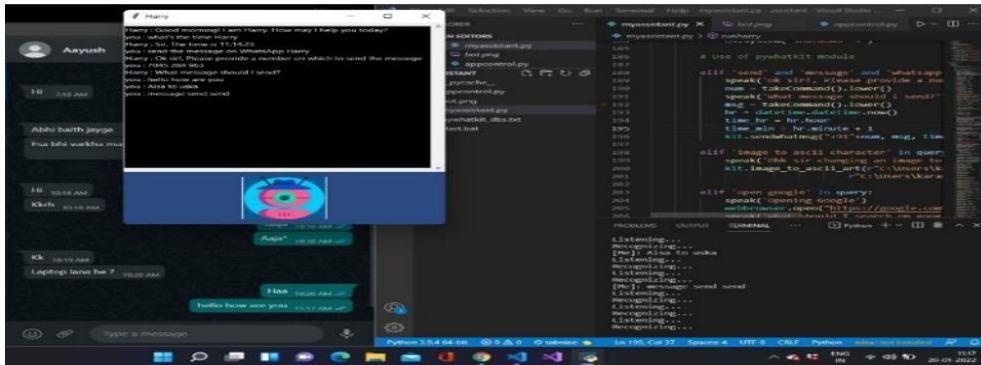


Figure-5: Sending WhatsApp message

- **Sending Mails**—if the user asks the assistant to send email the assistant will ask the mail id of the receiver and the message you want to send and then it will send the mail on the respective mail id.

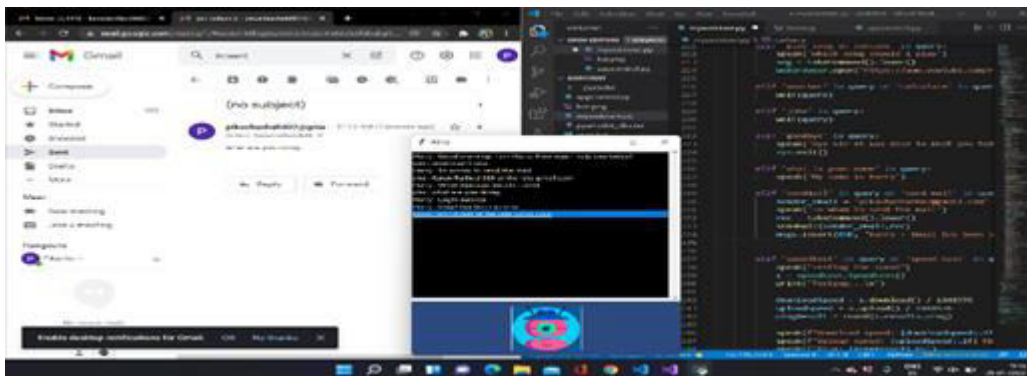


Figure-6: Sending Mails

BENEFITS TO THE SOCIETY

1) Minimal Effort

It's easier to say a few words than type them on a small smartphone screen.

2) Eyes Free

Are you wearing glasses or lenses? Me too. You can be as blind as a bat, but a voice assistant will always help you. Your ears are enough. You can also ask the bot about something while cooking at the same time.

3) Hands-free

The communication with a voice assistant can take place even when your hands are occupied. Are you painting your nails now? Are you installing a cabinet now? Don't worry; the voice assistant will be happy to hear what you have to say.

4) Minimally Disruptive

Have you ever wondered how many times you turn on and off your mobile while texting via Messenger? If your smartphone is not muted, you hear a notification sound each time. That's it. Comfortably read your book and check what is happening in the world using your voice only.

5) Fast response

Imagine how much time you have to spend to find some information on a website? Or how many clicks do you need to make before you find the thing you need in a mobile application? Voice assistants don't generate such difficulties. You ask a question and you have the answer.

6) Easy for children

Two-year-old children typing via Messenger? Impossible? Two-year-old children reading websites? Unlikely. 2-year-old children speaking with a voice assistant? Nothing hard.

Future Scope

The virtual assistants which are currently available are fast and responsive but we still have to go a long way. The understanding and reliability of the current systems need to be improved a lot. The assistants available nowadays are still not reliable in critical scenarios. The future of these assistants will have the virtual assistants incorporated with Artificial Intelligence which includes Machine Learning, Neural Networks, etc. and IoT. With the incorporation of these technologies, we will be able to achieve new heights. What the virtual assistants can achieve is much beyond what we have achieved till now. Most of us have seen Jarvis, that is a virtual assistant developed by iron man which is although fictional but this has set new standards of what we can achieve using voice-activated virtual assistants.

SWOC ANALYSIS**Strengths**

1. More conversational conversation
2. User friendly
3. Provides more features compare to Cortana
4. Helps the individual who has problem with sight.

Weakness

- 1) Language specific
- 2) Need internet connection for execution
- 3) Needs specific Keywords for the command execution.
- 4) Privacy is another big concern for voice assistant users.

Opportunities

- 1) Got to know in depth learning about various libraries present in Python.
- 2) Had an opportunity to learn how to operate a system using voice command

Challenges

- 1) Faced difficulty in operating the system using commands.
- 2) Due to lot of noise going in surroundings it was difficult and challenging to capture voice of a user.

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THE EFFECT OF WORK STRESS AND JOB SATISFACTION ON THE PERFORMANCE OF WOMEN EMPLOYEES

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ABSTRACT

This research was conducted to see the effect of Job Stress and Job Satisfaction on the Performance of Female Employees at Sasando International Hotel, Kupang City. This type of research is associative research, which is defined as research that aims to determine the relationship between two or more variables. This research approach is a quantitative research approach. Distributing questionnaires to 25 respondents collected the research data and the data obtained were processed and analyzed using simple linear regression and multiple linear regression methods. The findings in this study are partially the work stress variable has a positive but not significant effect on the performance of female employees of Sasando International Hotel, partially the job satisfaction variable has a positive and significant effect on the performance of female employees of Sasando International Hotel, and simultaneously the variables of job stress and job satisfaction are simultaneous positive and significant effect on the performance of female employees of Sasando International Hotel.

Keywords: Job Stress, Job Satisfaction, and Performance.

FOREWORD

Human resources are important asset in a company because they are the main driver in the running of activities that have been planned in a company. According to Alif in Nasution (2017) Human resources are an important asset or capital in organizational effectiveness in developing systems and product innovation efforts so that they can still have competitive advantage values compared to competitors. And because in general the company must be able to generate maximum profits, the company must make various efforts to improve the performance of its employees. While the company's performance is the level of achievement of results in order to realize the company's goals. In order to improve the performance of its employees, companies need to pay attention to the interests of employees who have various needs. Employee performance is generally influenced by two factors, namely internal and external factors. Internal factors are factors that come from within the employee, which includes job satisfaction and job stress, while external factors come from outside the employee, such as organizational culture (Ismail and Joon, 2006). Seeing the importance of the role of human resources, companies need to manage a good and conducive climate in employee work activities to reduce employee work stress levels. Hasibuan (2014: 9) states that, one of the things that must be considered in the company in order to be able to run according to the goals expected by management are employees, because with good management of employees, employees will feel satisfaction at work and the company will be able to make employees feel satisfied. This is a very valuable feedback in realizing the company's goals because in addition to job stress, job satisfaction also takes part in employee performance.

Employees with high job satisfaction will have positive feelings about their work, while employees with low job satisfaction will have negative feelings about their work, .And if employee satisfaction is high then employee performance tends to increase. Women are required to be responsible for taking care of and fostering a good family on the other hand as a worker, women are required to work in accordance with good performance standards. Especially female workers engaged in the world of selling services such as hotels, they are required to always be maximal in their work because prioritizing good service for the convenience of consumers is the goal of service companies.

Sasando International Hotel is a company engaged in the form of services in East Nusa Tenggara. The main services of this hotel are lodging services (rooms) complete with various facilities in it, food and beverage product services both in large and small quantities, as well as other services in the form of entertainment which are managed by the hotel based on public interest and meet the criteria or requirements are defined and managed professionally and their management is based on applicable legal regulations. Sasando International Hotel prioritizes service as the main tool to attract guests. Sasando International Hotel – Kupang itself currently has 83 employees consisting of 25 female employees and the rest are male employees who take part in developing Sasando International Hotel –Kupang. Whether it's a single female employee or a married woman, both of them have the same working time, the same tasks and portions in each division. Employees are required to work as much as possible to produce good performance considering that service providers, especially hotels in Kupang City, have several competitors. To date, the number of female employees working in mid 2018-2019 is 25 employees and the current total number of employees is 83 employees. It can be seen from the current

total number of employees of Sasando International Hotel Kupang, there are 9 hotel employees who left the company. It could be said that by not shifting the number of female employees, this indicates that female employees still get the same opportunities per year in their work.

The workload carried out by employees can be seen from the work portion of employees in each division to meet hotel targets, how much responsibility employees have for hotels and maintain an attitude at work. The active role of employees in the hotel as much as possible can be seen from the basic skills of the employees themselves in working according to the characteristics of different tasks in each outlet, where the hotel applies a rolling work system in each division within a certain period of time. In addition to the indications above, the salary received by Sasando International Hotel employees once a month has a different impact and feeling for each employee. The hotel also offers promotions for employees who, if their work performance is satisfactory.

Based on the description and various indications above, the researcher wants to conduct further research at Sasando International Hotel, Kupang. Therefore, the researcher raised the title "The Effect Of Job Stress and Job Satisfaction On The Performance Of Women Employees At Sasando International Hotel, Kupang City.

STUDY OF LITERATURE

Work Stress

Rivai (2010: 98) explains that work stress is a condition in which an individual experiences tension that makes the individual physically and psychologically unbalanced. According to Robbins and Judge (2011: 368) stress is a dynamic condition in which an individual is faced with opportunities, demands, or resources related to what the individual desires and for which the outcome is seen as uncertain and important. From several definitions of work stress according to the opinion of the experts above, the researcher can define that work stress is a condition that is felt by employees due to work demands so that employees can feel depressed both mentally and physically which can be shown through certain actions and behaviors in the work environment.

Several Indicators can Measure job Stress. Robbins (2011) Suggests Indicators of Job Stress as Follows

1. Operational workload
2. Availability of time in doing work
3. The role of the individual in the organization
4. Role ambiguity
5. Characteristics of job duties

Besides According to Robbins, There are also Other Indicators Proposed by Mangkunegara (2000) are as Follows

1. Workload, which is a collection of tasks and work related to the organization and must be completed within a certain time.
2. Working time, which is a period of time that binds employees in carrying out work related to the organization.
3. The feedback obtained, which is a process of action given by superiors, subordinates and colleagues on the actions taken
4. Responsibility, namely the state of being obliged to bear and bear all the consequences related to the work and position held.

Job Satisfaction

Basically job satisfaction is an individual thing. According to Robbins (2014) job satisfaction is a general attitude towards one's work as the difference between the amount of rewards received by workers and the amount of rewards that are believed to be received. Job satisfaction is an important thing that individuals have in their work. Each individual worker has different characteristics, so the level of job satisfaction is different and the level of job satisfaction can have an unequal impact. A person with a high level of job satisfaction has positive feelings about the job, while someone who is dissatisfied has negative feelings about the job. Job satisfaction refers to the general attitude of an individual towards his job. This can be seen in the positive attitude of employees towards work and everything that is faced in their work environment. A person's job satisfaction depends on individual characteristics and job situations. Each individual will have a different level of job satisfaction according to the value system that applies to him. From the understanding of satisfaction put forward

by the experts above, the researcher can define that job satisfaction is a general description of employees' feelings towards their work.

Several Indicators Measure Job Satisfaction. According to Luthans (2006) The Indicators of Job Satisfaction Are:

1. Incentives received by employees
2. A clear career path
3. Type of work/work itself
4. Quality control (supervision)
5. Social interaction with co-workers.

There are also Other Indicators of Job Satisfaction Proposed by Robbins (2011: 110) as Follows:

1. Satisfaction with salary/wages
2. Satisfaction with company promotion
3. Satisfaction with coworkers
4. Satisfaction with supervision
5. Satisfaction with the work itself

Employee Performance

Performance (performance) refers to the level of achievement of the tasks that make up an employee's job. A company that has employees who perform well, it is likely that the company's performance will be good, so there is a very close relationship between individual performance (employees) and company performance. Mangkunegara (2013: 67) that the term performance from the word job performance or actual performance (work performance or actual achievement achieved by a person) is the quality and quantity of work achieved by an employee in carrying out his duties in accordance with the responsibilities given to him. To complete a task or job, a person should have a certain degree of willingness and level of ability. Employee performance is not just information for promotion or salary determination for the company. Employee performance is very necessary, because with this performance it will be known how far the employee's ability to carry out the tasks assigned to him. From the understanding of work performance in the opinion of the experts above, the researcher can define that work performance is the result of work achieved by employees in carrying out their duties with the abilities of the employees themselves.

According to Mathis and Jackson (2006) Performance Indicators Are:

Quantity, measured from employees' perceptions of the number of assigned activities and their results.

1. Quality can be measured from employees' perceptions of the quality of the work produced and the perfection of tasks on the skills and abilities of employees. The results of the work carried out are close to perfect or meet the expected goals of the work.
2. Timeliness, measured by employees' perceptions of an activity that is completed from the beginning of time until it becomes output. Can complete at a predetermined time and maximize the time available for other activities.
3. Effectiveness, maximum utilization of resources and time available to the organization to increase profits and reduce losses.
4. Attendance, the level of employee attendance in the company can determine employee performance.

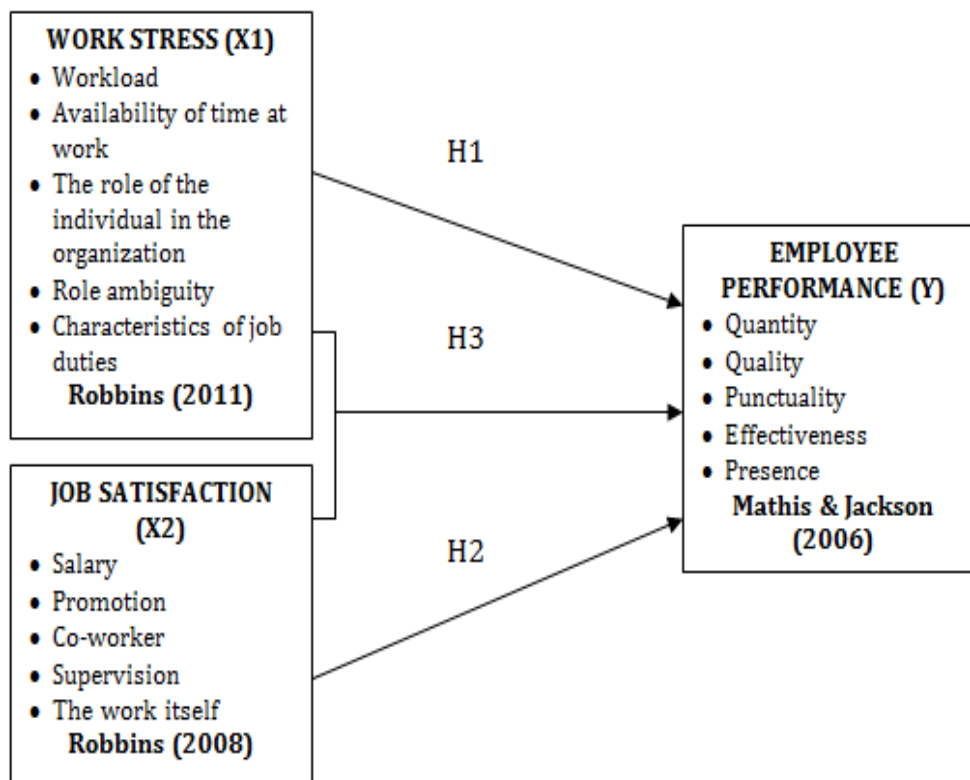
Other Indicators of Employee Performance also Stated by Bernadin (2013) Are:

1. Quality of work, where the results of the activities carried out are close to perfect in the sense of adjusting in some ideal way from the appearance of the activity as well as meeting the expected goals in an activity.
2. Quantity, which is the amount produced, is expressed in terms such as the number of units, the number of activity cycles completed by employees and the number of activities produced.
3. Timeliness, the level of an activity completed at the beginning of the desired time from the point of view of coordinating with the output results and maximizing the time available for other activities. Punctuality is measured from the employee's perception of an activity that is completed at the beginning of time until it becomes output.

The Relationship between Job Stress and Job Satisfaction with Employee Performance

Job stress can help or damage employee performance, depending on how much stress it is. According to Robbins (2011) the level of stress that can be controlled can make employees do their jobs better, because it makes them able to increase work intensity, alertness, and creative ability, but excessive levels of stress make their performance will decrease. The inverted U pattern shows the relationship between stress levels (low-high) and performance (low-high). As stress increases, performance tends to increase, because stress helps employees to direct all resources and fulfill work needs, is a healthy stimulus that encourages employees to respond to job challenges. As for job satisfaction itself, employees who feel satisfied with their work, employee performance tends to increase. From the description of the thought above, the researcher clarifies the variables of the influence of work stress and job satisfaction on the performance of female employees, which are described as follows.

Picture 1: Framework



Based on the Above Framework, The Hypotheses in this Study Are:

1. **H1:** Work stress has a significant effect on the performance of female employees at Sasando International Hotel, Kupang City.
2. **H2:** Job satisfaction has a significant effect on the performance of female employees at Sasando International Hotel, Kupang City.
3. **H3:** Job stress and job satisfaction have a significant effect on the performance of female employees at Sasando International Hotel, Kupang City.

RESEARCH METHODOLOGY

The type of research used is associative research. According to Sugiyono (2014), associative research is research that aims to determine the relationship between two or more variables. This research was conducted to determine whether there is an influence between job stress and job satisfaction on the performance of female employees with a quantitative approach. Quantitative research is research conducted by collecting data in the form of numbers, and then analyzed using statistical procedures to obtain information behind these numbers, where the data used in conducting this research are primary and secondary data. The primary data in this study was in the form of a questionnaire. While the secondary data in this study are in the form of documents that exist in the company, for example regarding information on company history, organizational structure and so on. Meanwhile, the data collection technique used by the researcher in this study was in the form of a questionnaire. This type of research uses a survey method, namely research that takes respondents from the entire population in the object under study and uses questionnaires as a means of collecting basic data.

The population in this study was all female employees who worked at Sasando International Hotel –Kupang, amounting to 25 people. The samples in this study were all female employees who worked at Sasando International Hotel, Kupang City, amounting to 25 people. The sampling technique used is a saturated sample (census).

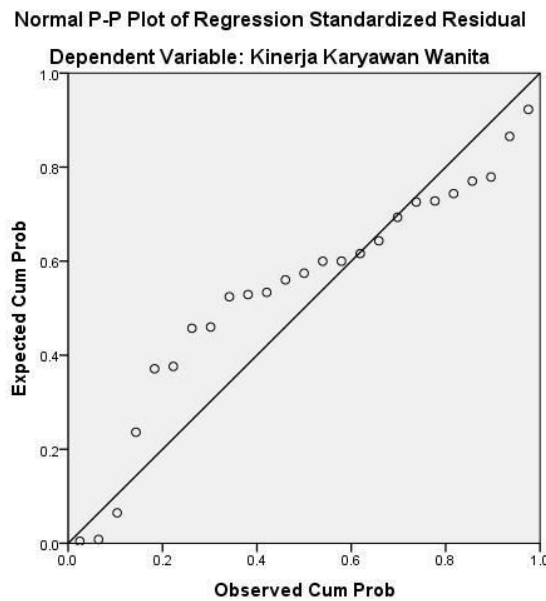
FINDINGS AND DISCUSSION

Inferential Analysis

1. Classic Assumption Test

The classical assumption test in this study was carried out with three types of tests, namely normality test, multicollinearity test, and heteroscedasticity. The following are the results of the normality test using the normal P-P Plot graph.

Picture 2: Normality Test Results



Source: Primary Data Processing Results (2019)

Based on the Normal probability plot graph above, it can be seen that the data depiction shows a good pattern and the data spreads around the diagonal line and follows the direction of the diagonal line. Then the normal probability plot graph is normally distributed.

Furthermore, the Multicollinearity test was carried out with the following results.

Table 4: Multicollinearity Test Results

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	9.256	8.541		1.084	.290		
	Stres Kerja	.092	.109	.119	.849	.405	.945	1.059
	Kepuasan Kerja	.769	.147	.733	5.236	.000	.945	1.059

a. Dependent Variable: Kinerja Karyawan Wanita

Source: Primary Data Processing Results (2019)

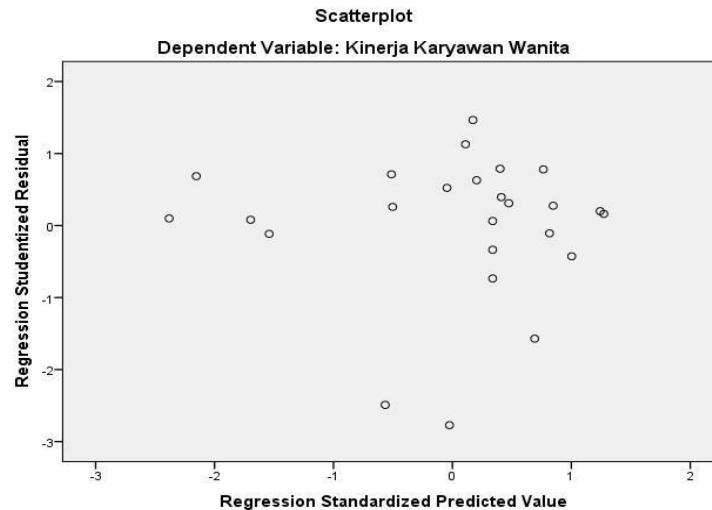
Based on Table 4 Above, The Following Conclusions can be Drawn

- a. Work stress (X1) with a tolerance value of 0.945 which is greater than 0.10 and a VIF value of 1.059 which is smaller than 10.
- b. Job Satisfaction (X2) with a tolerance value of 945 which is greater than 0.10 and a VIF value of 1.059 which is smaller than 10.

Because the tolerance value obtained for each variable is greater than 0.10 and the VIF value obtained for each variable is less than 10, it means that the variable data on job stress and job satisfaction and the performance of female employees are free from multicollinearity.

Next, the heteroscedasticity test was carried out. This test aims to see whether in the regression model there is an inequality of variance from the residuals, from one observation to another. The results of the heteroscedasticity test are as follows.

Picture 3: Heteroscedasticity Test Results



Source: Primary Data Processing Results (2019)

In Figure 2, the results of the heteroscedasticity test show that the points spread randomly, do not form a certain clear pattern, and are spread both above and below zero (0) on the Y-axis. This means that there is no deviation from the classical assumption of heteroscedasticity.

2. Multiple Linear Regression Analysis Test

Regression model is a model used to analyze the effect of various independent variables on a dependent variable (Ferdinand, 2006). The results of the multiple linear analysis test can be seen in the table of SPSS V. 21 processed results below:

Table 5: Multiple Linear Regression Test Results

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	9.256	8.541		1.084	.290
	Stres Kerja (X1)	.092	.109	.119	.849	.405
	Kepuasan Kerja (X2)	.769	.147	.733	5.236	.000

a. Dependent Variable: Kinerja Karyawan (Y)

Source: Primary Data Processing Results (2019)

Based on table 4.8 above, the multiple linear regression equation models is obtained as follows:

$$Y = 9.256 + 0.092 X1 + 0.769 X2$$

Based on the above equation, it can be seen that the regression coefficients of the independent variables, namely work stress (X1) and job satisfaction (X2) have a positive value, meaning that if the value of the X variable increases, the value of the Y variable will also increase and vice versa. From the two variables, it can be seen that the one that dominates or has a greater influence on employee performance (Y) is the job satisfaction variable (X2) of 0.769 while work stress (X1) is 0.092.

The Interpretation of the Multiple Linear Regression Equation Above is as Follows

- a. Based on the regression test results obtained, the constant value is 9.256, meaning that if the value of the work stress variable (X1) and job satisfaction (X2) is equal to zero (0), then the value of the employee performance variable (Y) will be 9.256 units.

- b. The value of the regression coefficient (b1) of the work stress variable (X1) shows a value of 0.092 units, which means that if the value of the work stress variable increases by 1 unit, then the value of the employee performance variable (Y) will increase by 0.092, with the assumption that the other independent variables are fixed.
- c. The value of the regression coefficient (b2) of the job satisfaction variable (X2) shows a value of 0.769 units, which means that if the value of the job satisfaction variable (X2) increases by 1 unit, then the value of the employee performance variable (Y) will increase by 0.769 units, assuming the other independent variables are fixed.

3. HYPOTHESIS TEST

Hypothesis testing in this study was carried out by t-test and f-test. Partial hypothesis testing used t test. The t-test aims to determine the effect between the independent variable and the dependent variable and to determine whether the independent variable has a significant relationship or not with the dependent variable individually for each variable. While the F test is used to determine whether the independent variables jointly affect the dependent variable. T test results are as follows:

Table 6: T test results

Coefficients^a

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	9.256	8.541		1.084	.290
Stres Kerja	.092	.109	.119	.849	.405
Kepuasan Kerja	.769	.147	.733	5.236	.000

a. Dependent Variable: Kinerja Karyawan Wanita

Source: Primary Data Processing Results (2019)

Based on the Table Above, It Can be Said That

- a. Because t count (849) < t table (1.717) and significance (0.405) > alpha (0.05), then H1 is rejected, meaning that work stress has no effect on the performance of female employees of Sasando International Hotel, Kupang City.
- b. Because t count (5.236) > t table (1.717) and significance (0.000) < alpha (0.05), then H2 is accepted, meaning that job satisfaction has a significant effect on the performance of female employees of Sasando International Hotel, Kupang City.

Then the F test is carried out with the following results:

Table 7: F Test Results

ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	210.601	2	105.300	16.003	.000 ^b
	Residual	144.759	22	6.580		
	Total	355.360	24			

a. Dependent Variable: Kinerja Karyawan Wanita

b. Predictors: (Constant), Kepuasan Kerja, Stres Kerja

Source: Primary Data Processing Results (2019)

Based on the table above, it is known that the calculated F value (16.003) > F table (3.44). Therefore, H3 is accepted where job stress and job satisfaction simultaneously have a significant effect on the performance of female employees of Sasando International Hotel Kupang.

Discussion of the Effect of Work Stress on the Performance of Female Employees at Sasando International Hotel, Kupang City

Thus it is stated that the level of work stress of employees at Sasando International Hotel, Kupang City is relatively high and needs to be controlled and minimized. This shows that the availability of time in carrying out work and the characteristics of the work duties of Sasando International Hotel, Kupang City need to be controlled properly, so that work stress at the Hotel can be managed and minimized so as not to worsen employee performance. This shows that work stress partially has no significant effect on the performance of

female employees. Thus it can be interpreted that the size of the work stress level of female employees does not affect their performance. Although work stress has no significant effect on the performance of female employees, the results of the multiple linear analysis test yield a positive significant value, meaning that work stress has an influence on employee performance or has a direct relationship to the performance of female employees at Sasando International Hotel, Kupang City. However, it goes straight with the research conducted by Nurhendar (2007), which shows that there is no influence of the work stress variable on employee performance.

The absence of the influence of work stress on the performance of female employees means that Sasando International Hotel, Kupang City manages the work stress of its employees well, including the performance and condition of the hotel well so that the more comfortable the place to work, the more stress is reduced and optimize performance. The results of this study also concluded that female employees of Sasando International Hotel, Kupang City work without high work stress which will reduce performance so that even though high work stress will not affect employee performance, of course this is dominated by work spirit and a high level of responsibility in work. Work stress arises due to differences in the demands of the work environment and the response of each individual is different, individuals who have good self-adjustment will tend to be able to immediately cope with the stress they face while individuals who have poor adjustments will tend to experience stress longer (Edy Sutrisno, 2009).

Discussion of the Effect of Job Satisfaction on the Performance of Female Employees at Sasando International Hotel, Kupang City

Based on the descriptive analysis, it is known that the job satisfaction at Sasando International Hotel, Kupang City achieves a variable achievement of 1368 with 12 question items that are on very high assessment criteria. Based on the results of the distribution of questionnaires to employees as respondents, most of the respondents answered strongly agree indicating that employee job satisfaction is in high criteria. However, there are several question items that are still in the high assessment criteria related to the promotions offered. Thus, the hotel needs to conduct a job evaluation so that it can determine promotions for employees according to hotel management agreements, besides that it is also fair and objective. In this case, very high job satisfaction has a good effect on the performance of hotel employees, thus facilitating the achievement of hotel goals and targets.

The results of multiple linear regression analysis obtained a variable coefficient of job satisfaction (b) 0.769, which means that if 1 unit increases job satisfaction, then work performance will increase by 0.769. The results of the analysis that has been carried out on the respondents who were sampled in this study indicate that the state of employee job satisfaction at Sasando International Hotel, Kupang City has an influence on the performance of female employees.

Based on the results of the t test which with the value of alpha (α) = 0.05, the variable job satisfaction obtained a value of Sig. 0.000 which means it is smaller than alpha (α) 0.05 and tcount (5.236) > ttable (1.717). This is proven to indicate that job satisfaction partially has a positive and significant effect on the performance of female employees. Thus it can be interpreted that if the job satisfaction of employees will be higher, it will have an impact on increasing employee performance in achieving company goals, in this case, Sasando International Hotel, Kupang City.

According to Lawler (in Robbins, 2014), the measure of satisfaction is based on the reality that is faced and accepted as compensation for the effort and effort given. It can be said that employees will experience a high level of performance if in the work process the job satisfaction desired by their employees is met, apart from that job satisfaction will support the work process so that the work is carried out properly and does not complicate the employees with the characteristics of respondents regarding educational background. Sasando International Hotel, Kota Kupang can help its employees to achieve optimal performance, age and also the years of service of Sasando International Hotel, Kupang City.

The results of this study are also strengthened by the results of previous research by Winata (2016) which states that job satisfaction has a positive and significant effect on employee performance with the results of the t-test (partial) where the probability of significance is smaller than alpha.

Discussion of the Effect of Job Stress and Job Satisfaction on the Performance of Female Employees at Sasando International Hotel, Kupang City

Based on descriptive analysis, it is known that the performance of employees at Sasando International Hotel, Kupang City obtained a variable achievement of 1396 and was in very good criteria with all items or 12 items being in very good criteria. This shows that the performance of the employees of this hotel is in a very good position, strengthened by the results of the F (simultaneous) test, which obtained F count of 16.003, which is

greater than F table with a value of 3.44 and a significance value of 0.000. Therefore, with the value of F count \geq F table ($16.003 \geq 3.44$), it can be concluded that the variables of job stress and job satisfaction simultaneously have a significant effect on the performance of female employees simultaneously.

The above is reinforced by the results of the analysis of determination which shows that the percentage of the contribution of the influence of the independent variable (job stress and job satisfaction) on the dependent variable (performance of female employees) Sasando International Hotel, Kupang City is 59.3% while the remaining 40.7% is influenced or explained by other variables not included in this study. Theoretically, other factors that are thought to influence employee performance at Sasando International Hotel, Kupang City include ability and motivation (Laksana, 2014) as well as work environment, work motivation, leadership, and leadership style (Kasmir, 2016). These factors are thought to have influenced the performance of female employees of Sasando International Hotel, Kupang City. However, to prove it, further research is needed.

Female employees who have job satisfaction in working at Sasando International Hotel, Kupang City and have minimal stress levels that can be controlled can have optimal performance. In this case, female employees who have job satisfaction and controllable stress levels have the drive to achieve the performance that has been set on time, quality and quantity in completing work in accordance with the targets in the hotel.

According to Wibowo (2012:101) the implementation of performance will be greatly influenced by several factors, both sourced from their own work and those from the organization. Employee performance is the work of employees viewed from the aspect of quality, quantity, and working time to achieve the goals set by the Dharma organization (2000:355).

CONCLUSION

Based on research conducted at Sasando International Hotel, Kupang City regarding the Effect of Job Stress and Job Satisfaction on the Performance of Female Employees, it can be concluded that 1) The results of the description analysis using the suspension range obtained that the work stress variable was in the high category while job satisfaction was in the very high category while for the employee performance variable itself is in the very good category, 2) The results of the partial hypothesis test prove that the work stress variable has a positive but not significant effect on the performance of female employees of Sasando International Hotel, Kupang City, 3) The results of the partial hypothesis test prove that variable job satisfaction has a positive and significant effect on the performance of female employees of Sasando International Hotel, Kupang City, 4) Simultaneous test results prove that the variables of job stress and job satisfaction simultaneously have a positive and significant effect on women employee performance Sasando International Hotel, Kupang City.

The advice given is that the hotel needs to pay attention to the level of work stress from its employees, especially female employees by paying attention to indicators related to employee work stress and also so that the hotel maintains the level of employee performance through job satisfaction from its employees. While for future researchers, further research is needed by adding factors outside of work stress and job satisfaction which also affect the performance of Sasando International Hotel, Kupang City employees, including ability and motivation (Laksana, 2014) as well as the work environment, work motivation, leadership, and leadership style (Kasmir, 2016).

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THE RELATIONSHIP BETWEEN THE PERCEIVED PARENTING STYLE AND SOCIAL INTERACTION ANXIETY IN ADOLESCENTS**Khushi Chauhan¹ and Samiksha Jain²**¹Student of Bachelors Applied psychology honors, AIPS, Amity University Noida²Visiting Faculty, Amity University Noida**ABSTRACT**

The aim of this study is to investigate the relationship between perceived parenting style and social interaction anxiety among adolescents and the gender difference in the level of social interaction anxiety. The sample of this study consists of 100 schools and college-going adolescents (52 females and 48 males) of age between 12 to 19 years. The snowball sampling technique was used for the administration of assessment tools on adolescents. The tools used for the assessment were the Perceived Parenting Styles Scale (PPSS) and the Social Interaction Anxiety Scale (SIAS). The statistical method used for data analysis were correlational analysis and independent sample t-test. The results showed that there is no correlation between perceived parenting style and social interaction anxiety in adolescents and both males and females have the same levels of social interaction anxiety.

Keywords: Perceived parenting style, social interaction anxiety, Adolescents

INTRODUCTION**Parenting Style**

Parents play a very crucial role in the child's overall physical, social, mental, and emotional development, and the parenting style they are using also become of very great importance. It is one of the most studied variables in child development. Parenting style is defined as "the emotional environment parents provide to bring up their children". Parenting style affects the children physical and mental progress and also many aspects of psychological development such as self-worth, self-confidence, and social adjustment (Baumrind, 1991a).

Many different psychologists have given many different theories on child development. Jean Piaget was the pioneer of this field with his theory of cognitive development he describes how children represent and reason the world. He still inspires many parents, teachers, and other theorists with his work. Later Erik Erikson, proposed eight life stages according to which people develop through these eight stages, and to move to the next stage they have to work out of problem otherwise they will get stuck in that stage, to help their child in each stage parents use an appropriate parenting style. Rudolf Dreikurs, Frank Furedi, and Judith R. Harris are also some of the theorists who also worked in this field in correlation with parenting style. Diana Baumrind who was interested on how parents affect their children was the first researcher who classified parenting style in her research studies known as Baumrind's parenting typology. She conducted studies on children and came up with many elements of parenting but the basic elements of parenting are responsiveness, unresponsiveness, demanding, and undemanding. with help of these elements, she categorizes parenting style into three types:-

Authoritarian parenting- In this parenting style, parents are highly dominating and controlling they not only control their children's attitudes and behavior according to their needs and values but also want their children to obey their rules without asking them anything as they know the best for their children and if their children don't obey those rules and regulations. they have to face terrible consequences like shouting and some cases beating the main goal of this parenting style is to teach children how to behave in society and also to make them strong to face the harsh world outside. Their children might be good in academics but are less involved in social activity, lack self-confidence and express sadness and anxiety (Baumrind, 1991b).

Authoritative parenting- It is somewhat the same as authoritarian parenting. In this also parents are setting rules and regulations for their children but in a way that enhances their children development, they not only give their children the freedom but they also encourage them to speak their mind. These parents are loving, caring, and sympathetic towards their children. When their expectation is not met by their children instead of rebuking, they forgive their children and support and encourage them. Parents monitor their children but are not restrictive. Authoritative parent's children are found to be more involved in social activity and skilled (Darling & Steinberg, 1993).

Permissive parenting- In permissive parenting style parents are very lenient with their children instead of being recognized as their parents they prefer calling themselves their best friend. These parents don't set any rules and regulations for their children they prefer their children to take their own decisions and set boundaries according to themselves and because of this thing children with these parents are very confident. These parents not only

give their children freedom but also everything they require. These parents are loving and supporting and don't have any high demands from children. Permissive parent's children have low achievements (Baumrind, 1971) and lack control over their impulses (Maccoby & Martin, 1983).

Baumrind was convinced that parents should make rules for their children to follow but also be affectionate with them. Later Baumrind's theory was expanded by Maccoby and Martin.

In conclusion parenting style which is so important can have both positive outcomes such as children with high self-esteem or can have negative outcomes such as children with low confidence.

SOCIAL ANXIETY

Every one of us feels anxiety in various different situations and anxiety which occurs in a social setting is called social anxiety. Social anxiety can be defined as "prolonged devastating fear of social situations". Social anxiety occurs when a person is worried about how they are being observed and assessed by others. Blushing, shame, guilt, shyness, sweating, pride, and feeling uneasy in social settings are some of the signs and symptoms of social anxiety. Environmental and hereditary factors contribute to the advancement of social anxiety (Chandler & Cuncic, 2012). Social anxiety can turn into a disorder called social anxiety disorder (SAD) if it has a huge impact on a person life, they feel anxious doing their day-to-day activities like talking with people, if possible, they even try to avoid them, they have fear of criticism, they worry about doing anything embarrassing in front of others and also, they have low self-esteem. SAD can be treated and has many different types of treatment like CBT. Holt, Heimberg, Hope, and Liebowitz (1992) proposed four circumstances when social anxiety can be seen first is formal speaking and interaction, excluding people with mild anxieties about 20% of people have reported a high level of anxiety on public speaking (McCroskey, 1970, 1977; Pollard & Henderson, 1988). The second is informal speaking and interaction, 80% of people reported feeling anxious in presence of a stranger or authority figure (Russell, Cutrona & Jones, 1986). The third is interaction with assertive behavior, assertive behavior like expressing disagreement has an inversely proportional relationship with anxiety (Orenstein & his colleagues, 1975) and the fourth is when people are being observed. Liebowitz (1987), Mattick & Clark (1998) later classified the circumstances where social anxiety can be seen into two; distress while interacting with others and while being observed by others. According to Mattick and Clarke (1998, p. 457), social interaction anxiety is defined as "distress when meeting up and speaking with other people".

Khodabakhsh, Fariba & Soliman (2014) explored how student's mental health can be predicted by Psychological Well-being and Parenting Styles. The cross-sectional research design and multi-stage random cluster sampling were used in this research. The sample consisted of 278 students (124 boys and 154 girls) of Boukan's high schools. Tools used were psychological well-being inventory and mental health parenting style questionnaire. The results showed that the dimensions of psychological well-being have a significant relation with mental health and authoritative and permissive parenting styles also have a negative correlation with mental health.

Shabbir, Shazia & Tahir (2013) investigated how parenting style affects social anxiety in Pakistani adolescents. Independent group design was used in this study. The researchers used the Stratified sampling technique for their study of parenting style and social anxiety and the sample of their studies was 200 adolescents (100 girls and 100 boys) whose both parents were alive and the age range of sample was 18- 20 years who were studying in 1st year of Punjab University, and GC University, Lahore. The tool used in the research was the Parent Attitude Inventory and Social Anxiety Scale for Adolescents (SASA). The result showed that there was a correlation between parenting style and social anxiety separately for both the parents and also has prominent gender difference in the parenting style of both parents for social anxiety and there was also a gender difference in the level of social anxiety in adolescents.

Jihong, et al. (2017) investigated how adolescent's social anxiety is affected by the parenting style of migrant families in China as more and more people started migrating to the cities. The sample of the research was 1345 children (majority of male students 59.26%) aged between 11 to 19 studying in four different junior middle schools in Guangdong in China all were from migrant families living in cities for more than 6 months. In this research, quantitative research method like a questionnaire is used. Tools used were the Chinese version of Egnä Minnen Beträffande Uppfostran (s-EMBU) and the Social Anxiety subscale of Self-Consciousness Scale. The questionnaire examination was conducted in the classroom by psychologists. The results of the study showed that parenting style was correlated with adolescent's social anxiety. when both the parents were rejecting and overprotected there was a positive correlation with adolescent social anxiety but when both the parents were showing emotional warmth there was a negative correlation with adolescent social anxiety.

Kenny, David & Eleanor (2020) investigated the relationship between social anxiety and cognitive processes in adolescents. The sample of this research was children aged 11–14 years from two mainstream, non-selective, and state-funded secondary schools in London, UK. 614 students did an assessment at 1st Time and completed every assessment after 6 six months later in the follow-up session 452 of them attended at 2nd Time and completed the assessment again. Tools used for the assessment were The Adolescent Social Cognitions Questionnaire (ASCQ), The Adolescent Social Behaviour Questionnaire (ASBQ), The Adolescent Social Phobia Weekly Summary Scale (ASPWSS), The Liebowitz Social Anxiety Scale for Children and Adolescents-Self Report version (LSAS-CA), and The Short Mood and Feelings Questionnaire (SMFQ). The result showed that cognitive processes are related to considered levels of social anxiety in adolescents and also, they can be major targets for treatments.

Saira Yousaf (2015) explored the link between self-esteem, parenting style, and social anxiety in girls. The sample included 100 female students of different schools of age group 15- 18 years. Tools used for this study were the Social Interaction Anxiety Scale (SIAS), Rosenberg Self-Esteem Scale (RSES), and Parenting Authority Scale. The result showed that self-esteem is just a predictor of social anxiety there was not much association between them and authoritarian and pessimistic parenting styles are also a predictor for social anxiety in girls.

Esther & Pamela (2013) investigated the parental influence on social and performance anxieties and how they can be managed by psychodrama in children and adolescents. The sample of the study was 567 school students (275 males and 292 females) of age range between 7 to 16 years old selected randomly from four different schools. Tools used for this study were the Children social anxiety scale, Performance anxiety scale, and Parenting style scale. After the assessment was done children who have higher anxieties were picked as management sample. The management sample consists of 50 children ranked from lowest to highest anxieties and the therapeutic technique used on them was Psychodrama. the results showed that children whose parents have authoritarian/authoritative parenting styles have a high level of social anxieties while children whose parents have permissive/authoritarian parenting styles have a high level of performance anxiety, and psychodrama was effective in reducing the anxieties in these children.

Qurratulain & Humaira (2021) investigated the relationship between perceived parenting and social adjustment in school-going high achievers, punctual and truant students. Cross-sectional research design was used in this study. The researcher used the purposive sampling technique for their study and the sample consisted of 51 truant students, 51 punctual students, and 51 high achieving students with the age range from 12 to 18 from public schools of Rawalpindi and Islamabad, Pakistan. The results showed that truant students with permissive and authoritarian parenting styles positively foretells the social adjustment issue school students

Nicholas, Et Al. (2021) investigated the relationship between online social interaction and social anxiety as social media is widely used by people. The sample of the study was 109 individuals selected by social media to complete a self-report assessment. The tools used for assessing social anxiety and internet use were a battery of self-report questionnaires. The result showed that individuals with an unusual level of social anxiety favor online social interaction as compared to face-to-face interaction and there was no correlation between social anxiety and internet use.

Suat (2016) examined how the social skills of children aged 5 to 6 are affected by parenting styles. The relational screening model was used for this study and the sample which was chosen by random sampling consist of a total of 231 people, preschool students aged 5 to 6 with their parents. Tools used for data collection were the Social Skills Evaluation Scale (4-6-year-olds) and the Parental Attitude Determination Survey. The results showed that authoritarian-protective parenting style and over protecting parenting style both have negative impacts on their child social skills.

Maryam, et al. (2014) explored how parenting style and children's social withdrawal both together affect the children's socioemotional development. The sample of the study was 314 children, their teachers, and parents the teachers rated the children's prosocial skills, internalizing, and externalizing behaviors on the scale, and parents filled the questionnaire to assess their control and affection. The results revealed that socially withdrawn children have low parental affection and these children have a high level of internalizing problems and children with parental control also foretold a high level of prosocial behavior.

Tanja, Teresa, & Jeong (2009) explored how an adjustment in middle and late adulthood is affected by remembered parenting styles. The sample consists of adults aged 40 and older (1,138 men and 1,094 women). Secondary data was collected from the 1955 National Survey of Midlife Development in the United States (MIDUS) which was used to assess psychological wellbeing. MIDUS collected data by randomly dialling

the telephone and taking 40-minute telephone interviews followed by self-administered mail-back questionnaires. The results reveal that adults with authoritarian or uninvolved parenting in past informed lower psychological well-being and more depressive symptoms as compared to adults with authoritative parenting.

Bitra, FLorRezaei & Monir (2013) investigated the correlation between the anxiety of children and overstressed mother parenting styles. The sample of the study was 250 mothers of female students (mean age 10.6) studying in 4 and 5 grades of primary school. By using the multi-layered random selection method 250 mothers were chosen, only 200 mothers completed the Parenting Stress Index (PSI) and out of which 80 mothers were found out to be overstressed then these mothers were further asked to complete the parenting skills inventory as well as their daughters filled Reynold's children anxiety questionnaire. The result revealed that there was a significant relationship between overstress of mothers and children's anxiety. Components of oversteering like social isolation have positive and role limitations have a negative relation with children anxiety respectively.

Olga, et al. (2019) explored the relationship between parental educational practices and social anxiety. The ex-post-facto design was used for this study and the sample of the study consisted of 2060 school students of age between 12 and 19 years old attending Obligatory Secondary Education in Andalusi the student were selected through the stratified random sampling technique. Tools used were the Scale of Social Anxiety for Adolescents, the Evaluation Scale of the Educational Style of Fathers and Mothers of Adolescents, The Scale of Negative Self-esteem, adapted from the Rosenberg Self-Esteem Scale, and The Emotional Suppression Scale, adapted from the emotional Regulation Questionnaire. The findings showed there was a direct relationship between both parent's educational practices and social anxiety

Irem & Alper (2010) explored the relationship between the Perceived parenting style, depression, and anxiety disorder in Turkish adolescents. The sample of the study were 150 university students (75 male and 75 female) in their 1st year age between 17 to 19. They were further divided into three groups based on socio-economic status each group had 50 students. The tools used for this study were My Memories of Upbringing Form (EMBU-S), child Depression Inventory (CDI), and State/Trait Anxiety Inventory (STAI). After the analysis of data, it was revealed that there was a significant relationship between Perceived parenting style and socio-economic status. There were high scores in depression and anxiety inventories of adolescents belonging to low and high socioeconomic status than the adolescents belonging to middle status

Salma & Erun (2013) explored how socially anxious and non-anxious students are affected by parenting style. Through the random selection technique, the sample was selected. The sample consists of 500 students (250 males and 250 females) of Peshawar university of age range between 17 to 25 years. Structured interviews and questionnaires like the Liebowitz social anxiety scale and measure of parental scale were used. The results showed that social anxiety was seen in the majority of female students and overprotective and rejecting parenting styles were common in socially anxious students as compared to non-anxious students.

Philip & Michael (2020) investigated how prevalent is social anxiety in young people around the seven countries. The sample was randomly selected and it consisted of 6,825 people (male = 3,342, female = 3,428 and other = 55), age between 16–29 years, from seven different countries (Brazil, China, Indonesia, Russia, Thailand, US, and Vietnam) decided for their social and economic diversity. People were asked to complete a 20-minute online questionnaire. Tools used were self-report Social Interaction Anxiety Scale and measures of resilience. The results revealed that social anxiety is a problem faced by young people around the world.

Pinki & Kiran (2018) investigated the relationship between parenting style and social anxiety in adolescents. The exploratory research design with cross-sectional method was used in this study through the random selection technique the sample was selected. The sample consisted of 120 students (60 boys and 60 girls) aged between 13 and 18 years from Lucknow city they were further divided into three groups having 40 students in each first group had students from a private school, the second group had students from government school and the third group had students from aided school. The tools used were the Parenting style questionnaire and Liebowitz Social Anxiety Scale both questionnaire and interview methods were used in the research. The results showed that between parenting style and social anxiety there was a negative correlation.

Susan, et al. (2010) investigated how Taiwanese children suffering from autism and their siblings are affected by behavioral problems and parenting styles. The sample consisted of 151 families with one child suffering from autism diagnosis issued by the Bureau of National Health Insurance, Department of Health, Taiwan age range between 3 to 12 years with a total of 134 normal siblings and there was a total of 113 control families with normal children. Tools used were the Child Behavior Checklist (CBCL), the Chinese version of the Parental Bonding Instrument (PBI), and The Brief Symptom Rating Scale (BSRS). The results showed that

siblings of autistic children show some behavioral problems whereas children with autism exhibit high-level of behavioral problems. Parents have an overprotective and less caring parenting style with autistic children and with their, sibling’s parents are less overprotective and less caring.

Mensah, et al. (2013) explored how children's social development is influenced by parenting styles. The descriptive survey design was used for the research and the sample of research were 480 adolescents (240 males and 240 females) and 16 teachers who were randomly selected. Through the questionnaire on perceived parenting style and structured interview, data was collected. The result showed that the authoritative parenting style was perceived to be the most dominant and those children with authoritative parents are more expressive whereas there was a negative correlation between authoritarian parenting style and social competence.

Raziyeh, et al. (2015) examined whether assertiveness training can be effective in decreasing health volunteer social anxiety. This research was a quasi-experimental research with pre-test and post-test of the control group and placebo group. Through random selection, 90 volunteers of age range 30 to 39 years were selected and divided into three groups called experimental, control, and placebo containing 30 members each. Tools used were the Assertiveness Inventory and the Social Phobia Inventory. The results revealed that social anxiety can be decreased by the use of assertiveness training.

METHOD

Problem and Objective

The objective of this research is to study the relationship between the parenting style and social interaction anxiety among adolescents and to study the gender difference in level of social interaction anxiety.

HYPOTHESIS

1. There will be a significant relationship between parenting style and social interaction anxiety among adolescents.
2. There will be a significant gender difference in level of social interaction anxiety.

SAMPLE

The sample consist of total 100 school and college going students (52 girls and 48 boys) of age between 12- to 19-year-old.

Sampling Technique

Snow ball sampling – This technique is used when sample is hard to find so the first group of respondents are chosen and after being interviewed, these respondents are asked to identify others who belong to the target population of interest. Other respondents are then selected on the basis of referral so it is also called referral sampling, chain sampling, chain-referral sampling.

Research Tools

S. No.	Tools	Developed by:-	Reliability	Validity
1.	Perceived Parenting Styles Scale (PPSS)	Divya and Manikandan (2013)	Authoritative style is having an Alpha coefficient of 0.79, authoritarian 0.81 and permissive 0.86. All the styles of the perceived parenting style scale have an acceptable level of reliability.	The authors claim that the scale has face validity.
2.	Social Interaction Anxiety Scale (SIAS)	Mattick and Clarke (1989)	The scale has high test-retest reliability ($r = 0.92$).	The scale has high discriminant validity not only is it able to discriminate between those with social phobia and healthy volunteers, but also between several different types of social phobia and anxiety.

- Perceived Parenting Styles Scale (PPSS) measures perceived parenting style of the subject with regard to three dimensions such as authoritarian, authoritative and permissive. It consists of 30 items in which responses were elicited in a five-point Likert scale.

- The Social Interaction Anxiety Scale (SIAS) is a 20 item self-report scale which consist of 3 reverse questions designed to measure social interaction anxiety. This tool is useful in tracing social anxiety symptoms as it is very sensitive to treatment changes, and may be useful as part of an assessment for social phobia or other anxiety related disorders.

DATA ANALYSIS

Data was collected through snowball sampling technique and was arranged in an excel sheet. After it was entered in IBM SPSS (Statistical Package for Social Science) version 28.0.0.0 a statistical software for analysis of data. The statistical method used in this study were correlation analysis and independent samples *t*-test. Correlational analysis was used to determine the relationship between perceived parenting style and social interaction anxiety in addition to this *t*-test was used to determine gender difference in level of social interaction anxiety.

RESULT & DISCUSSION

The goal of this study was to explore the relationship between perceived parenting style and social interaction anxiety among adolescents. The results are presented in the following tables:

Table 1: Correlation between perceived parenting style and social interaction anxiety

Correlations			
		PPSQ	SIAS
PPSQ	Pearson Correlation	1	.104
	Sig. (2-tailed)		.305
	N	100	100
SIAS	Pearson Correlation	.104	1
	Sig. (2-tailed)	.305	
	N	100	100

Table 1 shows that there is no significant relationship between perceived parenting style and social interaction anxiety, $r(98) = .104, p = .305 (p > .05)$

Table 2: Group statistics of social interaction anxiety among males and females

Group Statistics					
	Gender	N	Mean	Std. Deviation	Std. Error Mean
SIAS	Female	52	28.71	18.339	2.543
	Male	48	29.52	12.746	1.840

Table 2 shows comparison of social interaction anxiety with males and females.

Table 3: Gender differences in level of social interaction anxiety among adolescents

Independent Samples Test											
		Levene's Test for Equality of Variances		t-test for Equality of Means							
		F	Sig.	t	df	Significance		Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
						One-Sided p	Two-Sided p			Lower	Upper
SIAS	Equal variances assumed	7.034	.009	-.254	98	.400	.800	-.809	3.183	-7.127	5.508
	Equal variances not assumed			-.258	91.234	.399	.797	-.809	3.139	-7.044	5.425

Table 3 shows that there is no significant difference stated in the level of social Interaction Anxiety among males and females, $t(98) = -.25, p = .800 (P > .05)$

This study explored the relationship between perceived parenting style and social interaction anxiety. The objective of this research was to study the relationship between the parenting style and social interaction anxiety among adolescents and to study the gender difference in level of social interaction anxiety. The first hypothesis was that there will be a significant relationship between parenting style and social interaction anxiety among

adolescents. However, in the results it showed that is no significant relationship between perceived parenting style and social interaction anxiety among adolescents as value came was $P = .305 > .05$ hence our hypothesis failed. The second hypothesis was there will be a significant gender difference in level of social interaction anxiety however the value came was $p = .800 > .05$ so, there was no significant gender difference in level of social interaction anxiety and our hypothesis again was not accepted.

CONCLUSION

It can be concluded that there is no significant relationship between perceived parenting style and social interaction anxiety among adolescents and also there was no significant gender difference in level of social interaction anxiety.

LIMITATIONS

The key limitation of this study is there are high chances of error which was not easy to regulate. This study cannot be generalised as the sample size was small and credibility of Sample cannot be undertaken. This study is also prone to sampling bias.

SUGGESTIONS FOR FUTURE RESEARCH

More studies can be done on the relationship between different types of parenting style (Authoritarian, Authoritative, Permissive) and social interaction anxiety. Further studies can be also be done on the children to know the relationship between parenting style and social interaction anxiety and different sampling technique can be used with much bigger sample size.

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DETERMINATION OF VEHICLE REGISTRATION PLATE USING DYNAMIC IMAGE PROCESSING TECHNIQUES: A REVIEW

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This paper presents a determination of vehicle registration plate using dynamic image processing techniques. The traffic on the roads is increasing day by day. Automatic Vehicle Identification (AVI) has many applications in traffic systems (highway electronic toll collection, red light violation enforcement, border and customs checkpoints, etc.). The traffic data of multiple vehicle types on roads is important for taking various decisions related to traffic. A video based traffic data collection system for multiple vehicle types is helpful for monitoring vehicles under homogenous and heterogeneous traffic. In this paper the color image is converted into binary by means of adaptive threshold method which is applied in overcoming dynamic changes of illumination condition. Pixel connectivity in candidate object inside the unknown image is detected by connected component analysis technique (CCAT). For extracting the plate region, edge detection algorithms are used.

Keywords: Automatic Vehicle Identification (AVI), Dynamic image processing technique, Connected component analysis technique, morphological algorithms.

I. INTRODUCTION

Today there is a need for automatic vehicle traffic management systems to deal with the continuously increasing vehicle traffic on the national high-way or any local roads. Information about current situations can be automatically extracted by digital image processing techniques. Along with vehicle detection and tracking, the identification through license plate recognition is important for a variety of application like automatic congestion charge system, access control, tracing of stolen cars, ticketless parking (off-street and on-street), tolling, ITS (Intelligent Transport System), smart billing or identification of dangerous drivers. The quantity of vehicles on road is growing in the modern age, so numerous crimes are also increasing day by day. Almost every day the news of missing vehicles and accidents are perceived. Vehicle tracking is often required to investigate all these illegal activity. So vehicle number plate identification as well as recognition is an active field of study. However, vehicle number plate identification has always been a challenging task for some reasons, for example, brightness changes, vehicle shadows and non-uniform license plate character type, various styles and environment color effects. A traffic surveillance camera system is an important part of an intelligent transportation system. It mainly includes automatic monitoring of digital cameras to take snapshots of passing vehicles and other moving objects. The recorded images are high resolution static images which can provide valuable clues for police and other security departments, such as a vehicle plate number, the time is passed, its movement path and the drivers face, etc. In prior days, massive amounts of stored images were processed manually, but this required hard work and resulted in poor efficiency. With rapid development of computer technology, automatic license or registration plate recognition software is utilized at an increasing rate in the field with great success. Unfortunately, sometimes we may not discover the license or registration plate of a vehicle because of cloned registration plates, missing registration plate, or because the registration plate can't be recognized. This is why automatic vehicle detection and recognition is becoming the imminent requirement for traffic surveillance application. This technology will save a lot of time and effort for users trying to identify blacklisted vehicle or who are searching for specific vehicles from a large surveillance image database.

Vehicle number plate recognition is an enhanced computer vision technology that connects vehicles without direct human connection through their number plate. Registration plate recognition is the capacity to capture photographic video or images from registration plates and transform the optical data into digital information in real-time. Automatic number plate recognition is a technology that uses optical character recognition on images to read vehicle registration plate to create vehicle location data. The identification step of the license plate is the most critical step in an automatic vehicle detection system. Many of the research has been carried out to overcome many of the problems faced in this area, but there is no general method that can be used for detecting license plates in different places or countries because of the difference in plate style or design. An automatic number plate recognition system involves various steps that are image capturing, digital image processing and plate recognition. Many approaches in plates recognition looks for standards, such as the plate pattern, colors

clusters or still signatures in gray scale. Automatic number plate recognition can be used to store the images captured by the cameras as well as the text from the license plate, with some configurable to store a photograph of the driver. Systems commonly use infrared lighting to allow the camera to take the picture at any time of day or night. Automatic number plate technology must take into account plate variations from place to place.

II. METHODOLOGY

Digital image processing is always an interesting field as it gives improved pictorial information for human interpretation and processing of image data for storage, transmission, and representation for machine perception. Image pre-processing, image data recorded by sensors on a satellite restrain errors related to geometry and brightness values of the pixels. Image enhancement, the goal is to accentuate certain image features for subsequent analysis or for image display. Image segmentation is the process that subdivides an image into its constituent parts or objects. The feature extraction techniques are developed to extract features in synthetic aperture radar images.

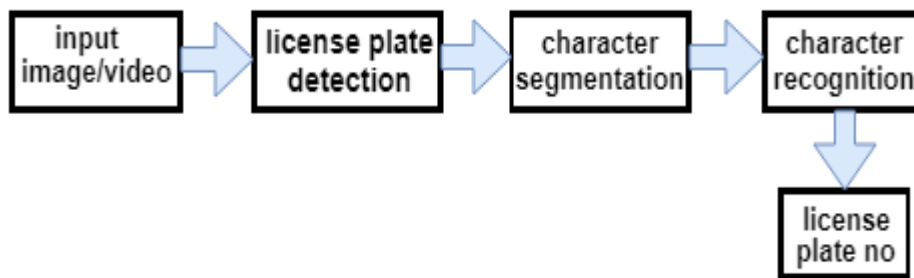


Figure 1: Architecture of ANPR System

Architecture of the license plate detection is shown in figure 1. It consists of three main sections are as follows:

- a) License Plate Detection
- b) Character Segmentation
- c) Character Recognition

a) License Plate Detection: License plate location is an integral and inseparable part of the system as it locates the plate that encloses the license plate numbers. The overall concept depends on the edges of the license plate since there are huge data in the image. The extraction of multiple license plates from an image with a complex background is the main factor. Different processes are performed to extract the license plate. The extractor gives its output to the segmentation part.

I) Edge Statistics and Morphological Process

Edge statistics and morphological process Techniques based upon combinations of edge statistics and mathematical morphology featured very good results. In these methods, gradient magnitude and their local variance in an image are computed. They are based on the property that the brightness change in the license plate region is more remarkable and more frequent than otherwise. Edge based methods alone can hardly be applied to complex images, since they are too sensitive to unwanted edges, which may also show a high edge magnitude or variance .To overcome this situation we used the combination of edge statistics and morphological process. When combined with morphological steps that eliminate unwanted edges in the processed images, the license plate extraction rate is relatively high and fast compared to other methods. Mathematical morphology consists of 2 algorithms, erosion and dilation process. Erosion is a morphological process that can be obtained by dilating the compliment of the black pixels and taking the compliment of the resulting point set.

I) Connected Component Analysis

Connected component analysis (CCA) is a vital technique in binary image processing that scans an already binarized image and labels its pixels into components based on pixel connectivity (either 4-connected or, usually, 8- connected). Once all groups of pixels have been determined, each pixel is labelled with a value according to the component to which it was assigned. Extracting and labelling of various disjoint and connected components in an image is basic to many automated image analysis applications, as many helpful measurements and features in binary objects may be extracted. Spatial measurements such as area, orientation, and aspect ratio (AR) are just few of the features frequently integrated in image processing algorithms for LP detection. Then, using simple filtering techniques, binary objects with measurements that exceed the desired limits can be eliminated in the next algorithmic steps. Text detection from complex background image is also possible in this method. Text regions have been successfully extracted irrespective of the text font and size.

II) Color Based Processing

Color or gray-scale-based processing methods are proposed in the literature for license plate location. Crucial to the success of the color (or gray level)-based method is the color (gray level) segmentation stage. On the other hand, solutions currently available do not provide a high degree of accuracy in a natural scene as color is not stable when the lighting conditions change. Since these methods are generally color based, they fail at detecting various license plates with varying colors. Though color processing shows better performance, it still has difficulties recognizing a car image if the image has many similar parts of color values to a plate region. An enhanced color texture based method for detecting license plates (LPs) in images was presented in. The system analyses the color and textural properties of LPs in images using a support vector machine (SVM) and locates their bounding boxes by applying a continuous adaptive mean shift (CAMShift) algorithm. The combination of CAMShift and SVMs produced efficient LP detection as time-consuming color texture analysis for less relevant pixels were restricted, leaving only a small part of the input image to be analysed. Yet, the proposed method still encountered problems when the image was extremely blurred or quite complex in color. An example of time-consuming texture analysis is presented in, where a combination of a kd-tree data structure and an approximate nearest neighbour was adopted.

III) Hough Transform

In the method that uses Hough transform (HT), edges in the input image are detected first. Then, HT is applied to detect the LP regions. In the authors acknowledge that the execution time of the HT requires too much computation when applied to a binary image with great number of pixels. As a result, the algorithm they used was a combination of the HT and a contour algorithm, which produced higher accuracy and faster speed so that it could be applied to realtime systems.

IV) Wavelet Based Transform

A wavelet transform-based method is used in for the extraction of important contrast features used as guides to search for desired license plates. Applying wavelet transform to an image and projecting the acquired detail information, a wave crest that indicates position of a license plate will be generated. Propose a multiwavelet with EMD analysis for identifying the license plate. It is useful for detecting license plate under various conditions from various countries. The major advantage of wavelet transform, when applied for license plate location, is the fact that it can locate multiple plates with different orientations in one image and detect blurry images.

b) Character Segmentation: License plate segmentation is also known as the character separation. After the license plate images are extracted from a picture determine individual character in the license plate to recognize it. In the segmentation of license plate characters, license plate first converted into a binary image and then characters are divided into segments. License plate segmentation is useful to outline the individual character. License plate segmentation which is referred to as character isolation takes the region of interest and attempts to split it into individual characters.

I) Projections and Binary Algorithms

Reviewing the literature, it was evident that the method that exploits vertical and horizontal projections of the pixels is the most common and simplest one. Obtaining a binary image, the idea is to add up image columns or rows and obtain a vector (or projection), whose minimum values allow us to segment characters. CCA is also intensely involved in character segmentation, in conjunction with binary object measurements such as height, width, area and orientation. In other cases, CCA is supported by either VQ or mathematical morphology. Usually, the CCA method labels the pixels into components based on 8-neighborhood connectivity, but the binarized image is decomposed into 4- neighbor connected components.

II) Histogram and Morphological Process

The work in proposed a novel adaptive approach for character segmentation and feature vector extraction from seriously degraded images. An algorithm based on the histogram automatically detects fragments and merges these fragments before segmenting the fragmented characters. A morphological thickening algorithm automatically locates reference lines for separating the overlapped characters. A morphological thinning algorithm and the segmentation cost Calculation automatically determine the baseline for segmenting the connected characters. Basically, this approach can detect fragmented, overlapping, or connected characters and adaptively apply one of three algorithms without manual fine tuning. The results are very promising and encouraging, indicating that the method could be used for character segmentation in plates with not easily distinguishable characters during off-line operation, but since the algorithm is computationally complex, it cannot be proposed for real-time LPR.

c) Character Recognition: Character recognition is the main part of the recognition process which decides the accuracy and recognition rate of the system. This recognition involves about to recognize the characters of the license plate character and numbers. Before the recognition the license plate characters are normalized. Normalization is to improve the characters into a block containing no added with spaces or pixels in all four sides of the characters. In this stage the license plate images that are taken out from the license plate image to be recognized. It is actually the process of the character recognition of the license plate characters.

I) Classifiers (Statistical/Hybrid Classifiers)

When hidden Markov models (HMMs) are employed, the recognition begins with pre-processing and parameterization of the ROIs detected in the previous phase (character segmentation). Based on, the recognition result in was reported to be 95.7% complex procedure of pre-processing and parameterization for the HMMs: one for every character. The authors also reported that the width of the plate in the image after rescaling lies between 25 and 600 pixels). This reveals the necessity for good character analysis when implementing HMMs, which poses a restriction on the effective distance of the plate recognition system. This prerequisite is also featured in, where the recognition results reached 92.5%. Furthermore, the authors in designed a system that implements SVMs and reports an impressive average character recognition rate of 97.2%. Character recognizers were applied to recognize upper characters, upper numerals, lower characters, and lower numerals on the plate.

II) Template Matching

The template matching technique is a suitable technique for the recognition of single-font, not-rotated, and fixed-size characters. It is a technique to identify the segmented character by finding the small part in image that match with the template this method need character image as their template to store in the database. Template matching requires a library of a wide variation of character fonts and thicknesses. In order to create the templates for each character do the following operation: For every white pixel we insert the value 1 and for every black pixel 0. We do this for all the 50 training samples for each character and calculate the weights to get the template. Template matching is an effective algorithm for recognition of characters. The character image is compared with the ones in the database and the best similarity is measured. Calculate the matching score of the segmented character from the templates of the character stored algorithm. Compare the pixel values of the matrix of segmented character and the template matrix, and for every match we add 1 to the matching score and for every miss-match we decrements 1. This has done for all pixels. The match score is generated for every template and the one which gives the highest score is taken to be the recognized character. The character template that best matches the input characters are then displayed.

III) Artificial Neural Network (ANN)

Artificial Neural Network (ANN) sometimes known as neural network is a mathematical term, which contains interconnected artificial neurons. Several algorithms such as are based on ANN. In two layer probabilistic neural network with the topology of 180-180- 36. The character recognition process was performed in 128ms. In multi layered perceptron (MLP) ANN model is used for classification of characters. It contains input layer for decision making, hidden layer to compute more complicated associations and output layer for resulting decision.

IV) Kernel Method

Kernel methods, including support vector machines (SVMs) primarily and kernel PCA, kernel FDA, etc., are receiving increasing attention and have shown superior performance in pattern recognition. Kernel methods use a kernel function to represent the inner product of two patterns in expanded nonlinear feature space (possibly of infinite dimensionality). Both training and classification are performed via the kernel function without explicit access of the nonlinear space. An SVM is a binary classifier with discriminant function being the weighted combination of kernel functions over all training samples. The weights (coefficients) are learned by quadratic programming (QP) with the aim of maximizing the margin in feature space. After learning, the samples of non-zero weights are called support vectors (SVs), which are stored and used in classification. The maximal margin criterion of SVM learning leads to good generalization performance, but the resulting large number of SVs brings about heavy storage and computation in classification.

III) CONCLUSIONS

Among license plate detection methods, Edge Statistics and Morphological process method gives good result. It gives an impressive rate of 99.6%. For character segmentation, high segmentation rate is shown by Connected Component Analysis and Markov Random Field methods. Accurate results can be achieved for character recognition through Deep neural network, even though it takes more time. Some of the works uses artificial neural network based methods for performing both segmentation and character recognition. MATLAB software is mainly used for implementing the image sample which is experimently for the distinction of the system.

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DETERMINANTS OF TOTAL ANNUAL INCOME OF PADDY FARM HOUSEHOLDS IN MYANMAR**Nilar Aung¹, Theingi Myint², Yu Yu Tun³ and NyeinNyein Htwe⁴**¹Research Based PHD Candidate, Department of Agricultural Economics, Yezin Agricultural University, Naypyitaw, Myanmar, 15013²Professor and Head, Department of Agricultural Economics, Yezin Agricultural University, Naypyitaw, Myanmar, 15013³Professor, Department of Agricultural Economics, Yezin Agricultural University, Naypyitaw, Myanmar, 15013⁴Professor and Head, Department of Agricultural Extension, Yezin Agricultural University, Naypyitaw, Myanmar, 15013**ABSTRACT**

Paddy is the country's primary agricultural product, which accounts for nearly 43 percent of the total agricultural production value. About 70 percent of the country's population live in rural areas and their livelihood drive the agriculture sector as an important growth engine of rural development. Various policies have been taken by the Myanmar Government to encourage the increase of production and productivity of paddy. However, productivity is still low with millions of tons. The low productivity of farming will cause low income resulting in the weak financial position of farmers. Fluctuating paddy production and volatile paddy price are the factors that negatively affect farmers and at the same time also harm consumers. The notion of farm income falls short of reflecting farmer's total income. Income from both farm and off-farm sources constitutes a farmer's total income. A complete knowledge on farmer's income from both the two sources would inform about the true nature of economic condition of farmers. Therefore, this study aims to analyze the factors affecting total income of paddy farm households in Myanmar. Study areas were selected based on the MADB (Myanmar Agricultural Development Bank) in debts of farmers in ten townships. Purposive sampling and simple random sampling techniques were used in selecting respondents. Descriptive analysis and multiple regression analysis were used to determine the objective of the study. The result showed that household size, household head's education, loan for monsoon paddy, income sources, total monsoon paddy production, total variable cost and household health expenditure were the significant factors that influenced the total annual income of the paddy farm households in Myanmar. The study identified that total monsoon paddy production and income sources were important factors for farm households to increase total annual income, therefore; they were the critical factors for the total annual income of paddy farm households in Myanmar. Farmers should effort crop diversification to get sustainable crop income with the supports of extension service, irrigation facilities and stable market for the paddy production and promoting job opportunities and capacity building programs for rural households to participate in nonfarm activities that should be practically of use as an agricultural financing alternatively.

Keywords; Farmers, Total annual income, Paddy production, MADB loan, Myanmar

INTRODUCTION

One of the most important sectors for the country's economy in Myanmar is the agricultural sector; agricultural products are Myanmar's second-largest export item. One-third of the country's GDP normally come from this sector accounting for 20 to 30 percent of total export earnings, and employs more than 70 percent of the workforce. Paddy is the country's primary agricultural product, which accounts for nearly 43 percent of the total agricultural production value. It is also a key commodity for domestic food security as well as a generator for farmers' income. In Myanmar, 70 percent of the country's population lives in rural areas and their livelihood drive the agriculture sector as an important growth engine of rural development (DOP, 2020). Paddy is grown mostly in lower Myanmar especially in Ayeyarwaddy and Yangon Region. Deep-water paddy is usually grown in areas of some restricted belts in Ayeyarwaddy and Bago Region and it is also cultivated in Central Dry Zone particularly in Sagaing and Mandalay Region irrigable farmland. Out of the total crop sown area of 12.11 million hectares, about 15% is under irrigation. The rest of the land has to rely on the rain for paddy production (DOP, 2020).

Various policies have been taken by the Ministry of Agriculture, Livestock and Irrigation to encourage the increase of production and productivity of paddy. In order to cover the higher production costs for farmers, the government increased the floor prices to 520,000 MMK for every 100 baskets (about USD 185/MT, 1 basket is 20.86 lb) of paddy harvested in the 2020 monsoon that had a 14 percent moisture content and met established minimum quality criteria. Only the farmers who pay back their previous loans from Myanmar Agricultural

Development Bank are eligible to apply for the coming year. They must also show the land certificate (Form-7). The government provides seasonal farm loans and short term and long-term credit for agricultural crops. However, the results have not reached what was expected.

Productivity is still low with millions of tons. This decrease was due to lack of sufficient water, increased pest and disease incidence. The low productivity of farming will cause low income that result in the weak financial position of farmers whereby they cannot support their own economic activities. Sustainability of paddy farming is tied to income from farming. Income is determined by the amount of production and the cost of production. Various problems faced by farmers in effort to increase farmers’ income from their paddy farming have been mentioned by the researchers. Fluctuating paddy production and volatile paddy price are the factors that negatively affect farmers and at the same time also harm consumers. Furthermore, the situation is causing a gap between production and consumption. The notion of farm income falls short of reflecting farmer’s total income. Income from both farm and off-farm sources constitutes a farmer’s total income. A complete knowledge on farmer’s income from both the two sources would inform about the true nature of economic condition of farmers.

Several previous studies determined factors affecting farm income such as Mirotschie and Taylor (1993), Mishra et al. (2002), Kamanga et al. (2009), Zou et al. (2009), Ding et al. (2011), and Korir (2011). Each previous study discovered a new different set of factors affecting farm income. The sets of factors had similarities and differences in terms of variables that were used by previous studies. The scope of previous studies focused on farm income that was obtained by farmers from cultivation not only paddy but also from other crop productions. Some previous studies focused and found information on socio-economic factors affecting paddy farm income. However, many socio-economic factors in farm households have not been explored yet in the prior studies. It will be many opportunities to construct several new sets of factors affecting farmers' total annual income according to the macro and micro economic environment of the rural sector. Therefore, this study aims to analyze the factors affecting total income of paddy farmers in Myanmar.

METHODOLOGY

A) STUDY AREA

Study areas were selected based on major monsoon paddy production areas and high inability to loan repayment in the specific regions. The study was carried out in the ten townships which are Lewe and Tatkone township in Naypyitaw territory, Yamethintownship and Pyawbwe township in Mandalay Region, Yedashe township and Thanatpin township in Bago Region, Hlegu and kyunkyankone township in Yangon Region, Mawlamyinegyunn and Labutta township in Ayeyarwady Region. Farmers in each township were selected randomly based on the situation of the MADB loan indebt of the farmers in particular. Numbers of selected farmers in the specific study areas are shown in Table 1.

Table 1: Numbers of selected farmers in the specific study areas

No.	Township	No. of respondent	No.	Township	No. of respondent
1	Lewe	61	6	Thanapin	69
2	Tatkon	61	7	Hlegu	73
3	Yamethin	64	8	Kungyangon	69
4	Pyawbwe	66	9	Mawlamyinegyunn	61
5	Yedashe	64	10	Lubutta	61
Total					649

Source: Field Survey, 2022

B) DATA COLLECTION

Data to be used in the study were obtained from both primary and secondary sources. Primary data were collected through direct observations and personal interviews with structured questionnaire. Regarding the personal interview, selected enumerators in the study areas were trained with video communication by using Zoom application and then conducted the face-to-face survey in respective study townships. Purposive sampling and simple random sampling techniques were used in selecting respondents. Collected data was sent by Viber application, e-mail and hard copies of collected questionnaire. Data consistency checking together with enumerators and data analysis by SPSS Statistics 26 was done.

Secondary datacollection was conducted from the literature sources from Myanma Agriculture Development Bank (MADB), Department of Agriculture (DOA), Department of Agricultural Land Management and Statistics (DALMS) under Ministry of Agriculture, Livestock and Irrigation (MOALI), Central Statistical Organization (CSO) and various government organizations.

C) DATA ANALYSIS

Descriptive analysis and multiple regression analysis were used to determine the objective of the study. The multiple regression model was specified as;

$$Y = \alpha_0 + \alpha_1 X_1 + \alpha_2 X_2 + \alpha_3 X_3 + \alpha_4 X_4 + \alpha_5 X_5 + \alpha_6 X_6 + \alpha_7 X_7 + \alpha_8 X_8 + \alpha_9 X_9 + \epsilon_i$$

Y = Household's total annual income (MMK/year)

α_0 = Constant term

α_i = Parameters to be estimated, X_i = vector of explanatory variables,

ϵ_i = Error term

X_1 = Household size of selected farmers

X_2 = Household head's age of the selected farmers

X_3 = Household head's education

X_4 = MADB seasonal loan of monsoon paddy

X_5 = Income sources

X_6 = Total monsoon paddy production

X_7 = Cash crops grown areas

X_8 = Total variable cost

X_9 = Household health expenditure (%)

RESULTS AND DISCUSSIONS

Socioeconomic Condition of Selected Households in the Study Areas

Household Size of the Respondents

Household size was measured in number of members of farm family. Regarding to the household income, it's definitely related to the income earner household members who work in the farming activities or nonfarm activities for the household income composition. The table 2 mentions that the average size of the household was 5 persons, maximum is 12 persons and minimum is only 1 person. This indicates that most households have enough family labor to assist with farming operations and off-farm income activities.

Table 2: Household size of the sample households in the study areas (N= 649)

No.	Townships	Regions	Average	Maximum	Minimum	SD
1	Lewe	Naypyitaw	5	9	2	2
2	Tatkon		5	8	1	2
3	Yamethin	Mandalay	5	10	2	2
4	Pyawbwe		6	12	2	2
5	Yedashe	Bago	4	8	2	1
6	Thanapin		5	12	2	2
7	Hlegu	Yangon	5	10	2	2
8	Kungyangon		4	9	1	2
9	Mawlamyinegyunn	Ayeyawwaddy	5	9	1	2
10	Lubutta		4	9	1	1
	Total		5	12	1	2

Source: Field Survey, 2022

Household Head's Age

Age of paddy farmer is argued that older farmers were wiser and more responsible than younger farmers in general. On the other hand, younger farmers were more knowledgeable and independent concerning the income earning activities.

According to Table 3, only few of the farmers in the study area are in young age as 22 years old. This means that only few young generations were into paddy production in respective regions. The table 3 also indicates that the farmers were in average age of 54. Farmers in this age level constitute the energetic level and were likely to work effectively to increase their crop yields leading to higher income. Regarding the respective

townships, the average age of households' head was not too different. The eldest age was above 75 years and the minimum age between 22 and 33 years.

Table 3: Age of households' head of selected households in the study areas (N= 649)

No.	Townships	Regions	Average	Maximum	Minimum	SD
1	Lewe	Naypyitaw	52	75	27	12.6
2	Tatkon		50	71	27	11.2
3	Yamethin	Mandalay	55	72	30	11.3
4	Pyawbwe		58	72	32	12.9
5	Yedashe	Bago	52	76	22	12.0
6	Thanapin		55	70	22	13.2
7	Hlegu	Yangon	52	78	28	11.3
8	Kungyangon		53	76	29	11.1
9	Mawlamyinegyunn	Ayeyawwaddy	55	74	33	11.0
10	Lubutta		55	75	27	11.9
	Total		54	78	22	11.3

Source: Field Survey, 2022

Household Head's Education

The level of education of the respondents was important for decision making of farming system and marketing practices. In this study, education level of the sample respondents was categorized into five groups: (1) "Monastery education" referred informal schooling although they could read and write; (2) "Primary level" referred formal schooling up to 5 years; (3) "Middle level" intended formal schooling up to 9 years; (4) "High school level" referred the formal schooling up to 11 years and (5) "Bachelor level" received degree from college or university. The education level of farmers was assumed to determine decision making of their farming system management and income earning activities, with the assumption as the higher levels of education may have higher repayment rates.

In general, the education level of household head's was showed that 29% of the household head had primary education, 37% had middle education, 16% had high education, and only 4% was graduated. And then, 14% of them had no formal education means that the old generation studied at monastery. 80% of the household heads' education are under high school level. Therefore, the household heads from the study areas had the most in middle educational level among five categories according to the results showed in Table 4. The education level of household heads may affect on management of their income improvement.

Table 4: Educational level of household heads in the study areas (N= 649)

No.	Townships	Regions	Percentage				
			Monas-tery	Primary	Middle	High	Bachelor
1	Lewe	Naypyitaw	8	16	52	16	7
2	Tatkon		11	16	26	31	15
3	Yamethin	Mandalay	8	30	49	11	2
4	Pyawbwe		8	28	42	20	2
5	Yedashe	Bago	5	24	45	20	6
6	Thanapin		28	28	33	9	2
7	Hlegu	Yangon	4	39	32	19	6
8	Kungyangon		11	56	23	5	4
9	Mawlamyinegyunn	Ayeyawwaddy	32	26	29	12	1
10	Lubutta		28	18	39	13	2
	Total		14	29	37	16	4

Source: Field Survey, 2022

Monsoon Paddy Production Areas and Seasonal Loan Received by Farmers

Monsoon paddy production areas and seasonal loan received by farmers were shown in Table 5. Average monsoon paddy growing area in the study area was 4.46 ha, maximum area was 85.02 ha and minimum area was 0.04 ha. Myanmar Agricultural Development Bank disbursed the seasonal loan to the monsoon paddy farmers. Loan payment rate was 370,500 MMK /ha or 150,000 MMK/ac and maximum acre was 10 acres. Therefore, whoever owned more than 10 acre receives not more than 1.5 million. In the study area, average loan amount of the farmers was about 1 million, maximum loan amount was 1.5 million and minimum loan amount was about 0.15 million.

Table 5: Monsoon paddy production areas and seasonal loan received in 2019 (N= 649)

No.	Townships	Monsoon paddy grown area (ha)			Amount of seasonal loan received (000'MMK)		
		Avg.	Max.	Min.	Avg.	Max.	Min.
1	Lewe	2.03	8.10	0.40	890	1,500	150
2	Tatkon	3.73	20.24	0.81	1,089	1,500	300
3	Yamethin	2.09	8.10	0.40	835	1,500	150
4	Pyawbwe	2.21	8.10	0.40	610	1,500	150
5	Yedashe	3.71	14.17	0.61	1,130	1,500	300
6	Thanapin	2.89	12.15	0.81	980	1,500	300
7	Hlegu	4.37	32.39	0.40	1,172	1,500	150
8	Kungyangon	6.93	56.68	0.40	1,222	1,500	150
9	Mawlamyinegyunn	2.63	7.29	0.40	931	1,500	150
10	Lubutta	14.00	85.02	0.81	1,407	1,500	300
	Total	4.46	85.02	0.40	1,026	1,500	150

Source: Field Survey, 2022

Note: Loan payment rate= 370,500 MMK /ha (150,000 MMK/ac)

Average Crop Revenue, Total Variable Cost (TVC) and Net Crop Income of Selected Households

Table 6 exhibits the average crop revenue, total variable cost and net crop income of sample respondents. Regarding to this, the farming had the return in average 5,164,000 MMK on the total variable cost of 2,673,000 MMK. The selected households earned in average 2,490,000 as crop net income. Among the study areas, Tatkon township had the highest profitability from crop production (7,185,000 MMK) and Pyawbwe township had faced in loss nearly 300,000 MMK.

Table 6: Average crop revenue, total variable cost (TVC) and net crop income of selected households (000' MMK)

No.	Township	Avg. crop revenue	Avg. TVC	Avg. crop net income
1	Lewe	3,659	1,640	2,018
2	Tatkon	10,902	3,716	7,185
3	Yamethin	3,150	1,043	2,106
4	Pyawbwe	2,005	2,299	-294
5	Yedashe	5,445	4,042	1,402
6	Thanapin	4,003	2,257	1,746
7	Hlegu	5,072	3,491	1,580
8	Kungyangon	5,348	2,742	2,606
9	Mawlamyinegyunn	3,335	1,839	1,495
10	Lubutta	8,719	3,664	5,054
	Average	5,164	2,673	2,490

Source: Field Survey, 2022

Number of Jobs Working By Members of the Paddy Farm Households

Concerning a source of income, table 7 describes the number of jobs working by members of the paddy farm households. There were one to eight occupational jobs. About half of the paddy farm households had only one kind of job. 29 % of them had two occupational jobs and 11% had three types of occupational job. Only 0.15% of paddy farm household had worked for 8 kinds of occupational job. Regarding to this, half of the farm households had been working in one kind of job especially in agricultural farming.

Table 7: Numbers of jobs working by paddy farm household in ratio (%) (N= 649)

No	Township	Occupational job (%)						
		One	Two	Three	Four	Five	Six	Eight
1	Lewe	49	36	10	5			
2	Tatkon	54	23	13	5	3	2	
3	Yamethin	64	25	8	2	2		
4	Pyawbwe	41	36	17	5	2		2
5	Yedashe	65	23	9		2		
6	Thanapin	42	36	17	2	2		

7	Hlegu	49	28	10	10	3		
8	Kungyangon	59	30	10	1			
9	Mawlamyinegyunn	57	23	13	4		3	
10	Lubutta	59	31	7	3			
	Total	54	29	11	4	1	.46	.15

Source: Field Survey, 2022

Household’s Annual Income

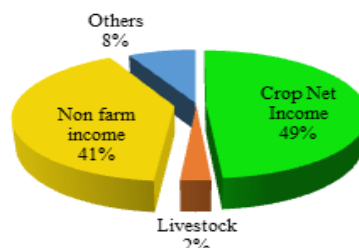


Figure 1: Household’s annual income composition of selected farmers

Figure 1 shows the household’s annual income composition. In the figure, total crop net income shared about 49% to household annual income, and then 41% was non farm income of the household members who were working in the other sectors. In addition, 2% was composed by livestock earning and 8% was from other income sources. It means that most of the selected farmers mainly relied on the agricultural income and off farm income that were more or less similar ratio for their livelihood in the study areas.

Household’s Annual Expenditure

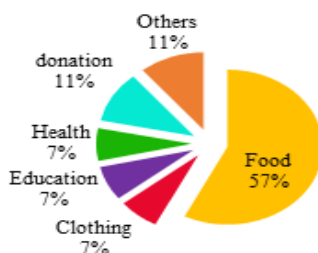


Figure 2: Household’s annual expenditure compositions of selected farmers

According to figure 2, the household used 57% of cost for their foods, 7% for clothes, 7% for education, 7% for health, 11% for donation, 7% for clothing and the left 11% for general. Therefore, it can say that the paddy growing farmers were poor because the share on their income was about 57% for food consumption. According to the data from Knoema (2018), the average share of food cost in the income was 56.11 % in Myanmar in 2018 and it was the top three highest in the world after Nigeria and Ethiopia.

Year-Round Crops Grown by Farmers in the Study Area In 2019

The farmers grew different crops in their farm year-round. Crops grown by selected farmers in their farm year-round are shown in the table 9. Generally, 22% of farmers grew only monsoon paddy in a year and other 88% of them grew crop diversification such as 25% of them grew monsoon paddy and summer paddy, 10% of them grew monsoon paddy, summer paddy and other crop for instant horticulture crop and sesame, groundnut, sunflower, etc., 39% of them grew monsoon paddy and legumes or other crop for example sesame, sunflower, cotton and sugarcane and 4% of them grew monsoon paddy and horticulture crop for instant chili, onion, grape, tomato. Respondent farmers in Laputta Township grew only monsoon paddy because they had only rain fed farm land and no more irrigated area in the township. Furthermore, respondent farmers in Pyawbwe Township grew monsoon paddy and legumes or sesame, groundnut, sunflower, corn, cotton, etc. Crop diversification is a strategic way of risk management for climate change and one of the factors of farm income stability and also farm household income.

Table 9: Year-round crops grown by farmers in the study area in 2019 (N= 649)

No.	Township	Percentage				
		MP-SP	MP-SP-others	MP-Legumes/others	MP & horticultural crops	MP only
1	Lewei	10	10	52	15	13

2	Tatkon	15	3	43	11	28
3	Yemethin	7	16	61	6	10
4	Pyawbwe	0	0	100	0	0
5	Yedashe	77	12	2	0	9
6	Thatnatpin	0	0	92	0	8
7	Hlegu	32	32	29	1	6
8	Kungyangon	47	3	0	8	42
9	Mawlamyinegun	64	24	12	0	0
10	Laputta	0	0	0	0	100
Total		25	10	39	4	22

Source: Field Survey, 2022

Note: MP=Monsoon Paddy, SP=Summer Paddy, others=sesame, sunflower, groundnut, cotton, sugarcane, betel leaf, corn, etc.

Determinants of Household’s Total Annual Income of Selected Farmers

According to the function of factors affecting the total annual income in table 10, the coefficient of household size (-0.061) was negatively signed and highly significant at 90% level of confidence. The family members of farming household seem to be the affecting factor of the total annual income. Most of the household have been the students and under age 5 causing high dependency ratios; therefore, it seems much in expenditure of the selected households.

The coefficient of household head's education (0.081) was positively and highly significant at 95% level of confidence. Household head's education helps households to improve their economic welfare. The positive impact of education tends to bring higher returns for poor rural households (Pede et al. 2012).

The coefficient of MADB seasonal loan of monsoon paddy (-0.139) was found negatively signed and highly significant at 99% level of confidence. Therefore, loan received by household for monsoon paddy production negatively influences to the farmers' total annual income implying that Internal Rate of Return (IRR) is lower than the cost of the loan which is still high in developing countries. The income sources for selected farmers were also highly significant factor of total annual income regarding the coefficient (0.319) at 99% level of confidence. If farmers grow not only paddy, but also other crops in other seasons, it will be effectively impact on the total annual income. Moreover, households can earn from other sources as the non farm income, it will be contribute to the cost of paddy production, and then it can be increasing output level of the paddy of their farm. Consequently, it can be higher for farmers' total annual income.

The total monsoon paddy production had a strong relationship with farmers' total annual income due to the coefficient (0.543) at 99% level of confidence. If paddy productivity is high, total annual income of the paddy farm households will be high. It means that total paddy yield will lead to increase the income level as total monsoon paddy production is one of the important factors for the total annual income.

The coefficient of total variable cost (0.133) was positively signed and highly significant at 95% level of confidence. If total variable cost is high, total paddy production of the household will be high. It means that total variable cost of crop production will lead to increase the production level and total annual income as the total variable cost of production is an important factor affecting the household’s total income. The household’s expenditure on health effected on total annual income of farm households because of the coefficient (-0.065) at 95% level of confidence. If the members of the household are healthy and wouldn’t spend the extra cost for health, the household’s total annual income will be increased.

Table 10: Multiple regression analysis of determinants of total annual income of selected paddy farm household N=581

Independent variable	Un-standardized coefficient (B)	Standardized coefficient (β)	t-value	Sig.
Constant	251528.314		0.209	0.835
Household size	-201418.752	-0.061*	-1.746	0.081
Household head’s age	-20127.997	-0.040 ^{ns}	-1.140	0.255
Household head’s education	451875.674	0.081**	2.298	0.022
MADB seasonal loan of monsoon paddy	-1.181	-0.139***	-3.395	0.001
Income source	1.856	0.319***	9.043	0.000

Total monsoon paddy production	5134.197	0.543 ^{***}	9.572	0.000
Cash grown area	29062.159	0.018 ^{ns}	0.537	0.591
Total variable cost	0.307	0.133 ^{**}	2.538	0.011
Household health expenditure	-45616.742	-0.065 ^{**}	-2.036	0.042

Note: Adjusted $R^2 = 0.424$, $R^2 = (0.433)$, $F = (48.403)$, $Sig = 0.000$,

Durbin-Watson = 1.628, ^{***} $p < 0.01$, ^{**} $p < 0.05$, ^{*} $p < 0.01$

^{***}, ^{**} and ^{*} are significant at 1%, 5 % and 10% level respectively and ^{ns} = not significant.

CONCLUSION AND POLICY IMPLICATION

This study investigated the effect of farmers' total annual income in Myanmar using multiple linear regression approach, which allows parameters to vary across MADB loan received respondents. Primary data of 649 rural households across ten townships were used. The result showed that household size, household head's education, loan for monsoon paddy, income sources, total monsoon paddy production, total variable cost and household health expenditure were the significant factors that influenced the total annual income of the paddy farm households in Myanmar. The household size had a negative effect on total annual income. The sources of income and total paddy yield were the main factors affecting total annual income of selected farmer. The study also identified that MADB loans for monsoon paddy had a relationship with total annual income negatively at highly significant level. There was a positive effect of household head education and total variable costs on farmers' total annual income and a negative effect of household health expenditure was found on the total household income. A policy implication here is that total productivity of paddy should be enhanced through improved production technologies, and enough agricultural financing in order to increase the total annual income. Farmers should effort crop diversification to get sustainable crop income with the support of extension service, irrigation facilities and stable market for the paddy production. Finally, the positive effect of income sources in this research also implies that promoting job opportunities for rural households is a key factor for the rural development program. The participation in nonfarm activities of household members should be practically paid attention by the capacity building program as vocational trainings in rural areas because nonfarm employment was found to be a major factor contributing to farming household total income in Myanmar.

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APPLICATIONS OF INDUSTRY 4.0 IN SERVICE/MANUFACTURING SECTOR

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ABSTRACT

Industry 4.0 is a concept that represents Artificial Intelligence, digitization, cloud computing, Internet of Things and Big Data to gain competitive advantages in domestic and global markets. Most research on this topic focuses on production scheduling and examines the effects in the smart factory domain. There is a need of research on the applications of the industry 4.0 enabling technologies in manufacturing processes. The roadmap toward I-4.0 is complex and multifaceted, as manufacturers seek to transition towards the new and emerging technologies, while retaining the operational effectiveness and a sustainability focus. This study focused on applications of industry 4.0 in the area of Medical, Food supply chain & Automotive Sector by presenting a critical evaluation with impacting the next generation of manufacturing challenges and various barriers for implementation. Further-more research gaps and the future work needed will be discussed.

Keywords: Industry 4.0; Manufacturing; Internet of Things (IoT); Blockchain, Big Data.

1. INTRODUCTION

Germany developed the concept of Industry 4.0 (I4.0) in 2010 as a plan to increase corporate production competitiveness, which had been harmed by emerging economies with low labour costs. The goal was to provide a cutting-edge industry that was close to the client, with customized and turnkey goods and solutions, and shortening manufacturing and service times. The use of Information and Communication Technologies (ICTs) in manufacturing, business, and industrial processes made this possible. The so-called Key Enabling Technologies are the most important Industry 4.0 ICTs (KETs). Cloud computing, big data, cybersecurity, robots, artificial intelligence, additive manufacturing, augmented and virtual reality, and other technologies are among them.

"A name for the current trend of automation and data exchange in manufacturing technologies, encompassing cyber-physical systems, the Internet of things, cloud computing and cognitive computing, and constructing the smart factory," according to the definition of Industry 4.0. It is marked by increased automation over the third industrial revolution, the bridging of the physical and digital

1

worlds through cyber-physical systems, enabled by Industrial IoT, a shift from a central industrial control system to one where smart products define the production steps, closed-loop data models and control systems, and product personalization/customization.

Industry 4.0 technology have become ubiquitous. Even small organizations and industries have begun to employ several of these technologies since the outbreak of the COVID-19 epidemic. As a result, a robust management structure is required to make the best use of these technologies. This research intends to investigate the important technologies of Industry 4.0 that can be used to improve the performance of a manufacturing-based industry's management systems. Most of Industry 4.0 initiatives are early-stage projects with a limited scope. In actuality, the majority of digitization and digitalization initiatives are focused on third and even second industrial revolution technology and aims.

In essence, the technologies that enable Industry 4.0 make use of existing data as well as a plethora of new data sources, such as data from connected assets, to gain efficiencies on multiple levels, transform existing manufacturing processes, create end-to-end data streams across the value chain, and realise new services and business models.

1.2 Organization of Paper

This paper is divided into various sections. Section 1 has covered introduction of the entire topic. Section 2 covers literature survey part in which Research findings and Research gaps are assigned with the sub-sections. Section 3 covers case studies of the Applications of Industry 4.0 in Manufacturing/Service Sector. Section 4 is conclusions drawn on the basis of study and future scope of current study. At the end, references of the articles selected are provided.

2. LITERATURE SURVEY

Literature survey for this report using Scopus database peer reviewed research articles only. Conference proceedings and thesis work are not included in this study. Research papers are selected from 2017 onwards. Articles are selected from reputed Journals like Electronics, Biosensors, Journal of Advanced Agricultural Technologies published by reputed publishers by like Taylor and Francis, Springer, Elsevier etc.

30 articles were selected on the basis of TAK (Title, Abstract and Keywords) principle after the scanning process. Upon further reading, 15 papers were shortlisted and summary of the contributions of the shortlisted articles are summarized in the below table, which highlights the key factors investigated, findings of the article and research gaps. Table 2.1 describes objective of the papers selected, year in which they are published, country and applications for Industry 4.0.

Sr. No	Author	Objective of the paper	Year	Country
1	Rai et.al.	To Determine about the Machine learning in manufacturing and industry 4.0 applications in it.	2021	United Kingdom
2	Haleem et.al.	To provide a thorough study of various Industry 4.0 technologies for improving the material quality and manufacturing systems.	2021	India
3	Ashima et.al.	This research-based study aims to efficiently identify and utilize Industry 4.0 technologies to improve Additive Manufacturing process's reliability and mass 3D print smart materials for manufacturers globally.	2021	India
4	Kayikci et.al.	To investigate the suitability of blockchain technology in resolving major challenges, such as traceability, trust, and accountability in the food industry.	2020	United Kingdom
5	Sepasgozar et.al.	To study the practical applications of implementing 3D Printing over the past decade and suggest a direction for future research work.	2020	Australia
6	Parmar et.al.	The main aim of the paper is to depict the present and futurescenarios related to the application of Industry 4.0 concepts to polymer composites manufacturing.	2020	UAE
7	Zheng et.al.	The purpose of this paper is to investigate how much the Italian manufacturing companies are ready to be involved in the industry 4.0 Paradigm.	2019	Italy
8	Ancarani et.al.	The main aim of the study is to shed light on strategic decisions that facilitate small and medium enterprises implementation of Industry 4.0 initiatives.	2019	Germany
9	Javaid et.al.	The purpose of this study is to understand the role of Industry 4.0 in the medical field and identify research status along-with future applications.	2019	India
10	Fathi et.al.	The purpose of this paper is to demonstrate how small manufacturing firms can leverage their Information Technology resources to develop the lean-digitized manufacturing system that offers sustained competitiveness in the industry 4.0 era.	2019	Sweden
11	Lee et.al.	This section describes the application and implementation of the Industrial AI architecture framework to machine tool spindle of a Computer numerical control (CNC) machine.	2018	UnitedStates
12	Canetta et.al.	To Develop a Digitalization Maturity Model for the manufacturing sector using Industry 4.0.	2018	Switzerland
13	Sachdeva	A framework is developed to identify various enablers of	2017	India

	et.al.	industry 4.0 in manufacturing industry and also design & test the model using theories of diffusion.		
14	Thuemmler et.al.	Application of Industry 4.0 Design Principles in Future Asthma Management.	2017	Switzerland
15	Losch et.al.	To develop an Industry 4.0-based Repair Concept for Structural CFRP Components in the Automotive Sector.	2016	Germany

2.1 RESEARCH FINDINGS

Rai et.al. (2021) have discussed that Computer vision-based part inspection and process monitoring is one of the most high-impact machine learning application areas in the manufacturing industry. High throughput part inspection can be achieved by using low-cost sensors like RGB cameras and ML-based algorithms. Computer vision (images and video)-based techniques combined with machine learning can allow for product monitoring throughout the manufacturing process. A computer vision-based technique can also be used to provide high-quality continuous process monitoring.

Haleem et.al. (2021)

Sepasgozar et.al. (2020) Scopus and China National Knowledge Infrastructure were chosen as key databases to perform interpretivist research in order to evaluate 3DP methods (CNKI). Scopus is an international database of high quality, and CNKI is a large database that covers Chinese scholarly papers. Different keywords were utilised to find relevant publications in the construction and structural design domains, such as building information modelling (BIM), scanner, and 3DP.

Ancarani et.al. (2019) discussed about the Smart devices in automobiles that are progressively embedding computational capabilities, interacting with the environment, and storing and sharing data on their status and use throughout their lives. Smart tyres are an excellent example of this. To evaluate and monitor tyre performance, well-known tyre manufacturers are experimenting with IoT-connected sensors and software platforms.

Zheng et.al. (2019) survey's findings show that the Italian manufacturing enterprises are at various stages of their path toward the I4.0 paradigm, depending on their size and level of digitization. Furthermore, due to the lack of specialised managerial positions to guide this revolution, not all company functions are effectively involved in this change, and their understanding of this new paradigm appears to be relatively low. Finally, depending on the technology adoption level, there are significant changes in both benefits and barriers associated to the implementation of the I4.0 paradigm.

Fathi et.al. (2019) findings show that Industry 4.0 transition requires the organizational integration of many IT-based modern technologies and the digitization of entire value chains. Smaller manufacturers, on the other hand, can begin their transition to Industry 4.0 by digitising specific parts of operations in support of their primary strategy. In the Industry 4.0 environment, the creation of lean-digitized production systems is a realistic business strategy for corporate survival.

Thuemmler et.al. (2017) discussed about the case study which is used for the manufacturing of Narrow-Band Asthma Inhalers. New technologies such as the Internet of Things (IoT), the Industrial Internet, network slice technology, and next-generation network technologies such as 5G, Narrow Band IoT (NB-IOT), LoRa, Big Data, CPS, edge cloud computing, and new strategies for the safe and secure aggregation of services hold the key to new and vastly improved asthma treatment strategies, allowing for progressive individualization of asthma treatment anywhere, anyhow, and at any time, as well as the integration of pharmaceutical and non-pharmaceutical therapy. The pharmaceutical business established the first conceptual approach in the asthma sector.

Losch et.al. (2016) proposed the following steps that are the primary process steps required to undertake a state-of-the-art CFRP repair in electric vehicles (see Fig2.2 for an overview of the repair

concept): Initially, a mechanic uses semi-automatic sensor systems to analyse CFRP components and diagnose damage caused by an accident, guided by an aid system. The sensor data can then be used by a software system or specialised material engineers to analyse the damages and compare it to previously saved material and geometry data of undamaged components, as well as known damages. If the extent of the damage is unknown, they can use FEA to calculate the structural integrity of the components. After assessing the damage, scarfing can be used to prepare the affected area. A CFRP patch can be created based on the geometry of the prepared component, using the data generated by the previous process steps as well as the manufacturer's nominal geometries. After that, the patch is put to the damaged area to restore the damaged component's structural

integrity. This eliminates the need to replace entire structural component assembly groups. This final process step is supported oncemore by an assistance system that makes use of the data collected throughout the repair process.



Fig 2.2: Overview of the repair concept for CFRP components.

2.2 RESEARCH GAPS

Many studies have problems in manufacturing system capability or internet infrastructure as a result of external factors. This section will discuss the mismatch between research and real-world circumstances.

- Various shop floor processes have not been automated; further research is required to develop answers.
- Manufacturing-related environmental dangers must be reduced, and new technologies must be developed. These are the areas where fresh research need be conducted.
- Safety (safety, security, and resilience) must be adopted as an obligatory extra design principle in Health 4.0 due to the classification of health infrastructures as key infrastructures. This should be looked after as early as possible.
- Because electric vehicles are still uncommon, there are no cost-effective repair options.
- The pharmaceutical industry is transitioning from a production to a service industry by taking on new duties that go beyond just producing pharmaceuticals. These goes for the asthma management as well. Smart Inhalers must be made Mobile friendly and enabled.

3. Case Study

The different case studies related to the application of manufacturing sector in Industry 4.0 paradigm have been discussed. These case studies are based on food sector, automotive sector and health sector.

3.1 Case Study 1

Kayikci et.al. (2020) have proposed a framework for prevention of food loss throughout the supply chain. Agricultural loss, postharvest loss, processing loss, distribution loss, and consumption loss are the five types of loss in the food supply chain. The majority of food is lost throughout the food chain, from farms to households, during post-harvest processing (warehouses, packaging), transportation and distribution, availability in supermarkets, and consumer purchase. Food loss is far more common in the early and intermediate stages of the supply chain in poor nations, and it is mostly due to insufficient supply chain and logistics infrastructure and management, low levels of technology use, and low investment in food production systems. In contrast, a large amount of food is wasted in developed countries during the marketing and consuming stages.

Because of product perishability, the food supply chain is unreliable. Furthermore, one of the key elements that leads to food fraud is 'knowledge imbalance' between stakeholders. As a result of pilferage, inefficient transactions, and other factors that lead to a lack of trust among supply chain participants, information sharing is required. Food traceability is becoming a crucial differentiator in the agri-food industry, and it is critical for businesses. As a result, having a centralised and effective traceability system that assures information linkage across all parties is critical.

In the food industry, a blockchain can be utilized to allow each participant in the supply chain (producers, processors, and distributors) to submit traceability information for their specific role and for each batch of goods (dates, places, farm buildings, distribution channels, potential treatments etc.). All parties in the food supply chain that handle the goods should be linked to the blockchain and collaborate on a blockchain consortium to

share all food-related data, such as HACCP records, quality records, temperature records, humidity records, verification records, tracked food information, and soon, in order for the goods to be traceable from farm to fork. To limit the risk of fraud, each step is recorded in the blockchain.

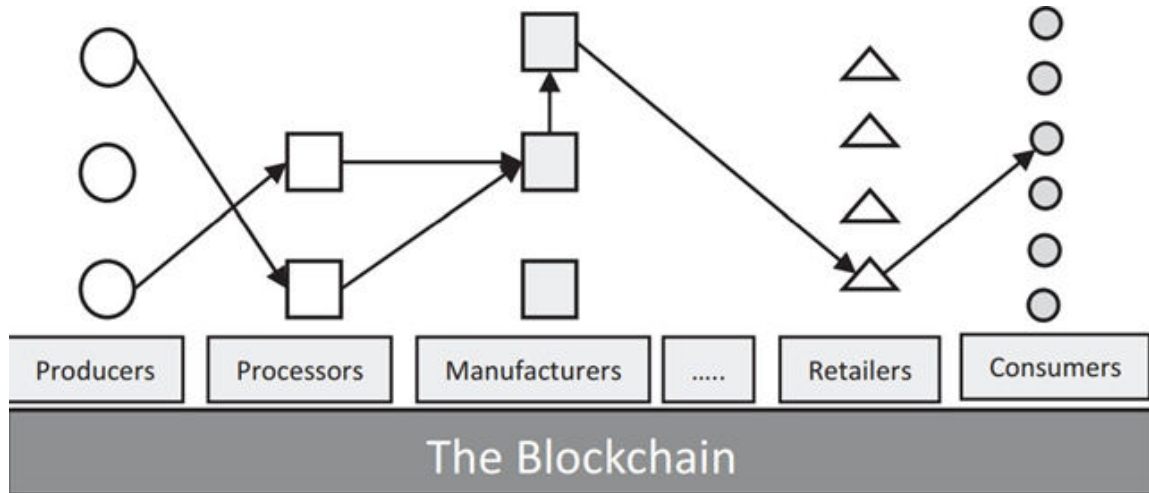


Fig 3.1: Blockchain in dairy sector

Figure 3.1 illustrates the application of blockchain in the dairy industry, where huge commercial dairy companies have trouble determining the provenance of their milk because they frequently source from multiple milk farmers. The Internet of Things (IoT) might also play a part. Trucks and storage coolers that are connected to the internet may monitor the products they are transporting and identify those objects using environmental characteristics such as temperature, humidity, light, shock, or location, guaranteeing that the product is treated safely throughout its journey. When it comes to pricey and

Sensitive items, blockchain technology can assist in informing the buyer of how the item arrived at their location. In a pharmaceutical container, a microchip sensor (IoT chip) could be used.

3.2 Case Study 2

Losch et.al. (2016) proposed the following.

Electric vehicles are a greener alternative to traditional gasoline-powered vehicles. However, the additional weight added by their substantial battery systems complicates the construction of such a vehicle. Car manufacturers are replacing structural body pieces with CFRP components to compensate for this weight (see Fig. 1 for an example). The lack of effective repair concepts for broken components is a fundamental flaw in this approach: Current state-of-the-art repair concepts call for replacing the problematic parts in large quantities. This method may be feasible if the number of electric vehicles in use is restricted; nonetheless, it is extremely wasteful and thus unsuitable for general use. Repairing the damaged pieces rather than replacing them is an alternative to this method.

A central data storage and management system connects all of the process steps in the repair concept. This enables tight coupling and integration of all of these process phases, as well as considerable interoperability and reuse of data generated during the process steps. In general, the data storage and management system must convert between and among a wide range of standard and rare data formats, including material data sheets, point clouds created by scans of damaged regions, geometry interchange formats, and specific damage description data formats. If necessary, the data management system should be able to read data directly from files that follow special format specifications, or even exchanged data directly with software used in the various process phases. The data management system's backend must provide a customizable mechanism to persistently store the exchanged data, such as a file-based approach or a database interface, to enable for reviews and documentation of the completed repairs.



Fig 3.2: An overview over the central data storage and management, Source - Author.

In general, the data storage and management system must convert between and among a wide range of standard and rare data formats, such as material data sheets, point clouds created by scans of damaged regions, geometry interchange formats, and specific damage description data formats.

3.3 CASE STUDY 3

Thuemmler et.al. proposed about the application of Smart Inhalers in Asthma management.

Wheezing, shortness of breath, chest tightness, cough, and reversible airflow limitation are all signs of asthma, a chronic respiratory condition. Both the symptoms and the airflow restriction alter over time. Asthma has a substantial societal impact. It is in the best interests of all stakeholders, including patients, doctors, careers, and pharmaceutical businesses, to reduce society burden while increasing asthma therapy effectiveness and efficiency, as well as perceived service quality.

New technologies such as the Internet of Things, the Industrial Internet, network slice technology, and next-generation network technologies such as 5G, Narrow Band IoT, LoRa, Big Data, CPS, edge cloud computing, and new strategies for the safe and secure aggregation of services hold the key to new and vastly improved asthma treatment strategies, allowing for progressive individualization of asthma treatment anywhere, anyhow, and at any time, as well as the integration of pharmaceutical and medical devices.

Initially, smart phones were proposed as a back-end device for storing data and providing processing intelligence via Bluetooth connections to medications. Smart phones can act as gateways for data sharing with remote servers, allowing for data aggregation and big data analysis. Although the use of smart phones as processors and prospective gateways is theoretically viable, concerns about their dependability, appropriateness, and practicality have been raised. Asthmatic individuals typically utilize two or more distinct types of aerosols or powder-based treatments, rather than just one. Many patients keep multiple units of each type in various locations to ensure that they are always available if needed.

Another issue is a conflict between mobile phones and medical devices in general in terms of reliability. While most mobile phones are designated "best effort," select medical gadgets are considered "mission important." Quality of service (QoS) terms like "best effort" and "mission important" might signify quite different things. While "best effort" implies that data may or may not be sent, "mission essential" implies that a device or process's reliability is guaranteed.

4. CONCLUSION

For the reception of video files and reports, smart phones and tablets will be crucial. Smart medications enabled by 5G technologies such as NB-IoT are nearing commercial readiness and will be available in the next years.

IoT devices may collect data for every package (pallet) of product, not just a sample, and provide answers to where, when, and what happened in the supply chain. The correct combination of IoT and blockchain technologies can completely alter the supply chain, allowing manufacturers and merchants to thrive. The primary goal of blockchain technology is to provide security. Supply chain transparency and chain of custody are improved by blockchain technology. Manufacturing supply chain self-sufficiency is another sector that will

expand in the near future. Blockchain technology allows for secure data storage with privacy and administration built in. The primary goal of blockchain technology is to provide security. Supply chain transparency and chain of custody are also improved by blockchain technology.

The CRPF repair strategy is distinguished by the substantial reuse of data created over many process steps, resulting in a repair concept that is extendable, versatile, and efficient. The design of business models for small and medium-sized firms (e.g. repair shops) who desire to employ the Carbon Reinforced Repair idea, including the design of a deployment strategy that allows the concept to be used in practice, is an important area for future research.

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IMPACT OF COVID-19 ON MICRO ENTERPRISES IN INDIA - A COMPARATIVE STUDY OF RAJASTHAN AND UTTARAKHAND**Ms. Deepali Tomar**

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ABSTRACT

MSMEs continue to be the backbone of the economy for countries like India where the problem of unemployment is steadily escalating and the agriculture land holdings continue to shrink. The State of Uttarakhand in India is looking at sustainable and inclusive industrial growth as it faces an acute problem of migration from the hilly terrain to the plains due to lack of employment and business opportunities. The purpose of this paper is to comprehensively analyse the impact of COVID-19 on Micro Enterprises in Rajasthan and Uttarakhand and to explore the reasons responsible for hindering their growth. A descriptive study was conducted with the help of secondary data and is based on extensive review which significantly contributes in directing the stakeholders to take appropriate measures for speedy development of the region

Keywords- MSME, Unemployment, Business opportunities, Migration.

INTRODUCTION

In this tough global business environment micro Enterprises have survived and even flourished therefore ,in recent time the micro Enterprises sector is emerging as an option of supporting business environment of any developed and developing economy (Munoz. S. Mark Joseph (ed), (2010)). In the present time all developed and developing countries are facing unemployment, unequal distribution of wealth, income and economic fluctuations, etc. therefore , micro enterprises has emerged as an economic growth engine in all the nations of the world. . Development of micro Enterprises can help to create immediate employment opportunities at lower investment level therefore micro Enterprises have emerged as a real bone for the poor (U. Jerinabi 2009). Micro enterprises are also called small businesses. In the present time world's all developed and developing Nations are adopting the various programs of micro enterprises development for creation of self -employment opportunities and economic development. During this economic environment, in the mid 1970 Dr. Yunus introduced Holistic development strategy by linkage micro enterprises to micro finance concept in Bangladesh. After the success of the development strategy in Bangladesh ,world -wide it was considered micro enterprises are the best way to generate employment opportunities and overall economic growth .Since 1980, various development agencies and developing and developed nation had been started various micro enterprise development programs and after 1990 microenterprise have been become the synonyms of economic development in all the countries of the world . The World Bank has been actively engaged micro enterprise development since 1990 e as it approved roughly 49 project between 1989 and 1993 that aims to improve the living standards of low-income people and just under half of these incorporated micro enterprise development programme (Websler M. Leila, Riopelle Rabdall, and Chidzero Morie Anne, (1996)).

MSMEs are said to be highly innovative , having high growth potential and a a major contribution to economy as a whole but the growth and performance of MSMEs could not be assessed accurately due to the sector comprising of more unorganised an unregistered sector rather than registered. Micro, small and medium enterprises are also facing various challenges that are uncommon to the large scale companies and multinational companies like lack of finance, marketing , skilled labour, technology , infrastructure and so on. In an endeavour to promote , develop and enhance competitiveness of the sector, Government of India enacted a single comprehensive legislation the MSME Act 2006 and also the NDA government has committed to boost micro ,small and medium enterprises by invoking slogan like “make in India”.

OBJECTIVES

- 1) To analyse the impact of COVID-19 on of Micro Enterprises in Rajasthan and Uttarakhand.
- 2) To examine problems faced by MSME’s in respect of availability of raw materials, finance, skill-promotion and capacity-building, labour and marketing strategies.
- 3) To suggest appropriate guidelines for strengthening the MSME’s.

REVIEW OF LITERATURE

C. LALROLUAHPUIA (2016)- The paper “**STUDY ON THE PERFORMANCE OF MSMEs IN LUNGLEI DISTRICT, MIZORAM**”, tried to find out the role and performance of micro, small and medium scale Enterprises in Lunglei district , Mizoram It was observed in the study that the small scale and medium

scale industries in India can make a significant contribution to achieve social and economic objectives such as labour absorption, eradication of poverty, reducing regional imbalances, ensuring equitable distribution of national income, rural development and growth of various development activities **Manvendra Pratap Singh, Arpita Chakraborty and Mousumi Roy (2016)**- The paper “**ENTREPRENEURIAL COMMITMENT, ORGANIZATIONAL SUSTAINABILITY AND BUSINESS PERFORMANCE OF MANUFACTURING MSMEs: EVIDENCE FROM INDIA**”, was an attempt to understand the motivation of micro, small and medium enterprises towards organisational sustainability in such a competitive environment. Conceptual Framework was developed to test the link among entrepreneurial commitment, organisational sustainability and business performance. Structural equation modelling and other standard statistical analysis have been used to analyse the data collected through questionnaire survey from 262 manufacturing micro, small and medium enterprises in India. The study findings highlighted that organisation sustainability emerged as a driving source of motivation to improve the business performance among manufacturing micro, small and medium enterprises in India. In addition, there is significant mediation effect of organisational sustainability on entrepreneurial commitment and business performance. **Dr. Samuel Muiruri Muriithi (2017)**- The paper “**AFRICAN SMALL AND MEDIUM ENTERPRISES (SMES) CONTRIBUTIONS, CHALLENGES AND SOLUTIONS**”, was based on empirical evidence and current research on small and medium scale Enterprises worldwide with the major focus on African small and medium scale enterprise and how to improve their operations and profitability. It was observed that the African government have to put more efforts and come up with practical rather than theoretical solution because of small and medium scale Enterprises alarming rate of failures and solutions. **Ms. Heena Upadhyay and Dr. Vivek Singh Kushwaha (2017)**- The paper “**Growth of MSMEs in INDIA: Its' Performance and Future Prospects**”, highlighted the performance of Indian micro, small and medium enterprises and also forecasts the future trend. The research design was analytical research design. The data required for the present study had been collected from secondary sources. It was observed that micro, small and medium enterprises not only help in industrialization of rural and backward areas but also they play a crucial role in providing large-scale employment opportunities at reasonably lower capital cost than large scale industries. Thereby ensuring more impartial distribution of national income, resources, wealth and thus reducing the regional imbalances. Economically this sector has strengthened the regions of the country and helps in achieving the self-reliance in every aspect of life. It also eliminate the imbalances between rich and poor. **Karabo Molefe, Natanya Meyer, Jacques de Jongh (2018)**- The paper “**A Comparative Analysis of the Socio-Economic Challenges Faced by SMMEs: The Case of the Emfuleni and Midvaal Local Municipal Areas**”, tried to identify and compare the main socio-economic challenges faced by SMEs in two local areas within the Vaal Triangle region. The study used quantitative research approach and a cross-sectional research design through means of the survey method. A total of 198 SME owners that resided in both the Emfuleni (ELM) (n=100) and Midvaal (MLM) (n=98) local municipal areas were surveyed. Data analysis involved the use of descriptive statistics, cross-tabulations and chi-square tests. The study revealed that managerial and economic challenges were the biggest challenges faced by SMEs which include: lack of skilled labour, insufficient business training and local economic conditions. The findings of the study provide valuable insight towards fostering an enabling environment for SME development on local levels. **Simranjeet Kaur Virk, Pinnacci Negi (2019)**- The paper “**An Overview of MSME Sector in India with Special Reference to the State of Uttarakhand**”, performance of micro, small and medium sector of India was highlighted by last annual report by government of India that is annual report of 2017 to 18. The study observed that MSMEs have the potential to act as a catalyst of growth and does social crisis. So observed that the Uttarakhand State should drive for MSME penetration across all the 13 district to ensure an overall development of the state. Also the Uttarakhand government needs to provide adequate support to the MSME to develop to its full potential in the state. **Dr. Megha Batola (Main Author), CA Bijaya Laxmi Thapliyal, Ms Neha Rani, Dr Ankur Singh Bist4 (2020)**- The paper “**Growth and Performance of Small and Medium Scale Enterprises in Women Entrepreneurship Development (A Case of Uttarakhand)**”, studied the impact of type of industry, age of entrepreneur and form of Organisation on women entrepreneurial development in Uttarakhand. The study basically included the small and medium scale women entrepreneurs of Uttarakhand from Dehradun, Haridwar, Nainital, Udham Singh Nagar and Haldwani and the sample size for the study comprises of 300 women entrepreneurs chosen according to stratified random sampling. Cross-sectional bivariate analysis was performed to determine the impact of various factors on the growth and performance of women entrepreneurship development. It was observed from the study that women are unaware of latest technological developments and market trends.

RESEARCH METHODOLOGY

The study area selected to accomplish the objectives of the paper is Uttarakhand and Rajasthan State.

SAMPLE AND DATA TYPE

- In this study we have used secondary data due to time limitation from different sources.
- Descriptive in nature
- Quantitative study.

SOURCES OF DATA

- Industries Department Uttarakhand
- National sample survey organization
- PHD Chamber of commerce and industry
- Confederation of Indian Industry
- KVIC reports
- Directorate Of Industries

FINDINGS

Table 1: - Number of MSME’s registered in Rajasthan and Uttarakhand

Years	Micro		Small		Medium	
	Rajasthan	Uttarakhand	Raajasthan	Uttarakhand	Rajasthan	Uttarakhand
2015-16	29022	1337	4655	393	188	40
2016-17	89533	3485	11937	1132	448	103
2017-18	111190	4666	11231	951	359	69
2018-19	113144	7886	12404	1468	414	112
2019-20	153563	14988	18774	2011	548	148
2020-21	50971	7321	14722	1679	456	95

Source- Ministry of MSME, Government of India Report 2020-21

The above table shows the number of MSME’s units registered from 2015-16 to 2020-21. It is quite evident from the table that before COVID-19 i.e. 2020 ,number of MSME’s units were increasing over the years till 2019-20 both in Rajasthan and Uttarakhand, although MSME units were more in Rajasthan as compared to Uttarakhand. But, in 2020-21 i.e. after the outbreak of COVID-19 , MSMEunits declined both in Rajasthan as well as Uttarakhand state. However, Rajasthan is still much ahead than Uttarakhand.

Table 2:- Total Employment in MSME in Rajasthan and Uttarakhand

Years	Micro		Small		Medium	
	Rajasthan	Uttarakhand	Raajasthan	Uttarakhand	Rajasthan	Uttarakhand
2015-16	139439	6806	69127	8968	10717	4223
2016-17	365161	21420	184473	29583	37002	8743
2017-18	388859	20066	134657	22223	25313	7007
2018-19	411678	37571	143735	28391	25272	12222
2019-20	530333	56617	195461	33684	31108	10570
2020-21	202119	36671	150319	24286	2665	7172

Source- Ministry of MSME, Government of India Report 2020-21

The above table shows the total employment in MSME sector from 2015-16 to 2020-21. It is quite evident from the table that before COVID-19 i.e. 2020 ,total employment was increasing over the years till 2019-20 both in Rajasthan and Uttarakhand, although total employment was more in Rajasthan as compared to Uttarakhand. But, in 2020-21 i.e. after the outbreak of COVID-19 , employment declined both in Rajasthan as well as Uttarakhand state. However, Rajasthan is still much ahead than Uttarakhand.

Table 3: - Male Registration in MSME in Rajasthan and Uttarakhand

Years	Micro		Small		Medium	
	Rajasthan	Uttarakhand	Rajasthan	Uttarakhand	Rajasthan	Uttarakhand
	Male	Male	Male	Male	Male	Male
2015-16	1308	49	430	44	34	7
2016-17	13817	453	2235	231	104	27
2017-18	91252	3642	9496	785	324	66

2018-19	94969	5870	10667	1212	369	97
2019-20	129780	10089	16195	1718	483	127
2020-21	44246	6175	13325	1454	409	85

Source- Ministry of MSME, Government of India Report 2020-21

The above table shows the number of males registered in MSME sector from 2015-16 to 2020-21. It is quite evident from the table that before COVID-19 i.e. 2020 ,number of males who were registered in MSME sector were increasing over the years till 2019-20 both in Rajasthan and Uttarakhand, although males participation in MSME sector was more in Rajasthan as compared to Uttarakhand. But, in 2020-21 i.e. after the outbreak of COVID-19, males participation declined both in Rajasthan as well as Uttarakhand state. However, Rajasthan is still much ahead than Uttarakhand.

Table 4: - Female Registration in MSME in Rajasthan and Uttarakhand

Years	Micro		Small		Medium	
	Rajasthan	Uttarakhand	Rajasthan	Uttarakhand	Rajasthan	Uttarakhand
	Female	Female	Female	Female	Female	Female
2015-16	213	9	80	8	2	0
2016-17	3350	108	389	50	8	2
2017-18	19938	1024	1735	166	35	3
2018-19	18175	2016	1737	256	45	15
2019-20	23783	4899	2579	293	65	21
2020-21	6725	1146	1397	225	47	10

Source- Ministry of MSME, Government of India Report 2020-21

The above table shows the number of females registered in MSME sector from 2015-16 to 2020-21. It is quite evident from the table that before COVID-19 i.e. 2020 ,number of females who were registered in MSME sector were increasing over the years till 2019-20 both in Rajasthan and Uttarakhand, although females participation in MSME sector was more in Rajasthan as compared to Uttarakhand. But, in 2020-21 i.e. after the outbreak of COVID-19 , females participation declined both in Rajasthan as well as Uttarakhand state. However, Rajasthan is still much ahead than Uttarakhand.

Problems faced by MSME’s in Uttarakhand and Rajasthan

UTTRAKHAND has been facing some crucial problems since last few decades that are responsible for hindering the performance of khadi village institutions in the state. Some of them are mentioned below;

- There is a problem of effective marketing and selling in the state due to uneven geographical factors.
- Inadequate Infrastructure
- Lower technology levels
- The industries are heavily weighed down by the rules and regulation imposed on them. investment in the khadi and village sector
- Shortage of energy leading to high energy cost is also an issue.
- Problems of storage, designing, packaging and product display
- Youth of the state lacks in proper skill development and training.
- Lack of proper research and development is also an issue.

CONCLUSION

- MSME’s are termed as the “engine of economic growth” of any country both developed and developing but specially developing countries. It’s the panacea to alleviate poverty and also a proven way to improve the quality of life particularly for the poor people.
- MSME’s have the potential to act as catalysts of growth and thus curb this societal crisis.
- From the study it is observed that COVID-19 has seriously affected the MSME sector in both the states as there was a sharp decline in number of MSME units registered, employment and gender-wise participation.
- The State should strive for MSME’s penetration across all the thirteen districts to ensure an overall development of the state.

RECOMMENDATIONS**1. Availability of Data**

- There is no data which shows the percentage contribution of tourism on MSMEs, it should be made available
- Data should be made available for the revenue generated from tourism.

2. Infrastructural Development

- Investments in tourism infrastructure may include development of both tourism as well as civic infrastructure.

Also involves provision of tourist information bureaus and websites for providing requisite tourist information

- Efforts towards enhancement of overall transport infrastructure in the form of good quality roads, rail network, airports, availability of tourist vehicles etc. may also be strengthened in order to improve the overall infrastructure.
- There is less number of beds per million people. Steps should be taken to increase and improve accommodation facilities.

3. Human Resource Development

- Provision of additional training institutes, enhancing capacity of existing ones along with introduction of short term courses providing specific skills directed at hospitality and travel trade sector employees may be required for catering to the increased manpower and skill requirements.
- Rural youth may be provided vocational training through special institutes to provide them employment opportunities.

4. Marketing Programs

- Collaborative marketing efforts may be required for promotions. Focused branding and promotional campaigns may be designed.
- Involvement of local travel trade partners may be encouraged.
- Trips to involved destinations, informative sessions, financial support and incentives may be provided.
- A greater number of domestic tourism events and road shows may be organized in order to offset seasonality of tourist inflow. Events may be based on innovative themes of music, dance, sports, food, fruits, handicrafts, Indian culture and traditions, Indian villages, festivals etc.

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VIDWAN SUBJECT EXPERT DATABASE: A STUDY AMONG THE MUSLIM MANAGEMENT ARTS & SCIENCE COLLEGES OF TAMIL NADU**Dr. N. Abdul Latheef**

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ABSTRACT

This paper deals with the vidwan subject expert database created by (Information Library Network) INFLIBNET, Ahmadabad. It discusses the vidwan portal membership institutions in Muslim Management Arts and Science colleges of Tamil Nadu. It also highlights the benefits of VIDWAN membership. Objective- of the study is to know the total No of colleges enrolled as members, and no of subject experts available in this college.

Methodology- a systematic questionnaire has prepared, distributed and collected from the colleges for analysis of data.

Findings –there were many muslim management colleges and their faculty are not enrolled as membership in this portal and it also reveals that Highest subject experts available in commerce subjects

Suggestions-were given that to create awareness among these institutions and also Orientation Programmes to be conducted about vidwan database and institutional initiative, it is further suggested that the librarian contributions also to be required to motivate researchers and faculty members.

Keywords: VIDWAN, Inflibnet, Expert database, Muslim Management & Arts & Science colleges

I. INTRODUCTION

Research is one of the essential activity in higher educational and research institutions. Research publications play a major role in scientific research and are key source in creating a network of researchers in a given discipline. In this direction, information and Library Network Centre (INFLIBNET) centre developed a database and National Researcher network. There are lot of research experts in India. VIDWAN portal is the premier database of profiles of scientists / researchers and other faculty members working at leading academic institutions and other R & D organisation involved in teaching and research in India. It provides important information about expert's background, contact address, experience, scholarly publications, skills and accomplishments, researcher identity, etc. The database developed and maintained by Information and Library Network Centre (INFLIBNET) with financial support from the National Mission on Education through ICT (NME-ICT). The database would be instrumental in selection of panels of experts for various committees, taskforce, established by the Ministries / Govt. establishments for monitoring and evaluation purposes. In this current scenario the Postgraduate students and other faculty working in the institutions may select their Research supervisors from this Vidwan portal for pursue Research programmes. The University Grants Commission have notified that the Institutions/ Principal Investigators of the Researcher should have a member ID from VIDWAN portal for their research proposals, then only the research proposals considered for grants.

II. REVIEW OF LITERATURE

Panda, Saroj Kumar; Kannan, P (2016) discussed about the VIDWAN subject expert database portal, an excellent source of background information of subject experts working at leading academic institutions and R & D organisations involved in teaching and research, provides a platform for finding potential experts with similar expertise. This paper aims to explore the application of emerging technologies in VIDWAN subject expert database and discusses particularly about the expert's selection methods, database feature and functionalities and its benefits. The article reviewed the current situation of the VIDWAN subject expert database and national researcher's network in India and recommends that it is the time to populate the database not only in India but also worldwide and in all scientific areas. Universities, R & D organisations and other academia too have an important role in populating this database.

Singh, Prem (2004) found in-house data entry fastest, reliable and cheapest. Having created the database, its management is also essential. There is, therefore, a need for Database Administrator in each library. This study also discussed the Definition, importance, advantages and disadvantages of the database approach. There are four main sources - Shelf List, Books and other Reading material, Data Sheets and international utilities such as OCLC - for retro conversion of library's card catalogue and union catalogue of journals. The librarian can use anyone or a combination of them for data entry. Librarian has to decide the priority as to which part of library

collection should be computerized first. Data entry can be done in-house or it can be outsourced. After weighing the economics and other pros and cons, the librarian can decide the mode of entry.

III. OBJECTIVES

- ❖ To identify the Number of colleges enrolled as membership in vidwan portal
- ❖ To know the different subject experts from these institutions
- ❖ To find out the highest subject experts in these institutions
- ❖ To provide orientation to Academicians & faculty members about the vidwan subject expert database portal
- ❖ To create awareness about the vidwan portal among the students and research scholars usage of this expert database

IV. RESEARCH METHODOLOGY

There were 42 Muslim Management Arts and science colleges in Tamil Nadu including Government Aided and self financing institutions. As per each institutional website most of the institutions not membership in Vidwan portal, so the researcher has taken randomly 10 colleges for the study those who are membership in Vidwan portal. Data were taken retrieved from each college website and taken into account for analysis.

V. DATA ANALYSIS

After collection of data, it has sorted out by alphabetical order and differentiates the Government Aided colleges and self financing colleges, also highlight the highest subject experts in these institutions. Cumulative data from these colleges arranged in one table and each college data were separated by genuine table.

The demographic table.1 depicts that the highest members in Vidwan database is Justice Basheer Ahamed sayeed college for women, Chennai (168), Sadakathullah Appa College, Thirunelveli (87) got second place and the third place Islamiah College, Vaniyambadi (79), Fourth place Jamal Mohamed College, Thiruchirappalli (77). On the otherhand Very lowest membership in Vidwan database is Annai Fathima College of Arts & Science, Madurai and other colleges are below the number of 5. It is observed from this study that there will be more awareness programmes about vidwan and its features, benefits to be conducted among these institutions.

Table 1: Vidwan Membership Data- Institutionwise

S.No.	Name of the Institutions	Vidwan Members	Total Faculty Members
1	Aiman College of Arts and Science for women, Thiruchirappalli	5	65
2	Annai Fatima college of Arts & science, Madurai	1	40
3	Islamiah College, Thirupattur	79	117
4	Justice Basheer Ahamed Syed College for Women, Chennai	168	310
5	Jamal Mohamed College, Thiruchirappalli	77	499
6	Khadir Mohideen College, Thanjavur	4	84
7	Mazharul Uloom College, Thirupattur	2	45
8	Mohamed Sathak College of Arts and Science, Chennai	3	220
9	Sadakathullah Appa College, Tirunelveli	87	163
10	Thassim Beevi Abdul kader college for women, Ramanathapuram	2	127
Total		428	1673

(Data as on 15th June 2021)

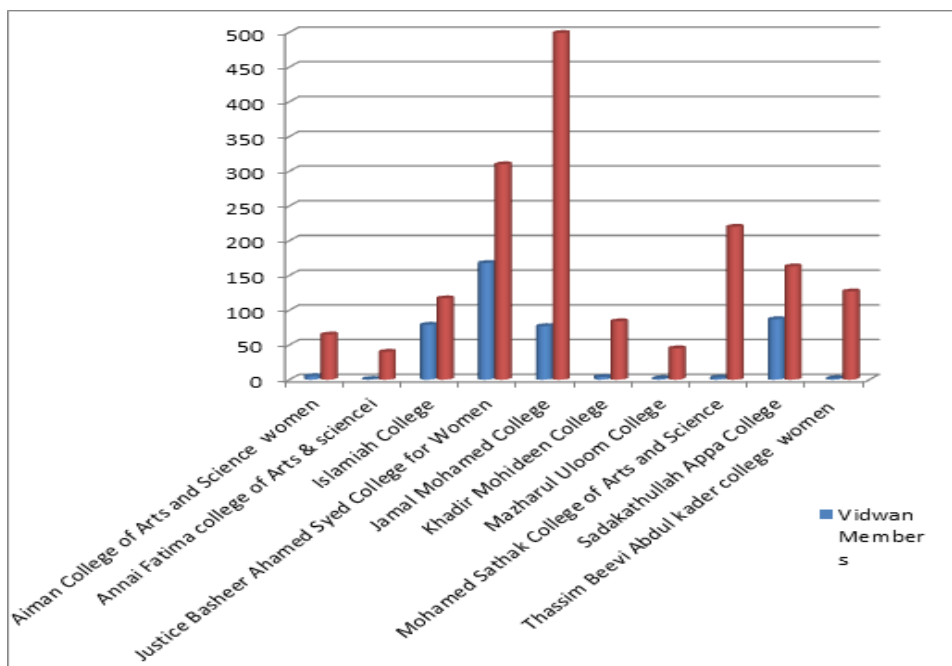


Fig.1: Vidwan Membership graph- Institutionwise

Table 2: Aiman College of Arts and Science for women

S.No	Subject Category /Experts	Vidwan Members
1	English Literature	1
2	Commerce	1
3	Mathematics	3
Total		5

The above table shows that only one faculty from the English Literature and Commerce subject. Incase of Mathematics 3 faculty experts available in this institution. But compared with the total strength of the faculty (65) it only 7%.

Table 3: Islamiyah College (Autonomous)

S.No	Subject Experts/Category	Vidwan Members
1	Literature	1
2	English	2
3	Hindi	1
4	History	8
5	Mathematics	10
6	Physics	5
7	Chemistry	5
8	Biochemistry	2
9	Biotechnology	6
10	Computer Science	13
11	Commerce	18
12	Management	4
13	Library Science	1
Total		79

The table 3 reveals that 18 faculty members from Commerce subject enrolled as membership in vidwan portal, next to this Computer Science faculty 13 and Mathematics in the third place where they have joined 10 members. On the other hand literature subjects single person as membership. Overall percentage 67% enrolled in Vidwan portal.

Table 4: Justice Basheer Ahamed Syed College for Women (Autonomous)

S.No	Subject Experts/Category	Vidwan Members
1	Tamil	10
2	English	18

3	Mathematics	18
4	History	8
5	Physics	11
6	Chemistry	9
7	Biochemistry	5
8	Biotechnology	5
9	Computer Science	19
10	Commerce	21
11	Economics	9
12	Management	12
13	Home Science	12
14	Educational Psychology	4
15	Microbiology	5
16	Library Science	2
Total		168

It is observed from the table.4 that highest of 21 faculty members were enrolled in commerce subject,from computer science 19 faculties interested to enrolled and 18 faculty from English and Mathematics subjects. on the other part only 2 faculty members from Library Science subject. It is found the over all percentage of membership in Vidwan portal is 54%. So rest of the faculty should be enrolled in Vidwan.

Table 5: Jamal Mohamed College (Autonomous)

S.No	Subject Experts/Category	Vidwan Members
1	Literature	1
2	Mathematics	2
3	Biochemistry	1
4	Zoology	1
5	Commerce	35
6	Economics	10
7	Management	23
8	Computer Science	3
9	Food Science Technology	1
10	Library Science	1
Total		77

The above table expose that maximum of 35 faculty from commerce enrolled in vidwan portal, on the other side 23 from management and 10 from economics faculty interested to enrolled in this portal. It is found that only one faculty from literature, Biochemistry, Zoology, Food science technology and Library science registered. Over all enrollement from this institution is 15%. It is found that the response rate of this institution is to be increased rapidly.

Table .6: Khadir Mohideen College

S.No	Subject Experts/Category	Vidwan Members
1	Chemistry	2
2	Computer Science	1
3	Physics	1
Total		4

The table 6 highlights that from chemistry subject 2 faculty and each one from computer science and physics respectively. Overall response rate of the membership is 4.7%.

Table .7: Mazharul Uloom Colleges

S.No	Subject Experts/Category	Vidwan Members
1	Commerce	1
2	Library Science	1
Total		2

It is observed from the table 7 that each one faculty from commerce and Library science enrolled in vidwan. Overall response rate of the institution is 4%. Rest of the faculty members to be registered in this portal. It is found that the rest of the faculties need awareness and initiative from the institution.

Table 8: Annai Fathima College of Arts & Science

S.No	Subject Experts/Category	Vidwan Members
1	Commerce	1
Total		1

The above table depicts that only one faculty from commerce subject enrolled in Vidwan Portal. Total strength of the college is 40 enrolled percentages 2.5%.

Table .9 Mohamed Sathak Colleges of Arts and Science

S.No	Subject Experts/Category	Vidwan Members
1	Physics	2
2	Biotechnology	1
Total		3

As per the above table total 3 experts in this institutions among this Physics 2 faculty and rest of them Biotechnology. Overall Percentage of this institution is 1.3% among the 250 faculty members. It indicates that rest of the faculty or experts to be registered in vidwan portal. So sufficient awareness to be given to rest of the faculty members.

Table .10: Sadakathullah Appa Colleges

S.No	Subject Experts/Category	Vidwan Members
1	Arabic	2
2	Tamil	3
3	English	11
4	Mathematics	3
5	History	4
6	Economics	3
7	Management	14
8	Physics	11
9	Chemistry	8
10	Computer Science	10
11	Biotechnology	11
12	Home Science	3
13	Library Science	3
14	Physical Education	1
Total		87

The table 10 depicts that highest members in this institution is Management faculty that is 14, where as 11 faculty from English, Physics & Biotechnology. On the other side Arabic faculty is lowest that this only 2. Over all observation from this institution is 53% only registered as members in Vidwan portal. It is found that rest of the faculty from other subjects to be registered in vidwan.

Table 11: Thassim Beevi Abdul Kader College for women

S.No	Subject Experts/Category	Vidwan Members
1	English Literature	1
2	Computer Science	1
Total		2

It is observed from the above table only one faculty from English literature and computer science enrolled as member in vidwan subject expert portal. It is found that 1.5% among the total faculty of 127. So in this institution need more awareness programme to be conducted to faculty to join the vidwan portal.

VI. FINDINGS

- It is observed from the study there were 8 Government Aided colleges, rest of the two self financing colleges were registered in Vidwan subject expert portal
- It is found that total faculty from 10 colleges were 1673, among this 428 faculties were enrolled in the Vidwan Portal that is 25% only
- The study shows that 75% of the faculty should be joined in vidwan portal
- It is found from the study that Maximum subject experts from Commerce subject

- It is revealed that Islamiah College highest membership among these institutions next to this Sadakathullah Appa College and Jamal Mohamed College respectively
- It is observed that Awareness Programme/ orientation programme will be given to all the faculty member of the institutions
- Institutional initiative will be need of the hour
- Overall observations maximum Library science and Physical education department enrolled and rest of the subject faculty need the awareness
- It is revealed from the study that most of the arts and science colleges not yet enrolled/joined membership in Vidwan portal. (data as on 15th June 2021)
- It is also found that among the 10 colleges only 5 Library science faculty enrolled in this portal
- Overall observations from the study that most of the faculty not aware about the Vidwan portal and its benefits.

VII. SUGGESTIONS

- ❖ It is suggested that enough awareness programmes to be conducted in the respective institutions
- ❖ Orientation programmes to be given to faculty about VIDWAN portal
- ❖ Suggestion were given that the Nodal officer to be fixed by the institution concerned
- ❖ Suggested that the Librarians may take initiative to orient their faculty and research scholars
- ❖ The study may be extended to other community institutions, Government colleges and overall state to be conducted

VIII. CONCLUSION

Curriculum Data or Information or profile of the individual faculty / academician has always been an important resource in all the organizations, but it has assumed strategic importance in this-competitive age. The faculty members and subject experts to be update their IT information based on this study. The union government and the University Grants commission, Ministry of Education have taken many initiatives for the higher education development. Ministry of Education spending corers of money for the sake of the higher education research. The UGC has circulating information through their webportal and sending hard copies of letters to the concerned institutions. Unfortunately the new initiatives/programmes not yet reached the academicians/institutions. As per the study sufficient awareness programmes /Orientation programmes to be conducted around the state. The management, Heads of institutions and the principals should take initiative to conduct awareness programmes in their institutions. Subject Mentors or Librarians of the Institutions have to create awareness through circulars, social media or any other mode to reach the information each and every corner of the country.

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IMPLEMENTATION OF A BATTERY ELECTRIC VEHICLE CHARGER FORTWO-WHEELERS

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ABSTRACT

In India, electric vehicles are expanding rapidly. This paper discusses the current status of charging methods of electric vehicles, the different power levels of electric vehicles. In this paper, single-phase, ac supply off-board chargers with CC, CV, and CC-CV charging methods are discussed and compared all the charging methods of an electric vehicle with the help of lithium-ion battery in MATLAB Simulink 2020 and taking output parameter of the lithium-ion battery like state of charge, output voltage, current & efficiency of lithium-ion battery with 4.2volt,24 AH, 48-volt lithium-ion battery.

Keywords: Li-ion battery, dc to dc converter, electric two-wheeler vehicle

1. INTRODUCTION

Types of Charging Level in Ev

1. **Level 1:** Level-1, This is the basic charging level for Electric vehicle charging and it’s rated at 120 volts. This charging technique mostly takes 16 to 20 hours to charge the battery to its full charging level so it is used as a slow charging technique of battery.
2. **Level 2:** Level 2 charging used for electric vehicles is rated at 240 volts. This charging is quite useful comparedto level-1 but extra or additional hardware is required for this type of charging so cost increases but then also this typeof charging is quite useful compared to level-1.
3. **Level.3:** The level 3 charging for electric vehicles is what one will find at public charging stations. This type of charging is Called DC fast charging, it converts the AC, into DC for direct storage in electric vehicle batteries.

Nowadays, fast chargers for Li-Ion batteries, are required for many applications such as electrical vehicles (EVs), cellphones, laptops, and tablets [1]. In electrical vehicle charging stations (EVCSs), fast charging needs high power converters to inject high currents during constant current mode [1]. This leads to a high voltage drop on the internal resistance and polarization parameters at the end of the constant current charging process [2].

Also, a high charging current may reduce the life of batteries [3], so the charging process must be precisely controlled. Many EVs use LIBs. So, it is necessary to investigate the charging technique for LIBs.

Here the listed there methods are discussed in this paper for charging electric vehicle batteries,

1. Constant current charging method (CC),
2. Constant voltage charging method (CV),
3. Constant current & constant voltage charging method (CC-CV) method.

2. FUNCTIONAL BLOCK DIAGRAM OF EV BATTERY CHARGER:

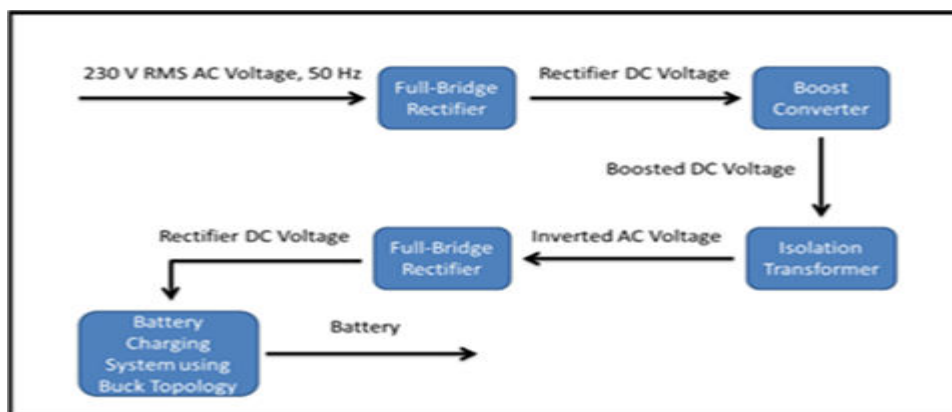


Figure.1: functional block diagram of EV CHARGER

In the block diagram of the EV charger,Block.1 full-bridge rectifier

First, single-phase ac supply is converted into dc supply by using the full-bridge converter and then used filtercircuit to smoothen the output of the dc voltage.

Block-2 boost converter

In the second stage, dc to dc converter is used to increase the voltage level at the desired level of charging. Block.3 isolation transformer

It requires the protection of the power circuit from the control circuit. It converts the dc higher voltage withappropriated ac inverted voltage, which is available at the secondary of the transformer.

Block.4 full-bridge rectifier

Now rectifier is used which converts the inverted ac voltage from the transformer secondary to dc voltage withfilter circuits.

Block.5 buck converter

Buck converter is used to step down the voltage that comes from the FBRC, used MOSFET switch, diode, inductor, and output of buck converter is applied to the battery.

3. CHARGING METHODS OF LI-ION BATTERY FOR ELECTRIC VEHICLE:

3.1. Constant Current Charging Method :(Cc-Method)

In this method of charging a constant current is applied as the battery voltage builds up to its full charge value. The constant current applied is within the rated current limit, if the constant current to the battery is applied it can easily cause overheating and damage, deteriorating the life of the battery. A high charging current provides a speedycharge but also significantly affects the battery’s aging process. [4]

To implement fast charging to Li-ion batteries using the CC method higher charging current is required. But when the charging current is too high the travel rate of Li-ions exceeds the insertion rate of Li-ions into the graphite layer. This causes the deposition of some Li-ions on the electrode layer instead of getting inserted into the layers. This is called lithium plating. To overcome lithium plating enough settling time for Li-ions has to be provided to get insertedinto vacant sites of graphite electrodes [6].

3.2. Constant Voltage Charging Method (Cv-Method)

In the constant voltage charging method, the charging level of voltage is maintained at the maximum level that should be applied to a battery and the corresponding current is decreases while full charging is approached. This method is used where only for lower voltages where the temperature is not a problem otherwise time of charging is the main concern in this method.[10]

In this charging method, the battery is charged with a DC power supply until the battery voltage is reached to set- point voltage. Li-ion cells have 4.2+/-50mV as nominal set-point voltage and the maximum allowable charging current is 1C. This method of charging is preferred for Pb-acid batteries as each cell equalizes the charge among all the cells.The main drawback of this method is the battery does not get fully charged and the time required for charging is morethan 4 hours [12]

3.3. Constant Current-Constant Voltage Charging Method :(Cc-CvCharging Method)

This method of constant current-constant voltage charging is a combination of both the methods to battery charging where the charger applies a constant current until the battery reaches a predefined set voltage potential, at which point voltage is held constant and the current continues to decrease until a full charge is reached [6]. This is the traditional method for charging batteries, yet it is limited in fast-charging applications because battery polarization becomes an issue.[6]

This CC-CV method has been modified to include multiple constant current steps, thereby further improving the charging rate of batteries.[21]

4. EV LI-ION BATTERY SPECIFICATIONS

TYPE OF BATTERY	Lithium-ion battery
Nominal Voltage Of Battery	48 VOLT
Ampere Hour Capacity Of Battery	24 AH
Number Of Cells Connected In Series	13 cells

Number Of Cells Connected In Parallel	4 cells
Battery Capacity	480 Wh/kg
Charging voltage of the battery	54.6 volt
Charging current	6 amperes
Discharging current	2 amperes

Table.1: battery specifications

5. CONSTANT CURRENT CHARGING METHOD: MATLAB CIRCUIT

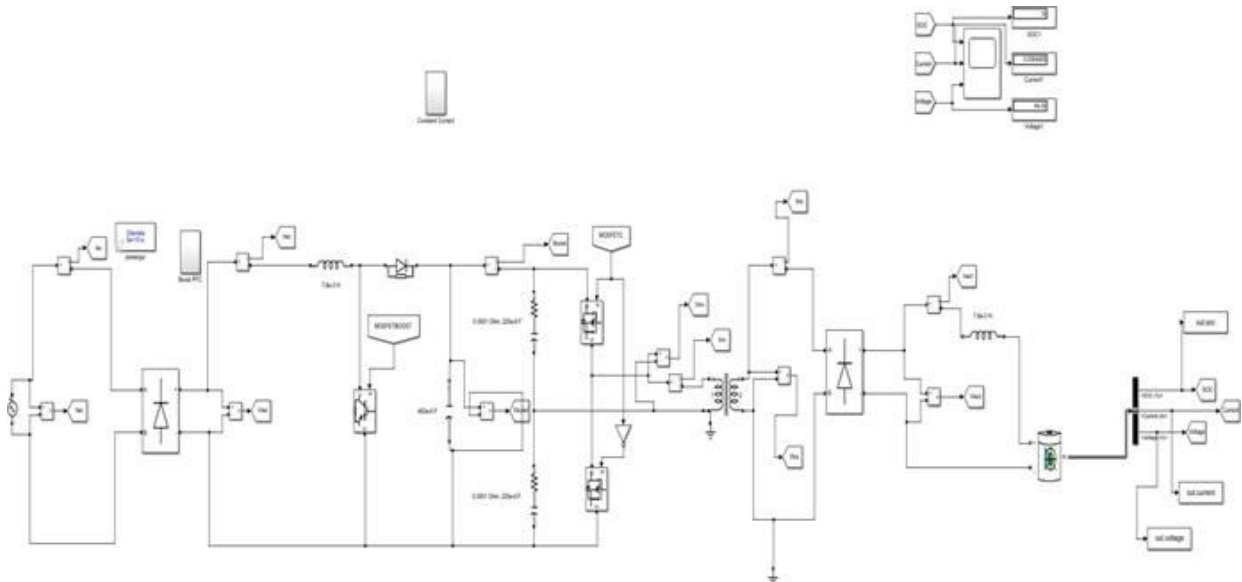


Figure.1: Li-ion battery in MATLAB circuit in cc-method

5.1 Ev Design Calculation of Battery & Matlab Results

The input ac voltage is a Single-phase ac supply volt RMS value supply frequency being the 50 Hz. 1. Maximum value of input ac voltage is $\sqrt{2} * 230 = 324.3$ volt

2. The output of the rectifier circuit is 254.3 volt.

3. Boost converter calculation:

Input voltage of boost converter is 254.3 volt which is the output of rectifier so output voltage of rectifier is,

$$V_o = (1 - D) * V_{rectifier}$$

$$= (1 - 0.45) * 254.3$$

$$= 464.2 \text{ volt.}$$

5.1.1 MATLAB Result of Cc Charging Methods

In this simulation of constant current charging method lithium-ion battery charged with a constant current of 12 amperes for time 7000 seconds with single-phase ac supply 230 volts, and measure the output parameters like soc (%), output voltage (volt), current (amperes), the efficiency of the battery.

In this MATLAB simulation, a lithium-ion battery (single-cell) with a nominal voltage of 4.2 volts, charged with soc level 10% to 80%.

5.1.1 Output Voltage of Rectifier Results in MATLAB

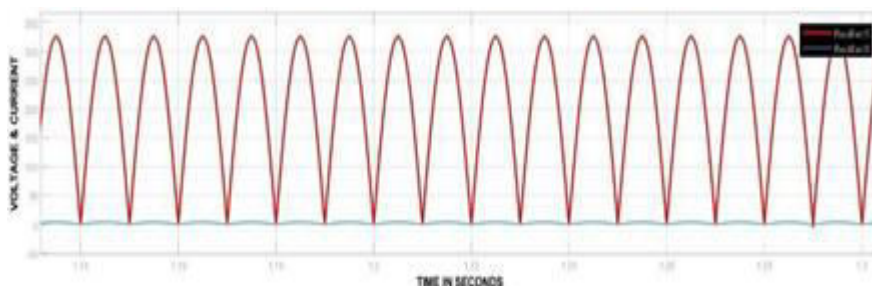


Figure .2: output voltage of rectifier waveforms in MATLAB with 325.4 volts

5.1.2 Constant Current Charging Soc, Voltage, The Current Waveform of the Li-Ion Battery From 10 To 80 %

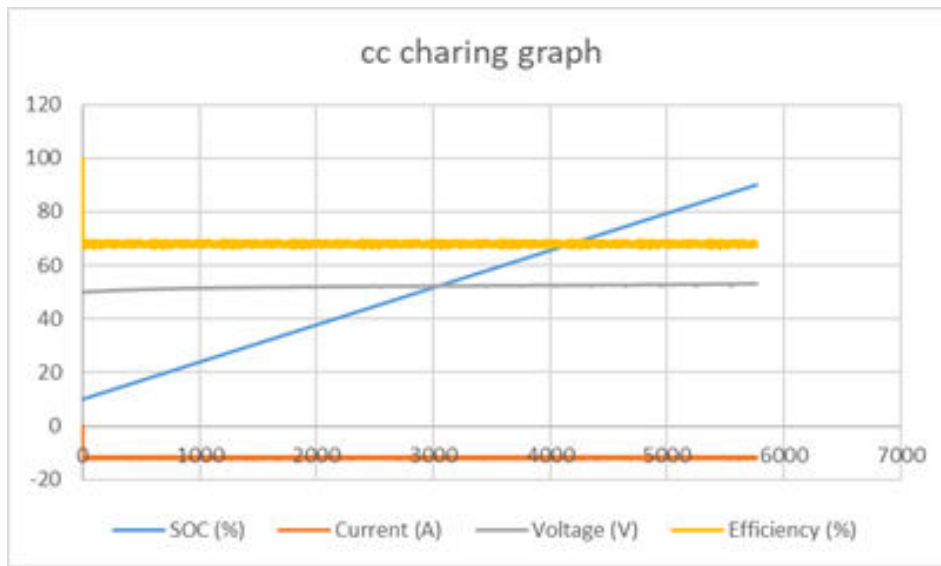


Figure.3: MATLAB waveforms of li-ion battery in cc charging methods

5.1.3 Experimental Results of SOC (%) of Constant Current Charging Data in MATLAB

Time in seconds	Initial SOC (%)	Final SOC (%)
10 SECONDS	10%	10.14 %
20 SECONDS	10 %	10.27 %
60 SECONDS	10%	10.83 %
1000 SECONDS	10%	23.87 % 37.74% 51.62% 65.50%
2000 SECONDS	10%	79.37%
3000 SECONDS	10%	
4000 SECONDS	10%	
5000 SECONDS	10%	

Table.2: Cc Charing Results of Soc

6. CONSTANT VOLTAGE CHARGING CIRCUIT: MATLAB CIRCUIT

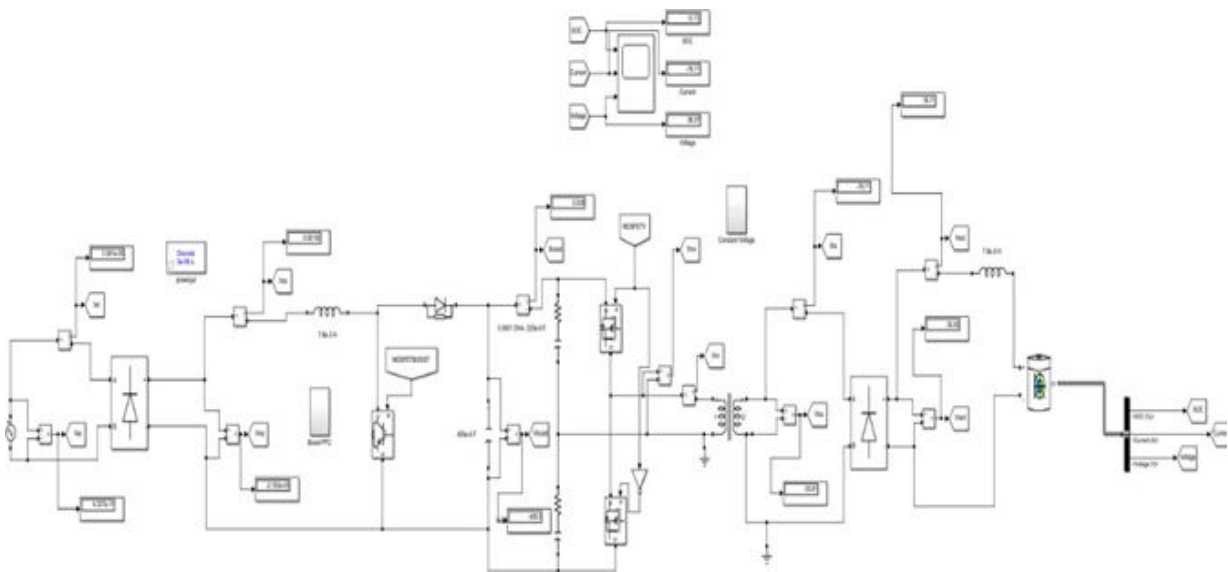


Figure.4: CV charging circuit of li-ion battery in MATLAB

In this method of li-ion battery charging, we are applying constant voltage up to the battery reaches its 80% of thestate of charge and voltage remaining constant up to that point and corresponding current gets reduces to its cut off value of current so practically it took longer time to charge the battery compared to cc charging method because in EV module number of cells are connected in series and parallel so it's not possible to charger the cell equally at the full voltage at the same time.[14]

6.1.1 2 Soc, Voltage, the Current Waveform of Constant Current Charging of the Li-Ion Battery from 10 To 80 %

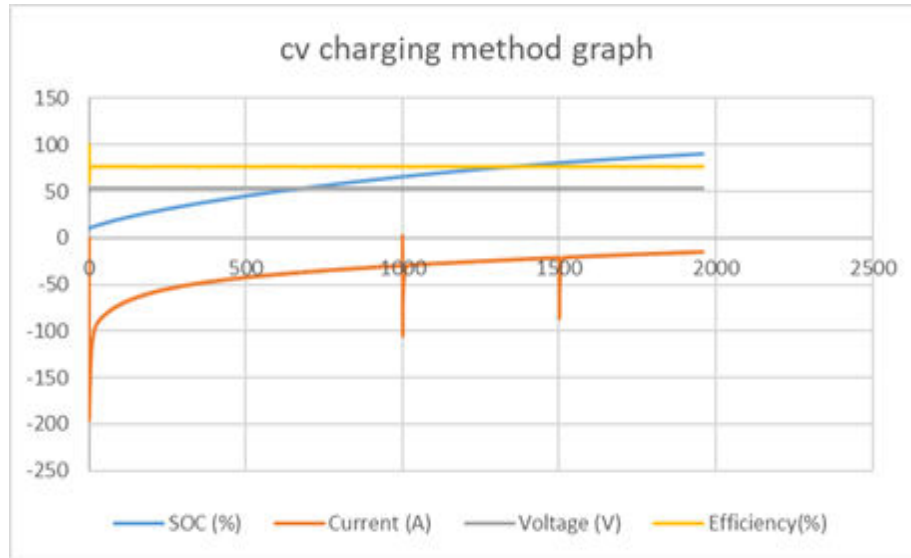


Figure.5: CV charging waveforms results in MATLAB

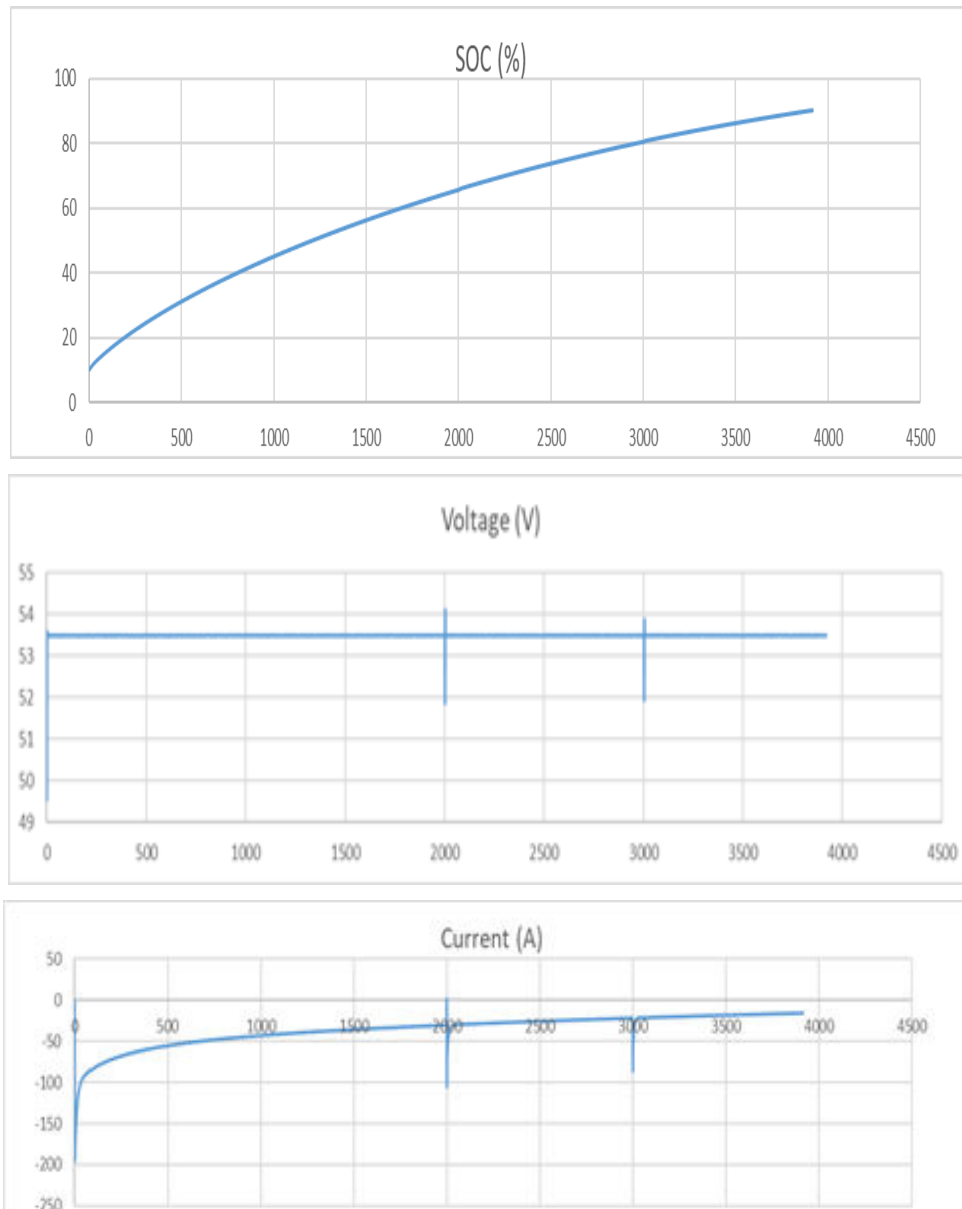


Figure.6: MATLAB results of soc, voltage, current for 4500 seconds.

5.1.3 Experimental Results of SOC (%) of Constant Voltage Charging Data in MATLAB

Time in seconds	Initial SOC (%)	Final SOC (%)
10 SECONDS	10%	11.66 % 12.85%
20 SECONDS	10 %	16.85 %
60 SECONDS	10%	65.64 % 72.38%
1000 SECONDS	10%	80%
2000 SECONDS	10%	80.67%
3000 SECONDS	10%	81.67 %
4000 SECONDS	10 %	
5000 SECONDS	10%	

Table.3: CV Charing Results of Soc

7. CONSTANT CURRENT AND CONSTANT VOLTAGE CHARGING METHOD: (MATLAB CIRCUIT)

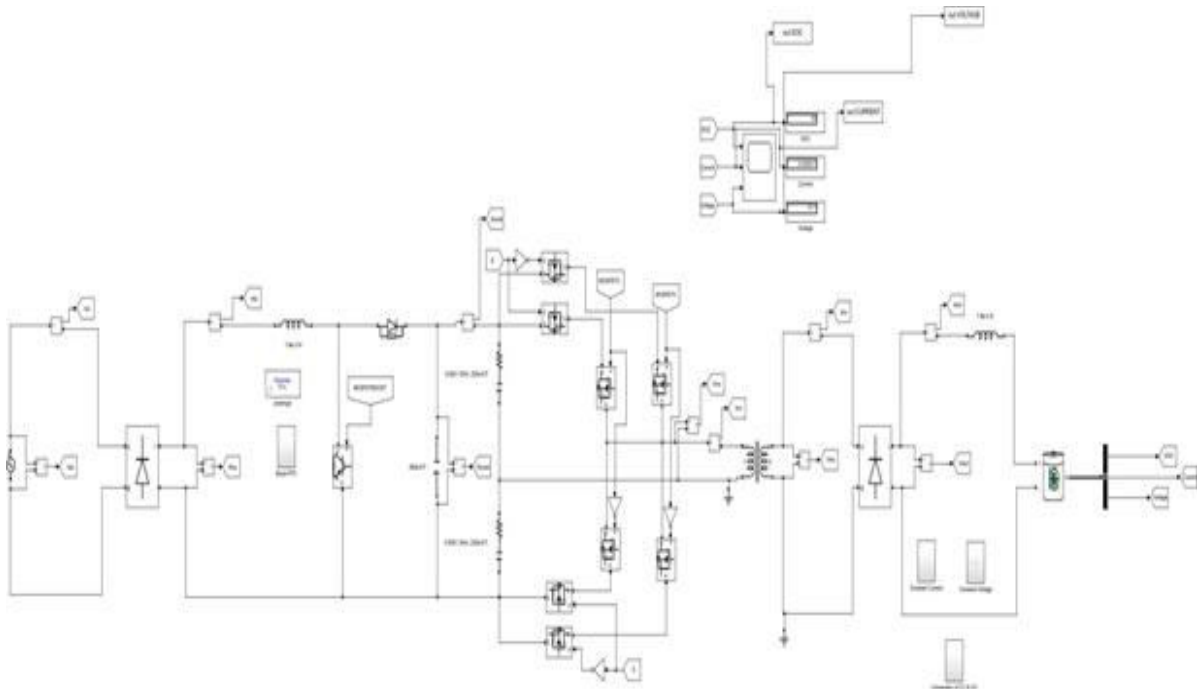


Figure.7: cc-cv charging of the Li-ion battery in MATLAB

7.1 Soc, Voltage, the Current Waveform of Constant Current Charging of the Li-Ion Battery from 10 To 80 %

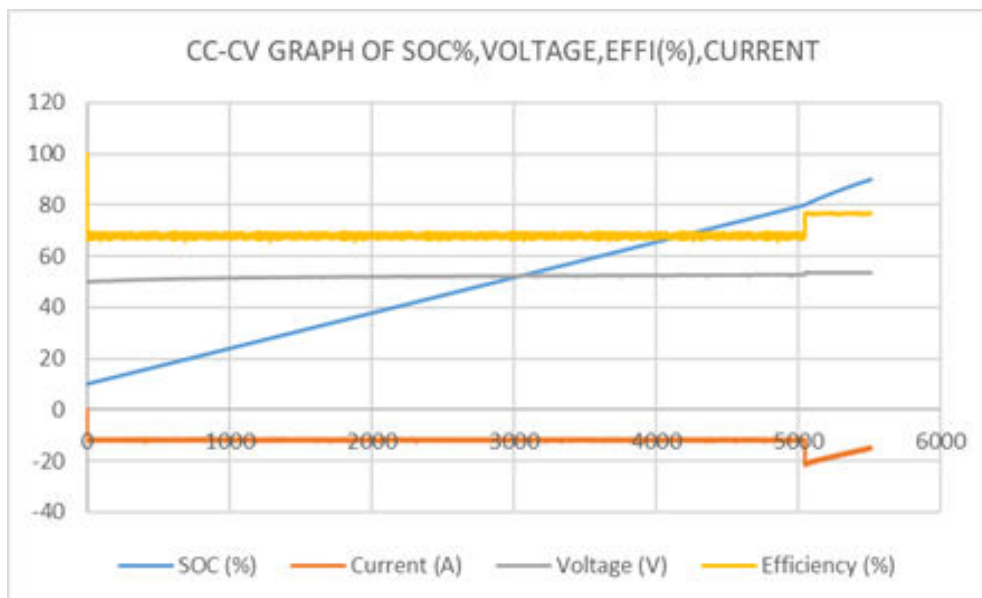


Figure.8: Cc-Cv Experimental Waveform of Matlab

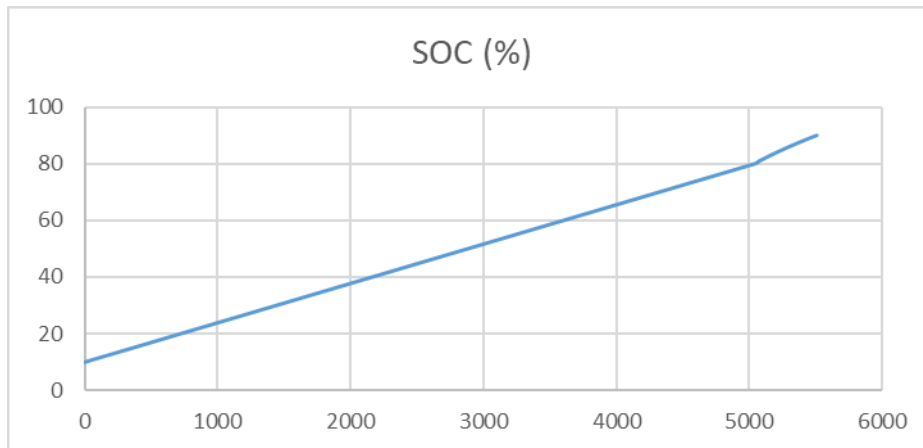


Figure.9: Cc-Cv Soc Graph for Li-Ion Battery

In the above figure.9 it shows that the battery changes its state from constant current to constant voltage when the battery reaches its 80% soc with constant current charging methods after that it changes into constant voltage mode when it reaches its cut-off value of voltage during charging.

7.2 Experimental Results of SOC (%) of Constant Voltage Charging Data in MATLAB

Time in seconds	Initial SOC (%)	Final SOC (%)
10 SECONDS	10%	10.13%
20 SECONDS	10%	10.27%
60 SECONDS	10%	10.83%
1800 SECONDS	10%	34.97%
2000 SECONDS	10%	37.74%
3000 SECONDS	10%	51.62%
5000 SECONDS	10%	79.37%

8. COMPARISON OF ALL CHARGING TOPOLOGIES OF LI-ION BATTERY

Time in seconds	Battery topology	Initial-Final SOC (%)
5000 SECONDS	CC TOPOLOGY CV TOPOLOGY	10%-79.27 %
5000 SECONDS	CC-CV TOPOLOGY	10%-81.61%
5000 SECONDS		10%-79.37%

CONCLUSION

In this paper, here I am discussing three charging processes of the li-ion battery for 5000 seconds, time is explained with the help of MATLAB. In the first method maximum charging current is set to ensure to charge the battery, but the drawback of this method is that continuously applying higher current battery life gets damaged or heating problem occurs. the second method of constant voltage charging method took a long time compared to the CC method. With considering charging time, energy cost, temperature variation, the CC-CV method of charging is used to charge the battery which takes lesser time compared to both the charging methods but, in this method, maximum energy loss occurs at one point so we are proposed a new method of charging in the future that charge the battery in a short time with minimum losses and higher efficiency.

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PRESCRIPTIVE ANALYTIC’S EFFECTS ON IMPROVING STUDENT ACADEMIC PERFORMANCE

M. S. Sassirekha

ABSTRACT

Students are battling to pass the exam on their first try. It has a negative impact on the final result and the institutions pass rate. To overcome the problem, an early warning system should be implemented in order to save the students in higher education. The key aspects of the data were analysed and filtered in descriptive analytics, predictions were generated using various machine learning models in predictive analytics, and ultimately, various interventions were provided based on predictions made in prescriptive analytics. The key features were determined and a best predicting machine learning model was constructed using 500 samples out of 4000 students. The results are forecasted on applying prescriptive analytics approaches to ensure the effectiveness of the interventions/support offered to the students based on the prediction. Finally, the student sample group is divided into two groups: control and experiment, with the experiment group showing improved results due to minimal interventions on time.

Keywords: Students academic performance, Prescriptive analytics, Interventions, Higher education, Control group, experiment group.

INTRODUCTION

Business analytics is the process through which companies analyse historical data using statistical methods and technologies in order to obtain new insights and improve strategic decision-making. In business analytics, there are often three parts: descriptive, predictive, and prescriptive. Descriptive analytics (sometimes known as descriptive statistics) is a type of data Descriptive analytics serves as a springboard for simple, straightforward data analysis. It's all about "what we know" (current user data, real-time data, previous engagement data, and big data). Predictive analytics is a term that refers to the study of patterns in Predictive analytics uses mathematical models to infer (predict) future behaviour from existing data. It's the "what could happen" scenario [12].

Prescriptive analytics is one of the parts of Data Analytics which is the science of studying raw data in order to draw conclusions about it. Prescriptive analytics is a sort of data analytics in which technology is used to assist businesses in making better decisions by analysing raw data. Prescriptive analytics, in particular, takes into account information about potential situations or scenarios, available resources, previous performance, and present performance to recommend a course of action or strategy. It can be used to make decisions throughout a wide range of time frames, from the immediate to the long term. Prescriptive analytics can simulate and display the probability of various outcomes, allowing institutions to better grasp the level of risk and uncertainty they face than relying on averages. Despite the potential for prescriptive analysis, it will only have an impact on cooperative human-machine work.

Optimization (how to attain the best output) and heuristics are two parts of prescriptive analytics (how to achieve the best outcome and make better decisions by accounting for uncertainty in existing data). Graph analysis, simulation, complex event processing (which involves combining data from multiple sources to infer patterns and model complex circumstances), neural networks, or combinations of various machine learning algorithms designed to process complex data, are all examples of tools that could be used to make prescriptive analytics happen, according to Gartner's definition of various analytics in figure 1.

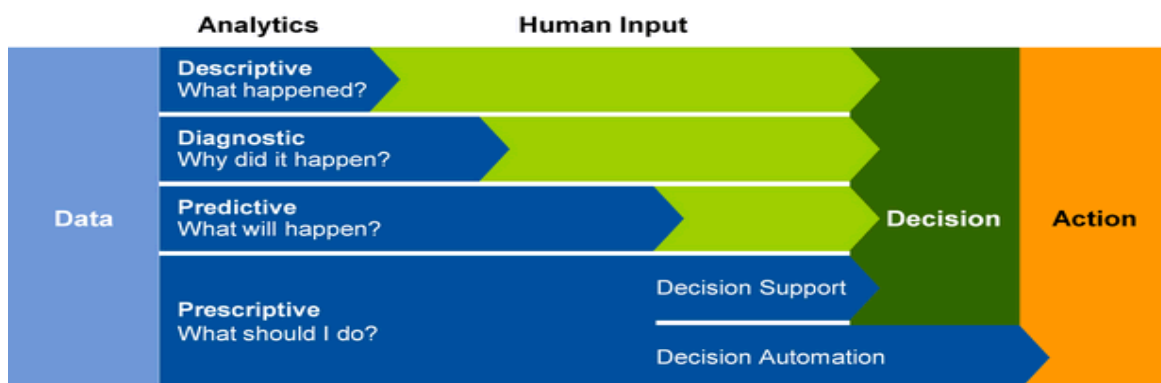


Figure 1: Gartner Framework of Data Analytics and its tools

Control and Experiment group: A control group is one that is kept distinct from the rest of the experiment so that the independent variable being examined has no bearing on the outcome. This helps rule out alternate explanations for the experimental results by isolating the independent variable's impact on the experiment. A test sample or the group that receives an experimental method is referred to as an experimental group. Changes in the independent variable being tested are presented to this group. The independent variable's values as well as their impact on the dependent variable are recorded. At any given time, an experiment may comprise many experimental groups.

Although every experiment has an experimental group, not every experiment requires a control group. When the experimental circumstances are complex and difficult to isolate, controls are particularly beneficial. Controlled experiments are experiments that involve control groups. In an experiment, the control and experimental groups are pitted against one another. The only difference between the two groups is that the experimental group's independent variable is altered. In the control group, the independent variable is "controlled" or kept constant. A single experiment can contain many experimental groups, all of which can be compared to the control group. The objective of having a control is to rule out other factors that could affect the experiment's outcomes. Control groups are not included in all trials, but those that do are referred to as "controlled experiments."

RELATED WORKS

The Education domain can make use of prescriptive analysis extensively to:

- Find the best factors influencing the student's performance in various portfolios such as academics, career and other skills [1].
- Determine the best possible techniques in a particular portfolio first [3].
- Improve performance rate by training machine learning models to recognize the most beneficial factors [2]
- Optimize procedures to eliminate unsuccessful attempts [4].

The first step is to determine what information you'll require and how you'll organise it. Separating data can be done using age, demographics, income, and gender. The information could be numerical or categorised. The collection of data is the second step in the data analytics process [9]. A range of methods, including computers, online resources, cameras, environmental sources, and individuals, can be used to do this. After the data has been collected, it must be organised before it can be analysed. This could be accomplished with the use of a spreadsheet or other statistical data-gathering software [10]. The data is then cleaned up before being analysed. This indicates that it has been cleansed and double-checked to ensure that there is no duplication or errors, and that it is complete. Before the data is given to a data analyst for processing, this step aids in the repair of any inaccuracies. Because descriptive and predictive analytics had already been applied to the dataset, the list of relevant features and the model that would best suit the situation were well understood.

The population of this study was students of mathematics teacher candidates in Cimahi City, and the sample was 90 students of mathematics teacher candidates who were purposefully selected and then assigned to the experiment and control groups at random [11]. Based on the findings and discussion, it was determined that: (1) The ability of students who were candidates for a math teacher who received Argument-Driven Inquiry (ADI) instruction improved more than those who received direct instruction; (2) There was no difference in the ability of students who were candidates for a math teacher who received Argument-Driven Inquiry (ADI) instruction improved more than those who received direct instruction. Furthermore, there was no interaction impact between the variables. (3) The increase of students' mathematics creative reasoning ability was influenced by learning elements and the type of Adversity Quotient (AQ). Furthermore, there was no interaction impact between learning and AQ in the development of students' mathematical creative reasoning ability; (4) mathematics creative reasoning ability of students aspiring to be math teachers was not optimally reached on the markers of novelty.

RESEARCH QUESTIONS

- 1) How the features found in feature selection techniques were given focus in practice?
- 2) How the prediction in student's performance helped in selecting the decision through prescriptive analytics?
- 3) Whether there is any improvement found based on the interventions applied?

Despite the abundance of works on prediction, there is a dearth of appropriate prescriptive analytics works in the education domain of improving a student's academic performance. There are only a few recommender systems to choose from [5][6][7][8]. This could be a new way to expand the research in the field of education.

MATERIAL & METHODS

Now to get started with prescriptive analytics, it was broken down into different parts, such as Data, state a goal, outline and test.

Data: In this scenario, the dataset used is a real-time dataset of postgraduate students from a reputable engineering college in Tamilnadu with a student population of 4000. In this study, 300 samples of Internet and Java programming topic marks were considered and used as input. Some of the input variables collected and stored in a csv (comma separated value) file were name, register number, email id, date of birth, gender, course name, course code, high school score, higher secondary score, under graduate specialisation, under graduate overall score, entrance exam score, continuous assessment test 1, final grade considered. The educational strategy of a postgraduate course involves calculating marks based on the aggregate of three internal evaluations and assignments (50 percent) and one external test (50 percent). As a result, the current method detects slow students near the end of the semester, which is far too late. If a student is likely to be unqualified following the first internal assessment, proactive interventions and extra caution during subsequent internal and external exams may be offered. All essential data was obtained and categorised. Students were assigned to groups at random based on the prediction for the feature CAT2 (continuous assessment test 2) with the lowest score.

Feature Selected: next continuous assessment test

Control Group: Students in the control group were given a traditional method, and their progress was examined in relation to the other experiment groups.

Experiment Group 1: A group of students was chosen, and the method of providing frequent training to them was implemented and verified for improvement.

Experiment Group 2: A group of students was selected, and the daily test method was used. It aided in the experimentation of those pupils' results improvement.

Experiment Group 3: A novel strategy was used on a group of students to check their daily class attention with questions.

Experiment Group 4: The next step was to use peer coaching to assess the progress.

Experiment Group 5: For this group of students, the idea was to conduct tests and discussions on the same topics.

Declare the goal: The goal was to increase the student's academic performance based on the main elements identified during the descriptive analytics phase, which included the selection of critical role playing aspects. This measure was taken in anticipation of a greater impact on the student's performance. A group of students was chosen and divided into one control group and five experimental groups. Various five interventions or supports were supplied to tackle the problem, thinking of improving the solution, that gave a notion of how much value might be gotten out of it, based on the selected feature found.

Outline: It was critical to define the specific problem or crucial component during this phase. A subset of the main goal, such as enhancing student performance while taking into account one or two elements discovered to see if the analytics were moving in the correct way. Because the educational system is such a large model, a proof of concept was conducted on a group of students to ensure that the numerous proposals were effective. Through minor scenarios and tests, it aids in the validation of the complete model.

Test: With the structure in place, the students in the experiment group received the interventions and assistance they needed, and their performance was evaluated and compared to that of the control group. The control and experiment groups would know what information was required and could handle all of the technical aspects of a predictive model. Finally, the preliminary findings aid in partially or totally resolving the issue and boosting the student's academic performance.

Roll out: Interventions that have a high impact on the specified goal can now be rolled out as a practise to a larger population, resulting in a positive outcome.

The study is set up as a series of trials with a pretest-posttest control group design, with the goal of determining the function of the factor continuous assessment test 2 in increasing student academic performance. The population of this study was postgraduate students, and the sample size was 600 students from purposively selected candidates who were then assigned to the experiment and control groups at random. In this study, data were analysed using a one-way ANOVA statistic test to examine whether there was a difference and if there

was an interaction effect between the factor and the target variable in terms of improving student academic performance.

To find out how much improvement of student’s academic performance before and after the activity, a normalized gain score analysis was calculated using the following formula:

$$g = \frac{\text{posttest score} - \text{pretest score}}{\text{maximum ideal score} - \text{pretest score}} \rightarrow 1$$

as such in normalized gain score levels are grouped into three categories are $0.70 < (g)$: High, $0.30 \leq (g) \leq 0.70$: Medium and $(g) < 0.30$: Low [11].

Results and Discussions

Findings on student’s academic performance prediction based on continuous assessment test 2 and target variable are presented in Table 1.

Table 1: Gain of selected feature factor and target variable

Various Groups	The increase in student's academic performance			
	Control Group(n=50)		Experiment Group(n=50)	
	Mean	SD	Mean	SD
Group 1	0.63	0.12	0.67	0.07
Group 2	0.72	0.15	0.8	0.09
Group 3	0.68	0.15	0.69	0.09
Group 4	0.75	0.13	0.79	0.15
Group 5	0.79	0.11	0.81	0.09

There were five experiment groups here: 1,2,3,4, and 5, which were used in the ANOVA analysis. Treatments are a type of independent variable known as a factor. The experiment factor has five levels since there are five different types of experiments. The X-axis represents the factor or independent variable to evaluate, while the Y-axis represents the control and other experiment groups indicated previously, so the one-way ANOVA approach is used for analysis.

Based on the previous description, it is clear that the feature chosen for improving the student's academic performance through the experiment group was superior to those learned through the control group, whether considered as a whole or when compared to other groups as shown in figure 3. In addition, if the components that affect the rise are examined, the learning factors and the group have an impact on the improvement of a student's academic performance, as shown in Table 1.

To back up the preceding description of the student's academic performance improvement, test data analysis was performed using the statistical test of average difference. The data distribution of student academic performance was found to be normally distributed following a normality test. The above-average difference test was done using the pairwise t-test Analysis of Variance (ANOVA) shown in Table 2 based on these findings. For one-way ANOVA, it was calculated for establishing simultaneous confidence intervals.

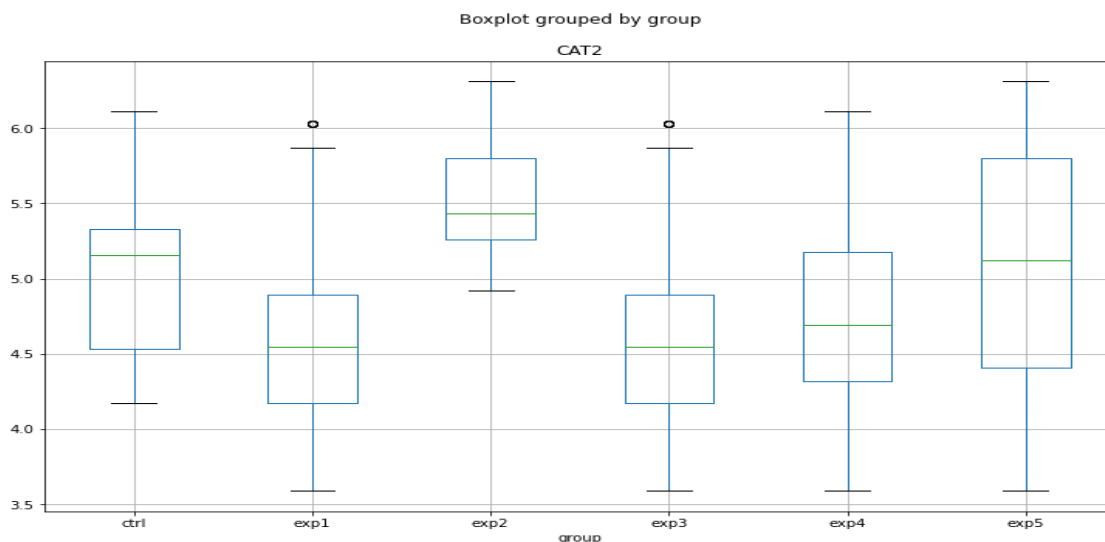


Figure 3: Comparison of Control group and various experimental groups using One-way ANOVA test

Table 2: Comparing all the pairs using Pairwise t-test ANOVA

	A	B	mean (A)	mean (B)	diff
0	ctrl	exp1	5.0320	4.661000	0.371000
1	ctrl	exp2	5.0320	5.526000	-0.494000
2	ctrl	exp3	5.0320	4.661000	0.371000
3	ctrl	exp4	5.0320	4.809400	0.222600
4	ctrl	exp5	5.0320	5.070196	-0.038196
5	exp1	exp2	4.6610	5.526000	-0.865000
6	exp1	exp3	4.6610	4.661000	0.000000
7	exp1	exp4	4.6610	4.809400	-0.148400
8	exp1	exp5	4.6610	5.070196	-0.409196
9	exp2	exp3	5.5260	4.661000	0.865000
10	exp2	exp4	5.5260	4.809400	0.716600
11	exp2	exp5	5.5260	5.070196	0.455804
12	exp3	exp4	4.6610	4.809400	-0.148400
13	exp3	exp5	4.6610	5.070196	-0.409196
14	exp4	exp5	4.8094	5.070196	-0.260796

CONCLUSION & FUTURE WORKS

The different key properties were determined using descriptive analytics. One of those aspects was chosen, and the task of repairing it was undertaken. The feature continuous assessment exam 2 was chosen as the focus, and 600 students were randomly assigned to one of five experimental groups: 1,2,3,4, or 5. The use of prescriptive analytics to forecast student performance aided in the selection of a decision, and the improvement was discovered based on the interventions used and demonstrated using the ANOVA technique. Other advantages included instructions on what to do and how to do it correctly the first time. Decision-makers would be able to see both real-time and forecasted data at the same time in order to make decisions that would support long-term growth and success. This simplifies decision-making by providing specific suggestions. Data analytics and outcome prediction were completed in real time, indicating that less time was spent repairing problems and more time was spent devising flawless solutions. It also lowers the chance of human error or bias. Predictive analytics provides a more extensive and accurate kind of data collection and analysis than descriptive analytics, predictive analytics, or even individuals, thanks to more complex algorithms and machine learning techniques.

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COMPRESSION AND DECOMPRESSION ALGORITHMS- A COMPREHENSIVE REVIEW

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ABSTRACT

We sometimes face problems related to memory issues while saving or transferring any document or a file. Hence, there is a need to compress it so that it is reduced in size and can be transferred and processed easily. Data Compression and Decompression provide users to store data in less space and also easier for the user to transfer over the network. The Compression reduces the file of the size so that we can share it easily over any network even at low speed. This paper aims at compressing and decompressing of different files stored in our computer system at a particular destination location. In the present system, there are so many problems while transferring or sharing a file of large size. These files cannot be sent over a network if they are above certain size limits, even if the size of the file is small but if the internet connection speed is slow, then too it is difficult to send them. These limitations create a lot of problems when we need to share an urgent file and we just can't due to the size limit of the file. Therefore, there is a need to build a system that can compress and decompress the files easily so they can be shared efficiently without any constraint. This paper focuses on the issues of Text Compression by reducing the size of text such that it can be easily transferred over the network. The paper aims to create set of components for compression and decompression.

Keywords: Compression, encoding, decoding, Huffman coding, Text compression, Image compression, audio compression, video compression

I. INTRODUCTION

In IT Data compression is a method in which the logical size of a file is reduced to save disk space for easier and faster transmission over a network or the Internet. Data compression, formally source encoding, is the process of reducing size of data by removing redundant information [1]. This is desirable because we reduce the amount of data we have to store, process or transmit. Reducing redundancy also makes data less reliable, more prone to errors, therefore data integrity is increased by adding check and parity bits. This compression can either be lossless or lossy compression [2].

A. Lossless Compression

Lossless compression is a class of compression that allows the original data to be perfectly reconstructed from the compressed data with no loss of information [3]. In situations where loss of even a single bit is unacceptable, lossless compression methods are used. These methods remove only statistical redundancy; therefore, they cannot be as effective as lossy methods, but compressed data can be reconstructed to identical copy of the original ones.

Lossless compression is most widely used in today's world. It is used in cases where the data has to be identical or where deviations from the original data would be unfavourable. Typical examples are executable programs, text documents, and source code [5].

B. Lossy Compression

On the other hand, Lossy compression is a method of data compression in which the size of the file is reduced by eliminating data in the file. Lossy compression methods minimize size of data by selective loss of least significant data. It is most commonly used for multimedia data - data intended for human interpretation, because human mind is not perfect and it will not notice the difference or even can fill missing information to some extent. So, if we are eliminating data from the file it is very obvious if the file type is image, the quality of Image will be decreased.

Well-designed lossy compression technology often reduces file sizes significantly before degradation is noticed by the end-user. Even when noticeable by the user, further data reduction may be desirable. The ultimate goal is to provide the same perception as original, while removing as much data as possible. Lossy compression suffers from generation loss - repeatedly compressing and decompressing the file will cause it to progressively lose quality. Now, Compression is useful because it reduces the resources required to store and transmit data.

C. Text Compression

Text compression algorithms aim to reduce the volume of data. One commonly used compression algorithm is Huffman coding, which makes use of information on the frequency of characters to assign variable-length codes to characters. The benefit of compressing texts in computer applications is threefold: it reduces the amount of

memory to store a text, it reduces the time for transmitting the text over a computer network. Recently, it has been deployed to speed up algorithmic computations because they can better exploit the memory hierarchy available in modern PCs by reducing the disk access time, by increasing virtually the bandwidth and size of disk (or memory, cache), and by coming at a negligible cost because of the significant speed of current CPUs [9].

We have used 4 algorithms for compression and decompression in this project. They are:

HUFFMAN

LZW

GZIP

RUNLENGTH

a. Huffman Coding

Huffman coding, which makes use of information on the frequency of characters to assign variable-length codes to characters. Huffman Coding is a technique of compressing data to reduce its size without losing any of the details. It was first developed by David Huffman. If shorter bit sequences are used to identify more frequent characters, then the length of the total sequence will be reduced [7].

b. LZW

LZW compression works by reading a sequence of symbols, grouping the symbols into strings, and converting the strings into codes. Because the codes take up less space than the strings they replace, we get compression. A particular LZW compression algorithm takes each input sequence of bits of a given length (for example, 12 bits) and creates an entry in a table (sometimes called a "dictionary" or "codebook") for that particular bit pattern, consisting of the pattern itself and a shorter code.

c. GZIP

GZIP is a compression technology frequently used for transferring data quickly over the internet.

d. RUNLENGTH

Run-length is a form of lossless data compression in which runs of data (sequences in which the same data value occurs in many consecutive data elements) are stored as a single data value and count, rather than as the original run. It compresses data by reducing repetitive, and consecutive data called runs. It does so by storing the number of these runs followed by the data.

II. RELATED WORK

A simple characterization of data compression is that it involves transforming a string of characters in some representation (such as ASCII) into a new string (of bits, for example) which contains the same information but whose length is as small as possible. Data compression has important application in the areas of data transmission and data storage. Data Compression is not only used for text but also for images, audio and videos [8]. Audio data compression reduces the transmission bandwidth and storage requirements of audio data. ZIP, RAR, etc files use lossless compression to compress files (so no data is lost with these compressions) [6]. Most image and video formats use a lossy compression (data is lost), examples of these are JPEG image files, most MP4 video files, etc (it is possible to embed video with a lossless compression in a MP4 file, but is very uncommon) [4].

Most digital cameras store high quality clicked images as compressed files in their storage. There are many cameras which directly store raw pictures. But the problem with raw pictures is the they are very high resolution and hence they occupy more storage in the memory for storing them. With a compression format such as that found in a JPEG file, you'll fit more files onto a camera's memory card, but you'll also sacrifice quality. Using the Same concept of Compression, we have used four algorithms to depict the process of text compression.

Audio compression (data), a type of lossy or lossless compression in which the amount of data in a recorded waveform is reduced to differing extents for transmission respectively with or without some loss of quality. In most cases the audio quality is only reduced by a very slight extent and it is hard to detect the quality drop in audio. Hence data compression when applied on audio files can reduce size of audio files without degrading the quality too much [15].

To pass some information x through a channel, the sender encodes x and sends the code $C(x)$ through the channel, then the receiver receives $C(x)$ from the channel (assumed to be noiseless) and decodes $C(x)$ to get back x . Coding and decoding can be formulated as a data compression problem [16].

Compression takes two stages: modeling and coding.

Modeling means finding the minimal representation for the data.

Coding deals with representing the model.

Information theory is strongly related to coding, given a sequence of codes and their probabilities arithmetic coding gives you the optimal way to represent those codes. Huffman is an approximation to arithmetical coding.

In many practical situations, a certain degree of irreversible image degradation can be tolerated. This level of degradation is usually controlled by the user by adjusting a set of parameters, e.g., quantization intervals. A relevant question is: “ What is the minimum bit rate required to encode a source while keeping the resulting degradation below a certain level? ” This fundamental question is addressed by a branch of information theory known as rate-distortion theory [10]. Rate-distortion theory establishes theoretical performance bounds for lossy data compression according to a fidelity criterion. For a broad class of distortion measures and source models, the theory provides a rate-distortion function $R(D)$ that has the following properties: - For any given level of distortion D , it is possible to find a coding scheme with rate arbitrarily close to $R(D)$ and average distortion arbitrarily close to D [11].

III. COMPRESSION TECHNIQUES

To create a System which can help people to minimise the number of bits of data by compressing it in order to save space. Uncompressed data can take up a lot of space, which is not good for limited hard drive space and internet download speeds that is why compression of data is very important. Maybe it may not look that efficient for small data but for data of large size compression and decompression can do the entire job very efficiently.

Compression and Decompression System gave us a chance to explore the Compression and decompression algorithms and how to compress data in order to minimize the number of bits stored. A compression algorithm is often called compressor and the decompression algorithm is called decompressor. The compressor and decompressor can be located at two ends of a communication channel, at the source and at the destination respectively. Not only in text compression but Slight reduction in image file size can be achieved without loss in the image quality[17] .

It helps to occupy less disk space or storage space. This is due to the fact that when compressed, quantity of bits used to store the information is reduced. Compressed data is read/written faster than original data.

Another big problem that compression and decompression can solve is: It enables faster file transfer on the internet due to reduction in file size. Moreover, file compression can zip up several small files into a single file for more convenient email transmission.

A very logical way of measuring how well a compression algorithm compresses a given set of data is to look at the ratio of the number of bits required to represent the data before compression to the number of bits required to represent the data after compression.

And after compressing a data set the number of bits will reduce. That is how these algorithms are used to do the job efficiently.

A. Architecture

Compression is the process of converting a data set into a code to save the need for storage and transmission of data making it easier to transmit a data. With the compression of a can save in terms of time and storage that exist in memory (storage). Many compression algorithm techniques can be performed and function properly such as the Huffman, Lempel Ziv Welch, Run Length Encoding, Tunstall, And Shannon Fano methods. The data process of data compression is shown in the following figure.

The decompression process returns the compressed file to the beginning of the text. Decompression results depend on the nature of the compression used, namely Lossless Compression or Lossy Compression. If a lossless compression technique has been performed on a text, the original text can be recovered correctly from the decompressed file [11]. Arithmetic encoding is a compression technique that is lossless compression. Lossy Compression results in the loss of some information, and decompression results cannot produce exactly the same text as the original text

The Compression ratio shows the percentage of compression made against the original file.

The compression ratio is derived from the equation:

Compression ratio = $(\text{Size after compression} / \text{Size before compression}) * 100$

The higher the compression ratio the smaller the resulting compression file, the better compression result.

B. Algorithm

We are creating a Data Compression and Decompression System is totally built on Java technology. Using our project, the users can compress the data according to the requirement at any point. We have used 4 algorithms for compression and decompression in this paper [12]. They are:

- a) HUFFMAN
- b) LZW
- c) GZIP
- d) RUNLENGTH

a. Huffman Algorithm [7]

Huffman coding is a lossless data compression algorithm. The idea is to assign variable-length codes to input characters; lengths of the assigned codes are based on the frequencies of corresponding characters. The most frequent character gets the smallest code and the least frequent character gets the largest code [13].

The variable-length codes assigned to input characters are Prefix Codes, means the codes (bit sequences) are assigned in such a way that the code assigned to one character is not the prefix of code assigned to any other character. This is how Huffman Coding makes sure that there is no ambiguity when decoding the generated bitstream.

Let us understand prefix codes with a counter example. Let there be four characters a, b, c and d, and their corresponding variable length codes be 00, 01, 0 and 1. This coding leads to ambiguity because code assigned to c is the prefix of codes assigned to a and b. If the compressed bit stream is 0001, the de-compressed output may be "cccd" or "ccb" or "acd" or "ab".

There are Mainly Two Major Parts in Huffman Coding

1. Build a Huffman Tree from input characters.
2. Traverse the Huffman Tree and assign codes to characters.

Input is an Array of Unique Characters Along with their Frequency of Occurrences and Output is Huffman Tree.

- Create a leaf node for each unique character and build a min heap of all leaf nodes (Min Heap is used as a priority queue. The value of frequency field is used to compare two nodes in min heap. Initially, the least frequent character is at root)
- Extract two nodes with the minimum frequency from the min heap.
- Create a new internal node with a frequency equal to the sum of the two nodes frequencies. Make the first extracted node as its left child and the other extracted node as its right child. Add this node to the min heap.
- Repeat steps#2 and #3 until the heap contains only one node. The remaining node is the root node and the tree is complete. Let us understand the algorithm with an example:

Character	Frequency
a	5
b	9
c	12
d	13
e	16
f	45

Step 1. Build a min heap that contains 6 nodes where each node represents root of a tree with single node.

Step 2 Extract two minimum frequency nodes from min heap. Add a new internal node with frequency $5 + 9 = 14$.

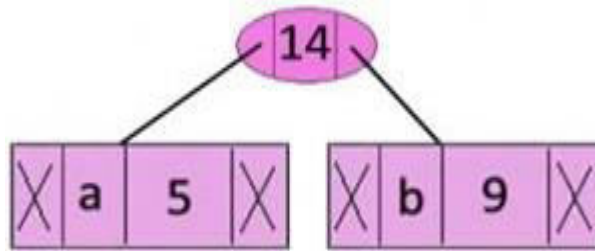


Figure 1: Huffman coding step 1

Now min heap contains 5 nodes where 4 nodes are roots of trees with single element each, and one heap node is root of tree with 3 elements.

Character	Frequency
C	12
D	13
Internal Node	14
E	16
F	45

Step 3: Extract two minimum frequency nodes from heap. Add a new internal node with frequency $12 + 13 = 25$

Now min heap contains 4 nodes where 2 nodes are roots of trees with single element each, and two heap nodes are root of tree with more than one node

Character	Frequency
Internal Node	14
e	16
Internal Node	25
f	45

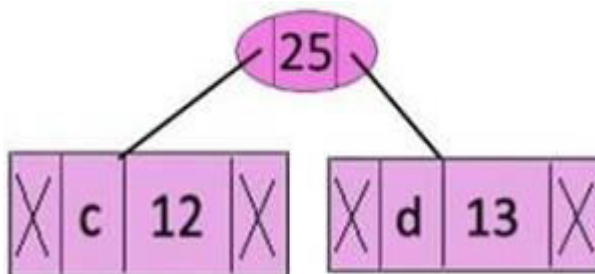


Figure 2: Huffman coding step 2

Step 4: Extract two minimum frequency nodes. Add a new internal node with frequency $14 + 16 = 30$ Now min heap contains 3 nodes.

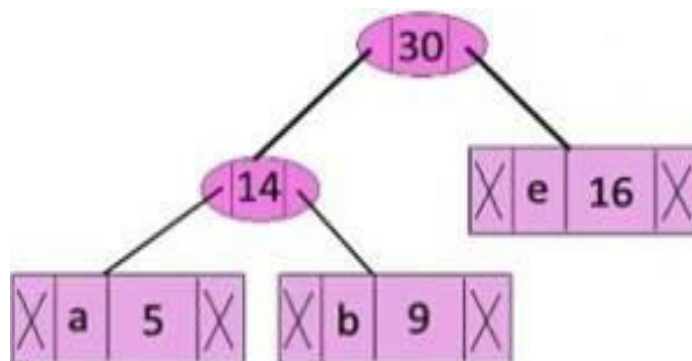


Figure 3: Huffman coding step 3

Character	Frequency
Internal Node	25
Internal Node	30
f	45

Step 5: Extract two minimum frequency nodes. Add a new internal node with frequency $25 + 30 = 55$

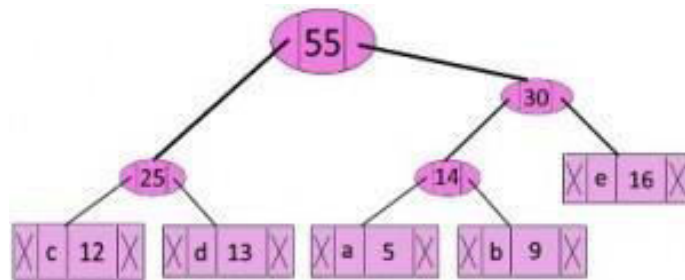


Figure 4: Huffman coding step 4

Now min heap contains 2 nodes.

Character	Frequency
f	45
Internal Node	55

Step 6: Extract two minimum frequency nodes. Add a new internal node with frequency $45 + 55 = 100$

Now min heap contains only one node.

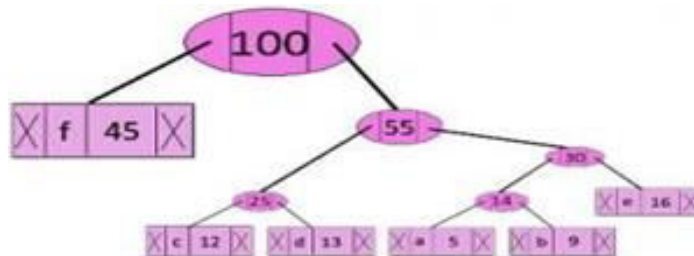


Figure 5: Huffman coding step 5

Character	Frequency
Internal Node	100

Since the heap contains only one node, the algorithm stops here.

Steps to print codes from Huffman Tree:

Traverse the tree formed starting from the root. Maintain an auxiliary array. While moving to the left child, write 0 to the array. While moving to the right child, write 1 to the array. Print

The array when a leaf node is encountered.

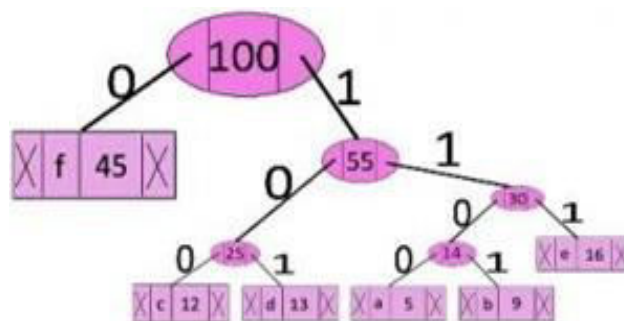


Figure 6: Huffman coding step 6

The codes are as follows:

Word	Character code
F	0
C	100
D	101
A	1100
B	1101
E	111

Time complexity: $O(n \log n)$ where n is the number of unique characters. If there are n nodes, `extractMin()` is called $2*(n - 1)$ times. `extractMin()` takes $O(\log n)$ time as it calls `minHeapify()`. So, overall complexity is $O(n \log n)$.

If the input array is sorted, there exists a linear time algorithm.

b. LZW Algorithm (Lempel–Ziv–Welch)

Lempel–Ziv–Welch (LZW) is a universal lossless data compression algorithm created by Abraham Lempel, Jacob Ziv, and Terry Welch. It was published by Welch in 1984 as an improved implementation of the LZ78 algorithm published by Lempel and Ziv in 1978. The algorithm is simple to implement and has the potential for very high throughput in hardware implementations. It is the algorithm of the widely used Unix file compression utility `compress` and is used in the GIF image format [18].

The encodes sequences of 8-bit data as fixed-length 12-bit codes. The codes from 0 to 255 represent 1-character sequences consisting of the corresponding 8-bit character, and the codes 256 through 4095 are created in a dictionary for sequences encountered in the data as it is encoded [19]. At each stage in compression, input bytes are gathered into a sequence until the next character would make a sequence with no code yet in the dictionary.

The code for the sequence (without that character) is added to the output, and a new code (for the sequence with that character) is added to the dictionary. The idea was quickly adapted to other situations. In an image based on a color table, for example, the natural character alphabet is the set of color table indexes, and in the 1980s, many images had small color tables (on the order of 16 colors). For such a reduced alphabet, the full 12-bit codes yielded poor compression unless the image was large, so the idea of a variable-width code was introduced: codes typically start one bit wider than the symbols being encoded, and as each code size is used up, the code width increases by 1 bit, up to some prescribed maximum (typically 12 bits). When the maximum code value is reached, encoding proceeds using the existing table, but new codes are not generated for addition to the table.

Further refinements include reserving a code to indicate that the code table should be cleared and restored to its initial state (a "clear code", typically the first value immediately after the values for the individual alphabet characters), and a code to indicate the end of data (a "stop code", typically one greater than the clear code). The clear code lets the table be reinitialized after it fills up, which lets the encoding adapt to changing patterns in the input data. Smart encoders can monitor the compression efficiency and clear the table whenever the existing table no longer matches the input well. Since codes are added in a manner determined by the data, the decoder mimics building the table as it sees the resulting codes. It is critical that the encoder and decoder agree on the variety of LZW used: the size of the alphabet, the maximum table size (and code width), whether variable-width encoding is used, initial code size, and whether to use the clear and stop codes (and what values they have).

Most formats that employ LZW build this information into the format specification or provide explicit fields for them in a compression header for the data.

ENCODING

A high-level view of the encoding algorithm is shown here:

1. Initialize the dictionary to contain all strings of length one.
2. Find the longest string W in the dictionary that matches the current input.
3. Emit the dictionary index for W to output and remove W from the input.
4. Add W followed by the next symbol in the input to the dictionary.
5. Go to Step 2.

A dictionary is initialized to contain the single-character strings corresponding to all the possible input characters (and nothing else except the clear and stop codes if they're being used). The algorithm

Works by scanning through the input string for successively longer substrings until it finds one that is not in the dictionary.

When such a string is found, the index for the string without the last character (i.e., the longest substring that is in the dictionary) is retrieved from the dictionary and sent to output, and the new string (including the last character) is added to the dictionary with the next available code. The last input character is then used as the next starting point to scan for substrings.

In this way, successively longer strings are registered in the dictionary and available for subsequent encoding as single output values. The algorithm works best on data with repeated patterns, so the initial parts of a message see little compression. As the message grows, however, the compression ratio tends asymptotically to the maximum (i.e., the compression factor or ratio improves on an increasing curve, and not linearly, approaching a theoretical maximum inside a limited time period rather than over infinite time).

DECODING

A high-level view of the decoding algorithm is shown here:

1. Initialize the dictionary to contain all strings of length one.
2. Read the next encoded symbol: Is it encoded in the dictionary?
 1. Yes:
 1. Emit the corresponding string W to output.
 2. Concatenate the previous string emitted to output with the first symbol of W. Add this to the dictionary.
 2. No:
 1. Concatenate the previous string emitted to output with its first symbol. Call this string V.
 2. Add V to the dictionary and emit V to output.
3. Repeat Step 2 until end of input string.

The decoding algorithm works by reading a value from the encoded input and outputting the corresponding string from the dictionary.

However, the full dictionary is not needed, only the initial dictionary that contains single-character strings (and that is usually hard coded in the program, instead of sent with the encoded data). Instead, the full dictionary is rebuilt during the decoding process the following way: after decoding a value and outputting a string, the decoder concatenates it with the first character of the next decoded string (or the first character of current string, if the next one can't be decoded; since if the next value is unknown, then it must be the value added to the dictionary in this iteration, and so its first character is the same as the first character of the current string), and updates the dictionary with the new string. The decoder then proceeds to the next input (which was already read in the previous iteration) and processes it as before, and so on until it has exhausted the input stream.

ENCODING

Buffer input characters in a sequence ω until $\omega +$ next character is not in the dictionary. Emit the code for ω , and add $\omega +$ next character to the dictionary. Start buffering again with the next character. (The string to be encoded is "TOBEORNOTTOBEORTOBEORNOT#".)

Table1: Encoding

Current Sequence	Next Char	Output		Extended Dictionary		Comments
		Code	Bits			
NULL	T					
T	O	20	10100	27:	TO	27 = first available code after 0 through 26
O	B	15	01111	28:	OB	
B	E	2	00010	29:	BE	
E	O	5	00101	30:	EO	
O	R	15	01111	31:	OR	
R	N	18	10010	32:	RN	32 requires 6 bits, so for next output use 6 bits
N	O	14	001110	33:	NO	
O	T	15	001111	34:	OT	
T	T	20	010100	35:	TT	
TO	B	27	011011	36:	TOB	
BE	O	29	011101	37:	BEO	
OR	T	31	011111	38:	ORT	
TOB	E	36	100100	39:	TOBE	
EO	R	30	011110	40:	EOR	
RN	O	32	100000	41:	RNO	
OT	#	34	100010			# stops the algorithm; send the cur seq
		0	000000			and the stop code

Unencoded length = 25 symbols × 5 bits/symbol = 125 bits Encoded length = (6 codes × 5 bits/code) + (11 codes × 6 bits/code) = 96 bits.

Using LZW has saved 29 bits out of 125, reducing the message by more than 23%. If the message were longer, then the dictionary words would begin to represent longer and longer sections of text, sending repeated words very compactly.

DECODING

To decode an LZW-compressed archive, one needs to know in advance the initial dictionary used, but additional entries can be reconstructed as they are always simply concatenations of previous entries.

Table 2: Decoding

Input		Output Sequence	New Dictionary Entry				Comments
Bits	Code		Full		Conjecture		
10100	20	T			27:	T?	
01111	15	O	27:	TO	28:	O?	
00010	2	B	28:	OB	29:	B?	
00101	5	E	29:	BE	30:	E?	
01111	15	O	30:	EO	31:	O?	
10010	18	R	31:	OR	32:	R?	created code 31 (last to fit in 5 bits)
001110	14	N	32:	RN	33:	N?	so start reading input at 6 bits
001111	15	O	33:	NO	34:	O?	
010100	20	T	34:	OT	35:	T?	
011011	27	TO	35:	TT	36:	TO?	
011101	29	BE	36:	TOB	37:	BE?	36 = TO + 1st symbol (B) of
011111	31	OR	37:	BEO	38:	OR?	next coded sequence received (BE)
100100	36	TOB	38:	ORT	39:	TOB?	
011110	30	EO	39:	TOBE	40:	EO?	
100000	32	RN	40:	EOR	41:	RN?	
100010	34	OT	41:	RNO	42:	OT?	
000000	0	#					

This works as long as the codes received are in the decoder's dictionary, so that they can be decoded into sequences. What happens if the decoder receives a code Z that is not yet in its dictionary? Since the decoder is always just one code behind the encoder, Z can be in the encoder's dictionary only if the encoder just generated it, when emitting the previous code X for χ . Thus Z codes some ω that is $\chi + ?$, and the decoder can determine the unknown character as follows:

1. The decoder sees X and then Z, where X codes the sequence χ and Z codes some unknown sequence ω .
2. The decoder knows that the encoder just added Z as a code for $\chi +$ some unknown character c, so $\omega = \chi + c$.
3. Since c is the first character in the input stream after χ , and since ω is the string appearing immediately after χ , c must be the first character of the sequence ω .
4. Since χ is an initial substring of ω , c must also be the first character of χ .
5. So even though the Z code is not in the table, the decoder is able to infer the unknown sequence and adds $\chi +$ (the first character of χ) to the table as the value of Z.

C. Gzip Algorithm

Gzip is a file format and software application used on Unix and Unix-like systems to compress HTTP content before it's served to a client. The process has been known to shrink a file by up to 80 percent, resulting in improved page load time, decreased bandwidth consumption and reduced SSL overhead (due to a decrease in the number of roundtrips during a SSL Handshake) [14].

File Types Associated With Gzip Include:

1. Gz – Indicates a file extension compressed by the gzip algorithm.
2. Tar file, tarball – A format used to store multiple files for archiving, but not for compression. Gzip can be used to compress .tar files.
3. Tgz, .tar.gz, .gz file – Indicates a .tar file that's been compressed by gzip.

How Gzip Works

1. When a server receives a request for a web page, the server checks the header of the request to determine if the browser supports gzip
 2. If so, the server generates the markup for the page before applying gzip
 3. Gzip converts the markup into a compressed data stream which is then delivered to the end user
 4. When the end user receives the compressed stream, their browser decompress it
- How Compression Levels Affect Resource Usage

Gzip compression is a CPU-dependent process that has different compression levels. Higher compression levels result in smaller files but are more CPU-intensive. Developers can choose how much to compress – as well as what to compress – based on the needs of the site or application they are responsible for. At StackPath we give developers the option to compress files on a level from 1 to 6 from the control panel.

Example of Gzip

A 2009 study shows the drastic impact compression can have on some of the world's top websites. For Facebook, enabling compression reduced page load time by an average of 9.4 seconds, or 414%. A savings of 350 KB may not seem like much in today's data driven world, but when aggregated across all of Facebook's users it makes for a substantial improvement.

A post by Google shows an average compression ratio of 77% for some of the most popular JavaScript libraries and CSS frameworks. While Google itself enjoys a modest 10.3 KB (or 44%) savings from compressing its homepage, some CSS frameworks experience savings of up to 88%. Combined with minification and other data reduction techniques, compression can drastically reduce the size of some of the web's most widely used libraries.

D. Run Length Encoding (RLE) Data Compression Algorithm

Run-length encoding (RLE) is a simple form of lossless data compression that runs on sequences with the same value occurring many consecutive times. It encodes the sequence to store only a single value and its count.

For example, consider a screen containing plain black text on a solid white background. There will be many long runs of white pixels in the blank space and many short runs of black pixels within the text.

```

WWWWWWWWWWWWBWWWWWWWWWWWWBBBWW
WWWWWWWWWWWWWWWWWWWWWWBWWWWWWWWWWWW

```

With a run-length encoding (RLE) data compression algorithm applied to the above hypothetical scan line, it can be rendered

as 12W1B12W3B24W1B14W. This can be interpreted as a sequence of twelve W's, one B, twelve W's, three B's, etc.

Encoding

In order to encode a string of data, your code will need to loop through each character of the data and count the occurrences. Once you see a character that is different from the previous character, you will append the number of occurrences and the character to your encoding.

Decoding

Decoding an RLE-encoded stream of data is actually even easier than encoding it. Like before, you iterate through the data stream one character at a time. If you see a numeric character then you add it to your count, and if you see a non-numeric character then you add count of those characters to your decoding, which is returned to the caller once you iterate through all of the input data.

IV. IMPLEMENTATION**A. Module****a. CGZipEncoder.java**

In this class, we have imported the java.io package for using the file operations and util.zip.GZIPOutputStream class. This class implements a stream filter for writing compressed data in the GZIP file format. We also define a loadFile () method overloaded with different number of parameters. The Boolean encodeFile () method returns true on the successful encoding of the file.

b. CGZipDecoder.java

In this class, we have imported the java.io package for using the file operations and util.zip.GZIPInputStream class. This class implements a stream filter for reading compressed data in the GZIP file format.

We also define a loadFile () method overloaded with different number of parameters. The Boolean decodeFile () method returns true on the successful decoding of the file.

c. CHuffmanEncoder.java

The class CHuffmanEncoder implements the HuffmanSignature interface which is defined in the HuffmanSignature.java in another file. It has three constructors that call the loadFile () method with different arguments. The encodeFile () method returns true if the file is encoded successfully. There are methods to build and get the Huffman codes.

d. CHuffmanDecoder.java

This class also implements the HuffmanSignature interface. It is used to decode the Huffman codes to get the original file. There are three constructors in which we have called the loadFile () method with different arguments. The decodeFile () method is of Boolean type and returns true on successful decoding of the file. There is an int findCodeword () method that finds the codeword for the Huffman code.

e. HuffmanNode.java

This class stores all the nodes of the Huffman tree.

f. CPriorityQueue.java

The CPriorityQueue class is used to find the Huffman codes for every character of the file. There are several functions like enqueue (), dequeue (), is Full (), totalNodes () in this class.

g. HuffmanSignature.java

This is an interface that declares final variables with a value.

h. CLZWEncoder.java

This class implements the LZWInterface and creates instances using different constructors. There is a Boolean method called encodeFile () that returns true on successful encoding of the file.

i. CLZWDecoder.java

This class implements the LZWInterface and creates new instances by defining constructors with different parameters. We also use hashtable as this algorithm is table-based and stores values in a table. There is a Boolean method called decodeFile () that returns true on the successful decoding of the file.

j. LZWInterface.java

This interface defines the final variables.

k. CRLEEncoder

This class implements the RLEInterface. The method encodeFile() creates two instances, one of input files and another of output file, and then copies the single byte from input source file to output source file. In the output, it adds the extension provided by the user at the runtime (i.e., rle extension).

l. CRLEDecoder

This class also implements RLEInterface. In this also, there are two file sources, one is of RLE signature and destination file. Then we read file character-wise until we get an escape character. Finally, we get the original file at a particular location with the file size.

m. RLEInterface

In this interface, we have defined some final variables with some initial values.

In the FileBitIO folder, there are 3 classes and one Form file:

n. CFileBitReader.java

This class imports the java.io package to use the classes and methods related to input File. This class mainly deals with reading from the input file. There is a loadFile () method that is used to load the file.

There is a getBit () method that converts the file into the form of bits. The getByte () method returns the file in the form of bytes or 8-bit sequence. There is eof method that checks whether the file has reached to end or not. The closeFile () method closes the file object. We have used these methods in other classes directly to perform the file operations.

o. CFileBitWriter.java

This class also uses the java.io package and deals with writing to the file. There are methods like putBit (), putBits(), and putString() to write into the file in different formats-either bitwise or bytewise. It also has closeFile () method to close the file after writing.

p. GfhWorkingDlg.form

This is an xml file that defines all the components and dimensions of the components.

q. Main.java

In the Main class, we call the invokeLater () method of java.awt.EventQueue class and inside the run () method we create the object of Gph class and call its setVisible () method and pass true in it.

r. GfhWorkingDlg.java

This class extends the predefined class javax.swing.JDialog and implements the interface GphGuiConstants. There are two parameterized constructors. We create a thread to compress or decompress. This class basically performs the actions after clicking the button and shows the progress bar of processing.

s. GphGuiConstants.java

This interface has two String arrays – one for algorithms names and other for extensions. We have also defined some final variables with an initial value.

t. Gph.form

This is an xml file that defines all the properties of the components with their dimensions.

u. Gph.java

This class imports the java.awt.Color class and creates the layout of the application interface. We call the initComponents () methods in which we have created the whole frame using different components of javax.swing package.

B. Development Details**a. Download and install Eclipse IDE.**

Create a new project “Data Compression & Decompression”.

Select design pane and using Swing Functions design text boxes, panel, onclick buttons etc.

Choose appropriate background image.

Connect the buttons with the appropriate data mining algorithms written in java files.



Figure 1: Graphical User Interface of the Application

b. Steps Tot Run The Project

Step-1: When you click on the Main.java file, you will see the following window:



Figure 2: Run the program

Step-2: Click the browse button.

Step-3: Select the file you want to compress.

Step-4: Now, select the compression algorithm.

Step-5: Choose the destination folder.

Step-6: Click the OK button.

Step-7: Now, we can see in our folder that the zip file has been saved.

V. CONCLUSION

Using the compression technique can reduce the number of files sizes. Data that has a large size can be converted into a smaller size that can save storage in a computer, and can be sent to another system through network quickly and easily. Data compression can be implemented on a text, photo, and video data. This paper provide a brief overview on how compression works that allows users to weigh the advantages and disadvantages. The compression technique observed is either lossy or lossless. Always lossless compression is preferred but to achieve secrecy some image quality degradation is accepted. Encryption applied by different researchers by means of encrypting algorithm which encrypt the entire or partial multimedia bit sequence using a fast conventional cryptosystem. Much of the past and current research targets encrypting only a carefully selected part of the image bitstream in order to reduce the computational load, and yet keep the security level high.

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INCLUSIVE TEACHING AND LEARNING IN THE INDIAN CONTEXT – A SPECIAL EMPHASIS ON HIGHER EDUCATION

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Good initiatives towards inclusion have been taken in primary education and secondary education in India, the result of which there is a larger percentage of disabled students participating in higher education. However, the curriculum of higher education is standardized and does not cater to the specialized needs of disabled students. The main objective of this study is to analyse the existing practices of inclusion in the academic sector and suggest corrective measures to overcome the gaps in the inclusion process in higher education, especially in the Indian context. To achieve this goal, the researchers have examined the past literature on inclusive practices in the areas of primary, secondary, and tertiary education. The researchers have also attempted to discuss the evolution of the term inclusion in the global as well as Indian context. This research article analyses the higher education system in India and highlights the challenges faced by students with disabilities in the portals of higher education. The researchers conclude that India has achieved significant success in inclusive practices in primary education and secondary education. However, there is a lacuna in the inclusion of students with disabilities in higher education. The researchers suggest that higher education institutions need to be pushed by the government and regulatory agencies towards developing infrastructure like ramps, lifts, disabled-friendly washrooms, special educators, bridging courses, etc. to smoothen the process of assimilation of students having disability into the mainstream.

Keywords: Inclusive education, disability, inclusion, disabled students

INTRODUCTION

India has the second largest population in the world with one in every five people on the earth being an Indian. India's population was estimated to be 1,352,642,280 (United Nations 2019). This huge mass of the population is disproportionate to the relatively small landmass occupied by India, which is 2.24% of the world's total area. India is known as a subcontinent rather than a country in terms of diverse linguistic, economic, cultural, and social backgrounds.

India is marching towards becoming one of the largest education centers. There has been a steady increase in the enrolment of school children. The number of children going to school increased to 248 million in 2018-19 as compared to 219 million in 2004-05 as per World Bank (Economic Times, 2020). Next to China and the United States, in terms of the number of students India has the third largest higher education system. Ever since independence i.e. from 1947 India has progressed tremendously in terms of higher education. The expansion of higher education in India can be categorised into three stages: (i) first stage between the periods 1947 to 1980, (ii) second stage between the periods 1980 to 2000, and (iii) third stage from the year 2000 onwards (Agarwal, 2006).

India's education system has grown meteorically ever since independence with the advent of seats of higher education such as colleges, universities, professional colleges such as engineering institutes, medical colleges, and other skill-based institutions. The overall enrolment has increased in all levels of education namely primary, secondary and tertiary. Private sector participation has brought about drastic changes in the field of higher education. Deemed to be Universities, Private Universities, and Autonomous Institutions led by the private sector have made the foray into the higher education sector. The private sector contributes to more than 60% of higher education institutions in India and has fastened the pace of growth resulting in India possessing the highest number of Higher Education institutions and universities in the world (Shaguri, 2013). These private institutions are cumulatively having a higher proportion of seats as compared to the government and semi government universities and institutions. However, the numbers do not ensure high quality. The majority of Indian Universities have a poor ranking in terms of infrastructure and teaching pedagogy. Indian universities have failed to qualify to be included in the league of top-ranking universities. Smaller European countries and the USA have established top league universities. China has established relatively young universities as compared to premier European and American universities but these Chinese universities have managed to attain premier ranking and are some of them are being recognised as world class.

Developments in the Indian Educational System

Last two decades have witnessed significant changes in the Indian educational system. In 2001, Government of India introduced Sarva Shiksha Abhiyan (SSA) programme which can be undoubtedly labelled as the most prominent educational movement in the country aimed at providing primary education for all school age children (MHRD, 2012). In 2002, the 86th Amendment of the constitution of India made education as a fundamental right for children between the age range of six and fourteen. In 2005, introduction of National Curriculum Framework which provides the framework for making syllabi, drafting textbooks and teaching practices was a progressive step towards inclusive education (NCERT, 2005). Right to Education Act (RTE) introduced in 2009 was another significant milestone in the Indian education system. Children with disabilities benefitted from the introduction of two more policies particularly focused on their inclusion (MHRD, 2009).

According to United Nations Report (2012) there has been significant improvement in the school enrolment rate, which has gone from 83.5% in 2000 to 98.2% in 2008. Singal and Jeffery (2011) state that in the pursuit of achieving the goal of providing primary education to all the children, several attempts have been made by numerous programmes and schemes to address the education of the marginalised groups by various factors such as poverty, gender, disability, location, religion and caste. In spite of these progressive policies, an estimated eight million children are still excluded from schooling system (UNICEF, 2011). The worst hit section in terms of access to education are children with disabilities who find it a big challenge to complete primary education and are five times more likely to drop out of school than those from Scheduled Castes and Schedule Tribes (World Bank, 2007).

Unequal Opportunities to Education and Need for Legislation

Multiple forms of inequality continue to exist in India concerning access to education. Status inequality, market inequality (poverty), spatial and sexual disparity prevent the underprivileged sections among the Indian citizens to attain freedom from illiteracy and innumeracy (Appasamy et al., 1995). It has been noted by the Indian government documents (such as Ministry of Human Resource Development, 1986) that there is a possibility of exclusion of children belonging to underprivileged sections of the society such as children with disabilities, schedule caste (SC) groups/schedule tribes (ST), economically backward girls, children of migrant labourers etc.

The enormity of people with disabilities in a thickly populated developing country like India with scarce resources, backward mentality in the rural and semi urban areas, adverse social attitudes, caste-based system makes the mission of imparting inclusive education to the masses a herculean task. It is almost impossible for the private educational sector; NGO's and even government schools, and regulating agencies to ensure inclusive education. It is the only legislation that can eventually bring about a substantial change in a uniform manner. Baquer (1997), notes that the impact of well-directed legislation would be intense and emancipating in the long run.

The saviour for children with disabilities in India concerning access to education was the enactment of 'The Persons with Disabilities (PWD) Act' (1995). This landmark legislation brought about positive changes in the education system catering to Indian children with disabilities. This act emphasised the full participation and inclusion of students with disabilities in regular schools by removing physical and psychological barriers. This act urges various stakeholders like educators, policymakers, service providers, and parents to consider special education as an essential part of regular education.

Inclusive Education

The idea of 'inclusive education' has turned out to be an international catchphrase, and has found acceptance among various countries across the world. World Conference on Special Needs Education was held in Salamanca, Spain in June 1994. 25 international organisations and representatives of 92 governments took part in this conference. This conference declared that inclusion should be the norm in education. The outcome of this world conference was a Framework for Action which emphasised that all children, irrespective of their intellectual, physical, emotional, linguistic, social, or other conditions. The framework stressed that all educational policies should mandate that the children with disabilities should attend regular schools in their neighbourhood attended by mainstream children without disability. According to Vislie (2003) 'inclusion' as described by Salamanca World Conference has become an international notation adopted world over. In spite of wide acceptance of the term 'inclusion', still there is ambiguity in terms of its meaning.

The post effects of Salamanca world conference have been many; one important outcome has been the broadening of the meaning of the term 'inclusive education' which now includes multiple meanings across the earth. Spurgeon (2007) states that in England inclusive education is sometimes used to describe practices within

special schools. Ainscow et al. (2006) in their study state that to a certain extent in United Kingdom inclusive education is associated with school attendance by all sections of students and not just limited to disability or special needs. The idea of inclusive education is increasingly used to mean many different things and is showing signs of jetlag (Slee, 2004).

Peters (2003) after conducting comprehensive analysis at an international level on the subject of inclusive education noted that it is a complex issue with no clear approach available from past literature. She further states that inclusive education is implemented at different levels, is centred on range of diverse motives, it adheres to different goals and also represents variety of categorisations of special education needs. Holdsworth (2002) states that it is not sufficient that nations adopt 'inclusion' as a politically correct term but rather conceptualize and implement it by taking into consideration the context.

Inclusive education is conceived of as an unfinished process and a belief system that poses a challenge to any situation of exclusion (Ainscow 1998; Sapon-Shevin, 2003). Inclusive education is recognised as a basic human right and the basis for a fair and equitable society (European Agency for Development in Special Needs Education 2012; Forlin, 2013). An ethical component is also considered (Reindal, 2016). Inclusive education focuses on the need to provide a high-quality educational response for all students, increasing the practices that lead to full participation (Ainscow 2015; Messiou et al., 2016).

According to the UK Department for International Development (DfID) definition, (2000) "Inclusive education in a developing country implies the equal right of all children to the 'educational package', however basic that package may be." Sapon-Shevin (2003), states that inclusion is about social justice. According to him inclusion is not about disability, nor is it only about schools. He further articulates that inclusion demands that the society needs to ask, (i) what kinds of skills and commitment do people need to thrive in diverse society? and (ii) what kind of world do we want to create?

World Bank report (2006) states that there is a link between inclusive growth and the efforts undertaken to improve quality of essential services such as healthcare, water supply, education and power for every citizen of the country. The irony is that education itself is not fully inclusive and is marred by exclusiveness. Thereby, due to high degree of inequalities education's contribution to inclusive growth is limited.

Inclusion in Higher Education

Questions of inclusion and equity in teaching and learning have been explored by multiple higher education stakeholders in recent years. Scholars and policymakers alike have discussed the importance of widening participation in tertiary education (Bradley & Miller 2010) and of developing campus cultures and pedagogical approaches that value, respect, and work for a wide variety of learners (Ouellett, 2005). Much of this scholarship has focused on the relative accessibility of teaching and learning for students with disabilities in particular (e.g., Fuller, Bradley, & Healey, 2004; Riddell et al, 2007), often considering inclusive pedagogical strategies such as universal design for learning (Burgstahler & Moore 2009). Considerable attention has also been given to how teaching and learning intersect with ethnicity, socio-economic status, religion, and other axes of identity (Devlin et al., 2012; Ladson-Billings, 2014). In line with this growing body of work, Ainscow et al. (2006) suggest that inclusion has become a global agenda for educational institutions, arguing that all such institutions "should concern themselves with increasing the participation and broad educational achievements of all groups of learners who have historically been marginalized".

Unequal access to higher education or inequality in higher education is expensive as it results in a loss in social welfare as well as individual welfare. Salmi and Bassett (2014) note that the prerequisite for young people to realise their full potential is that they have equal access to tertiary education without any barrier or exclusion. They also emphasise the extensive private and social benefits that result from higher education. Exclusivity or inequalities result in loss to the education sector, due to lack of or low 'diversity' (UNESCO 2009).

Inclusive Education in India

Inclusive education in the Indian context has facilitated a forum using which activists and reformers can raise concerns over the educational requirements of students with disabilities. However, there is no clarity regarding the meaning of inclusivity concerning education in the Indian context. Neither is there any uniformity in the usage of the word inclusion. Since India has a high proportion of educated people proficient in English, the word inclusive education has replaced the word integrated education with no significant change in meaning. Legislators and educators must develop clarity on the meaning of the term inclusive education (Singal 2006).

In the last two decades there has been a significant amount of scrutiny with regards to the mainstream education system in India about the existence of social inequalities and restricted educational opportunities for some

disadvantaged sectors of the society (Taneja 2001); lack of adequate role of teachers (Selvam et al. 2000); limited teaching methods (Anita, 2000); and concerning rigid curriculum (Rajput, 1999). Despite these studies, there have been no significant policy changes or legislation with regards to these anomalies in the field of education.

Singal (2005) commented on the growing media visibility of the term 'inclusive education' in the mass media. Ever since, there has been a multi-fold increase in the usage of this term on television, print media, and websites. Singal (2005) also notes that the majority of Indian studies on inclusive education are backed up with little empirical research. These studies are more of commentaries of people working in the field. Post-2005, there has been a steady increase in the number of empirical studies on inclusive education but their number is negligible as compared to developed western European countries & United States.

Researchers on inclusive education in the Indian context are divided regarding their focus. Giffard-Lindsay (2007), note that in India children with disabilities require attention since they have been neglected and quite often excluded from the education system. Singal (2008) on her study investigating the meaning of inclusive education in India rationalises her focus on disability. Parasuram (2006) and Julka (2005) adopt a contrary approach by recognising the wider focus of inclusive education rather than a specific focus on children with disabilities.

Researchers focusing on the policy aspect of inclusive education have criticised the Indian government's policy of providing appliances and aids to children with disabilities rather than changing practices within schools and developing favorable services in the educational system that promote inclusion. These researchers have also raised a voice of dissent against the government's policy of encouraging inclusive education on one hand and simultaneously developing special schools on the other hand (Kalyanpur, 2008). Singal (2005), notes that inclusive education is an elusive concept in the Indian context. Hodkinson and Devarakonda (2009), state that the term inclusive education has become a 'fashion statement' with no deeper meaning attached. Kalyanpur (2008), comments on the tendency of Indian educators and policymakers to be 'politically correct' by taking popular trends from developed western countries like 'inclusive education' without a real understanding of their meaning.

Limited Access to Higher Education in India

Halder (2009) states that in 2009, out of estimated 40 million children aged 4–16 years with mental and physical disabilities, 90% were excluded from any kind of education or dropped out of school. She further notes that less than 1% of students in India enrolled in higher education in 1950, whereas in 2009 the enrolment percentage increased tenfold approximately to 10%. She makes a critical comment that the enrolment percentage of students in higher education is much less than the global average of 23.0%, and 54.6% for developed countries. From this study, it is evident that there is a pressing need to increase the accessibility of higher education to Indian students, especially students from disadvantaged sections of society. The accessibility to higher education can be increased in two ways: (1) Reducing or resolving barriers hindering the access of students to higher education (Wiseman et al, 1988); (2) Increasing the infrastructure and intake capacity of the existing colleges and universities (Thorat 2006).

Challenges Faced by Students with Disabilities at Higher Educational Institutes

Students with disabilities face particular challenges in higher education not only in terms of gaining physical access to buildings but also in much wider issues concerning curriculum adaptation and accommodation, teaching, learning, and assessment. These reasons become the eligibility criteria to scrutinize the ability of higher education to include a diverse range of learners. This has led to the emphasis on initiatives to widen access to higher education to individuals with disabilities. Chataika (2009) revealed that the students with disabilities in higher education continue to face attitudinal, physical, and institutional barriers but they also have the ability to develop coping mechanisms that help them reach their educational goals.

DISCUSSION

Students with disabilities continue to encounter physical barriers to educational services, such as a lack of ramps and/or elevators in multi-level buildings, heavy doors, inaccessible washrooms, and/or inaccessible transportation to and from the institution. They often encounter delays at many stages of the accommodation process. They have difficulties in the processing of claims for scholarships and concessions. Many of the time professional assessments are not carried out on time. Delay in the provision of special education programs and services is also observed. Students with disabilities continue to face negative attitudes and stereotypes in the education system. Lack of knowledge about and sensitivity to disability issues on the part of some educators, staff, and students can make it difficult for students with disabilities to access educational services equally.

The deficit view dominates the approach to inclusiveness, particularly in the educational setting. Higher education training programs focusing on disability often reinforce deficit views. Going forward, the mainstream curriculum should embrace individual and cultural differences and students with disabilities should not be isolated to the niche of special education. Academic success should not be measured solely on standardization but rather on diversity. "Inclusive systems of education are essential to improve the learning environment by deploying skilled teachers, equitably targeting financial and learning support to disadvantaged schools, and providing intercultural and bilingual education" (UNESCO 2010).

Higher Education Providers must be proactive in making reasonable adjustments to accommodate students with disabilities. Universities and colleges must anticipate the requirements of students with disabilities and make adjustments to accommodate them. Governments must enact legislation making it mandatory for higher education institutions to provide a similar opportunity to students with disabilities as other mainstream students. This will result in equal outcomes in terms of learning.

It is an accepted fact that higher education promotes social mobility due to better jobs and increased income. Hence inclusiveness is essential to bring students with disabilities to the mainstream. Inclusive learning and teaching in the true sense recognises all students' entitlement to a learning experience that respects diversity, enables participation, removes barriers, and anticipates and considers a variety of learning needs and preferences.

Having a pool of teaching faculty from diverse backgrounds is a great step towards inclusive education. Teachers from mainstream backgrounds have a fairly homogenous view of the ability of the students. To the mainstream teachers, students with disabilities are a problem that they need to tackle or endure causing frustration to both the student with disabilities as well as the teacher. Teacher training programs designed by including teachers and administrators from marginalized groups help in sensitising the higher education faculty about the merits of diversity and the importance of inclusion.

CONCLUSION

Students with physical/mental disabilities face several challenges during their pursuit of higher education leading to either non-inclusion or partial inclusion in the higher education system. Students with disabilities often feel discriminated against due to the mentality of some teachers and administrators that students with disabilities are occupying the seats of more deserving mainstream students. Students with disabilities are treated with sympathy rather than being treated with empathy in the portals of higher education. This results in a higher percentage of either voluntary or forced dropouts, thereby robbing the students with disabilities a chance of a better future and economic wellbeing. This research paper discusses models of inclusion and suggests steps that can be taken by universities and institutions of higher learning to overcome the barriers to inclusion of students with disabilities. Training higher education teachers and academic administrators about the importance of diversity and inclusion is an important step towards the assimilation of students with disabilities.

In the Indian context there have been attempts towards inclusion mostly in primary education and partially in secondary education. Important legislations like the Right to Education Act & Sarva Shiksha Abhiyan have resulted in increased access to basic education and a greater degree of inclusion. However, only a cosmetic effort is seen in higher education. The Indian government needs to frame legislation and concrete policies to ensure the inclusion of students with disabilities in field of higher education. Higher education institutions need to be pushed towards developing infrastructure like ramps, lifts, disabled friendly washrooms, special educators, bridging courses, etc. to smoothen the process of assimilation.

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ELUCIDATION OF PREDICTIVE BIOMARKERS FOR THE DIAGNOSIS OF NON TUMOR BRAIN LESIONS THROUGH MAGNETIC RESONANCE SPECTROSCOPY ALONG WITH HISTOPATHOLOGICAL FINDINGS**Smitha. H^{1*}, Meena Devi V.N², Sreekanth K.S³ and Vinoo Jacob⁴**¹Department of Physics, Noorul Islam Centre of Higher Education, Kumarakovil, Kanyakumari & Department of Physiology, Sree Gokulam Medical College & Research Foundation, Venjaramoodu.P.O, Trivandrum – 695607²Department of Physics, Noorul Islam Centre of Higher Education, Kumarakovil, Kanyakumari³Department of Biochemistry & Molecular Biology, Sree Gokulam Medical College & Research Foundation, Venjaramoodu.P.O, Trivandrum – 695607⁴Department of Radio Diagnosis, Sree Gokulam Medical College & Research Foundation, Venjaramoodu.P.O, Trivandrum – 695607**ABSTRACT**

Background: Elucidation of predictive biomarkers are essential for the proper diagnosis of non tumor brain lesions like abscess, tuberculosis, neurocysticercosis, microphthalmia, microcephaly etc .Magnetic Resonance Spectroscopy (MRS) differentiates the different non tumor brain lesions supported by histopathological evaluations by which we can predict the biomarkers. The aim of this study is to find out the metabolites in non tumor brain lesions diagnosed through MRS in correlation with histopathological changes to predict the specific biomarkers .This study was conducted in a tertiary health care centre of South Kerala ,in the Department of Radiology. Patients (n=81) suspected of non tumor brain lesion were subjected for both MRS and histopathological investigations after the surgery and the results obtained were recorded and statistical analysis was performed by SPSS version 16. MRS images of 81 non tumor brain lesions were studied and compared for the metabolic ratios and pathogenesis. MRS spectrum gave different peaks of specific metabolites of non tumor brain lesions and histopathological results also showed supporting findings. Magnetic Resonance Spectroscopy is an ideal technique and has a wide range of sensitivity to evaluate different metabolites of non tumor brain lesions .The quantification of tissue metabolites by MRS and histopathological changes can predict better diagnosis and further therapeutic interventions.

Keywords: Biomarkers, Magnetic Resonance Spectroscopy, metabolites, non tumor brain lesions

INTRODUCTION

Brain lesions can be caused by a variety of infectious, neoplastic, inflammatory or vascular diseases and are one of the most common encountered abnormalities .¹An understandings of the diseases is essential for the better treatment as well as management, as the non tumors brain lesions are common among the people. Abscess, tuberculosis, neurocysticercosis, microphthalmia, microcephaly etc are some of the non tumor brain lesions .² The lesions like multiple sclerosis (MS), neuromyelitis optica (NMO) and acute disseminated encephalomyelitis (ADEM) are the central nervous system disorders.³

Pathological changes have been found in multiple sclerosis (MS), both in macroscopic lesions and in normally appearing tissue.⁴ Pathological studies showed that white matter changes of myelin attenuation, axonal loss, oligodendrocyte loss, astrocytic gliosis, and arteriolar sclerosis leads to the ischemic changes .⁵

Magnetic Resonance Spectroscopy (MRS) provides the functional information on body fluids, cell extracts and tissue samples as it is an advanced technology of Magnetic Resonance Imaging (MRI).⁶ The concentration of brain metabolites such as N-acetyl aspartate (NAA), Choline (Cho), Creatine (Cr) and Lactate in the tissues were determined by MRS. It also helps for the separation of recurrent brain neoplasm from radiation injury.⁷ The aim of this study is to find out the metabolites in non tumor brain lesions diagnosed through MRS in support with the histopathological changes to predict specific biomarkers for non tumor brain lesions.

MATERIALS AND METHODS

This is descriptive study was conducted in the Department of Radiology in one of the major tertiary health care centres in South Kerala. Patients suspected of non tumor brain lesions were subjected for both MRS and histopathological examinations after the surgery. The study was approved by the Institutional Ethics Committee. Informed consent was taken from all the patients. A total of 81 patients were included. They were the patients suffering from neurocysticercosis (n=5), meningitis (n=5), abscess (n=9), multiple sclerosis (n=8), cerebral ischemia (n=4), white matter lesions (n=18), cerebral infarct (n=11), epidermoid cyst (n=4), arachnoid cyst (n=7) and cystic lesions (n= 10) . These 81 consecutive patients of non tumors brain lesions who underwent

surgical excision and confirmed with histopathological examinations were prospectively studied. In this study, the patients with proven MRS diagnosis for non tumor brain lesion were included. Both males and females were included in this study. Patients with implants, aneurysm clips, pacemakers, heart valves and patients with age below 20 years were excluded from this study.

Three different planes, Axial, Coronal and Sagittal of MRI scans were performed by using 1.5 T with sequences like FLAIR T2 weighted imaging and diffusion-weighted imaging (DWI) to determine the pathological conditions of cerebral tissue. Spectroscopy-2D Brain software was used for analysing the spectra. Both Single-voxel (SV) technique and Multi-voxel technique were used. Based on the spectroscopic results, the concentrations of specific metabolites of each non tumor brain lesions were diagnosed.

The non tumor brain lesions were studied in detail by histopathological examination using H&E staining. Clinical features and histopathological features were studied and noted in detail. For this study, biopsy tissue was fixed overnight in 10% buffered formalin and subjected for processing. Histopathology findings were evaluated and correlated with MRS findings. Statistical Analysis was done by SPSS version 16 software. The quantitative variables were expressed in mean and standard deviation (SD). Friedman Test was used for comparing the metabolic ratios.

RESULTS

MRS images of 81 non tumor brain lesion patients were included in this study and compared for the metabolic ratios and also the extent of pathogenesis. This study included non tumors brain lesions (n=81) like neurocysticercosis, meningitis, abscess, multiple sclerosis, cerebral ischemia, white matter lesions, cerebral infarct, epidermoid cyst, arachnoid cyst and cystic lesions. Present study shows the results in different groups of non tumor brain lesions. The normal values of common metabolites like N-acetylaspartate (NAA), creatine (Cr) and choline (Cho) were found to be altered.

Metabolite Findings of Non-Tumor Brain Lesions

MRS spectrum was analysed and the result shows that, a prominent lactate (1.35) and alanine (1.32) peaks were observed in neurocysticercosis (n=5) cases (Figure 1). MRS of meningitis (n=5), that is given in Figure 2, shows that there were an abnormally increased lipid peak at 1.48 ppm. It was detected that, the MRS spectrum of abscess (n=9) as lactate, lipids, valine, succinate, leucine, alanine, acetate have peaks at 1.43, 1.5, 1.21, 2.8, 3.8, 1.36, 2.2 respectively (Figure 3). The figure 4 indicates the MRS spectrum of multiple sclerosis (n=8) which gives a myoinositol peak at 3.61, lactate at 1.36, lipid at 1.41 and glutamate at 3.71. The figure 5 illustrates, the spectrum of cerebral ischemia (n=4) with increased level of myoinositol (3.62) and lactate (1.34). Figure 6 gives the white matter lesions (n=18), which shows the presence of glutamate at 3.65. In the case of cerebral infarct (figure 7) (n=11), the MRS was detected as a lactate and glutamate at 1.32 and 3.79 respectively. The peaks of lipid (1.39) and lactate (1.32) were found in the MRS spectrum of epidermoid cyst (n=4) (Figure 8). Figure 9 gives an arachnoid cyst (n=7) that shows a lactate peak at 1.38 and figure 10 gives the cystic lesions (n=10), which detects the lactate and lipid peaks at 1.35 ppm and 1.45 ppm respectively.

MRS Spectrum Analysis

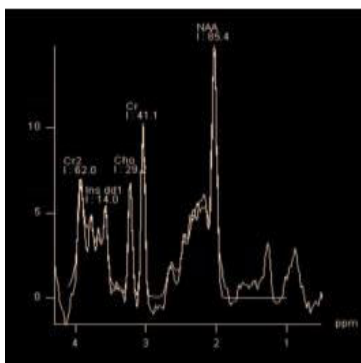


Figure 1: Neurocysticercosis

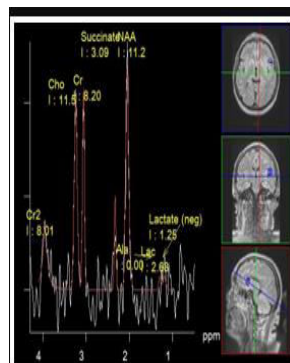


Figure 2: Meningitis

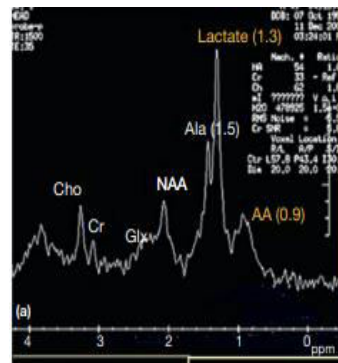


Figure 3: Abscess

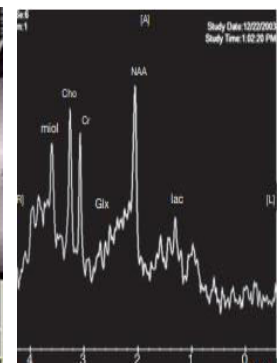


Figure 4: Multiple sclerosis

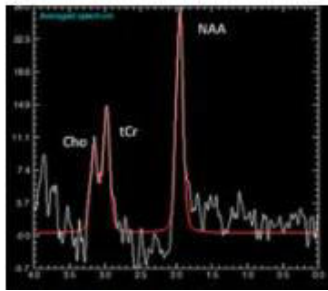


Figure 5: Cerebral Ischemia

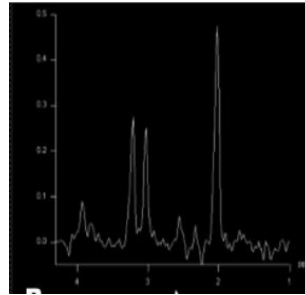


Figure 6: White matter lesion

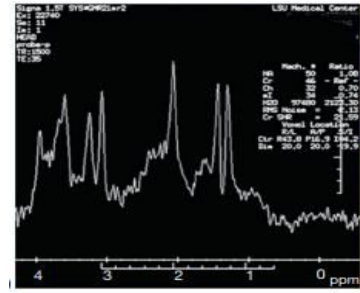


Figure 7: Cerebral infarct

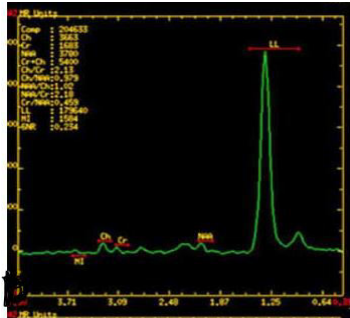


Figure 8: Epidermoid Cyst

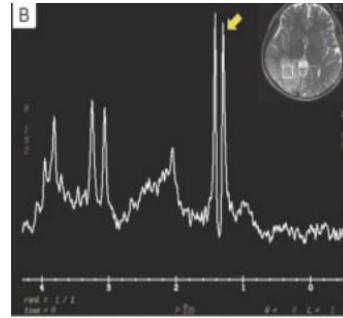


Figure 9: Arachnoid cyst

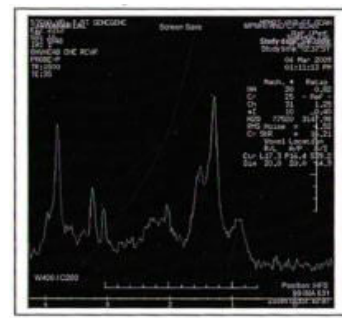


Figure 10: Cystic lesions

In the non tumor brain lesion like neurocysticercosis, it was found that there was a statistically significant difference with a *P* value of 0.135. The results indicate that there was a significant difference in the non tumor brain lesion, meningitis (*P*=0.136). Abscess, gives a significant difference as with *P* = .000. Similarly it was found that there was a significant difference in multiple sclerosis (*P* = 0.006). The cerebral ischemia shows that there was a significant difference as *P* = 0.050. Moreover it was found that there were also a significant difference determined in the non tumor, white matter lesions with *P*= .0001. Cerebral infarct shows that there is a significant difference with *P*= 0.001. It was also determined that the significant difference in epidermoid cyst were *P*= .0002. Similarly it was found that the significant difference of non tumor lesions like arachnoid cyst lesions were *P*= .0001. The non tumors like cystic lesions, also shows a significant difference observed as *P*= 0.002.

Table 1: Histopathological Findings of Non tumor Brain Lesions

Sl No	Types of Lesions Non Tumor	Pathological findings
1	Neurocysticercosis	Inflammatory response -edema
2	Meningitis	CSF protein is elevated and glucose is low
3	Abscess	Pus-oriented , polymorphonuclear cells
4	Multiple Sclerosis	Myelin loss within the CNS called plaques or lesions, gliosis
5	Cerebral Ischemia	Pallor of staining and vacuolization
6	white matter lesion	Massive macrophage infiltration with severe inflammation, necrosis
7	cerebral infarct	Appears as a poorly demarcated area of softening
8	Epidermoid Cyst	Central punctum that represents the plugged orifice of the pilosebaceous follicle
9	Arachnoid Cyst	Membrane delicate ,filmy ,translucent,increased thickness of collagen layer
10	Cystic lesion	Cyst wall formed of delicate fibrous connective tissue lined by meningotheial cells

Table 1 gives the histopathological analysis of neurocysticercosis, meningitis, abscess, multiple sclerosis, cerebral ischemia, white matter lesions, cerebral infarct, epidermoid cyst, arachnoid cyst and cystic lesions. The histopathological analysis of neurocysticercosis, indicates a cysticerci and spiral canal. In meningitis, histopathologically it was given that CSF protein is elevated and glucose is low. But in the case of abscess, it was appeared as pus-oriented and polymorphonuclear cells, in the pathological analysis.

Moreover the multiple sclerosis was appeared as myelin loss within the CNS called plaques or lesions and gliosis. The histopathological report of cerebral ischemia was given as pallor of staining and vacuolization. In addition to that the histopathological analysis were observed as massive macrophage infiltration with severe

inflammation, necrosis in white matter lesion. In the case of cerebral infarct, it were appeared as a poorly demarcated area of softening. Similarly the epidemoid cyst, gives the pathological report as central punctum that represents the plugged orifice of the pilosebaceous follicle. The non tumor lesion like arachnoid cyst were appeared as membrane delicate, firmly, translucent, increased thickness of collagen layer. The hisopathological results were determined in the cystic lesions were indicated as cyst wall that formed of delicate fibrous connective tissue lined by meningothelial cells.

Table 2 shows the Comparison of MRS findings, Histopathological findings and the end products of metabolic pathways.

Table 2: Comparison of MRS findings and Histopathological findings

Sl.No	NonTumors	MRS Specific metabolites	Histopathologically Observed metabolites	End products of metabolic pathway
1	Neurocysticercosis	Lactate	Lactate	Pyruvate
		Alanine		
2	Meningitis	Lipid	Lipid	Apolipoprotein
3	Abscess	Lactate		Glycolipid , phospholipid
		Lipid	Lipid	
		Alanine	Alanine	
		Amino Acids		
4	Multiple Sclerosis	Lactate	Lactate	Neurofilament light (NFL)protein
		Lipid		
		Glutamate		
		Myoinositol		
5	Cerebral Ischemia	Lactate	Lactate	Lactate Dehydrogenase(LDH)
		Myoinositol		
6	White matter lesion	Glutamate	Glutamate	TNF (tumour necrosis factor- α)
7	Cerebral infarct	Lactate	Lactate	Pyruvate
		Glutamate		
8	Epidermoid Cyst	Lactate		Ceramide esters and sterol diesters
		Lipid	Lipid	
9	Arachnoid Cyst	Lactate	Lactate	Lactate dehydrogenase
10	Cystic lesion	Lactate		Glycerophospholipid
		Lipid	Lipid	

DISCUSSION

In the current study, the patients of different types of non tumors brain lesions, were included and analyzed. The findings of histopathological and MRS analysis were analyzed and compared in this study. MRS gives the concentration levels of the intracellular metabolite and the metabolite compounds that serve as biomarkers. The pathological investigation determines the molecular pathways and interactions through the detection and monitoring of small molecular compounds. This study included 81 non tumor brain lesions such as neurocysticercosis (n=5), meningitis (n=5), abscess (n=9), multiple sclerosis (n=8), cerebral ischemia (n =4), white matter lesions (n=18), cerebral infarct (n=11), epidermoid cyst (n=4), arachnoid cyst (n= 7) and cystic lesions (n= 10).

In this study it was observed that, the MRS spectrum of neurocysticercosis, gives a prominent lactate and alanine peak . Studies also showed that there were an increased level of lactate and alanine peaks in the MRS spectrum of neurocysticercosis .⁸ Similarly the present histopathological studies shows that there were a cysticerci and spiral canal in neurocysticercosis lesion. In the previous studies also it was confirmed that cysticerci including spiral canal were observed by hystopathological analysis of neurocysticercosis.⁹ Studies also detected that in neurocysticercosis ,pyruvate is the end-product of glycolysis which is metabolized via the anaerobic pathway to lactate .¹⁰ This current study also confirmed that in MRS of meningitis , there were abnormally increased lipid. In the previous study, it was also confirmed that in meningitis, the MRS gives an increased peak of lipid .¹¹ Histopathologically, in the present study it was observed as moderate multifocal meningeal inflammation, mild inflammation of meningeal arteries and ventriculitis. One of the previous studies also indicated that meningitis was appeared as mild inflammation of meningeal arteries and ventriculitis¹².

Studies also reported that in meningitis patients, the lipid metabolism leads to the significant increase of ApoB (apolipoprotein) .¹³

The current study shows that the MRS spectrum of abscess was identified as an increased peaks of lactate, lipids, valine, succinate, leucine, alanine and acetate. In the earlier studies also it was found that, the MRS spectrum of abscess, lactate, valine, leucine, isoleucine and lipid were altered¹⁴. This study indicates that pathologically, abscess, was appeared as pus-oriented and polymorphonuclear cells. Previous histopathological studies also determined that abscess were appeared as a pus and polymorphonuclear cells¹⁵. In the earlier studies it was also confirmed that the analysis of lipid extracted from abscess homogenate may result in the formation of phospholipid and glycolipid .¹⁶

Present study also shows that in the MRS spectrum of multiple sclerosis, presence of myoinositol, lactate, lipid and glutamate were observed. In the previous studies also it was confirmed the presence of lactate and myoinositol peaks in the MRS of multiple sclerosis .¹⁷ In this current pathological analysis of multiple sclerosis it was identified as focal areas of myelin loss within the CNS called plaques or lesions and gliosis. Previous studies also showed that the cerebrospinal fluid of multiple sclerosis, was given as an increased lactate level which is significantly correlated with the presence of neurofilament light(NFL) protein .¹⁸ This study also indicated that in the MRS spectrum of cerebral ischemia an increased level of myoinositol and lactate were identified. The previous studies also detected that there were an increased peak of lactate in cerebral ischemia of MRS spectrum .¹⁹ In this present study it was also revealed that, there were a pallor of staining and vacuolization of the white matter, in the case of cerebral Ischemia lesion, given by pathological report. Earlier studies also showed that high brain lactate concentrations may result from mitochondrial dysfunction forcing cells and the conversion of pyruvate to lactate is mediated by LDH (Lactate dehydrogenase) in cerebral ischemia .²⁰ This study also indicates that MRS peak of white matter lesions, which were given as the presence glutamate and glutamine. Previous studies also revealed that there were an elevated concentrations of glutamate and glutamine (Glx) in white matter lesion .²¹ Studies also confirmed that, glutamate can also cause glial demise, by releasing tumour necrosis factor- α (TNF- α), that destroys the myelin and damage the axons in white matter lesion .²² In this study, cerebral infarct, were given as an increased peak of lactate and glutamate in the MRS spectrum . Previous studies also confirmed that there is an increased peak of lactate in MRS of cerebral infarct lesion²³.

Similarly in this study, it was detected that in the MRS spectrum of epidermoid cyst, there were an increased peak of lactate and lipid . Studies also confirmed that there is an increased lactate peak which shows in MRS spectrum of epidermoid cyst .²⁴ The earlier studies also showed that the epidermoid cyst with an high lipid in MRS spectrum .²⁵ In this study, it was also found that in epidermoid cyst, pathologically it was indicated as central punctum that represents the plugged orifice of the pilo sebaceous follicle. In one of the study, it was also confirmed histopathologically, the epidermoid cyst can appear as the plugging of the follicular orifice .²⁶ Studies also revealed that in epidermoid cyst, the desquamated material like cerami de esters and sterol diesters have been identified as minor epidermal lipid components .²⁷

In the current study, it was indicated that the MRS spectrum of arachnoid cyst, was determined as an increased peak for lactate. The earlier studies also showed that in arachnoid cyst lesion, the MRS gives a lactate peak²⁸. In this present study, the histopathological studies of arachnoid cyst were appeared as membrane delicate, filmly, translucent, and increased thickness of collagen layer. Studies also reported that by chemical analysis, it was observed that lactate dehydrogenase was detected in archnoid cyst.²⁹ In this study it was identified that the MRS spectrum of cystic lesions, there was an increased peak of lactate and lipid. In one of the studies also it was detected that there were lipid and lactate peaks observed in the MRS spectrum of cystic lesion .³⁰ In the previous studies also, it was determined that, the biosynthesis of lipid metabolites in intracranial cyst, results in the formation of glycerophospholipid and phospholipase .³¹

CONCLUSIONS

Magnetic Resonance Spectroscopy is a useful technique that helps in determining the abnormalities of brain lesions. MRS gives a wide range of sensitivity and is able to evaluate the different metabolites of brain lesions. The MRS and the pathological findings provide the quantification of tissue metabolite concentration, which helps to assess the impact on clinical outcome as specific markers that help for the proper diagnosis. Thus MRS can potentially identify the pathological change, at the biochemical level of non-tumor lesions and provides better diagnosis and further therapeutic interventions.

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Conflict of Interest

None

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DESIGN THINKING IS A BUSINESS SOLUTION PROCESS**Dr. Vishal Mahajan^{1*}, Dr. P. S. Aithal² and Dr. Shailly Mahajan³**¹Post-Doctoral Fellow, Srinivas University, Mangalore, India & Assistant Professor, Sardar Beant Singh, State University, Punjab, India²Professor, College of Management & Commerce, Srinivas University, Mangalore, India³Assistant Professor, Shanti Devi Arya Mahila College, Punjab, India¹OrcidID: 0000-0002-1824-6848, ²OrcidID: 0000-0002-4691-8736 and ³OrcidID: 0000-0003-2237-8760**ABSTRACT**

Design thinking is collaboration for dealing with issues by zeroing in on the customer's prerequisites paying little heed to anything more. It relies upon seeing, with sympathy, how people speak with their environmental elements, and uses an iterative, dynamic method for managing making imaginative plans. In this paper author tries to explain the design thinking as a business solution

Keywords: Design thinking, Empathy. Critical thinking, Proto type and Thought process

INTRODUCTION

Design thinking is "human-focused," and that implies that it utilizes proof of how purchasers (people) really draw in with an item or administration, instead of how another person or an association figures they will connect with it. To be really human-focused, originators see how individuals utilize an item or administration and keep on refining the item or administration to work on the purchaser's insight. This is the "iterative" some portion of configuration thinking. It favors moving rapidly to get models out to test, as opposed to perpetual exploration or rumination. As opposed to customary critical thinking, which is a direct course of distinguishing an issue and afterward conceptualizing arrangements, design thinking possibly works assuming that it is iterative. It is to a lesser degree a way to get to a solitary arrangement, and to a greater extent an approach to ceaselessly advance your reasoning and answer customer needs.

LITERATURE REVIEW

Brain research and Philosophy. Brown [2009] has characterized Design Thinking as "bringing creators' standards, approaches, strategies, and apparatuses to critical thinking". Configuration Thinking rehearses help associations to take care of perplexing issues by decreasing inclination, empowering advancement and rousing individuals to turn out to be more inventive [LieDesignthinkingka 2011]. By making Design Thinking a methodology part, numerous associations all through the world - like Google and Apple - are driving through advancement with incredible achievement [Chang et al. 2013]. Along these lines, design thinking has been proclaimed as an appropriate strategy in empowering development and financial development [LieDesignthinkingka 2011]. Therefore, it has been presented in various hierarchical settings, like social advancement, instruction and the board [Cipollaalso, Moura 2011], [Burdick and Wilis 2011], [Chang et al. 2013]. Be that as it may, estimating the results created by the Design Thinking rehearses is as yet a test [LieDesignthinkingka 2011]. Moreover, the execution of design thinking generally requires an adjustment of the association culture, the making of new position positions and new actual spaces - and that implies cost for associations [Rauth et al. 2014]. Subsequently, persuading directors to present design thinking in an association is anything but a simple errand. To tackle those difficulties, it is important to acquire a superior point of view of design thinking writing to give to the industry a straightforward method for grasping this interdisciplinary methodology. Chai and Xiao [2012] gave proof that Design Thinking has been a moving point in the Design Concentrates on Journal throughout the past years. As demonstrated by Elsevier, the Design Studies Journal is one of the most exhaustive and interdisciplinary diaries on plan research. Be that as it may, no efficient examination exertion has been made on totaling proof from the Design Studies Journal to comprehend the advancement of design thinking from the most recent decade. This study means to expand the consequences of Chai and Xiao [2012] by dissecting the advancement and advantages of the examination in view of Design Thinking in the Design Studies Diary from 2006 to October 2015. A precise planning concentrate on [Kitchenham 2010] was acted in request to give proof of how the comprehension of Design Thinking has advanced, recommend significant ramifications for training and distinguish research regions for development. Planning Study [Petersen et al. 2008] is a proof based approach which focal objective is to give an outline of an examination region and recognize the amount and kind of exploration and results accessible inside it. A precise planning might be required for two reasons: it, right off the bat, gives a decent acquaintance investigation with a specific region, and also when the scholarly world needs to comprehend the points of view on the writing to tackle research difficulties [Petticrew and Roberts 2006]. By and large, 269 papers were found in manual

ventures, and 42 important ones were chosen. The outcome sumsup applicable exact review information that was utilized to plan holes and patterns or innovative work. Deeply challenges and moving subjects of the exploration in view of Design thinking in Design Studies. In light of that, this review adds to the writing by a) giving the principal efficient planning of Design thinking writing in Design Studies from 2006 to October 2015, and b) distinguishing how the view of Design Thinking has developed in a reach of disciplines. Moreover, it likewise offers a down to earth commitment to the business by giving a decent interdisciplinary presentation of Design thinking.

RESEARCH QUESTION

Design thinking is a business solution process or not.

METHODOLOGY

Utilizing Internet web crawlers, business writing and exploration reports, research was led into instructive projects, courses and units and course satisfied across a determination of colleges to explore how endlessly configuration believing is being instructed to understudies in business around the world. Some data was accessible online in various structures.

For instance, frequently a unit summation was accessible online to portray momentarily what and how realizing goals were surveyed yet, seldom the extent of the program and its step by step learning exercises was posted online in a not many minor cases.

Many hunts expected an immediate contact with the college to find the subtleties of content and exercises of the program. By exploring the substance of educational plan and centering on global business colleges or interdisciplinary units including business, the accompanying outcomes were accomplished. Two kinds of searches were led over a time of about a month to get data about plan and business and the board instruction.

The quests of worldwide and Australian colleges analyzed projects and courses around development and business as well as general administration and training programs. Contact was likewise made with experts in the field to actually take a look at the nature and exactness of our discoveries.

Following model has been worked in business solutions with design thinking.

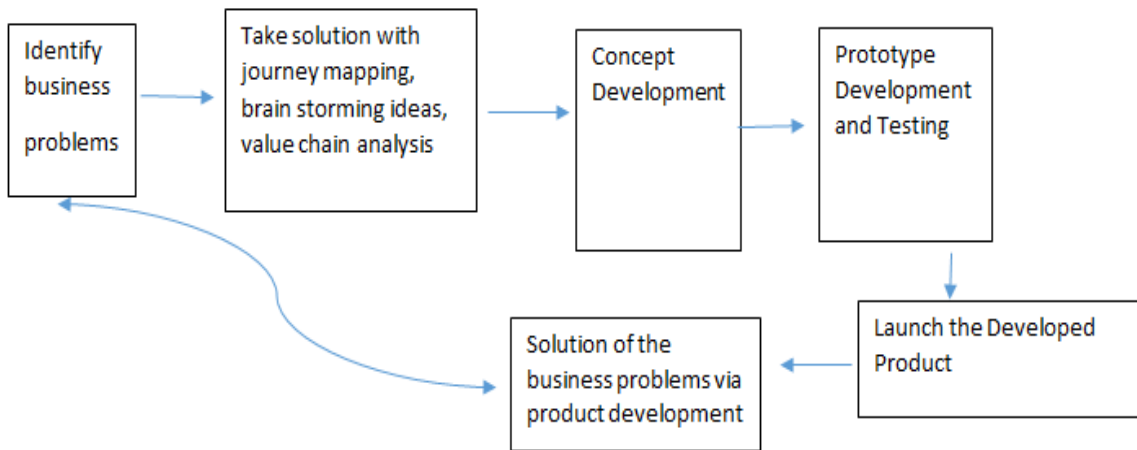


Fig1: Design thinking business solution model

The above model has been identified for business problem solution. Problems root cause should be identified first then solution should be carried out with journey mapping of client, create as many brain storming ideas for the solution and select the best viable solution for problem along with value analysis of profit. Then concept should be developed and testing should be done continuously until the satisfaction of client is achieved and prototype should be developed and tested by client positively. Next and last step is launching of product. It should be launched in small quantity initially for check the market response, if it is positive, it should be launched at mass level and again if problem occurs, same repeated model should be followed for the problem.

CONCLUSION

The quantity of these projects is expanding and will without a doubt take on new structures. We can anticipate the center methodology of human-focused plan in addition to the rethinking of business issues into amazing open doors for new business or vital reestablishment to increment. The fame of this plan driven approach in the commercial center might demonstrate excessively quick for business colleges and we might see drives in the Strategy as Endlessly plan as Strategy space taken up by experienced creator business pioneers.

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ACUTE TOXICITY EVALUATION OF HERBICIDE ON FISH (POECILIA RETICULATA)

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ABSTRACT

A Laboratory experiment was conducted to evaluate the acute toxicity in Fresh water fish with herbicide (Pendimethalin 15 % + Pyrazolesulfuron 0.15% GR) formulation was studied. A static exposure was performed as per the guidance Document on Toxicology for Registration of Chemical Pesticides in India. "Acute Toxicity-Fish", OECD test guideline (OECD TG 203). Initially a range finding experiment was conducted with five concentrations each concentration two replicates each replicate containing ten freshwater fish (*Poecilia reticulata*) were exposed to five different concentration of 1, 10, 25, 50 and 100 mg/L, concurrently a control group was maintained, based on the results of range finding experiment, Limit test was conducted with concentration 100 mg/L with containing ten freshwater fish (*Poecilia reticulata*) were exposed. The Limit test no mortality was observed in control and fish exposed to 100 mg/L throughout the experimental period. During the conduct of the experiment fish were observed for toxicity sign at approximately 3, 6, 24, 48, 72 and 96 hours after exposure. No toxicity signs were observed in control and fish exposed to 100 mg/L throughout the experimental period. The method validation and concentration verification was performed. The concentration verification of the compound in the exposure medium sample was carried out for the concentration of high concentration (100 mg/L). The sample at 0 hour and 96 hours were analyzed. The mean recovery concentration for Pendimethalin 15 % + Pyrazolesulfuron 0.15% GR at 0 hour 98.23 %, 98.13 % and at 96 hours 97.59 %, 95.00. Based on the results, LC50 of Pendimethalin 15 % + Pyrazolesulfuron 0.15% GR., observed over a period of 96 hour for freshwater fish (*Poecilia reticulata*) was found to be greater than 100 mg/L.

Keywords: Herbicide, Fish Toxicity, LC50 and HPLC

1. INTRODUCTION

The United Nations Food and Agriculture Organization (FAO) define pesticides as stocked pesticides that can no longer be used for their original purpose or any other purpose and therefore require disposal (FAO, 1995). FAO estimate that half a million tons of pesticides are in storage world-wide. A broad definition of pesticides includes all pesticides technical and formulations. Associated contaminated empty containers and other contaminated materials and equipment, buried pesticides and containers. In developing economies, pesticides may enter into ecosystem due to usage of pesticides [1-4]. In brief, fish are exposed to the test chemical for a period of 96 h, mortalities and abnormalities are recorded at 24, 48, 72 and 96 h and the concentration which kills 50 % of the fish (LC50) is derived. The test was originally adopted as an organization for Economic Cooperation and Development (OECD) test guideline (TG203) in 2019. The concluded that fish acute toxicity data continue to be core regulatory requirements. Certain chemicals, such as herbicide products, are key in achieving these goals but do present acute toxicological concern. This landscape creates the need to further consider how we can meet the societal standards on animal welfare whilst maintaining the environmental protection goal that fish acute toxicity assessment provides [5-6]. Determination of Acute Toxicity in aquatic life is similar to the solving of most Environmental and biological problems, in which experimental data are obtained under controlled laboratory conditions [7]. Under laboratory conditions, the toxicity testing procedures (mortality studies LC50 estimates) may provide information regarding the harmfulness of industrial stress for aquatic animals, including fishes. In the acute toxicity of contaminants in static bioassays, the use of 96-h, LC50 has been widely recommended as a preliminary step in toxicological studies on fishes [8-10]. The aquatic environment makes up the major part of our environment and resources. Therefore, its safety is directly related to human health. The excessive contamination of aquatic ecosystems has evoked major environmental and health concerns worldwide because the aquatic environment is the ultimate recipient of pollutants produced by natural and anthropogenic sources. The LD50 is the dose of a given chemical product (pesticide) which causes the mortality of 50 % of a group of test animals in a specified period. It is commonly used in bioassays assessments to measure the acute toxicity of a chemical active ingredient [11].

The objective of this investigation was to evaluate the toxicity effect of pesticide formulations to freshwater fish, (Pendimethalin 15 % + Pyrazolesulfuron 0.15% GR) formulation to determine 96-hour LC50 and safe and nontoxic in aquatic environment.

2. MATERIALS AND METHODS

Reference analytical standards of Pendimethalin purity 98.70 % and Pyrazolesulfuron purity 99.60 %, the Granules (GR) formulation of combination herbicide was purchased by local market. The stock solutions of Pendimethalin and Pyrazolesulfuron was prepared. In this mixture of solution was prepared. From this mixture, a series of calibration solutions were prepared. Acetonitrile, water, orthophosphoric acid supplied by Merck life sciences private limited. The other chemicals used are analytical grade reagents.

2.1 Chromatographic Separation Parameters

The High-Performance Liquid Chromatography (HPLC) equipped with a UV detector was used for the identification and quantification of Pendimethalin and Pyrazolesulfuron. The detector wavelength 240 nm was used. The stationary phase Zorbax SB C8 150 mm x 4.6 mm x 3.5 μ m was used for the separation of herbicides. The mobile phase was used for the elution was a mixture of acetonitrile and 0.1 % Orthophosphoric acid in Milli-Q water, the injection volume was 20 μ L and the flow rate was programmed 1.0 mL/min. The herbicides Pendimethalin and Pyrazolesulfuron eluted at 2.19 and 4.42 minutes retention times respectively.

2.2 Analytical Method Validation

Method validation is very critical aspects of analysis. In this method validation, the specificity and LOQ, Linearity, Precision and Accuracy was determined. The limit of quantification was determined as the lowest concentration given a response of 10 times the base line noise. The linearity was determined by different known concentrations which were prepared by diluting the stock solutions concentration. The Precision (%RSD) and Accuracy (% Recovery) was conducted by fortification at LOQ and 10 X LOQ level. Six determinations were performed at each concentration level along with control sample.

2.3 Stability and Sample Analysis for Fish

The range finding experiment was conducted with 100 mg /L exposure water sample at for 0 hour and 96-hour stability analysis. During the conduct of the limit test, 100 mL of sample was collected from the respective aquaria on the 0 day of exposure (prepared exposure medium) and on completion at 96 hours (pooled samples of the replicate) from control and exposure sample 100 mg/L were analyzed for concentration verification. The verification of effective test concentrations was adopted using a prescribed validated analytical method.

2.4 Dose Formulation

Range Finding Experiment - The required concentrations were prepared 1, 10, 25, 50 and 100 mg/L, for 10 Liter, the compound was individually taken and dissolved in respective tanks (R1 and R2 Replicates) to obtain the concentrations 1, 10, 25, 50 and 100 mg/L. After preparation of dose formulation stirred well with glass rod for uniform distribution of concentration.

Limit Test- Required Concentration was 100 mg/L, for 10 Liter. The compound was dissolved in respective tank (R₁ and R₂ Replicates) to obtain the concentration 100 mg/L. After preparation of dose formulation stirred well with glass rod for uniform distribution of concentration.

Control- Control group was concurrently maintained along with the treatment groups.

Range Finding Experiment - Initially the range finding experiment was conducted with 10 fish (per concentration) with five different concentrations such as 1, 10, 25, 50 and 100 mg/L, along with control group was also maintained.

Limit Test - Based on the results of range finding experiment limit test was conducted with concentration of 100 mg/L along with test concentration control group was also maintained.

Physicochemical Parameters - Physicochemical parameters such as pH, temperature and dissolved oxygen were measured and recorded on daily basis in the control and all concentrations during the experiment. Hardness and conductivity were measured and recorded in the control on day 0.

3. RESULTS AND DISCUSSION

3.1 Specificity

The specificity was evaluated by analyzing the Acetonitrile, mobile phase, Reference standard solutions (Pendimethalin, Pyrazosulfuron), Reference standard solution and compound.

3.2 Loq

Five different concentrations of reference item solutions were prepared in Acetonitrile and injected in to HPLC. The noise at the retention time of the analyte in the blank was integrated and area was calculated the signal to noise ratio.

3.3 Linearity

Five different concentrations of reference item solutions were prepared by diluting the stock reference item solution and injected onto HPLC. The linear calibration curve was established by plotting the respective mean peak areas against the corresponding concentrations (mg/L). The correlation coefficient (r), intercept (a) and slope (b) were calculated. The details are presented in the Figure 1.

3.4 Precision (% RSD) And Accuracy (% Recovery)

Precision and accuracy was established from the analysis of six replications at the LOQ and 10 x LOQ level. For this, known quantity of reference item was weighed in six separate volumetric flasks. The contents were dissolved and made up to the mark with Acetonitrile. The active ingredient content in each replication, the mean value of all determinations, standard deviation and relative standard deviation (% RSD) and % Recovery was calculated and reported. The details are presented in the Table 1.

3.5 Stability and Dose Analysis

The range finding experiment 100 mg/L exposure water sample was performed at for 0 hour and 96-hour stability analysis. During the conduct of the limit test, 100 mL of sample was collected from the respective aquaria on the 0 day of exposure (prepared exposure medium) and on completion at 96 hours (pooled samples of the replicate) and control for concentration verification. Same dose verification samples also collected and analyzed for the concentration verification for 0th and 96th hour samples. The details are presented in the Table 2 and Figure 2 and 3.

3.6 Mortality Test and Toxicity Sign

Mortality was observed and recorded daily during the acclimatization period and approximately at 3, 6, 24, 48, 72 and 96 hours after exposure up to the experiment. After 96-hour exposure, cumulative mortality at each concentration was calculated. Toxicity signs were recorded approximately at 3, 6, 24, 48, 72 and 96 hours after exposure. No mortality was observed in the control. Constant conditions were maintained throughout the test. The dissolved oxygen concentration was above 80 per cent of the air saturation value throughout the test. The concentration of the compound being tested has been satisfactorily maintained and preferably it was above 80 per cent of the nominal concentration throughout the test. The details are presented in the Table 3 and Table 4.

Physicochemical parameters such as Temperature, pH and dissolved oxygen were analyzed daily in control and all tested concentrations during the conduct of the experiment and hardness and Conductivity were analyzed at the start of the experiment once in control. The details are presented in the Table 5. The body weights and lengths of fish details are presented in the Table 6.

During range finding No mortality was observed in control and fish exposed to 1, 10, 25, 50 and 100 mg/L throughout the experimental period. During Limit test no mortality was observed in control and fish exposed to 100 mg/L throughout the experimental period. No toxicity signs were observed in control and 100 mg/L throughout the experimental period. Based on the results, LC₅₀ of Pendimethalin 15 % + Pyrazolesulfuron 0.15% GR., observed over a period of 96 hour for freshwater fish (*Poecilia reticulata*) was found to be greater than 100 mg/L.

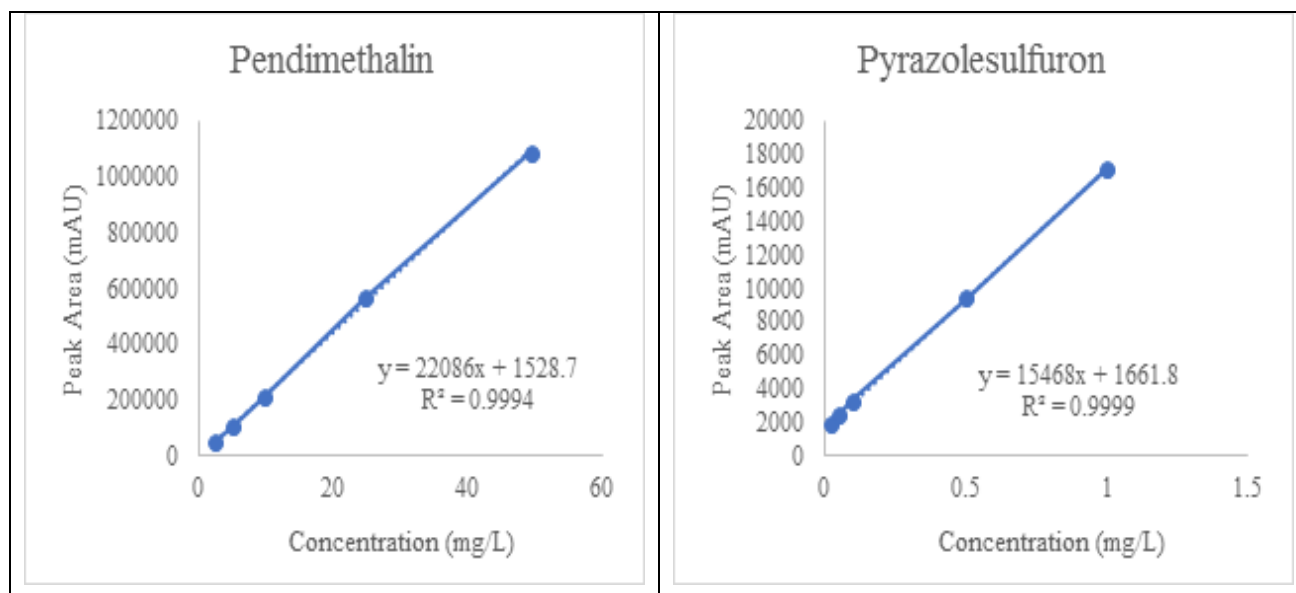


Figure 1: Representative Calibration Curves of Pendimethalin and Pyrazolesulfuron

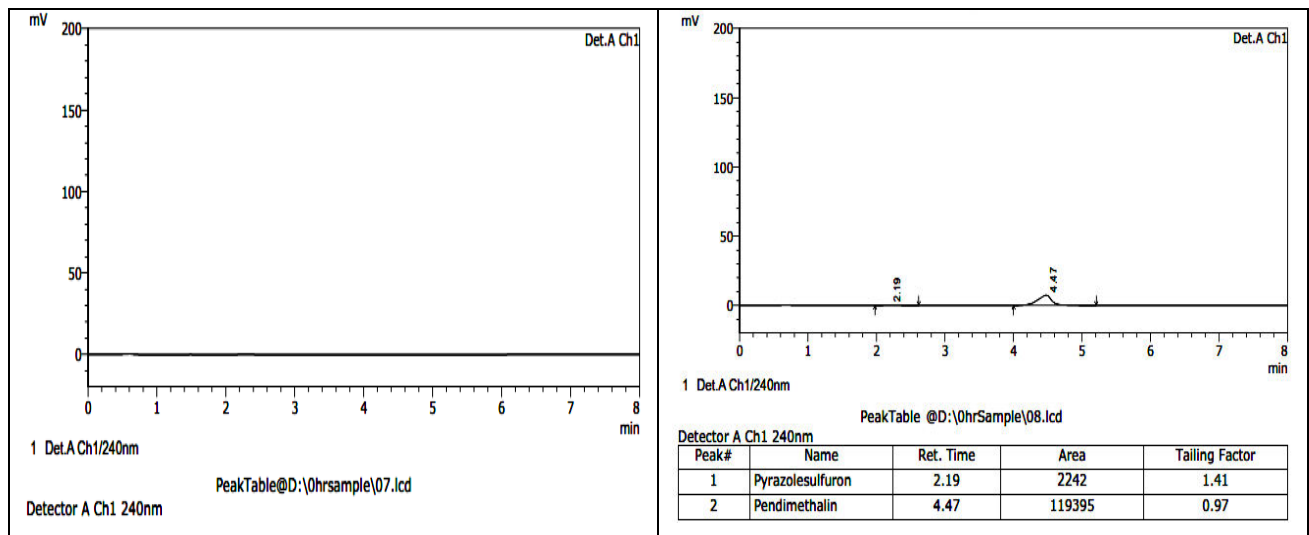


Figure 2: Representative Chromatograms of 0th Hour sample analysis

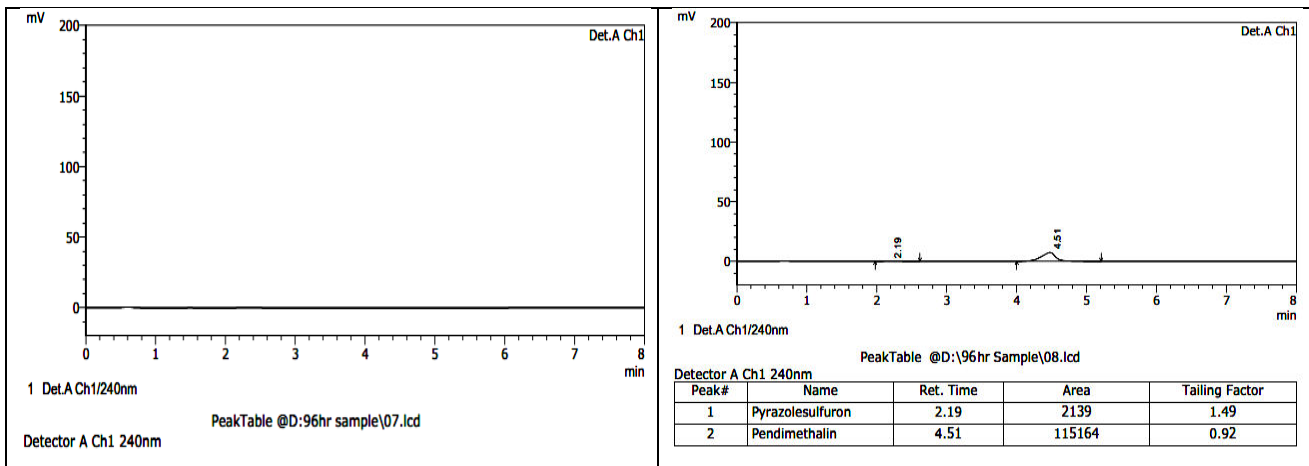


Figure 3: Representative Chromatograms of 96th Hour sample analysis

Table 1: Details of Accuracy (% Recovery) and Precision (% RSD)

Accuracy and Precision				
Compound	Concentration	Mean Recovery	SD	% RSD
Pendimethalin	LOQ Level	97.45	1.00	1.03
	10 x LOQ Level	100.24	0.94	0.94
Pyrazolesulfuron	LOQ Level	97.81	2.00	2.04
	10 x LOQ Level	97.47	1.35	1.39

Table 2: Details of Stability and Dose Formulation Analysis

Stability and Dose formulation analysis			
Compound	Concentration (mg/L)	0 th Hour Recovery	96 th Hour Recovery
Pendimethalin	100	98.23	97.59
Pyrazolesulfuron		98.13	95.00
Pendimethalin	100	99.55	94.10
Pyrazolesulfuron		94.58	93.33

Table 3: Details of Mortality Data

Mortality Data								
Range Finding Experiment								
Concentration	No. of	Day					Cumulative mortality (%)	
		0		1	2	3	4	
mg/L	Fish	3 hour	6 hour	24 hour	48 hour	72 hour	96 hour	(96 hour)
Control (0)	10	0	0	0	0	0	0	0
1	10	0	0	0	0	0	0	0
10	10	0	0	0	0	0	0	0

25	10	0	0	0	0	0	0	0
50	10	0	0	0	0	0	0	0
100	10	0	0	0	0	0	0	0
Limit Test								
Concentration	No. of	Day					Cumulative mortality (%)	
		0		1	2	3	4	
mg/L	Fish	3 hour	6 hour	24 hour	48 hour	72 hour	96 hour	(96 hour)
Control (0)	10	0	0	0	0	0	0	0
100	10	0	0	0	0	0	0	0

Table 4: Details of Toxicity Signs

Toxicity Signs							
Range Finding Experiment							
Concentration	No. of	Day					
		0		1	2	3	4
mg/L	Fish	3 hour	6 hour	24 hour	48 hour	72 hour	96 hour
Control (0)	10	10/10 N	10/10 N	10/10 N	10/10 N	10/10N	10/10N
1	10	10/10 N	10/10 N	10/10 N	10/10 N	10/10N	10/10N
10	10	10/10 N	10/10 N	10/10 N	10/10 N	10/10N	10/10N
25	10	10/10 N	10/10 N	10/10 N	10/10 N	10/10N	10/10N
50	10	10/10 N	10/10 N	10/10 N	10/10 N	10/10N	10/10N
100	10	10/10 N	10/10 N	10/10 N	10/10 N	10/10N	10/10N
Limit Test							
Concentration	No. of	Day					
		0		1	2	3	4
mg/L	Fish	3 hour	6 hour	24 hour	48 hour	72 hour	96 hour
Control (0)	10	10/10 N	10/10 N	10/10 N	10/10 N	10/10 N	10/10 N
100	10	10/10 N	10/10 N	10/10 N	10/10 N	10/10 N	10/10 N

Table 5: Details of Physico-Chemical Parameters

Parameters	Concentrations	Day				
		0	1	2	3	4
	(mg/l)	0 hour	24 hour	48 hour	72 hour	96 hour
pH	Control (0)	7.14	7.12	7.13	7.14	7.12
	100	7.29	7.29	7.28	7.29	7.28
Temperature (°C)	Control (0)	22.4	22.3	22.4	22.2	22.4
	100	22.4	22.5	22.5	22.4	22.3
Dissolved oxygen (%)	Control (0)	89	90	89	88	89
	100	87	86	87	86	87
Hardness (mg/L)	Control (0)	160	-	-	-	-
Conductivity (µS cm ⁻¹)	Control (0)	9.9	-	-	-	-

Table 6: Record the body weights and lengths of fish

S. No	Body weight (g)	Length (cm)
1	0.291	1.6
2	0.296	1.7
3	0.292	1.7
4	0.291	1.8
5	0.292	1.6
6	0.294	1.7
7	0.293	1.8
8	0.295	1.8
9	0.296	1.6
10	0.292	1.6
Mean	0.293	1.7

CONCLUSIONS

From the above investigation, we conclude that the pesticide formulation (Pendimethalin 15 % + Pyrazolesulfuron 0.15% GR) was nontoxic after 96th hour expose. Based on the observed LC50 values in the study, GR formulation may non-toxicity in environmental condition. The detailed investigation on characterization of the pesticide is safe and nontoxic in aquatic environment.

Acute toxicity in Fresh water fish with Pendimethalin 15 % + Pyrazolesulfuron 0.15%. Initially a range finding experiment was conducted with freshwater fish (*Poecilia reticulata*) were exposed different concentrations, along with a control group was maintained, based on the results of range finding experiment, Limit test was conducted with concentration 100 mg/L were exposed. Length and body weight of randomly fishes were recorded prior to acclimatization. The fish were observed daily during the acclimatization period, all fish were normal during the acclimation period. During Limit test no mortality was observed in control and fish exposed to 100 mg/L. For main experiment fish were observed for toxicity sign at approximately 3, 6, 24, 48, 72 and 96 hour after exposure. No toxicity signs were observed in control and fish exposed to 100 mg/L. Concentration verification of the test item in the exposure medium sample was carried out for the test item concentration of high concentration (100 mg/L). Based on the results, LC50 of Pendimethalin 15 % + Pyrazolesulfuron 0.15% GR., observed over a period of 96 hour for freshwater fish (*Poecilia reticulata*) was found to be greater than 100 mg/L.

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TRACING INDICATORS OF SUSTAINABLE TOURISM MARKETING: PROPOSING 'HRSM' SCALE**Dr. Partha Naskar**Joint Director (Accounts), Netaji Subhas Administrative Training Institute, Kolkata, West Bengal
Personnel & Administrative Department, Government of West Bengal, Kolkata, India**ABSTRACT**

Tourism has emerged as the largest smokeless and fastest industry in the world for its future prospects and potentialities. With the advent of pandemic environment the travel and tourism industry has experienced massive turmoil which is quite unprecedented for tourism market. Amidst the drastic outbreak of novel corona virus pandemic disrupting tourism marketing business resulting substantial downfall in tourism economy, the concern for tourism marketing opportunities is the call of the hour. Therefore, it is found highly desirable, imperative, important and necessary to conduct a study on prime drivers of tourism marketing for holistic development and growth of tourism marketing business. The essential objective of the paper aims to identify the prominent domains and related items that may be considered in line with projection, promotion, and possibilities of tourism marketing business in the near future. The study would be based on secondary literature survey. A scale would be created involving essential consideration of the papers viz. spatial tourism marketing, pilgrimage tourism marketing, highlights of health tourism and magnitudes of MICE tourism marketing. The design scale would be the primary tool of the study with a clear nomenclature of 'HRSM' towards collection of primary data in the arena of tourism marketing. From the literature explicated in the paper a clear attempt has been made to identify the items within the domains considered for the study. From the literature explicated in the paper a clear attempt has been made to identify the items within four broad domains of spatial tourism marketing destinations, pilgrimage tourism marketing, health tourism marketing and potentials of Meetings, Incentives, Conferences, Exhibitions (MICE) in tourism marketing. The items have been identified underlining the proposed "HRSM Scale". The structured scale formulated in the study can be used as a standing tool considering the novelty of the study in similar research work. The role of tourism marketing for economic progression in the present turmoil is quite relevant and significant in the context of global business practices. The coverage of the paper makes a realistic attempt to reveal the upcoming potentials of tourism marketing business in the 21st century with a optimistic tourism horizon in the coming years.

Keywords: tourism, marketing, HRSM, sustainable, destination

FOLLOWING THE FOOTSTEPS OF TOURISM JOURNEY

For centuries Peninsular India has been a centre of attraction for tourists across the world. The ancient invaders viewed this country as a golden bird fascinated by its natural beauty with amazing dimensions of culture and religion. With times the concept of travel which was once considered as profligacy for higher class of people has reached within the limits of billions worldwide. The path way of tourism transformation with new hunger for experiencing travel destinations is the epicenter of present day tourism activity. Etymologically the word tour is derived from the Latin word "Tornus" meaning "a Lathe" or "circle the movement around a central point or axis." The McMillan dictionary defines "tourism as the business of providing services for people who are travelling for their holiday". With the advent of covid 19 pandemic, the revival of tourism economy and the future of tourism are still not yet transparent. The catastrophic effect of the pandemic has made tourism to a standstill stopping and disrupting the life and livelihood of people altogether. Tourism business is one of the prime industries which thrive on people has been greatly affected with the pandemic effect whereby the movement of people has got restricted and interrupted. As per United Nations World Tourism Report international tourism has accounted an unparallel crisis which is extremely challenging and going to impact international tourism substantially. Tourism sector being the major contributor of Gross Domestic Product in India has a significant impact on the economy, tourism marketing and tourist destination sustainability too. The contribution of Tourism industry in the last decade can be visualized in the given **figure I**. The revival of tourism marketing promotion is the call of the hour. At this back drop markets in tourism and travel industry need to be restructured, redesigned and reallocated in a systematic manner which can attain expected outputs beneficial to all stakeholders of the tourism business. India draws millions of tourists every year inviting guests and thus the prospects and proponents of tourism marketing is embedded within the layers of promotional activities, digitalized tourism model with new avenues in tourism destinations. The emerging trends of tourism marketing in India rests on growing options for low budgeted travellers, automated tourism services, relevance of artificial intelligence, travel blogging, offbeat destinations, short weekend getaway are some of the prominent means of tourism development. Tourism in India is the rising industry and the phenomenon of

tourism marketing need to be understood in the context of latest innovations, current scenario and market share of the tourism industry. Since the beginning of covid 19 pandemic, the hospitality and tourism sector are the worst hit industry worldwide. Tourism is a highly changing phenomenon & along with the changing waves a ray of hope can be visualized where tourism marketing business can introspect and develop new tourism marketing forecasting plans and developing new tourism products replacing the old ones. Thus tourism arena contributing towards enriched customer experience for development of tourism industry at large.

PURPOSE OF THE STUDY

Amidst the drastic outbreak of Novel corona virus pandemic disrupting tourism marketing business resulting substantial downfall in tourism economy, the concern for tourism marketing potentials is the call of the hour. The whole tourism value chains across hotels, travels agents

,tour operations, destinations, restaurants, family entertainment venues and air, land and sea transportation all within the nucleus of tourism marketing domain has been badly and struggling hard for revival and restoration. Therefore, it is found highly desirable, imperative, important and necessary to conduct a study on prime drivers of tourism marketing for holistic development and growth of tourism marketing business. Tourism being in the fastest growing economies of the world with an estimated growth of 8.8% over the next ten years is exploring avenues for proactive global changes in marketing scenario keeping in tune with changing tourist's perception. The essential objective of the paper aims

- i. To identify the prominent domains of tourism marketing business
- ii. To formulate related items that may be considered in line with projection, promotion, and possibilities of tourism marketing business in the near future.
- iii. To design a conceptual scale in the name of HRSM scale for building global tourism marketing avenues.

LITERATURE REVIEW

Unfolding Avenues of Spatial Tourism Marketing: Potentials & Prospects

Tourism is considered as one of the key constituent of cultural phenomenon acting as a bridge way across the world and not limited to the social margin, resource and times away from home. Human wants are unlimited and are multifaceted. It is the human aggressiveness and urge towards exploring the passion of travel with an experience coupled with convenience and economy. The quest of people to travel for various reasons is backed by the motivation of learning, seeking and gaining insights of travel extravaganza with time. Every year it can be witnessed that millions of people across the world leave their homes for different periods of time to experience & cherish the excitement of travel with pleasure, contentment and satisfaction. The sphere of tourism activities has expanded in recent years and evolved as the significant contributor of social, cultural & economic phenomenon worldwide. Travel & Tourism are interwoven with each other as the approach of tourism activities need to be redesigned, realigned and restricted in context with space, resources and environment. The use, the utility and the protection of environment with planned management in line is the pathway towards effective tourism development. The need for spatial planning is the call of the hour. The reasons for spatial planning – its goals – its tasks – means and methods of its implementations are one of the most prominent interdisciplinary activities for successful tourism management destination. The activities included within the spatial planning focuses on the attributes like concepts, strategies, programs, plans, regulation, implementation of local and regional norms all contributing towards meeting the opportunity of future generation with balanced economic development. The essence of spatial planning rests from the principle of horizontal integration in spatial protection with an array of plans involving regulations, licensing, and approvals towards spatial protections for balanced spatial sustainability. The foundations of spatial planning is based on the pillars of monitoring, analysis, evaluation, vulnerability, supporting sustainable development – all leading to the qualitative living with ecological balance & uniformity with nature and welfare. The three key prerequisites elements of tourism marketing planning has been depicted in the following **figure II** connecting development opportunities, objective & evaluation for better utilization of spatial resources. The development and adoption of spatial planning can be determined through identity of space, harmonious relationship, landscape values, linkage with renewable and non renewable natural resources, cultural heritage with the purpose of minimizing the risk of damage and creating avenues for competitiveness in spatial resources. The present world is a changing world with a balanced spatial planning & development. The need for appropriate planning in relation to the resources, geographical positions, traditional values need to be examined for better tourism marketing potential. Spatial planning and development is inseparable from the overall development of the regions and the country in general. The pros and cons of spatial planning will foster sustainable development progress providing

opportunities for growth which will prevent the devastation of living space and contribute towards quality development policy decisions ant the tourism destinations levels.

Unleashing Prospects of Religion Marketing: An Overview

Religion has been widely regarded as a potent medium of marketing phenomenon. Usually people embark on religious travel with the primary purpose of sharing faith & fellowship through exploration of tour & travel. The rapid development of tourism in the last few decades has transformed many religious sites into attractive tourist destinations both for pilgrim and for tourist. Pilgrimage is a significant tradition for all religions and can be defined as “a journey of religious affairs to the Holy Land for spiritual purpose as well native understanding”. The essentials of religious tourism rests on co-operation with religious leaders, knowledge about the cultural differences about the target audience, religious practices and spiritual component all reflecting the essence of tourism management extravaganza. Studies reveal that substantial part of the tourist attractions in the world comprises of religious sites predominantly natural places like mountains, rocks or caves and sites of shrines worships and belief – the most appealing destinations for tourists’ attractions worldwide. Religious tourism marketing acts as a backbone which can boost economic development on one hand and will help in protecting historic heritage on the other. Pilgrimage and tourism both mobilizes masses of people to travel across and within the country contributing to the tourism economy with a shift and expansion both in demand and supply side of the tourism industry. In the wake of improved connectivity through rail, air and road the motivational aspect in terms of accessibility and affordability has mounted religious visitors significantly. Religious tourism has stepped forward with improved technology through audio visual media and virtual tourism connecting people, place and product at one platform. The qualitative changes of religious tourism has resulted religious package trips attracting tourists to visit conveniently at multiple religious sites in the same way. Package religious trips in turn expand cognitive connectivity of the religious tourist in a very distinctive way. Religious tourism acts as a stimulator in facilitating sustainable development ranging from agriculture, accommodation, infrastructure, energy development, usage of water and transportation. The popular proverbs “*sustainability is Godliness*” need to be focused and followed by all religious destinations. The crux between pilgrim tourism industry and pilgrim tourism marketing is based on the four pillars viz., change master, quick encashier, stabilizer and synthesizers projecting the possible avenues and outcomes of religious tourism marketing. Studies focuses that the essence of religious tourism marketing are based primarily on two aspects responsible for development of religious tourism destinations which is projected in the given table 1.

Table 1: Twin Factors of Religious Tourism Marketing

Sl. No	Customer Aspect (C)	Sl. No.	Industry Aspect (I)
C.1	Customer Understanding	I.1	Tourist Arrival
C.1	Money Value	I.1	Safety
C.1	Security	I.1	Hospitality
C.1	Parking Opportunity	I.1	Solid Waste Management
C.1	Drinking Water	I.1	Tour and Travel Operator
C.1	Lavatory Arrangement	I.1	Disaster Management System
C.1	Quality Foodstuff	I.1	Tourist Information Counter
C.1	Hospitality Infrastructure Amenities	I.1	Environment Concern
C.1	Accessibility of Market and services	I.1	Connectivity

In recent years pilgrimage tourism has become the bell tone of tourism activities. It is quite imperative that religious overview takes social ambiguity and at the same time contribute to the developing of good moral values, humane world view and civic activism. The expansion of tourism is largely related to the state of preservation of religious heritage, level of authenticity & commercialism and restoration of spiritual values among masses. Therefore for promoting religious tourism marketing activities the following recommendations can be followed namely: The 21st century has greatly changed religious centers transforming them into visitor’s attractions and with a modest attempt to improve the religious tourism in the modern tourism market for progress and prospect.

Examining Health Tourism Proponents

The present business global environment is facing severe adverse consequences and the same is being affected in the travel tourism business at large. The tourism industry has been impacted considerable with the “stay at home” and “social distancing norms” imposed by government worldwide. Tourism business is a human centric activity interrelated with natural world. To build a strong foundation tourism industry needs recovery development strategy for sustainable business in the future period. Against the backdrop of swiftly growing global pandemic the urge for health or medical tourism is one of the fastest growing sectors of the health care throughout the world. Travel for the purpose of health started its journey where people visited various destinations and health centres for getting medical treatment. Evidences of travelling from one country to another can be traced back in the early age of 4000 BC. History reveals that emergence of medical tourism can be traced from the examples of Greek people travelling to various temples for healing purposes. The present 21st century millennium is witnessing a popular drive of developing tourism business in the name of Medical tourism which in turn acts as a key economic driver for boosting economy. Studies project that a greater proportion of investment in medical industry is one of the ways to increase gross domestic product and to boost tourism in the long run. With the revised health policy of the government there has been a revolutionary makeover in the tourism industry whereby initiating the market development schemes for the travel agents and promoting medical tourism through PPP model goes simultaneously. The present trends of medical tourism can be visualized in the **figure IV** projecting new paradigms of medical tourism. As per the reports of NitiAiyog Medical Travel Value (MVT) has been focused as the prime source of foreign exchange earnings which may contribute 20% of the global market share. In recent times travelling overseas for healthcare is a common phenomenon for richer class of people in developing countries. In addition corporate showcasing of health tourism acts as a deliberate marketing strategy favouring professional medical care which in turn legitimizes co modification process. Co modification of health care has emerged as a new dimension in health tourism business which involves moving towards product standardisation”, “, market expansion” and marketing health care to customers. The Indian health tourism rests on the trio pillar of Ayurveda-Yoga-Spas- all entrusted in treating various ailments with wellness and welfare programme. The factors relating to cost competitiveness, investments and availability of quality and qualified service personnel acts as a perennial source in running and providing health services to market at large. The **figure V** illustrates the wings of health tourism destination for promoting varied aspects of health tourism worldwide. The Indian health tourism sector with avenues of modern medical system offerings plenty opportunities across the world. With the advocacy of favourable policy, tourist’s benefits, online marketing, infrastructure development, support service providers, database management, marketing collaborations and infrastructure development, the Indian health tourism sector can play a vibrant role in providing employment, generate attractive foreign exchange and rejuvenation of tourism business at large.

Potential of Meetings-Incentives-Conferences- Exhibitions (MICE) in Tourism Marketing

Travelling has fascinated humans to such a great extent that it has forced to leave its own place and travel far and wide. This has led to the discovery of new places which is a refreshment on the one hand and on the other, it give individuals a means by which the business can be improved so that it brings economic freedom, liberty. The economic factor is of vital importance as it is related to the individual, society and to the nation at large. Considering the repercussions which the whole of travel and tourism industry has on the entire nation, countries today are vying with each other in order to attract tourists to its destination. As a result, infrastructures like creation of modernized airports, improvement in transportation system, telecommunication, hospitals etc are being built so as to pull the tourists and the investors into their country. Tourism is a multi- billion dollar industry involving a wide range of industries - accommodation, food & catering, transport, attractions and entertainment - to name a few. Besides these, there are hundreds and thousands of people who are directly or indirectly involved and who also gets a share of the business being generated. Even organizations / companies are outreaching foreign lands in order to create new customer base which will improve their profitability to a great margin. All these leads to one thing - people must travel, and this travelling has created a new definition in the travel and tourism industry called Meetings, Incentives, Conferences and Exhibitions, popularly connoted as MICE. The work flow of MICE is depicted in the **figure VI**. Meetings, Incentives, Conferences and Exhibitions (MICE), are one of the niche forms of tourism industry which is associated with business travel. During the course of business travel, company executives will be requiring various sorts of activities and providing these facilities to the right person at the right time is a critical factor in MICE. It has evolved as a result of globalizations and economic reforms undergoing throughout the world. The core of MICE is vested in the business travellers who are always on the lookout for quality things without bothering for the costs. This kind of spending is always a welcome sign for the host destination as high spending means high return and subsequently high profit. Unlike tourists, who travel during specific periods in a year and have a fixed

budget, business travellers have greater flexibility in travel and the meetings, conferences are being organised throughout the year, thus creating and retaining the employment sector though this has undergone a sea change due to the present conditions. MICE Tourism is an emerging market with a lot of opportunities for the host region. But the need of the hour is to plan by which this untapped area can be developed into a proper tourism activity which will help the local population to sustain.

RESEARCH METHODOLOGY

The main source of conceptualizing the domains and items within is formulated with related literature and expert opinions comprising academicians, researchers, travel agents, tourist business proprietors and allied stakeholders of the tourism industry. Extensive literature review was done by considering research papers considering research papers, journals, articles, and bulletin and government reports. The study would be based on secondary literature survey. A scale would be created involving essential consideration of the papers viz spatial tourism marketing, pilgrimage tourism marketing, highlights of health tourism and magnitudes of MICE tourism marketing. These would be considered as independent variables and the notion of tourism marketing business as dependent variables. The design scale would be the primary tool of the study with a clear nomenclature of “HRSM” towards collection of primary data in the arena of tourism marketing. H stands health, R stands for religion, S stands for space and M stands for MICE.

Findings

FINDINGS I

Identifying the Broad Domains

Domain	Description
Domain A	Introducing spatial tourism marketing destinations
Domain B	Advocating “Sustainability is Godliness” concern to religious tourists
Domain C	Encouraging Potentials of Health Tourism
Domain D	Bridgewaying MICE Tourism for future Tourism Business

Findings II

Item wise Analysis of Each Domain

Domain	Item No.	Description of the Item
Domain A	A.1	Vertical integration in spatial protection promotes tourism marketing
	A.2	Collaborating space-resources-environment upgrade tourism attractiveness
	A.3	Preservation of natural and cultural heritage fosters tourism business
	A.4	Understanding performing tourist places builds marketing network
	A.5	Advocating liquid modernity enhances tourism destinations
Domain B	B.1	Advocating “Sustainability is Godliness” concern to religious tourists
	B.2	Improved communication and transport facilities promotes pilgrimage tourism economy
	B.3	Truth-believe-faith enhances religious tourism practices for tourism houses

	B.4	Linkage between sites and attractions creates tourism business
	B.5	Economic benefits of religious tourism brings best possible outcome
Domain C	C.1	Encouraging involvement of PPP model of medical facilities
	C.2	Boosting baby boomers contribution in travel industry
	C.3	Identifying medical travel value as prime source of foreign exchange earnings
	C.4	Increasing health care funding stimulates medical tourism marketing
	C.5	Encouraging Consumer Willingness towards potential of medical tourism
Domain D	D.1	Fostering effective employment opportunities for long term survival
	D.2	Upholding unique tourist attractions with entertainment
	D.3	Creating avenues for rise in local income
	D.4	Advocating wide reaching marketing platform
	D.5	Promoting 'green MICE' venue for tourism marketing

Each of the above items has been proposed through this paper as the focal means within each of the four independent domains. The items have been generated from elaborative literature study which has been a significant part of this paper. The items and the domains are to be tested for statistical reliability and validity subsequently through further research analysis towards crafting of a proposed 'HRSM' scale.

IMPLICATIONS OF THE STUDY

The hospitality industry is a very dynamic one and it has to respond to the changes which are going across the world. Tourism marketing too has to be evolved in such a manner so that new forms of tourism can be integrated under its scope. The industry partners are always on the lookout for generating income through other modes and there should be a scope of evolving marketing in a more dynamic ways so that it is acceptable to the tourists. Today the tourism industry is going through a crisis situation – the airlines are cutting their flights due to government restrictions, professionals associated with the tourism industry are having a bleak future with pay cut and even retention, Tourism which meant a “circle” has now come to a real standstill with the destinations outside the reaches of the tourists, no connectivity and all other reasons. The locals who were dependent on the tourism industry too are facing a quite hardship. It was beyond the imagination of mankind that this kind of situation will ever exist where every picture from the travel and tourism industry is a very gloomy one. But everything is not lost. Just like after a stormy night, clear and calm morning evolves, similarly the tourism industry has to devise ways to make the wheel moving. And it is here which calls for newer pastures which can provide the much needed relief and most importantly profitability. Health, religious, pilgrimage and MICE can be the savior for future tourism destinations. According to the report provided by WTTC and McKinsey & Company “Adapting to Endemic Covid 19- The Outlook for Business Travel”, it is seen that business travel industry has seen substantial changes in the last 18 months. All the travel partners are trying to adopt a “do” or “die” approach in order to combat the global crisis and are very hopeful to bounce back once the normalcy returns. General tendency among the tourists has been concentrated more on domestic travel , visiting friends and relatives, business travel especially MICE to name a few. Not only that more emphasis on digitilisation and adopting a customer-first strategy and tailoring marketing, communication efforts to better cater to the tourists are the need of the hour. The future lies in the hands of those who are ready to take up the challenge and show the trends which can change the direction of the industry. It is high time that, the industry responds to the changing needs so that it can rethink, rediscover and redevelop its marketing strategies which will go a long way in the welfare of humanity. The paper make a humble attempt in bringing out the potential and

potentialities that impact extensive sustainable escalation of tourism marketing in the real sense of the term. The essentiality of the study lies in the fact that the efforts and the effectiveness of tourism sector has the potential to significantly impact in extending prosperity-pleasure-progression across the globe for next generation in the coming days.

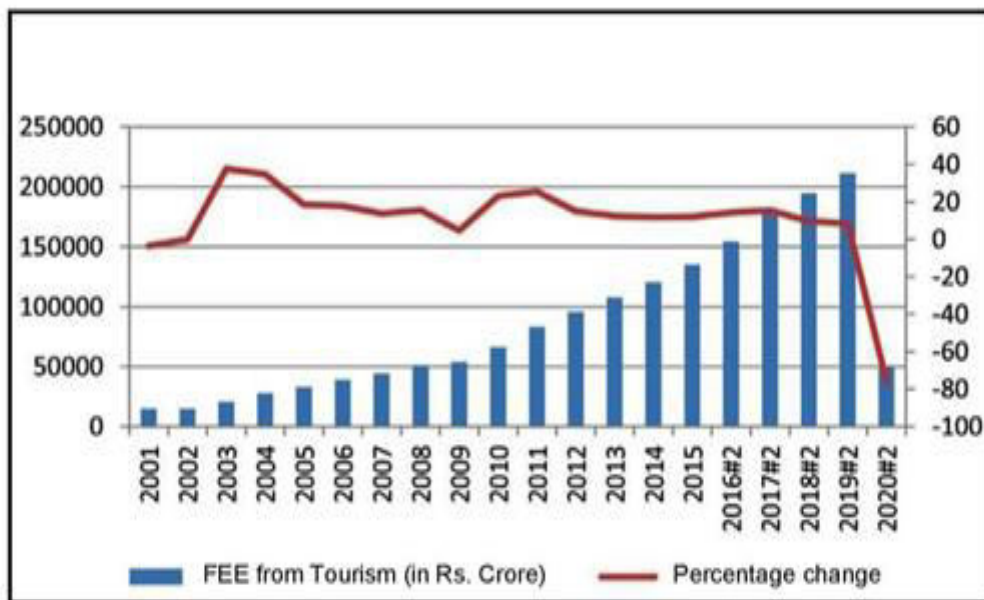
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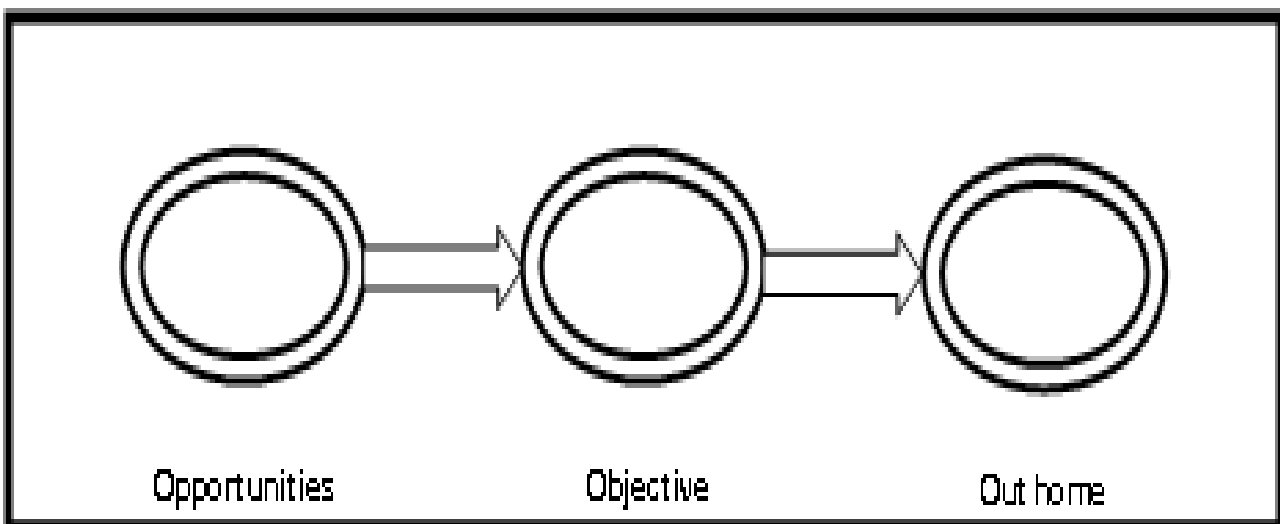
Figure I: Trends of Foreign Exchange Earnings

Foreign Exchange Earnings (FEEs) in Rs. Crore from Tourism in India, 2001-2020



Source: (i) Reserve Bank of India, for 2001 – 2015 (ii) Ministry of Tourism, Govt. of India, for 2016-2020

Figure II: Three “O”s of Tourism Planning



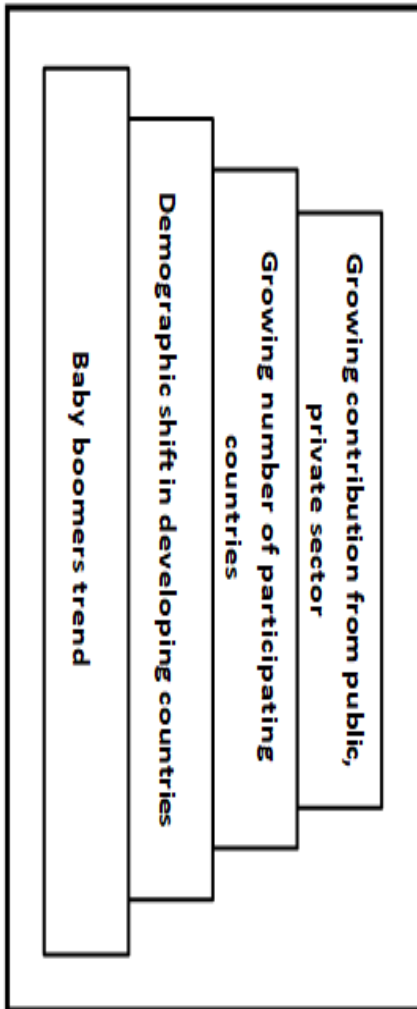


Figure IV: Upcoming Trends in Medical Tourism

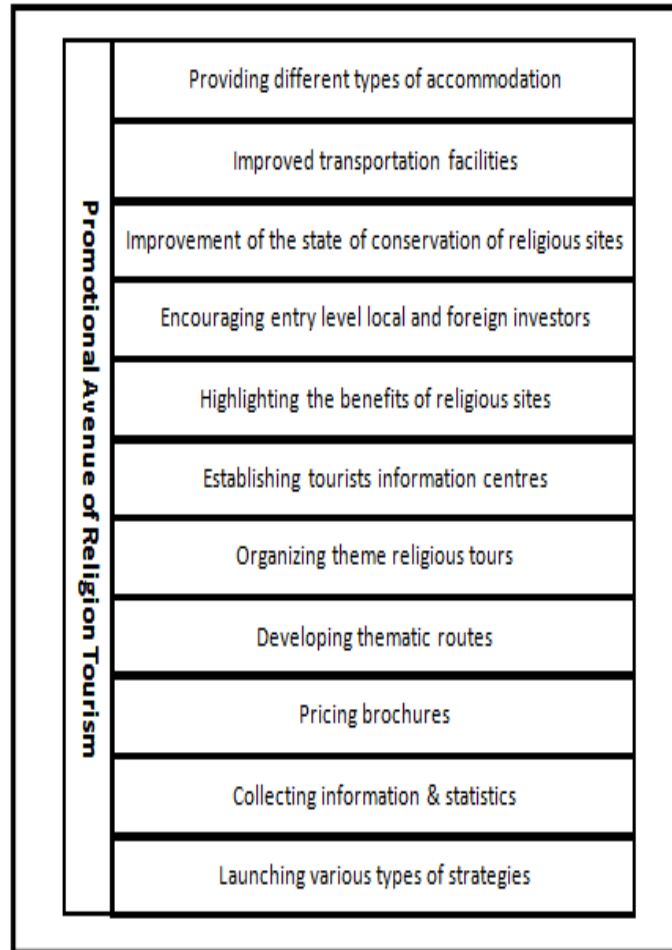


Figure III: Promotional Avenues of Religious Tourism

Figure V: Promotional Tools of Health Tourism

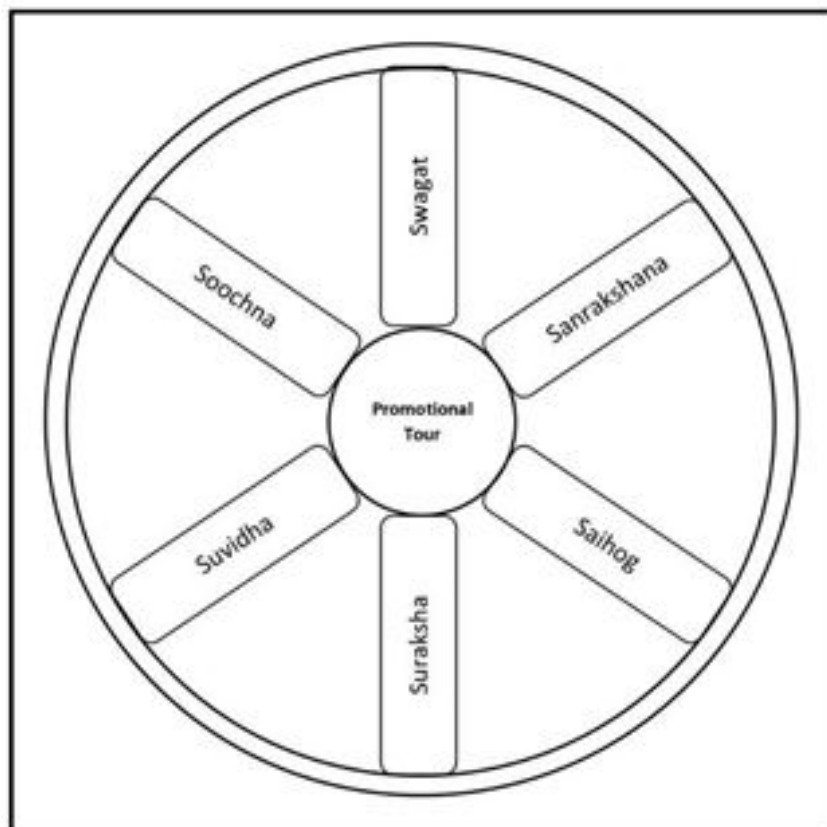
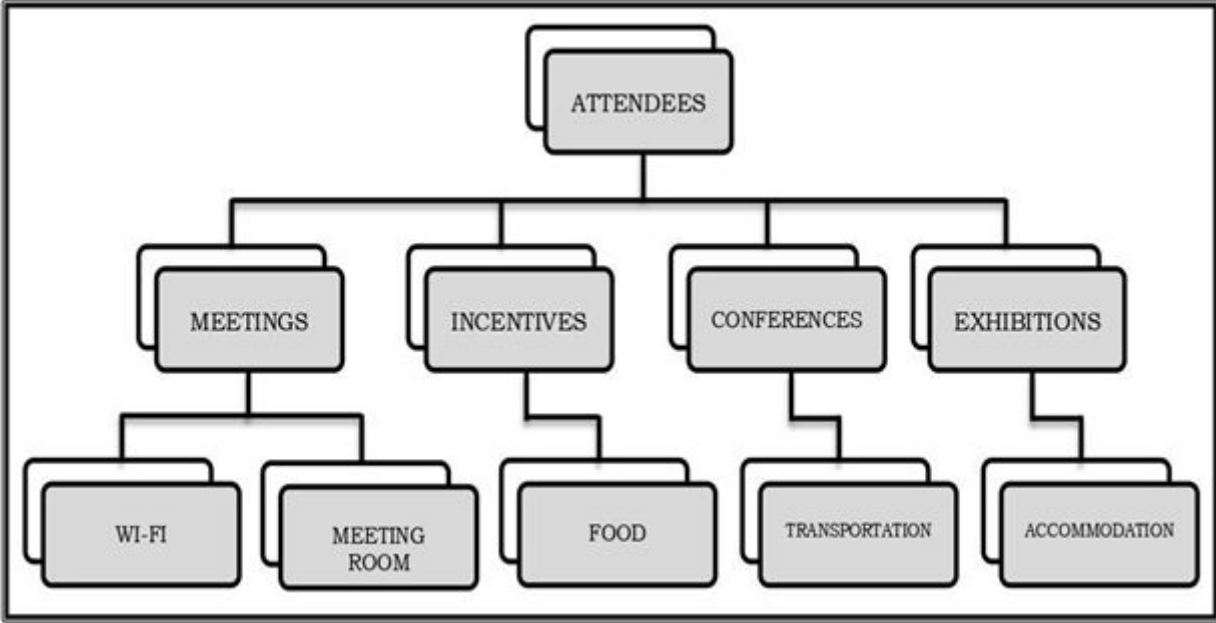


Figure VI: Work Flow of MICE Tourism



AN OVERVIEW STUDY ON PRE-PROCESSING TECHNIQUES IN DATA MINING

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ABSTRACT

The process of extracting relevant patterns and models from a large dataset is referred to as data mining. In a decision-making task, these models and patterns are quite useful. The quality of data is crucial for data mining. Missing values, noisy data, incomplete data, inconsistent data, and outlier data are all common characteristics of raw data. As a result, processing these data prior to mining is critical. Data pre-processing is a necessary step in improving data efficiency. Data pre-processing is a common data mining stage that involves the preparation and manipulation of a dataset while also attempting to improve the efficiency of knowledge discovery. Cleaning, integration, transformation, and reduction are some examples of pre-processing procedures. This research provides a comprehensive overview of data preparation strategies used in data mining.

Keyword: Data Mining, Data Pre-processing, Data Cleaning, Data Integration, Data Reduction, Data Transformation.

INTRODUCTION

In day-to-day life the amount of data being generated and stored is growing exponentially. Users who use these data are expecting more sophisticated information from them. From the ocean of these data, information is digging out with help of data mining.

“Data mining means to mine or extract “information” or “knowledge” from large amount of data”, and “Data Pre-Processing” is one of the process/techniques used to carry out data mining successfully.

Importance of Data Pre-processing: [17]

1. Real-world data might be incomplete, noisy, and inconsistent, making useful patterns difficult to spot. This is because:
 - i) **Incomplete Data:** attribute values are missing, specific attributes of interest are missing, or the data is merely aggregate.
 - ii) **Noisy Data:** Data that is noisy contains errors or outliers.
 - iii) **Inconsistent Data:** Data that is inconsistent: has discrepancies in codes or names.
2. Data preparation produces a smaller dataset than the original, which can boost data mining performance dramatically. This task entails:
 - i) **Choosing Relevant Data:** attribute selection (filtering and wrapper approaches), anomaly removal, and duplicate record elimination.
 - ii) **Data Reduction:** sampling or case selection.
3. Quality data is generated by data preparation, which leads to quality patterns. for instance, we can:
 - i) **Recover Incomplete Data:** Fill in missing values or reduce ambiguity by recovering partial data.
 - ii) **Purify Data:** Purify data by fixing errors or eliminating outliers (numbers that are odd or exceptional).
 - iii) **Resolve Data Conflicts:** Resolve data discrepancies by relying on domain knowledge or expert judgement.

It is clear from the above three findings that data pre-processing, cleansing, and preparation is not a simple task. Researchers and practitioners must focus their efforts on developing appropriate ways for effectively exploiting and managing data. While data-mining technology can help data-analysis applications within the businesses, quality data must be able to be prepared from raw data in order to enable efficient and quality knowledge discovery from the data provided. As a result, developing data preparation tools and processes is a difficult but necessary task [17].

Data Pre-Processing Involved Major Steps [1, 2, and 3]

- 1) Data Cleaning
- 2) Data Integration

3) Data Reduction

4) Data Transformation

a) Data Cleaning

The data cleaning routine “clean” the data by filling in missing values, smoothing noisy data, identifying and removing outlier and resolving inconsistencies. (Data Cleaning, also called data cleansing or scrubbing is the process of detecting and removing errors and inconsistencies from data in order to improve the data quality).

b) Data Integration

This technique involves merging data from numerous heterogeneous data sources, such as multiple databases, data cubes, or files, into a cohesive data store and presenting a uniform representation of the data.

c) Data Reduction

Techniques for data reduction can be used to provide a reduced representation of a data set that is substantially smaller in volume but produces the same analytical results [1][4][5].

d) Data Transformation

Data transformation refers to the task of transforming data from one format to another [6]. Under this technique data is transformed in the way which is ideal and suitable for data mining.

Figure: Forms of data preprocessing

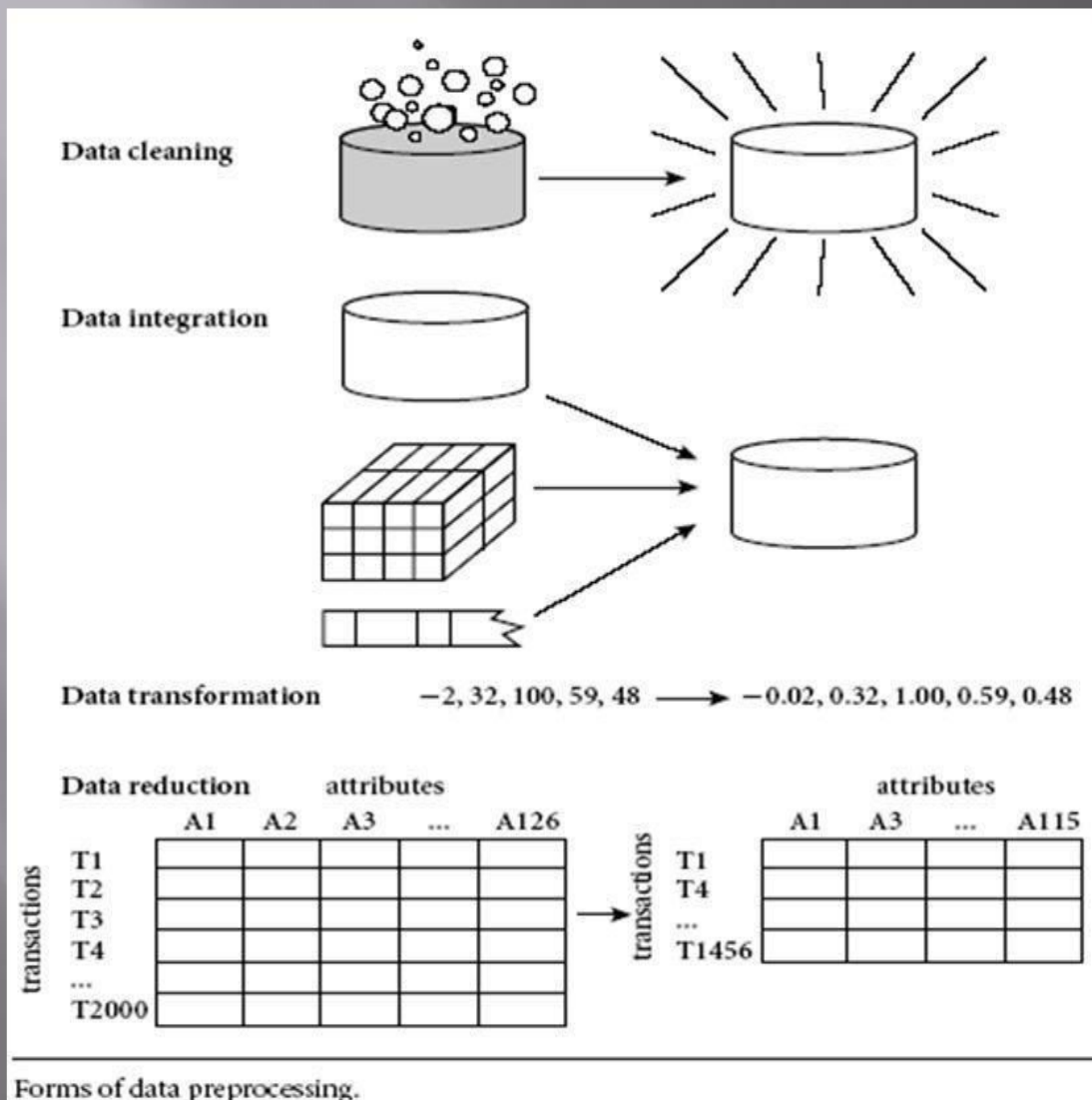


Figure: Forms of Data Pre-Processing [7]

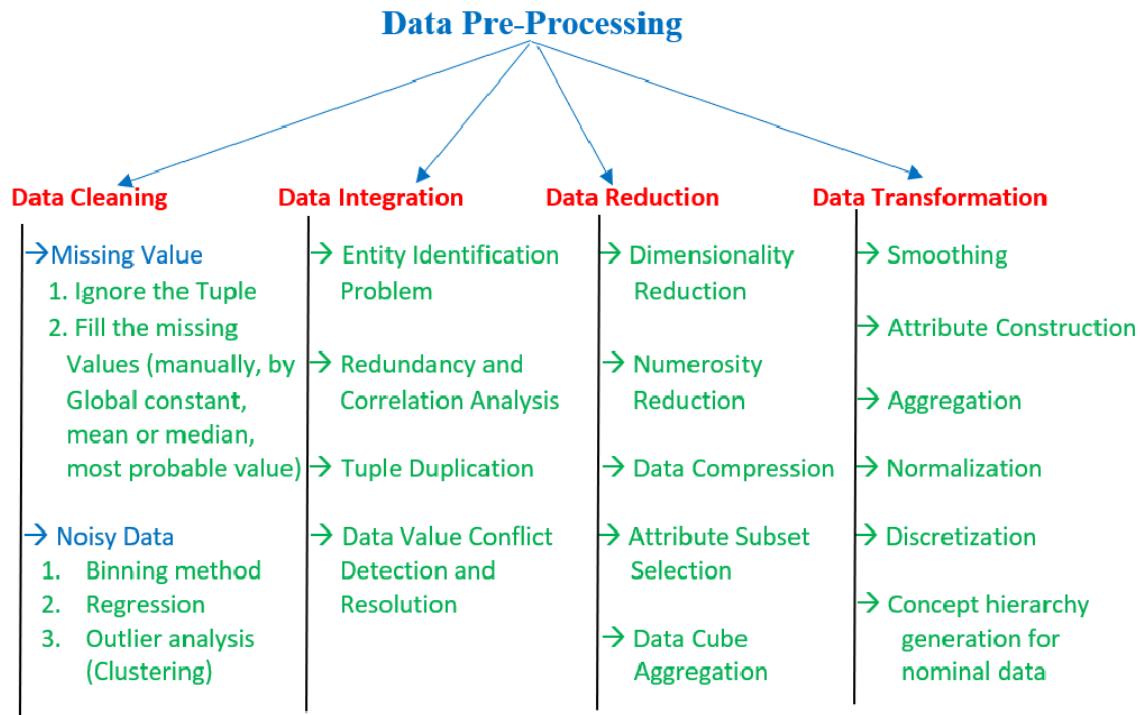


Figure1: Data Pre-Processing Techniques

a) Basic Methods for Data Cleaning are As Follows-

i) **Missing Values:** This occurs when a value or piece of data in the data/tuples is missing. If it is discovered that several tuples do not have any recorded value for numerous attributes, then that missing value for that attribute will be filled by using some methods like [1][2][8]-

a) **Ignoring Tuple:** Normally this is done when the class label has missing. When the tuple that contains numerous attributes having missing values, then that approach is ineffective. This method is especially bad when an amount of missing values varies a lot by attribute. We don't use the remaining attribute values in the tuple since we are ignoring that tuple [1][2].

The method of ignoring the tuple is suitable only when the datasets are huge and numerous values inside a tuple are missing [1][2].

b) **Missing Values Filled in by Manually:** This method is very time-consuming in general, and it may not be practical / feasible for huge data sets with various / multiple missing values [1][8].

This method works well with small data sets that have some missing values.

c) **Using Global Constant for Fill up the Missing Values:** Substitute some constant for all missing attribute values such as a label like "Unknown" or $-\infty$ or like "NA" etc. If missing values are replaced by, say, "Unknown," then the mining program may mistakenly think that they form an interesting concept, since they all have a value in common—that of "Unknown." Hence, although this method is simple, it is not recommended [1][8].

d) **Using Central Tendency (Mean or Median) for an Attribute to Filling in Missing Value:** The missing values can be fill by mean/median.

Mean — We can use the attribute mean to fill in the missing value. Mean is the average value. Eg. Customer average income is 30000 and then we use this value to replace missing value for income.

When the data has no outliers in that case missing value will be replaced by mean value. Mean will be affected by outliers.

Median — When the data has more outliers, it's best to replace them with the median value. Median is the middle value (50%). (If data is numerical then mean and median is used, if data is categorical the mode is used)

e) **Use of Most Probable Value to Fill in Missing Values:** This may be determined with regression, inference-based tools using **Bayesian formalism, or decision tree induction** [1][8]. Eg. In customer table, if customer_income is missing for particular customer then by calculating the average customer income we will fill the missing value.

ii) **Noisy Data:** “Noise” is nothing but an error (random error) or the variance (difference) in a measured value or variable. “Data that is noisy is useless. It contains any data that machines cannot understand or interpret appropriately, like an unstructured text. The binning technique, regression, and outlier data analysis can all be used to smooth out noisy data [1].

a) **Binning Technique:** In this approach, Data is first sorted, and then that sorted data or values can be dispersed into number of buckets called bins. This method looks at the values in the neighbourhood, or the values that are close by and conduct local smoothing.

Eg. (4, 8, 15, 21, 21, 24, 25, 28, 34)

Equal Portioned Bin	Bin Mean	Bin Boundaries
Bin1: 4,8,15	Bin1: 9, 9, and 9	Bin1: 4,4,15
Bin2: 21, 21, 24	Bin2: 22, 22, 22	Bin2: 21, 21, 24
Bin3: 25, 28, 34	Bin3: 29, 29, 29	Bin3: 25, 25, 34

b) **Regression:** A data smoothing approach in which data values are conformed to a function is called regression. The regression can be linear or multiple. Linear regression has only one independent variable and multiple regressions have more than one independent variables [1].

Linear regression involves finding the “best” line to fit two variables (or attributes) so that one variable can be used to predict the other.

Multiple linear regressions are an extension of linear regression, where more than two attributes (variables) are involved and the data are fit to a multidimensional surface.

c) **An Outlier Analysis**

Clustering can be used to identify outliers, where clusters are groupings of similar values. Outliers are values that do not fall into any of the clusters like odd man out.

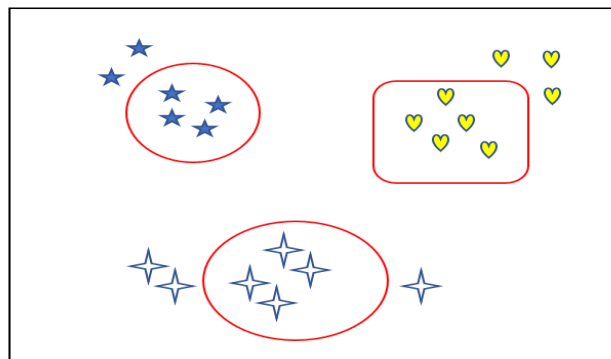


Fig: Cluster Image

b) **Data Integration**

i) **Entity Identification (Concern) Problem:** During data integration, there are lot of issues to consider. Schema and Object Integration might be challenging. Entity identification problem arises when the same field with different names present in different data sources.

Eg. Identification of Emp_id in one database and Emp_no in another database which referred as same attributes, that is very difficult task for data analyst or the computer. Matching the entity identification problem is prevented by using metadata.

ii) **Redundancy and Corelation Analysis:** If one attribute is derived from other attribute or from the group of attributes then it is called as redundant attribute. Redundancies may occur because of inconsistency in an attribute and/or the naming of dimension in the resulting or final data set. Many redundancies are found/detected with the help of correlation analysis and χ^2 Test (Chi- Square) [9].

Eg. If we have a data set having three attributes Pizza_Name, Is_Veg, Is_Nonveg. If any Pizza_Name is not veg, it means that Pizza is surely Non_Veg. In this case one of these attributes became redundant. It means that the two attributes are very much related to each other, and one attribute can find the other. So, we can drop either the first or second attribute without any loss of information.

Pizza_Name	Is_Veg	Is_Nonveg
Veg Loaded	1	0
Chicken Fiesta	0	1

iii) Tuple Duplication: In addition to redundancy data integration has deal with tuple duplication. For the data integration, when the table which is not in normalized form is utilised as a source then duplicate tuples may come in the resultant data. Inconsistencies always arises between various / numerous duplications, because of inaccurate or faulty data entry as well as by updating some of (but not all) the data occurrences. Eg. In Bank Database, Customer name, Address may occur in saving account and current account also.

iv) Data Value Conflict (Detection & Resolution): Detection & resolution of the data value conflict occur when, for some entity of real-world, the values of attribute from multiple sources can differ. This may occur because of variances or the differences in scaling, encoding or representation [1].

Eg: In one system weight attribute can be saved as a metric unit and some another system we can saved it as British Imperial unit.

c) Data Reduction

i) Dimensionality Reduction: The technique or the process in which many random variables or the attributes which are under consideration will be reduced is called as Dimensionality Reduction. It reduces an unimportant or redundant attribute by applying data encoding or transformation [10][11]. The Wavelet Transform and the Principal Component Analysis (PCA) methods are available to reduce or transform an original data into a smaller / less space. With the help of an Attribute Subset Selection method [1], we identify (detect) and eliminate (remove) the attributes or dimensions which are redundant or irrelevant or weakly relevant.

ii) Numerosity Reduction: The data reduction approach which replace an original data into alternative smaller forms is called as Numerosity Reduction. Two methods of numerosity reduction are-

- a) Parametric method b) Non-Parametric method

For Parametric method data is represented using some model and for non-Parametric methods we use clustering, histograms, data cube aggregation, sampling etc [12].

iii) Data Compression: In data compression approach size of the files are reduces using some encoding mechanisms like Run-Length encoding, Huffman Encoding etc. Data Compression Technique are divided as-

- a) Lossless Compression and b) Lossy Compression

In Lossless compression large file are reduced / compressed to smaller sized file and can be decompressed again without loss of any data. In Lossy compression large files are reduced/compressed to smaller size and can be restores it to its original format with loss of some data.

iv) Attribute Subset Selection: Any data set contain huge number of attributes. Among those attributes some attributes may be redundant and some of may be irrelevant. This Attribute Subset Selection method will find the minimum set of attributes, dropping out all those irrelevant attributes which will not so affect to the data analysis cost and data utility that will be reduced [1][13].

v) Data Cube Aggregation: In this technique data is aggregated into a simpler form. That is information is gathered and expressed in summary format.

Eg. If you need to know the sale report of your company for the year 2020,2021 then summarised the data as shown below, which will give total sale per year instead six months sale.

Year 2020		Year 2021			
H.Y.	Sale	H.Y.	Sale	Year	Sale
H1	500	H1	600	2020	800
H2	300	H2	100	2021	700

d) Data Transformation

- i) **Smoothing:** The noise can be removed from data by applying some algorithms is done with the help of smoothing technique. Smoothing can be performed by - Binning Technique, Regression Technique and the Clustering Technique.
- ii) **Attribute Construction:** For helping the mining process it will generate new attributes and then will be added from the given attribute set. By this method, simplification of original data and efficiency of mining process will be increase.
- iii) **Aggregation:** It is a type of data and information mining procedure in which data is sought, gathered, and presented in a report-based, summarised style in order to fulfil certain corporate objectives or procedures and/or undertake human analysis. Data aggregation can be done manually or with the help of software [18]. In this method summary or aggregate functions are applied to create data cubes. Eg. To calculate monthly and yearly amount of sale, the daily sales data will be aggregated.
- iv) **Normalization:** When dealing with attributes on multiple scales, normalisation is usually essential; otherwise, the effectiveness of a significant, equally important attribute (on a smaller scale) may be diluted due to the values of another attribute on a bigger scale [16]. In normalization process we scale the value by giving range. It converts all data variables into given range. Like 1.0 to 2.0. Normalization is performed by using the techniques like Decimal Scaling, Z-score, Min-Max Normalization etc.
- v) **Discretization:** Data discretization is a technique for transforming a large number of data values into smaller ones, making data interpretation and management easier. To put it another way, data discretization is a technique for transforming continuous data properties into a finite set of intervals with little data loss. Tin short the data is being transform into the set of small intervals. Eg. (1-10, 11-20), (Age: Young, Middle age, Senior) etc.

3. Research Methodology

Research methodology is required because it allows the seamless execution of numerous procedures, results in the most efficient research feasible, giving maximum knowledge with the least amount of work, time, and money expended. In reality, research design means to forward planning about the method which will be utilised for collecting or gathering relevant data and the relevant techniques for their analysis, while keeping the research purpose in mind.

4. Future Work

- a. Apart from that, it is useful for further research into emerging data pre-processing technologies.
- b. Building interactive, integrated data mining environments.
- c. Developing data-preparation methods and systems that are efficient and effective for single and many data sources while taking into account both internal and external data.
- d. Investigating effective data preparation methods for Web intelligence.

5. CONCLUSION

This paper provides an overview of data pre-processing methods with some examples.

In data mining, the data preparation is responsible for identifying quality data from the data provided by data pre-processing systems. Indeed, data preparation is very important because real-world data is impure i.e. it contain incomplete, inconsistent, noisy and missing some value. But the high-performance mining systems require quality data. Quality data yields concentrative patterns.

In this paper, we have argued for the importance of data preparation and briefly introduced the research into data preparation, where the details of each achievement can be found in this special issue. By way of summary, we now discuss the possible directions of data preparation. The diversity of data and data-mining tasks deliver many challenging research issues for data preparation. Below we would like to suggest some future directions for data preparation. The goal of data pre-processing is to provide quality data for any type of mining like that data mining, text mining and web mining. I conclude that data pre-processing techniques have an efficient, effective and important role in preparation, analysis, process large data-scale.

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WEIGHT OPTIMIZATION OF HAT-SHAPED COMPOSITE T-JOINTS IN AUTOMOBILES BY USING ANSYS**Prashant Saxena* and Rashmi Dwivedi**

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ABSTRACT

This study presents a multi-objective design optimization methodology on geometry for carbon fiber reinforced plastics (CFRP) T-joints in automobiles to achieve car body lightweight design. The CFRP T-joint was subjected to out-of-plane bending load using experimental method, and a finite element analysis (FEA) method was developed to simulate full failure procedure in the hat shaped composite T-joint. The proposed method was validated by an obtained optimum design of a composite T-joint with reduced weight and improved overall stiffness and strength behavior, and can thus provide a guidance in practical vehicle composite joint design. The method is applied to the optimization of the FEA result of the T-joint at different loading conditions. The mechanical behaviors of the specimen were studied by means of FEA method and Mathematical methods. The Mathematical results calculated the total deformation on the T joint. The final outcome of the study the overall weight of the T-joint reduces up to 0.6369 kg and total deformation decreases up to 79.8mm. The total strength of T joint increase in case 4. In case for higher grade carbon fiber was used. The total deformation in case 4 decrease 30%. and total stiffness and strength behavior of the vehicle increases.

Keywords: ANSYS, FEA, T-joint, Topology optimization, weight reduction;

1. INTRODUCTION

The frame of any vehicle is the main part of any automobile. All other parts of the machine are supported and mounted on the chassis. Made of forged steel. All parts related to the car are attached only there. Transmission, suspension, brake, steering, all parts are attached to the chassis and mounted. In French, chassis manner the 'entire vehicle without a frame' and consists of all systems without a body, consisting of a gearing machine, steering, shock absorber, rubber tires, and vehicle electronics. If the body is also connected, it is referred to as a unique car in keeping with the outer surface.

The basic functions of the automobile chassis system carry different types of stationary load and also carry passenger and cargo weight. And also the moment generated by the vehicle is the main cause of torsional vibrations. The centrifugal force generated by the vehicle is the main cause of failure. There is various type of vibration generated by the vehicle. we need to control these vibrations.

Different Types of Chassis are used for a different purposes. The traditional frames are also called bearingless frames. The vehicle total load transfer chassis to suspension the frame called bearing fewer frames. The C-Section is mainly used for large elements and the Square section is used for short elements. T-Sections are currently used on tricycles, scooters, matadors, and pickup trucks. The frame must be strong enough to withstand heavy braking and crashes.

BIW (frame in White) is a degree in automotive layout and production. BIW refers back to the body layout of car products including automobiles. it is just a welded sheet metallic structure. BIW has no doorways, engines, chassis, or other moving components.

2. OBJECTIVES

There are the following objectives set for the present work

- The main objective of the study reduces the overall weight of the BIW model.
- Improved overall stiffness and strength behavior of the BIW model.
- The total efficiency of the vehicle increase due to low vehicle weight.

3. METHODOLOGY

In the current study, the Ansys workbench was used for Finite element simulations. In this current study, the surface body is used for FEA analysis. this Cad model was developed with help of cad software CATIA. ansys workbench base of Finite element method. so in the next step cad model is imported into Ansys and this cad model is divided into several nodes and the element is called meshing. Meshing is part of the FEA simulation process. any product and partly divided into nodes and elements are called meshing. In the current study, T-joint is divided into 26815 nodes and 5543 elements. Now apply boundary conditions on the T joint for finite element simulations. First, t appl for fixed support on both sides of branches a for constrained Degree of freedom in all

directions and help get better FEA result. now apply the loading condition on Tjoint for failure Analysis. The final boundary condition was illustrated in Fig. 1



Fig. 1: Boundary Condition Was Illustrated

First prepared cad model of T-joint according to the base paper. Cad model prepared with help of cad software CATIA. CATIA is a type of computer-aided design software that engineers use to develop, alter, and evaluate graphical representations of product designs. Because of its numerous benefits, it is used in a wide range of sectors. CAD software advancements continue to increase design quality by boosting accuracy and lowering design flaws. By centralizing design data and documentation and establishing a single, trusted source of information for engineers and manufacturers, CAD software may help enhance communication. Then import the cad model to ANSYS.

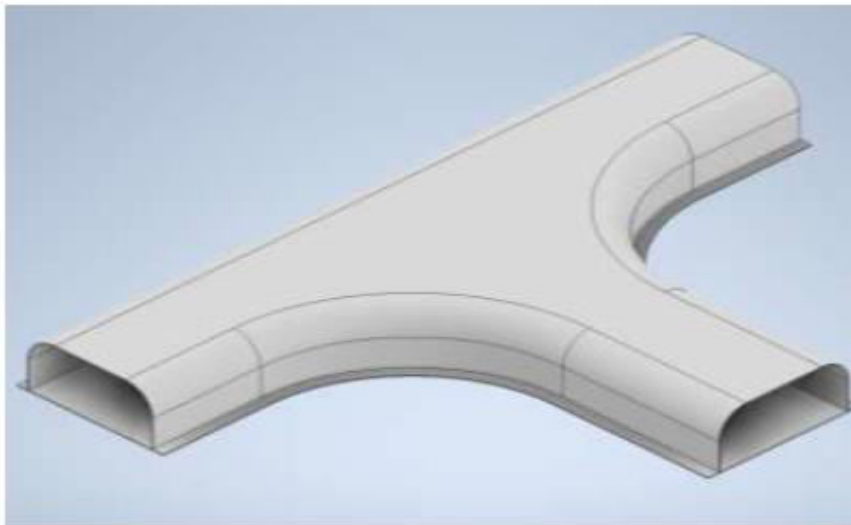


Fig.3: Prepared cad model for FEA analysis

In the current study, four types of material were used for Finite element analysis. In case-1 epoxy composites were used and the density of the epoxy composite was 1700kg/m³ in case-4 low-density carbon fiber material was used and the density of low-density carbon fiber was 1298kg/m³.and other 2 cases Kevlar and epoxy carbon woven was used for finite element analysis.

Tables.1: Material property

Material property	Fibre/epoxy composites.	Epoxy Carbon Woven	Kevlar	Low-density Carbon Fiber material
Density (Kg/m ³)	1700	1420	1400	1298
Young's modulus (GPa)	650	613	300	113
Poisson's ratio	0.3	0.3	0.2	0.32

Meshing is part of the FEA simulation process. any product and part-divided into nodes and elements are called meshing. In the current study, T-joint is divided into 26815 nodes and 5543 elements.

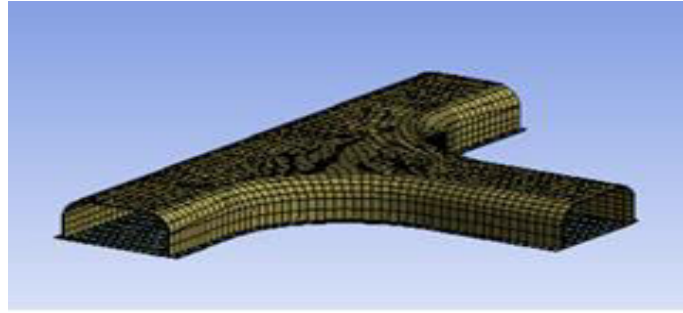


Fig.4: Mesh Model

All DOFs of both sides of branches were constrained to simulate the loading conditions of the experiment as illustrated in Fig. 5.

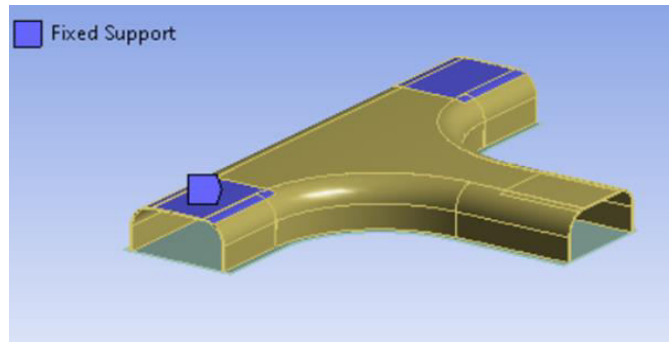


Fig.5: Applied fixed support

A load was uniformly applied to the end region of a B-pillar branch of the T-joint.

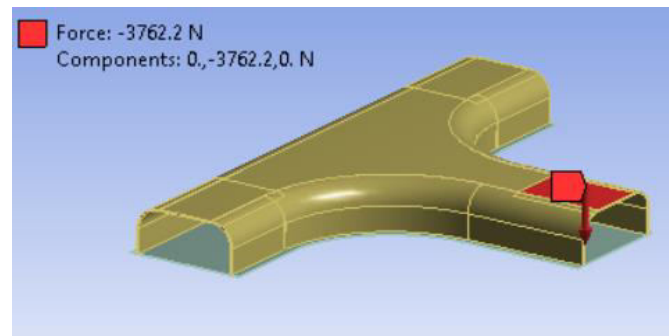


Fig.6: Applied force

Deformation at top of the T-joint can be approximately expressed as[2]

$$\frac{\delta}{P} = \frac{L^3}{3E_1I_x} + \frac{PL_1 \times (\frac{L_t}{2} - L_2 - L_3) L_T}{4G_{12}\omega^2 t} L$$

4. RESULT AND DISCUSSION

This example has a look at provides a multi-target layout optimization approach of carbon fiber strengthened plastic (CFRP) T-joint design in automobiles to reduce the total mass of the system. For checking failure, the T-joint bending loading condition applies to the T-joint. The study's primary goal is to improve the T-design joints and raise the vehicle's overall stiffness and strength.

Table.2: - Boundary conditions

	Case-1 (Epoxy)	Case-2 (Kevlar Fabric)	Case-3 (Carbon Woven)	Case-4 (Low-density carbon fiber)
Weight(kg)	0.83416	0.68695	0.69677	0.6369
Total deformation(mm)	107	102.35	87.1	79
stress(MPa)	2113.6	1974.5	1794.4	1600.2
Cost(INR)	1401	1154	1169	1068

In fiber/epoxy composites use as material for T joint and applied load 3762.5N and calculating total deformation and equivalent stress. The total deformation in case-1 107.55mm and equivalent stress 2133.6 MPa.

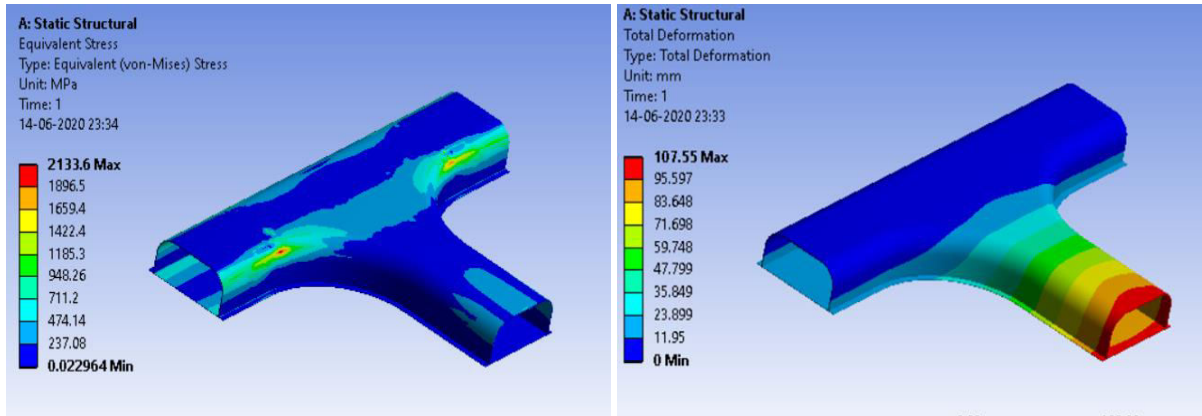


Fig.8. a: Equivalent Stress Contour, b. Total Deformation

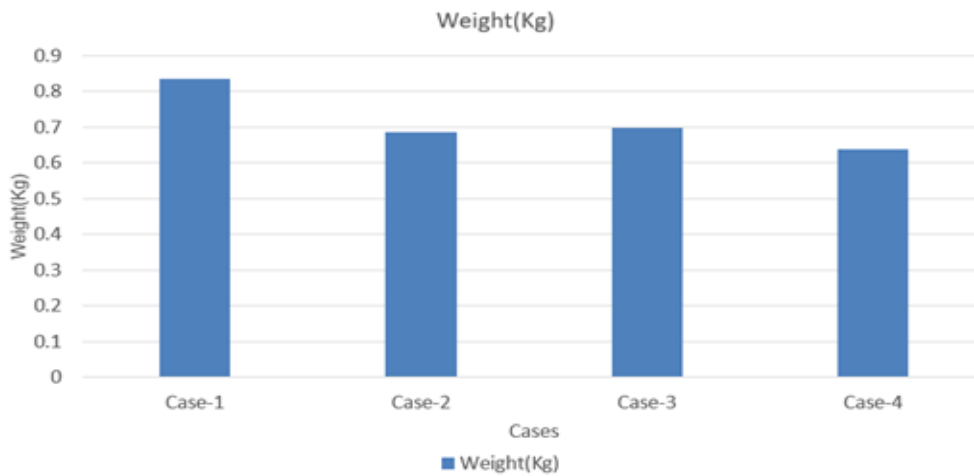


Fig.9: Weight in different cases

Table.3: Total Deformations Result at Deferent Forces

Forces	C1 Total Deformation Maximum [mm]	C2 Total Deformation Maximum [mm]	C4 Total Deformation Maximum [mm]	C3Total Deformation Maximum [mm]
3762	107.54	102.3548	87.14343	79.81207
4000	114.34	108.8244	92.65157	84.85681
4500	128.63	122.4274	104.233	95.46391
5000	142.93	136.0305	115.8145	106.071
5500	157.22	149.6335	127.3959	116.6781
6000	171.51	163.2366	138.9774	127.2852
6500	185.81	176.8396	150.5588	137.8923
7000	200.10x	190.4427	162.1403	148.4994

Table.4: Equivalent Stress Results at Deferent Forces

Forces	C1Eq. Stress Maximum [MPa]	C2Eq. Stress Maximum [MPa]	C4Eq. Stress Maximum [MPa]	C3Eq. Stress Maximum [MPa]
3762	2133.565	1974.464	1749.413	1600.224
4000	2268.423	2099.265	1859.989	1701.371
4500	2551.976	2361.673	2092.488	1914.042
5000	2835.529	2624.081	2324.986	2126.713
5500	3119.082	2886.489	2557.485	2339.385
6000	3402.635	3148.897	2789.984	2552.056
6500	3686.188	3411.306	3022.482	2764.728
7000	3969.741	3673.714	3254.981	2977.399

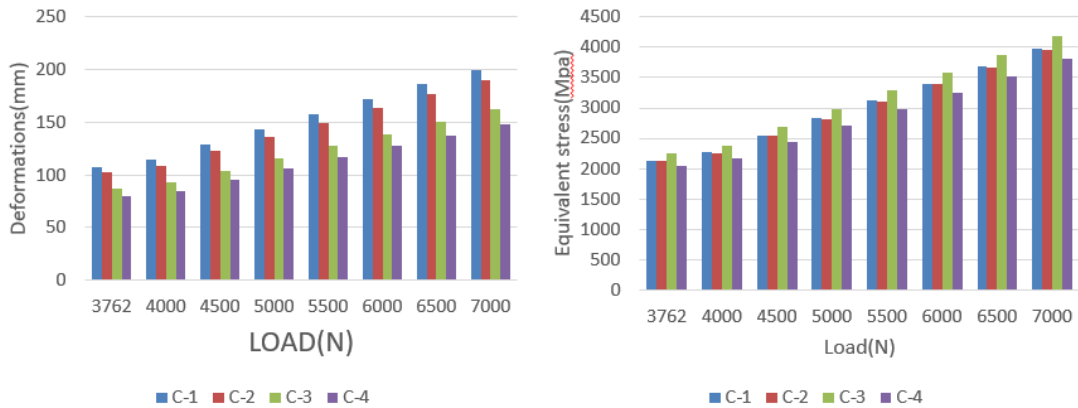


Fig.9. (a): Total Deformations Results at Different Forces, (b) Eq. Stress Results at Different Forces;

Table.5: FEA Result VS Analytical Result

Cases	FEA Result(mm)	Analytical Result(mm)	Error %
CASE-1	107	105	2%
CASE-2	102.35	101.4	1%
CASE-3	87.1	93	6%
CASE-4	79	85.3	7%

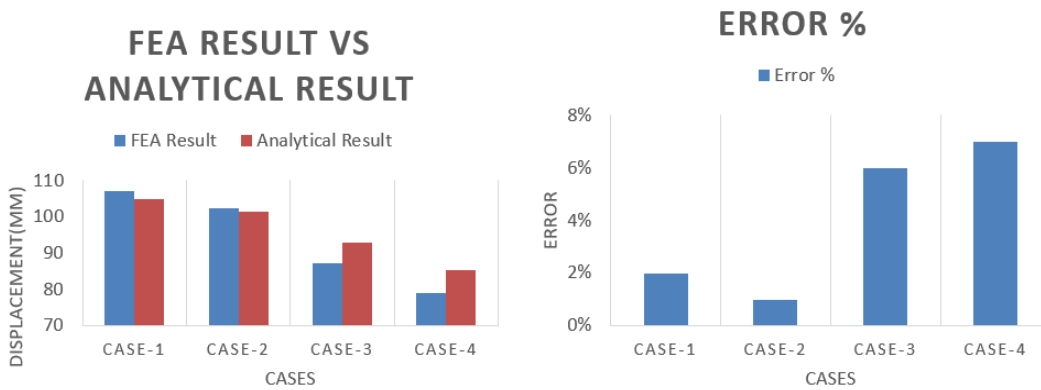


Fig.10 (a): FEA Result VS Analytical Result (b) Error%

5. CONCLUSION

The main approach is implemented to the optimization of the FEA result of the T-joint in special loading situations. Also, simulate the mechanical behaviors of the specimen were studied using the FEA method and Mathematical methods. The Mathematical results calculated the total deformation of the T joint with help of ANSYS. The final results show that the overall weight of the T-joint reduces up to 0.6369 kg and the total deformation of the T-joint decreases up to 79.8mm. The total strength of the T joint increases in case 4. (Low-density carbon fiber). In the final case higher-grade, carbon fiber was used as T joint material. The total deformation in case 4 decreases 30%.and total stiffness and the strength behavior of the vehicle increases.

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A STUDY OF ONLINE PURCHASE INTENTIONS OF CUSTOMERS

Charu Rastogi¹ and Dr. Sanjay Mishra²¹Research Scholar and ²Professor, Department of Business Administration, M. J. P. Rohilkhand University**ABSTRACT**

The tremendous growth of e-commerce industry and increasing customers interest in e-shopping give a new shopping experience to the consumers. Online retailers giving different seasonal offers and discounts for attracting more customers and earn huge profits like Great Indian Festival, Big billion days, end of season sale etc. The purpose of this study to analyse the impact of different variables accurate description of products, shipping charges, guarantee/ warranty of products, previous purchase experience, reputation of website and secured payment process on purchase intention of customers. Based on extensive literature review, factors effecting online purchase intentions were identified and a structured-non-disguised questionnaire was prepared. The data was collected through survey of 397 respondents of NCR. The findings of the study indicates that online purchase intentions of customers depend on accurate description of goods, shipping charges and secured payment.

Keywords: E-commerce, Online shopping, Online purchase intentions of customers

INTRODUCTION

There is a tremendous growth of e-commerce industry in India. Due to its vast population, it has become a vital part of Indian society. Internet has transformed our lives in different style: the way we connect and communicate with each other and the most important the way we sell and buy ^[1]. The huge development of internet has formed a suitable and quicker way to the shopping experience for the customers ^[2]. The major online players Amazon, Flipkart, Myntra, Paytm, Firstcry etc. offered a broader variety of product category to consumers. The amplified internet penetration and more innovative ways for online financial transaction give a new drive to e-commerce industry.

For the success of any business, the primary concern of retailers is to provide satisfaction of customer's need to make purchase repeatedly. The e-commerce market has great possibilities for youth generation. Companies are concentrating on youth people for the speedy future growth of business. Companies can create interest in more consumers by refining after sales services, offering safe transactions and timely delivery of products ^[3].

The global e-Commerce market is anticipated to be growing by \$1 Trillion by 2025, according to the Forbes survey ^[4]. In 2020, according to IBEF Indian e-commerce industry analysis, the sale of e-commerce in India were expected to rise by only 7-8% as compared with 20% in China and the US ^[5]. E-shopping give a newly changed shopping experience to their consumers.

Therefore, industry should emphasis on the factors that affect the online purchase intention of customers. Majority of research are performed outside India. To fill this gap, the following research is proposed to examine how different variables affect online purchase intention of customers.

LITERATURE REVIEW

Syed Shah Alam & Et Al. the study found that customer service, reliability and trust exhibited significant relationship with online buying intentions, in which trust was the most persuading factor. Also experienced buyers were more convinced and have shown diverse buying intentions from inexperienced buyers ^[6].

Spiros Gounaris & Et Al 2010, the study found that e-retailers should make their websites that give accurate information, ease of use, and offer better quality with the aim to enhance quality of website. Special offers, discounts and promotions that motivates consumers to visit website again and again ^[7].

Arpita Khare and Sapna Rakesh 2011, the study revealed that the aims of Indian students for shopping online are influenced by attitude towards e-shopping, availability of information and utilitarian value ^[8].

Prashant Singh 2014, the study found that e-shopping gave a different way to shopping experience by saving time and money. Flipkart offered quality products at best prices to their customers ^[9].

Rakshita Puranik and Alok Bansal 2014, the study found that the factors that influence internet user's perception towards e-shopping. The main factors are relevant information, trustworthiness, past experiences, instant reviews, product delivery, transparency and image of seller ^[10].

R. Shanthi and Dr. Desti Kannaiah 2015, the study found the factors from most significant to least significant ones are price, security, guarantee and warranty, delivery time, website reputation, privacy and accurate description of goods ^[11].

Tahir Ahmad Wani & Et Al 2016, the study found the main drivers of online purchase intentions of consumers were attitude towards e-WOM and their past experiences. The study also revealed that favourable past experience has positive impact on the consumer to shop online ^[12].

Research Objectives and Hypothesis

The objective of this research is to identify the impact of different variables on online purchase intentions of customers. Based on the literature review, following hypothesis have been framed:

H₁: Purchase intention depends on accurate description of products.

H₂: Purchase intention depends upon shipping charges.

H₃: Purchase intention depends on guarantee/ warranty of products.

H₄: Purchase intention depends on reputation of website.

H₅: Purchase intention depends on Previous experience.

H₆: Purchase intention depends on Secured payment process.

RESEARCH METHODOLOGY

The present research design is descriptive and exploratory in nature. To test the above framed hypothesis, a survey of consumers residing in NCR was carried out with the help of a 'structured non-disguised' questionnaire. A pilot study was also conducted on a sample of 10 respondents. Some modifications in questions are made according to the results of pilot study. Then the final study was conducted on a sample of 397 respondents.

The sample was drawn using convenience sampling method. Questions were prepared using 5 point likert scales ranging from 1-5 (1=strongly agree, 2=agree, 3=neutral, 4= disagree, 5= strongly disagree). Regression analysis were used for analysing the responses.

Analysis of Study

For testing the above stated hypothesis, we must develop a regression model. Regression analysis is the best statistical tools for measuring impact of one or more independent variables on dependent variable.

Dependent Variable (y1)	Independent Variables
Purchase Intention (y1)	Accurate description of products (x ₁)
	Shipping Charges (x ₂)
	Guarantee/ Warranty of products (x ₃)
	Reputation of website (x ₄)
	Previous experience (x ₅)
	Secured Payment Process (x ₆)

Based on the above classification of dependent and independent variables, following multiple regression model was hypothesized:

$$\text{Customer satisfaction (y1)} = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6$$

Analysis of Variance (ANOVA)

The null hypothesis we want to investigate is that there is no relation between the response and the regressor against the alternative that H₀ is false, that is:

The above said hypothesis can statistically be described as:

$$H_{01}: \beta_1 = \beta_2 = \dots = \beta_q = 0$$

$$H_{11}: \text{At least one } \beta \neq 0$$

Results of linear relationship tested through ANOVA are shown in the table below:

Model	Sum of Squares	Df	Mean Square	F	Sig.
Regression	66.331	6	11.055	35.207	.000

	Residual	122.460	390	.314		
	Total	188.791	396			

Above table reveals that the p-value for regression is .00000 which is less than α ($= .05$), so the null hypothesis was rejected and it can be concluded that the six explanatory variables collectively have at least some predictive values.

All the assumptions underlying Multiple Regression model were analyzed so far. Therefore, Regression equation for the model is:

Purchase Intention = 1.116 + 0.167 Accurate description of products + 0.133 Shipping charges - 0.058 Guarantee/Warranty of products + 0.021 Reputation of website + 0.281 Previous experience + 0.259 Secured Payment Process

Interpretation of Regression Model for Purchase Intention:

Value of constant (β_0) is 1.116 which shows that if all the considered independent variable turns out to be zero then also there is 1.116 unit of purchase intention will be attained during online shopping.

Value of coefficient term (β_1) for X 1 was 0.167, which shows that change in accurate description of products by single unit increased the purchase intention by 0.167 units.

Value of coefficient term (β_2) for X 2 was 0.113, which means that for every 1 unit change in shipping charges there is 0.113 unit increase in purchase intention.

Value of coefficient term (β_3) for X 3 was -0.058, which shows that change in guarantee/ warranty of products by single unit decreased the purchase intention by .058 units.

Value of coefficient term (β_4) for X 4 was 0.021, which shows that change in reputation of website by single unit increased the purchase intention by .021 units.

Value of coefficient term (β_5) for X 5 was 0.281, which shows that change in previous experience of consumers by single unit increased the purchase intention by .281 units.

Value of coefficient term (β_6) for X 6 was 0.259, which shows that change in secured payment process of e-shopping site by single unit increased the purchase intention by .259 units.

Result of Hypothesis Testing:

The result of hypothesis testing is shown in table below:

Accurate Description of products	3.628	.000	Since, sig. value is less than α (0.05), hence we fail to accept null hypothesis
Shipping Charges	2.758	.006	Since, sig. value is less than α (0.05), hence we fail to accept null hypothesis
Guarantee / Warranty of products	-1.144	.253	Since, sig. value is greater than α (0.05), hence we accept null hypothesis
Reputation of website	.410	.682	Since, sig. value is greater than α (0.05), hence we accept null hypothesis
Previous experience	5.131	.000	Since, sig. value is greater than α (0.05), hence we accept null hypothesis
Secured Payment Process	5.129	.000	Since, sig. value is less than α (0.05), hence we fail to accept null hypothesis

FINDINGS

The objective of this study was to assess the impact of different variables on purchase intention of customers. Major findings of this study are as follows:

- The sig. value for accurate description of products is less than α (0.05), hence we fail to accept null hypothesis. It shows that purchase intention depends upon accurate description of products.

- The sig. Value for shipping charges is less than α (0.05), hence we fail to accept null hypothesis. It shows that purchase intention of customer depends upon shipping charges taken by e-shopping portals.
- The sig. Value for guarantee and warranty of goods is greater than α (0.05), hence we accept null hypothesis. It shows that purchase intention does not depend upon guarantee and warranty of items.
- The sig. value for reputation of website is greater than α (0.05), hence we accept null hypothesis. It shows that purchase intention does not depend upon website reputation.
- The sig. value for previous experience is greater than α (0.05), hence we accept null hypothesis. It shows that purchase intention does not depend upon previous experience of consumers
- The sig. value for secured payment process is less than α (0.05), hence we fail to accept null hypothesis. It shows that purchase intention depends upon secure transaction process adopted by e-shopping sites.

CONCLUSION

Though e-shopping is very popular all around the globe due to its convenience and comfort. E-retailers should focus on customer needs and try to make strategies that satisfy their customers. It can be concluded based on study that purchase intention of customers while shopping online depends upon accurate description of products, shipping charges and secured transaction process while reputation of website, previous experience and guarantee of goods have no effect on purchase intention of customers. E-retailers should try to focus on creating trust in the minds of their consumers by providing privacy and security consumer details.

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A STUDY ON FOREIGN TOURIST ARRIVAL IN INDIA AND ITS IMPACT ON THE GROWTH OF FOREIGN EXCHANGE EARNINGS

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ABSTRACT

The main purpose of this Paper is to describe the Impact on the Growth of Foreign Exchange Earnings based on Foreign Tourist Arrival from 2016 to 2021 in India. This Paper focuses on the Past and Current Scenario on Tourism Sector in India.

Tourism in India is important for the country's economy and is growing rapidly. The World Travel and Tourism Council calculated that tourism generated ₹16.91 lakh crore (US\$220 billion) or 9.2% of India's GDP in 2018 and supported 42.673 million jobs, 8.1% of its total employment.

Foreign tourist arrivals in India, which were 1.28 million in 1981, have reached a level of 10.93 million in 2019 showing an average annual growth of 5.65% during 1981-2019. But in 2020 it reached a level of 2.74 million showing an average annual growth of 1.92% during 1981-2020, this is due fears of spread of coronavirus during mid-December 2019 and the subsequent lockdown later in India have severely crippled the tourism sector, leading to job losses and an economic impact that may take years to heal.

India's travel and tourism sector, which accounts for nearly 2.5% of the GDP, has made repeated appeals to the government seeking succor for travel and tourism businesses tottering on the brink of collapse due to the Covid-19 pandemic.

Keywords: COVID-19, Earnings, Foreign, Lockdown, Tourism and Tourist Arrivals.

INTRODUCTION

India has a huge market for travel and tourism. It offers a diverse portfolio of niche tourism products - cruises, adventure, medical, wellness, sports, MICE, eco-tourism, film, rural and religious tourism. India has been recognized as a destination for spiritual tourism for domestic and international tourists. Prime Minister Mr. Narendra Modi, in his Independence speech from Red Fort urged people to visit 15 domestic tourist destinations in India by 2022 to promote tourism. India ranked at the 54th place in a global travel and tourism development index, down from 46th in 2019, but still remained on the top within South Asia. Tourism is an important source of foreign exchange in India similar to many other countries. In 2020 until March 2020, India earned foreign exchange of US\$ 6.15 billion from tourism. During 2019, India earned foreign exchange of US\$ 29.96 billion from tourism, recording a YOY growth of 4.80%. Foreign exchange earnings (FEEs) from tourism in India witnessed growth at a CAGR of 8.96% between 2007 and 2019.

The Indian tourism and hospitality industry is emerged as one of the key drivers in the growth among the services sector in India. Tourism in India has significant potential considering the rich cultural and historical heritage, variety in ecology, terrains and places of natural beauty spread across the country. Tourism is also a potentially large employment generator besides being a significant source of foreign exchange for the country.

OBJECTIVE OF THE STUDY

The Objective of the Present Study is to Review the Following:

- i. Foreign Tourist Arrivals (FTAs) in India 1981-2020.
- ii. Estimates of Foreign Exchange Earnings (FEEs) from Tourism in India 2001-2020

RESEARCH METHODOLOGY

The present study is descriptive in nature. The study has been done primarily based on the basis of secondary data and information available from books, published works, India Tourism Statistics from 1981 to 2020 and reports of Ministry of Tourism, Govt. of India.

Framework and Analysis of Results

Rate of growth in tourist arrival and Foreign Exchange Earnings (FEEs) from Tourism in India can be measured for the given time period by regressing tourist arrival and Foreign Exchange Earnings (FEEs) against time using the phenomenon of **Compound Annual Growth Rate (CAGR)**.

$$CAGR = \frac{\text{Ending Value}^{(1/t)}}{\text{Beginning Value}} - 1$$

• CAGR = Compound Annual Growth Rate
• t = Number of Periods in Years

The **Compound Annual Growth Rate (CAGR)** is the annualized rate of growth in the value of an investment or financial metric, such as revenue, over a specified time period. CAGR provides the growth rate as if the changes occurred evenly at the same rate over each individual period, so the CAGR effectively “smoothens” the growth rate.

Table 1: Important Statistics on Tourism in India From 2015 To 2020

Description	Year					
	2015	2016	2017	2018	2019	2020
Number of Foreign Tourist Arrivals in India (million)	8.03	8.80	10.04	10.56	10.93	2.74
Annual Growth Rate (%)	4.5	9.7	14	5.2	3.5	-74.9
Number of Non-Residents Indians Arrivals (million)	-	5.77	5.51	6.87	6.98	3.59
Annual Growth Rate (%)	-	9.7	-4.5	1.4	1.7	-48.6
Number of International Tourist Arrivals in India (million)	-	14.57	15.54	17.42	17.91	6.33
Annual Growth Rate (%)	-	9.7	6.7	3.7	2.8	-64.6
Foreign Tourist Arrivals by Mode of Transport (%)	84.5	84.1	79.6	79.6	77.4	79.2
i. Air	14.8	15.0	19.7	19.6	21.7	19.3
ii. Land	0.7	0.9	0.7	0.8	0.9	1.5
iii. Sea						
Foreign Tourist Arrivals by Port of Entry (%)	-	29.7	28.35	28.8	28.1	29.6
i. Delhi (Airport)	-	17.2	15.72	15.7	13.6	14.6
ii. Mumbai (Airport)	-	8.6	11.69	9.8	10.1	8.7
iii. Haridaspur (Land Check Post)	-	8.1	7.16	7.5	7.3	6.6
iv. Chennai (Airport)	-	6.2	5.66	5.8	6.0	5.6
v. Bengaluru(Airport)	-	4.0	4.58	5.1	5.0	4.5
vi. Kolkata (Airport)	-	3.6	3.41	3.2	3.1	3.1
vii. Kolkata (Airport)	-	3.4	3.10	3.1	3.1	2.7
viii. Cochin (Airport)	-	19.2	20.33	21.0	23.7	24.5
ix. Others						
Foreign Exchange Earnings from Tourism (PR)	135193	154146	177874	194881	211661	50136
i. In INR terms (in Crore)	9.6	14.0	15.4	9.6	8.6	-76.3
Annual Growth Rate (%)	21.07	22.92	27.31	28.59	30.06	6.958
ii. In US\$ terms (in billion)	4.1	8.8	19.1	4.7	5.1	-76.9
Annual Growth Rate (%)						
No. of Indian Nationals Departures from India (million)	20.38	21.87	23.94	26.29	26.91	7.29
Annual Growth Rate (%)	11.1	7.3	9.5	9.8	2.4	-72.9
Number of Domestic Tourist Visits (million)	1432	1613.55	1652.49	1854.93	2321.98	610.22
Annual Growth Rate (%)	11.6	12.68	2.3	11.9	25.3	-73.7

Source: Ministry of Tourism, Govt. of India.

INTERPRETATION: Table 1 above shows the Important Statistics on Tourism in India from 2015 to 2020. From Table 1, it is understood that over the period under review, The COVID-19 pandemic, which began in

China's Wuhan, spread to India and other parts of the world in 2020, prompting the government to suspend international flights in March 2020. The number of Foreign Tourist Arrivals (FTAs) in India during 2020 decreased to 2.74 million as compared to 10.93 million in 2019, registering a negative growth of 74.9%. The number of domestic tourist visits in India during 2020 was 610.22 million as compared to 2321 million in 2019, with a negative growth rate of 73.7%. About 79.2% of the FTAs entered India through air routes followed by 19.3% by land routes and 1.5% by sea routes in 2020. The percentage share of Foreign Tourist Arrivals in India from 2016 to 2020 among the top ports was highest at Delhi Airport followed by Mumbai Airport, Haridaspur Land Check Post, Chennai Airport, Bengaluru Airport, Kolkata Airport, Cochin Airport, Hyderabad Airport and other Airport. Delhi and Mumbai airports accounted for about 44.2% of the total FTAs in India. Tourism continues to play an important role as a foreign exchange earner for the country. In 2020, foreign exchange earnings (FEE) from tourism were US \$ 6.958 billion as compared to US\$ 30.06 billion in 2019, registering a negative growth of 76.9%. The number of Indian national departures from India during 2020 was 7.29 million as compared to 26.91 million in 2019, registering a negative growth rate of 72.9%. The negative growth rate during 2020 is due to rapid outbreak of corona virus (COVID-19) and the subsequent lockdown later in India have severely crippled the tourism sector, leading to job losses and an economic impact that may take years to heal.

Table 2: Inbound Tourism: Foreign Tourist Arrivals (Ftas), Arrivals of Non-Resident Indians (Nris) and International Tourist Arrivals (Itas) 1981-2020

Year	FTAs in India (in million)	% change over previous year	NRIs arrivals in India (in million)	% change over the previous year	International Tourist Arrivals in India (in million)	% change over the previous year
1981	1.279	2.0	-	-	-	-
1982	1.288	0.7	-	-	-	-
1983	1.304	1.3	-	-	-	-
1984	1.194	-8.5	-	-	-	-
1985	1.259	5.5	-	-	-	-
1986	1.451	15.2	-	-	-	-
1987	1.484	2.3	-	-	-	-
1988	1.591	7.2	-	-	-	-
1989	1.736	9.1	-	-	-	-
1990	1.707	-1.7	-	-	-	-
1991	1.677	-1.7	-	-	-	-
1992	1.868	11.3	-	-	-	-
1993	1.765	-5.5	-	-	-	-
1994	1.886	6.9	-	-	-	-
1995	2.124	12.6	-	-	-	-
1996	2.288	7.7	-	-	-	-
1997	2.374	3.8	-	-	-	-
1998	2.359	-0.7	-	-	-	-
1999	2.482	5.2	-	-	-	-
2000	2.649	6.7	-	-	-	-
2001	2.54	-4.2	-	-	-	-
2002	2.38	-6.0	-	-	-	-
2003	2.73	14.3	-	-	-	-
2004	3.46	26.8	-	-	-	-
2005	3.92	13.3	-	-	-	-
2006	4.45	13.5	-	-	-	-
2007	5.08	14.3	-	-	-	-
2008	5.28	4.0	-	-	-	-
2009	5.17	-2.2	-	-	-	-
2010	5.78	11.8	-	-	-	-
2011	6.31	9.2	-	-	-	-
2012	6.58	4.3	-	-	-	-
2013	6.97	5.9	-	-	-	-

2014	7.68	10.2	5.43		13.11	
2015	8.03	4.5	5.74	5.7	13.76	5.0
2016	8.80	9.7	6.22	8.5	15.03	9.2
2017	10.04	14.0	6.77	8.8	16.81	11.8
2018	10.56	5.2	6.87	1.4	17.42	3.7
2019	10.93	3.5	6.98	1.7	17.91	2.8
2020	2.74	-74.9	3.59	-48.6	6.33	-64.7

Source: Bureau of Immigration, Govt. of India

INTERPRETATION: Table 2 above shows the Inbound Tourism: Foreign Tourist Arrivals (FTAs), Arrivals of Non-Resident Indians (NRIs) and International Tourist Arrivals (ITAs) 1981-2020. From Table 2, it is understood that over the period under review:

The number of Foreign Tourist Arrivals (FTAs) in India during 2020 decreased to 2.74 Million As Compared To 10.93 Million In 2019, registering a negative growth of 74.9%.

Over the course of 10 years (1981-1990), Foreign Tourist Arrivals (FTAs) in India grew from 1.279 to 1.707 million. Its compound annual growth rate (CAGR) is 2.93 %.

Over the course of 20 years (1981-2000), Foreign Tourist Arrivals (FTAs) in India grew from 1.279 to 2.649 million. Its compound annual growth rate (CAGR) is 3.71 %.

Over the course of 30 years (1981-2010), Foreign Tourist Arrivals (FTAs) in India grew from 1.279 to 5.78 million. Its compound annual growth rate (CAGR) is 5.16 %.

Over the course of 39 years (1981-2019), Foreign Tourist Arrivals (FTAs) in India grew from 1.279 to 10.93 million. Its compound annual growth rate (CAGR) is 5.66 %.

Over the course of 40 years (1981-2020), Foreign Tourist Arrivals (FTAs) in India grew from 1.279 to 2.74 million. Its compound annual growth rate (CAGR) is 1.92 %.

Hence over 39 years, there was gradual increase in compound annual growth rate (CAGR) of Foreign Tourist Arrivals (FTAs) in India. But in the 40th Year (2020), there was sudden fall in compound annual growth rate (CAGR) of Foreign Tourist Arrivals (FTAs) in India due to the COVID-19 pandemic, which began in China's Wuhan, spread to India and other parts of the world in 2020, prompting the government to suspend international flights in March 2020.

Month	Table 3: Foreign Tourist Arrivals (FTAs) in India										
	2016	2017	2018	2019	2020	2021	Percentage (%) Change				
							2017/ 16	2018/ 17	2019/ 18	2020/ 19	2020/ 21
January	84453 3	964109	104502 7	111104 0	11192 50	83822	14.2	8.4	6.3	0.7	-92.5
February	84878 2	931025	104925 9	109051 6	10184 40	99640	9.7	12.7	3.9	-6.6	-90.2
March	80910 7	885936	102153 9	978236	32830 4	12317 9	9.5	15.3	-4.2	-66.4	-62.5
April	59200 4	717899	745033	774651	2820	69442	21.3	3.8	4.0	-99.6	2362.5
May	52746 6	622408	606513	615136	3764	13307	18.0	-2.6	1.4	-99.4	253.5
June	54697 2	663470	683935	726446	8590	29397	21.3	3.1	6.2	-98.8	242.2
July	73383 4	779309	806493	818125	12655	64566	6.2	3.5	1.4	-98.5	410.2
August	65211 1	719129	785993	800837	19761	84955	10.3	9.3	1.9	-97.5	329.9
September	60817 7	719964	719894	751513	28167	10670 4	18.4	0.0	4.4	-96.3	278.8
October	74177 0	866976	890223	945017	41494	18132 5	16.9	2.7	6.2	-95.6	337.0

November	878280	997738	1012569	1092440	70977	251993	13.6	1.5	7.9	-93.5	255.0
December	1021375	1167840	1191498	1226398	90544	303799	14.3	2.0	2.9	-92.6	235.5
Total	8804411	10035803	10557976	10930355	2744766	1412129	14.0	5.2	3.5	-74.9	-48.6
CAGR	1.6%	1.61%	1.1%	0.83%	-18.9%	11.33%	-	-	-	-	-

Source: Ministry of Tourism Govt. of India.

INTERPRETATION: Table 3 above shows the Foreign Tourist Arrivals (FTAs) in India from 2016 to 2021. From Table 3, it is understood that over the period under review:

Over the course of 12 Months (January-December 2016), Foreign Tourist Arrivals (FTAs) in India grew from 844533 to 1021375. Its compound annual growth rate (CAGR) is 1.6 %.

Over the course of 12 Months (January-December 2017), Foreign Tourist Arrivals (FTAs) in India grew from 964109 to 1167840. Its compound annual growth rate (CAGR) is 1.61 %.

Over the course of 12 Months (January-December 2018), Foreign Tourist Arrivals (FTAs) in India grew from 1045027 to 1191498. Its compound annual growth rate (CAGR) is 1.1 %.

Over the course of 12 Months (January-December 2019), Foreign Tourist Arrivals (FTAs) in India grew from 1111040 to 1226398. Its compound annual growth rate (CAGR) is 0.83 %.

Over the course of 12 Months (January-December 2020), Foreign Tourist Arrivals (FTAs) in India fall from 1119250 to 90544. Its compound annual growth rate (CAGR) is -18.9 %.

Over the course of 12 Months (January-December 2021), Foreign Tourist Arrivals (FTAs) in India grew from 83822 to 303799. Its compound annual growth rate (CAGR) is 11.33 %.

Over the course of 5 years (2016-2020), Foreign Tourist Arrivals (FTAs) in India fall from 8804411 to 2744766. Its compound annual growth rate (CAGR) is -20.79 %, these is due to the past year (2020) has been devastating for the Tourism sector and the effects of pandemic continue to unfold on the domestic tourism sector. The foreign tourist arrivals (FTAs) in nine months (From April to December 2020) stood at 0.279 million, which is down over 97 per cent as compared to the same period in 2019 when FTAs stood at 7.75 million. Since March 2020, the suspension of international flights has been extended many times, and such scheduled flights continue to remain suspended till February 28th 2021. Though the government had started Vande Bharat Mission (VBM) and travel bubbles with several countries, the amount of traffic in these flights remains fairly restricted.

Over the course of 6 years (2016-2021), Foreign Tourist Arrivals (FTAs) in India fall from 8804411 to 1412129. Its compound annual growth rate (CAGR) is -26.29 %, these is due to Foreign Tourist Arrivals (FTA) in India between January and September 2021 have reduced even further by 73.44% compared to the same time last year (2020). As per information received from the Bureau of Immigration, FTAs during the full year 2020 were 2744766 as compared to 10930355 in 2019 registering a negative growth of 74.9 per cent. From Table 4, the data however showed that on a month-on-month basis in 2021, there is an increase in inbound tourists. In fact, for the first time in months, FTAs crossed the 1 lakh mark in September 2021. In August 2021 over 84,955 people flew into India, whereas in September over 1.06 lakh FTAs travelled to India. However, in October this figure went up to 1.81 lakh. The reducing number of covid-19 cases and rising number of eligible vaccinated people is one of the reasons for this rise. The Indian government is also gradually easing the air bubble related flights which is bringing in more passengers into the country.

Month	Table 4: Foreign Exchange Earnings (in US \$ billion)								
	2016	2017	2018	2019	2020	Percentage (%) Change			
						2017/16	2018/17	2019/18	2020/19
January	2.032	2.320	2.791	2.575	2.833	14.2	20.3	-7.7	10.0
February	2.001	2.289	2.76	2.521	2.551	14.4	20.6	-8.7	1.2
March	1.938	2.224	2.648	2.331	0.784	14.8	19.1	-12.0	-66.4
April	1.726	2.211	2.379	2.466	0.009	28.1	7.6	3.7	-99.6
May	1.534	1.901	1.889	1.983	0.012	23.9	-0.6	5.0	-99.4
June	1.587	2.013	2.125	2.316	0.027	26.8	5.6	9.0	-98.8

July	2.125	2.295	2.468	2.646	0.041	8.0	7.5	7.2	-98.5
August	1.875	2.158	2.37	2.504	0.064	15.1	9.8	5.7	-97.4
September	1.744	2.149	2.101	2.359	0.094	23.2	-2.2	12.3	-96.0
October	1.812	2.183	1.998	2.401	0.013	20.5	-8.5	20.2	-99.5
November	2.110	2.549	2.302	2.777	0.190	20.8	-9.7	20.6	-93.2
December	2.439	3.018	2.755	3.179	0.241	23.7	-8.7	15.4	-92.4
Total	22.923	27.310	28.586	30.058	6.959	19.1	4.7	5.1	-76.8

Source: Ministry of Tourism Govt. of India

INTERPRETATION: Table 4 above shows the Foreign Exchange Earnings (in US \$ billion) in India from 2016 to 2020. From Table 4, it is understood that over the period under review:

In 2019, for instance, foreign exchange earnings stood at \$30.058 billion and \$28.586 billion in the year before that (2018). From January to June 2020, this number reportedly dropped to \$6.216 billion.

In 2020, foreign exchange earnings from tourism industry across India amounted to nearly seven billion U.S. dollars. This was a drop of nearly 77 percent compared to the previous year and was the impact of the coronavirus and consequent lockdown. In 2019, tourism was the third largest foreign exchange earner for the country.

Month	Table 5: Foreign Exchange Earnings (in Rs. crore)								
	2016	2017	2018	2019	2020	Percentage (%) Change			
						2017/16	2018/17	2019/18	2020/19
January	13671	15799	17755	18205	20200	15.6	12.4	2.5	11.0
February	13661	15353	17757	17959	18241	12.4	15.7	1.1	1.6
March	12985	14667	17222	16214	5830	13.0	17.4	-5.9	-64.0
April	11495	14260	15620	17134	71	24.1	9.5	9.7	-99.6
May	10260	12255	12752	13642	94	19.4	4.1	7.0	-99.3
June	10677	12971	14398	16083	208	21.5	11.0	11.7	-98.7
July	14285	14796	16976	18205	307	3.6	14.7	7.2	-98.3
August	12553	13811	16492	17867	479	10.0	19.4	8.3	-97.3
September	11642	13840	15150	16824	686	18.9	9.5	11.0	-95.9
October	12100	14213	14701	17057	831	17.5	3.4	16.0	-95.1
November	14259	16528	16584	19840	1413	15.9	0.3	19.6	-92.9
December	16558	19381	19474	22631	1776	17.0	0.5	16.2	-92.2
Total	154146	177874	194881	211661	50136	15.4	9.6	8.6	-76.3

Source: Ministry of Tourism Govt. of India

INTERPRETATION: Table 5 above shows the Foreign Exchange Earnings (in Rs. crore) in India from 2016 to 2020. From Table 5, it is understood that over the period under review:

In 2019, for instance, foreign exchange earnings stood at Rs. 211661 crore and Rs. 194881 crore in the year before that (2018). From January to June 2020, this number reportedly dropped to Rs. 44644 crore.

In 2020, foreign exchange earnings from tourism industry across India amounted to nearly Rs. 50136 crore. This was a drop of nearly 76 percent compared to the previous year and was the impact of the coronavirus and consequent lockdown. In 2019, tourism was the third largest foreign exchange earner for the country.

Table 6: Estimates of Foreign Exchange Earnings (Fees) From Tourism in India 2001-2020

Year	FEE from Tourism in India (in US \$ million)	Percentage(%) change over the previous year	FEE from Tourism in India (in Rs. Crore)	Percentage(%) change over the previous year
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2001	3198	-7.6	15083	-3.5
2002	3103	-3.0	15064	-0.1
2003	4463	43.8	20729	37.6
2004	6170	38.2	27944	34.8
2005	7493	21.4	33123	18.5
2006	8634	15.2	39025	17.8
2007	10729	24.3	44362	13.7
2008	11832	10.3	51294	15.6
2009	11136	-5.9	53754	4.8
2010	14490	30.1	66172	23.1
2011	17707	22.2	83036	25.5
2012	17971	1.5	95607	15.1
2013	18397	2.4	107563	12.5
2014	19700	7.1	120367	11.9
2015	21013	6.7	134844	12.0
2016	22923	9.1	154146	14.3
2017	27310	19.1	177874	15.4
2018	28586	4.7	194881	9.6
2019	30058	5.1	211661	8.6
2020	6958	-76.8	50136	-76.3
CAGR	3.96%		6.19%	

Source: (I) Reserve Bank of India, For 2001 – 2015
(ii) Ministry of Tourism, Govt. Of India, For 2016-2020

INTERPRETATION: Table 6 above shows the Estimates of Foreign Exchange Earnings (FEEs) from Tourism in India 2001-2020. From Table 6, it is understood that over the period under review:



Over the course of 19 years (2001-2019), Foreign Exchange Earnings (FEEs) from Tourism in India grew from \$3198.00 million to \$30058.00 million. Its compound annual growth rate (CAGR) is 12.52 %.

Over the course of 20 years (2001-2020), Foreign Exchange Earnings (FEEs) from Tourism in India grew from \$3198.00 million to \$6958.00 million. Its compound annual growth rate (CAGR) is **3.96 %**. It was the impact of the coronavirus and consequent lockdown.

Over the course of 19 years (2001-2019), Foreign Exchange Earnings (FEEs) from Tourism in India grew from Rs. 15083 Crore to Rs. 211661 Crore. Its compound annual growth rate (CAGR) is 14.91 %.

Over the course of 20 years (2001-2020), Foreign Exchange Earnings (FEEs) from Tourism in India grew from Rs. 15083 Crore to Rs. 50136 Crore. Its compound annual growth rate (CAGR) is 6.19 %. It was the impact of the coronavirus and consequent lockdown.

FINDING FROM THE TABLE 1 TO 6 ABOVE

- The COVID-19 pandemic, which began in China’s Wuhan, spread to India and other parts of the world in 2020, prompting the government to suspend international flights in March 2020.

- The number of Foreign Tourist Arrivals (FTAs) in India during 2020 decreased to 2.74 million as compared to 10.93 million in 2019, registering a negative growth of 74.9%.
- The number of domestic tourist visits in India during 2020 was 610.22 million as compared to 2321 million in 2019, with a negative growth rate of 73.7 %.
- About 79.2% of the FTAs entered India through air routes followed by 19.3% by land routes and 1.5% by sea routes in 2020.
- The percentage share of Foreign Tourist Arrivals in India from 2016 to 2020 among the top ports was highest at Delhi Airport.
- In 2020, foreign exchange earnings (FEE) from tourism were US \$ 6.958 billion as compared to US\$ 30.06 billion in 2019, registering a negative growth of 76.9%.
- The number of Indian national departures from India during 2020 was 7.29 million as compared to 26.91 million in 2019, registering a negative growth rate of 72.9%.
- The negative growth rate during 2020 is due to rapid outbreak of corona virus (COVID-19) and the subsequent lockdown later in India have severely crippled the tourism sector, leading to job losses and an economic impact that may take years to heal.
- The foreign tourist arrivals (FTAs) in nine months (From April to December 2020) stood at 0.279 million, which is down over 97 per cent as compared to the same period in 2019 when FTAs stood at 7.75 million.
- Foreign Tourist Arrivals (FTA) in India between January and September 2021 have reduced even further by 73.44% compared to the same time last year (2020).
- In 2019, for instance, foreign exchange earnings stood at \$30.058 billion and \$28.586 billion in the year before that (2018). From January to June 2020, this number reportedly dropped to \$6.216 billion.
- In 2020, foreign exchange earnings from tourism industry across India dropped by nearly 76 percent compared to the previous year and was the impact of the coronavirus and consequent lockdown.

CONCLUSION

- This research paper mainly dealt to study and analyze the Impact on the Growth of Foreign Exchange Earnings based on Foreign Tourist Arrival from 2016 to 2021 in India.
- Tourism is a very productive activity both for the tourist and the government.
- The Indian tourism sector is adversely affected by Covid-19 since March 2020. On 24th March 2020, the government of India imposed a nationwide lockdown. India suspended all tourist visas from 13th March 2020 in the middle of a raging pandemic. With the situation improving, the government has relaxed visa rules step by step over the past two years. In October 2021, the Centre began issuing visas to all foreigners, including tourists, arriving on chartered flights. This was further relaxed to cover regular flights by November 2021.
- In fact, for the first time in months, FTAs crossed the 1 lakh mark in September 2021. In August 2021 over 84,955 people flew into India, whereas in September over 1.06 lakh FTAs travelled to India. However, in October this figure went up to 1.81 lakh, these was due to the government has relaxed visa rules step by step over the past two years.
- The COVID-19 pandemic had a significant effect on global tourism as well as the tourism industry in India.
- Due to COVID-19 and consequent lockdown, Tourism has become the most adversely affected sector. And it has been found that the Foreign Tourist Arrival and Growth of Foreign Exchange Earnings trends are highly affected at large scale.

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ALGAE AS A BIO SOURCE-A REVIEW**Sadeeya Shaheen and Rajakumari K***

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ABSTRACT

Pollution is something that causes harmful effect on humans, animals, marine organisms and also algae involve in the control of pollution. It plays a vital role in stabilizing carbon-di-oxide level and used in food supplements and their mode of nutrition is an autotrophic and it has the ability to perform photosynthesis. Algae contains bioactive compounds such as dietary fiber, carotenoids and cytokines. Some bloom produces toxin effects on fish and marine mammals. In some of the cases some algae such as Microcystis acts as water pollutant. Bio sources from algae were used to produce algae oil from certain process. Algae has suitable sources for bio sources that contain green algae, brown algae, yellow-green algae, golden algae and red algae and fire algae and it plays important in stabilization carbon-di-oxide level and is food supplements

Keywords: Bio sources, marine mammals, photosynthesis.

INTRODUCTION

Marine biotechnology has its own mark on producing natural marine products and also bioactivity includes biochemical studies and metals are brought into the biological systems because of enduring of soil mining, handling and utilization of metals and microalgae has been demonstrated for dangerous metal, nitrogen etc., [1]. Algae are the highest growing plants with photosynthesis whereas algae also contribute around 50% and also algae have fuel production because it can be re used again and again [2]. Golden-brown algae and diatoms are the most abundant types of unicellular algae also it is commonly found algae [3]. Usually largest and most known algae are called seaweed and green algae includes spirogyra [4]. Algae has aquatic organism which has complex cell structure; therefore, it converts solar energy into chemical energy from photosynthesis [5]. Algae are diverse group of photosynthesis organism such as eukaryotic algae and cyanobacteria and in recent studies we got to know that in 60% of photosynthesis that takes place on earth [6]. Photosynthesis of algae are used to produce their own nourishment by using light energy from the sun and CO₂ to generate carbohydrates and oxygen [7]. This paper also discusses the variety of algae resources and environment [8]. Algal growth and also it helps the algae growth in industry to create its maximum capacity and also green algae also acts as adsorbents for copper and zinc and it is contamination by sewage of absence of freshwater that will utilize of seaweeds of green algae of bio sources [9]. Anabaena is the most non-harmful blossoms and also it is readily available in neurotoxic sample therefore the biodiesels are widely produced among the fuels from algae [10]. In recent studies we get to know that bio sources from algae are totally ecofriendly sources from producing energy [11]. Affiliation where found in the the hypotoxiocity of *Microcystis aeruginosa*, *M. wesenbergii*, *Anabaena spiroides*, *M. viridis* and *Anabaena* and its immobilization that expands the bio sources and free cell which contains colopsinols A-C exhibits cytotoxicity in which DNA polymerase of Alpha, Beta and Gama whereas colopsinols and development in the human, contamination, overexploitation of land and absence of freshwater will be utilized in seaweeds [12].

Types and Characteristics

There are 3 main types of algae are present that is brown algae (Phaeophyceae), green algae (Chlorophyta), and red algae (Rhodophyta) and also it contains chlorophyll granules and as well as different pigments and also their characteristics colors. Most of the brown algae are derived simply as kelp whereas algae photosynthesis organism and also as unicellular and multicellular organism also it contains different body structure such as root, stems and leaves are absent. Algae are found in adequate moisture. Specific algae are common to plant as well animal therefore the reproduction of algae was both asexual and sexual forms whereby asexual reproduction occurs by spore formation which is free living and has symbiotic relationship with those of other organism. Bio sources are divided into 4 types such as: control of climate and diseases, nutritional cycle, crop population and cultural, whereby the characteristics of primary bio sources that is generated for application of oriented in forestry agri and aquaculture that products food, sustainable products and eventually energy. Cell reinforcement and anticancer impact from dark colored ocean growth (*Sargassum polycystum*) was examined cancer prevention agent properties were controlled by DPPH and has powerful anticancer properties and cell reinforcement. Converting the agricultural into bio sources can increase the farm income and leads to rural development into both social and economic and has easily accessible storage facilities and also low energy has been consumed bio source and low input energy. Active use of bio source mostly in plants and microorganism

that is been hope to solve environmental problems whereas the energy used in plants and microorganism is renewable and it helps to prevent global warming. Cell reinforcement and anticancer of dark colored ocean growth sargassum and it was examined cancer that prevents agent properties of DPPH analysis whereby methoxy bifurcarenone has antibacterial and antifungal activity isolated from *Cystoseira tamariscifolia*.

Algae as Biosource

Some algal species can produce hydrogen gas under specialized growth conditions whereas Algae are good source of renewable energy because of rapid growth rate and its ability to be cultivated in waste water and also they are found in most of the aquatic food web and abundance of animal and also scientific study of algae is called phycology also which contribute to environmental sustainability and give a strong sustainable technologies through developing bio source in order to overcome environmental issues. Therefore, bio sources are used in many sources such as nutrition (human or animal), energies (biofuel, heat and electricity) organic fertilization also bio sources production and activities also defined bio economy. Bio sources also has also provided quality construction and facilities to support service most of local companies. Algae with favorable characteristics are cultivated from regional flora which results algae biomass which can be processed in algae of bio sources into consumed products whereby algae are used as liquid fertilizer which helps in repairing nitrogen which is present in soil. Mainly bio source of algae is used in medicine from many decades and they are not used in food, dairy, cosmetic and industrial use and also algae are used in antioxidants, anticancer and antiviral properties. Algae bio sources can be generated and can be integrated as sustainable ecosystem or based on algae as a bio source usually seawater is used in cooling power plant as a cultured media for cultured medium for the algae as a source and additional and renewable fuel, the methane can provide energy for on-site processing such as harvesting, drying, heating or the algae culture. Bioresources are essential for solving the mysteries of life, such as mechanism of human ontogeny and evolution and bio resources are necessary for research on health and production of proper amount of food.

Importance of Biosource

BioSource are derived renewable biological source of energy and it plays a major role in transportation and transesterification process and common type of bio sources are biodiesel, bioethanol, biofuel gasoline, bio ethers, biogas, syngas, vegetable oil etc. The uses of bio sources includes the following: fuel for vehicles, effective solvents, replacement for gasoline in the production of electricity, cooking purposes, heating process in the digesters whereas three contamination markers Geochemical Index, enrichment Factor and Contamination Factor were determined to decide the level of metal contamination in the marine coastline and the commitment of anthropogenic impact and therefore immobilization expanded the biosorption contrasted and free cells and the high take-up of metals in green growth (*Enteromorpha intestinalis*) and algal growth (*Padina gymnospora*) recommended the green growths and whereas *Mixis* and concentrates with hostile to HIV movement are additionally dynamic against different retroviruses and *constantinea simplex* and *farlowia mollis* shows antiviral activity which inhibits the herpes simplex virus whereas immobilization of biosorption and free cell and physical adsorption on cell surface to natural movement and combined with the ligands with ETDA and molasses therefore Australian algae based on bio sorbents contains metal properties which removes heavy metals from water. Both living and dead cell is been created by microorganism can be powerful metals.

CONCLUSION

Among many sources of bio sources of algae to be easily renewable and also the production should be implemented to reduce the control of natural sources of algae. Awareness should be created about algae of bio sources that is used in natural products of bio sources and also wastewater treatment in algae of bio source has been utilized controlling against wastewater of their productivity has been developed to take the supplements from waste water. Both living and death organism has been created by microorganism by powerful metals therefore influence the biomass profitability. Green algae play an important role in zinc and copper. Algae are the technological sources that has been carried out in bio sources.

FUTURE PRESPECTIVE

In future there is a chance for many perspectives to be arises regarding bio sources productions and also it has been highlighted and has been acknowledged as noteworthy and treatment is costly in cleansing of drinking water. The metal-microorganism collaboration has been stayed in biotechnology and future advancement and applications in fundamental.

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ARECA CATECHU CONSUMPTION AND ITS MEDICINAL PROPERTIES - A COMPREHENSIVE REVIEW**Upendra Sharma U. S¹ and Dr. R.Shanti Iyer²**¹PHD Scholar, Department of Biotechnology, JAIN (Deemed-to-be University), Bangalore - 560027²Principal, Dr. NSAM First Grade College and Research Guide, Dept. of Biotechnology, JAIN (Deemed-to-be University), Bangalore - 560027**ABSTRACT**

Areca catechu L is one of the most important medicinal plants grown in southeast asian countries and is shown to have both medicinal properties like improving concentration and having a relaxing effect apart from having cytotoxic effects. They also show anti-inflammatory, antiparasitic, anti-hypertensive, and antidepressant activities. They also have effectiveness in treating symptoms of Alzheimer's disease. In India, people consume areca nuts alone or in combination with tobacco and other products in the form of Pan masala or Gutka. Areca nut usage dates back to Harappan civilization and has a mention in our ancient vedic and sanskrit manuscripts. Chemically, Areca nuts are made up of flavonoids, alkaloids, tannins etc. Some of the important alkaloids include arecoline, arecaidine, guvacine etc. Arecoline is colourless, volatile and is an important component of Areca nut. It has been studied for its effects in both in vitro and in vivo studies. Though areca nut is popularly chewed in the Indian subcontinent and China its effect has not been investigated systematically in humans. When compared to modern medicine (allopathy), traditional medicines, especially the ones containing areca nut as an important ingredient, have not been researched much. In this review we have considered the medicinal properties of Areca nuts and their effectiveness against many human diseases. Fractions of Areca nuts are obtained through aqueous and organic solvent extraction techniques and have shown varied effects in the animal models used in research carried out across the world.

Keywords: betel nut, Areca catechu L, Arecoline, Betel leaf, Antiparasitic, Tobacco

INTRODUCTION

Areca nut is the seed of Areca catechu, which belongs to the family of palm trees. It is commonly known as betel nut and chewed with leaves of betel plant in many parts of the world [1]. Areca nut has been used in India for a very long time and it's a socio-cultural practice that is accepted widely by the society. This practice has been converted into a public health problem after European traders introduced tobacco some 400 years ago [2]. Areca nut is the fourth most commonly used psychoactive drug after Nicotine, Ethanol and Caffeine [3]. Areca nut use is associated with most ancient civilizations like Harappa and since then it has become an integral part of our tradition as "Thambula" [4].

Areca nut is native to South and Southeast Asia including India, Indonesia, Malaysia, Philippines, Cambodia etc., The fruit of Areca nut is harvested from November to December and the seeds are collected and dried in the sun.

Areca nut has a mention in Sanskrit Manuscripts and is used for religious purposes, Medicine, food and so on. It is mainly cultivated in India, Malaysia, Polynesia, Micronesia and most places of South pacific Islands [5]. Around 0.6 million tonnes of Areca nut are produced in the world currently and India produces almost 53% of it [6].

Areca nut has been used as Socio-economic practice in India. As per many reports areca nut is used with tobacco in the form of Pan masala or Gutka is increasing in the country and the ATS report suggests that Areca nut with tobacco is used by 7.5% men and 4.9% women. People of rural India use a lot of tobacco mixed Areca nut as compared to Urban people.

Chemical Composition

Different chemicals have been isolated from Areca nut plant in many countries for the last 150 years [7]. So far 59 compounds have been isolated and identified from areca nut plants. They have been characterised into Alkaloids, Tannins, Flavonoids, Triterpenes etc.,

There are four alkaloids present namely Arecoline, Arecaidine, Guvacine and Guvacoline of which Arecoline is the most important constituent [8].

Arecoline is a major alkaloid in areca nuts and has agonistic activity mainly at muscarinic acetylcholine receptors and stimulates the central and autonomic nervous system. This results in increased well-being, alertness and stamina in people who consume it regularly. Studies also suggest that areca nut extract improves

concentration and relaxation, with other reported effects including lifting of mood, staying off hunger, aphrodisiac properties and as postprandial digestant. There is also the presence of cariostatic properties shown by areca nut [8,9]. Arecoline is a cholinomimetic and has a number of structural similarities to acetylcholine, a major neurotransmitter involved in central and autonomic nervous system signalling.

Chemically arecoline is a colourless, volatile and oily and its chemical formula is $C_8H_{13}NO_2$. The Taenifuge properties of the drug are probably due to nicotine like the principle of Arecoline. It mixes with water, Chloroform, Alcohol and Ethane. Chemical formula of arecaidine is $C_7H_{11}NO_2 + H_2O$ and it is non-poisonous and was discovered by Jahns in 1891. Guvacine has a chemical formula $C_6H_9NO_2$ and is the lower homologue of Arecaidine and is non-poisonous.

The tannins resemble catechu-tannic acid, is red and strikes green with ferric salts, quickly changing to brown and when alkali is added a violet colouration appears. It is not soluble either in hot water or cold water. It gives bitter and astringent taste to the areca nut [10,11].

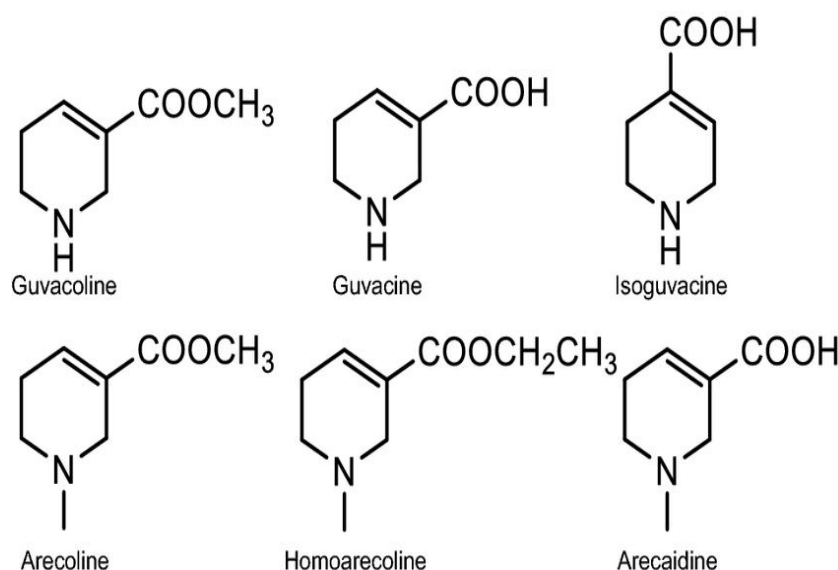


Fig.1: Structures of the components of Areca catechu L (Oliveira et. al., 2021)

Medicinal Properties of Areca Nut

Betel Nut or Areca nut is known to have Psychoactive properties in reducing tension, producing Euphoria or a sense of well-being, increasing the capacity to work and providing the means of social interactions and rituals [13, 14]. Parasympathomimetic properties are shown by Arecoline acting on both muscarinic and nicotinic receptors [15]. It induces an arousal response in animals and a cardio-acceleratory response in humans [16,17,18] Normally Areca nut is consumed with Betel leaf and quick lime and this mixture shows different reactions and interactions before the psychoactive compounds are released into the circulation [19]. Arecoline in the presence of lime is converted into arecaidine, which lack parasympathetic properties. Though areca nut is popularly chewed in the Indian subcontinent and China its effect has not been investigated systematically in humans. Arecoline and arecaidine from Areca nut are found to be stimulators of catecholamine release from chromaffin cells in-vitro [19]. Water extracts of Areca nut are known to kill tapeworms by paralytic effect [20,21]. 1% decoction of the areca nut effectively kills blood flukes by disrupting their nervous system [22]. Arecoline shows synergistic effect with pentachlorophenol sodium and esculentoside against Oncomelania, with mechanisms involving regulation of the smooth muscle contraction of the feet [23].

Effect on Digestive System

Studies on rabbits and mice reveal that water extract of Areca nut can significantly increase gastrointestinal motility at different concentrations and also improve gastrointestinal function of rats with functional dyspepsia [24]. Areca nut is also used in the treatment of diarrhea, constipation, ulcers and also gastrointestinal inflammation, dyspepsia and so on. Sympathetic nerves are shown to be stimulated by arecoline, one of the important components of Areca nut. It also stimulates Choline M receptors and promotes the secretion of human saliva, sweating and gastrointestinal peristalsis which helps digestive function in humans [25].

Wound Healing Properties

Traditional herbal formulas prepared by tribes and people in different countries are used in treating wounds, where they are known to exert antibacterial effects and are proven effective against Staphylococcus aureus. The

studies showed that areca nut was one of the important constituents of such herbal formulations. Researchers also found that these formulations are effective against hydroxyl-free radicals as antioxidants [26].

Effect on Nervous System

Studies also suggest that Arecoline, an important component of areca nuts has acetylcholine like effect and experimental results tells us that it improved cognitive function in elderly rats after they were fed with 10mg/kg arecoline for six days without a break. This work explains the importance of areca nut in treating Alzheimer's disease as it improved some of the symptoms of the condition in rats. Further studies done in humans suggest that arecoline has an important pharmacological effect on improving the memory in patients suffering from Alzheimer's disease. [27,28].

Hypoglycemic Activity

Arecoline is reported to show hypoglycemic activity in many animal models of Diabetes. When the arecoline is injected subcutaneously in rabbits, they showed significant reduction of blood glucose level that lasted for 4-6 hours [29]. According to medical knowledge, α -glucosidase inhibitors are used for the treatment of diabetes. They work against postprandial hyperglycemia and reduce the blood glucose level. When arecoline was used as an alternative, it inhibited glucosidase activity thereby reducing the elevated levels of sugar in blood [30].

Anti-Hypertensive Activity

Anti-hypertensive activity was shown by fractions of areca nut extract containing tannins when administered in rats. 100 to 200 mg/kg concentration was introduced into hypertensive rats and the studies showed that there was a clear reduction in hypertension via inhibition of angiotensin converting enzymes. It is proposed through some studies that tannins present in areca nut extract possess blood pressure controlling effect [31].

Antidepressant Activity

Ethanol extract of Areca catechu is known to have antidepressant effects in rats. When they were administered at a dose of 40-80 mg/kg, there was a reduction in the immobility time interval without reduction in the motor activity. This clearly indicates the antidepressant effect of areca nut. Aqueous extract of Areca catechu has an effect on Monoamine oxidase (MAO) in samples obtained from rat brains. Inhibition of MAO is very similar to some of the drugs used as antidepressants in humans [32,33]. This result is very significant as many people across the globe are suffering from depression and similar symptoms and are struggling to cope with it. If further research in this area can completely establish the antidepressant effect of areca nut seed extracts, this can-do wonders for people suffering with depression.

Anti-Inflammatory Activity

Areca catechu extracts prepared using ethanol as a solvent have proven to have anti-inflammatory activity in rats. For instance, a dose of 1 to 10 mg/kg/day for 5 days helped in the suppression of carrageenan-induced inflammatory edema and prostaglandin E2 levels. At higher doses there were dose dependent anti-inflammatory and analgesic effects reported in rats [34]. Both in vivo and in vitro assays carried out in rats and mice showed similar outcomes. There was a significant reduction in the edema that was induced in the animal models. Dose of the extract was an important factor in determining the effectiveness of areca nuts in reducing the inflammation.

Antiparasitic Effects

In traditional medicine, Areca nut is used in killing tapeworms, pinworms, nematodes etc. The investigations suggest that aqueous extracts of areca nuts are effective against tapeworm by causing paralysis. 1% decoction of areca nut can effectively kill blood flukes by affecting their nervous system [35].

CONCLUSION

Areca catechu L is one of the important economical as well as medicinal plants of southeast asian countries. India is one of the major producers and consumers of areca nut products. Looking at the history, we understand that areca nut has been a part of our socio-cultural practices for a very long time. Large group of the Indian population are consumers of areca nut and its products. Even in religious practices of Hindus, the concept of "Thambula" refers to the combination of betel leaf and areca nut seed. Over the last 300-400 years, after the introduction of tobacco in India, people have been consuming a mixture of areca nut, tobacco and other products in the form of Pan masala. This has a negative impact on the health of consumers and many cases of Oral cancers are considered to be caused by the duo of areca nut and tobacco. Alternatively, Indian traditional medicine considers areca nut as one of the most important constituents in their formulations that plays a very important role in traditional medicine. Although there is sufficient evidence that indicates its importance as a medicinal compound, there is a lot of research work that suggests otherwise. Arecoline is a very important component of Areca nut extract and its role in medication has been proven beyond doubt through earlier works

and literature. But Arecoline is also a major toxin that is responsible for Oral submucous fibrosis (OSF) and has cytotoxic effects on normal cells in humans that induces apoptosis [35]. In this review we have considered the general uses and medicinal properties of Areca nut. Both aqueous and organic solvent extracts have shown to have medicinal properties and animal studies have provided evidence for their effectiveness as anti-inflammatory, antiparasitic and so on. The review also suggested that Arecoline if injected in controlled doses can be effective against Alzheimer's disease as it is shown in rat models. We have gone through many original works during this review and it was found that many animal models have been established to study the effects of various doses of areca nut extracts in different conditions, but most of them have not spoken in large about the similar effects in humans. This opens up the possibility of further research in this area to understand how this compound can be effective in treating human ailments. There are excerpts from our Vedic literature that support the use of areca nuts in medicine, but much needs to be done in this regard to facilitate the research and find more evidence about the medicinal properties of areca nuts and its uses in treating a broad range of human diseases.

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ARTIFICIAL INTELLIGENCE MORE INTUITIVE IN THE MYOELECTRIC PROSTHESIS FOR UPPER LIMB AMPUTATION PATIENT—A SINGLE SUBJECT RESEARCH STUDY**C. Nageswari¹, Dr. N. Meena² and R. Prasath³**¹ Professor and Principal, Department of Physical Medicine and Rehabilitation, ¹ Shri Indra Ganesan Institute of Medical Science College of Physiotherapy, Trichy, India² Senior Lecturer, Department of Physical Medicine and Rehabilitation, ² Annamalai University, Annamalainagar, Tamilnadu, India³ In charge Physiotherapist, Department of Physical Medicine and Rehabilitation, ³ Neuro One Hospital, Tiruchirapalli, Tamil Nadu, India**ABSTRACT**

Amputation is the intentional surgical removal of a limb or a body part. It is performed to remove diseased tissue or relieve pain or due to trauma. The word amputation is derived from the Latin word “amputare” (“to cut away”), from ambi- (“about”, “around”) and putare (“to prune”). Most amputation involves a small body part such as finger, arm, legs, feet, rather than an entire limb. Amputation is performed for the following reasons, i.e., to remove the tissue that no longer has an adequate blood supply, to remove malignant tumors because of severe trauma to the body part. The blood supply to an extremity can be cut off because of injury to the blood vessel, hardening of the arteries, arterial embolism, and impact circulation as a complication of diabetes mellitus, repeated severe infection that leads to gangrene, severe frostbite, Reynaud's disease, Burger's disease. A transhumeral amputation is a surgical procedure in which the humerus are cut and a portion of it along with the rest of the arm is removed from the body. In a transhumeral amputation the stump is above the level of the elbow. Most of these types of amputation involves severe trauma to the arm and occur for limbs as often in men, usually those who get injured in workplace or in an accident. Myoelectric prosthesis uses signal or potential from muscles through electromyography within a person's stump. The signals are pick up by the electrodes on the surface of the skin which activates a battery driven-motor that operates a prosthetic component, like the finger, control of the motor regulates the extent for the speed of the prosthesis, such as elbow flexion or extension or opening and closing of the finger of the terminal device.

Keywords: Myoelectric Prosthesis, Trinity amputation and prosthesis experience scale, Manual Muscle Grading, Cosmetic Glove, applicator Glove

INTRODUCTION

In a world population of approximately 6.7 billion, 10 million are Amputee and of this 30% (=3million) are armed amputees. While developed nations show a smaller

Statistic of amputees, the developing nations comprise of a total of 2.4 million arm amputees. Of the number of arm amputees, 58% are amputee below the elbow. In developed country like US, 50000 amputations occur every year, 30% of which make up arm amputees and of which, 70% have amputations distal to the elbow. Birth prevalence of congenital lymph deficiency was 25.64 per 100,000 live births.

Transhumeral amputations makeup 60% of total wrist and hand amputation, which means 70% of all persons with upper limb amputation have amputation distal to the elbow. In US 41,000 persons are registered who had an amputation of hand or complete arm. 60% of amputations are between age 21 to 65 years and 10% are under 21 years of age. Causes leading for amputation include cardiovascular disease, traumatic accident, infection, tumors, nerve injury, tropic ulceration, congenital anomalies. Most frequent causes of upper limb amputation are trauma and cancer followed by vascular complications of disease. More frequently upper limb deficiency has an incidence of approximately 4.1 per 10,000 live birth, congenital 8.9%, tumor 8.2%, disease 5.8%, trauma 77%. The aim of prosthetics is always to replace the missing limbs to allow amputees to control the device more precisely, and to lead an active, self-determined life.

How a Myoelectric Prosthesis Work?**Muscle Signals**

When an electrode is placed on the muscle, it is referred as a control site. A simple myoelectric arm with one control site called a Cookie Crusher is often a child first myoelectric fitting. Later on, when the clinic team decides the child is ready to handle a more sophisticated fitting or when an adult is fitted, the two control sites are usually used, in which one control site opens the hand and the other control site closes it.

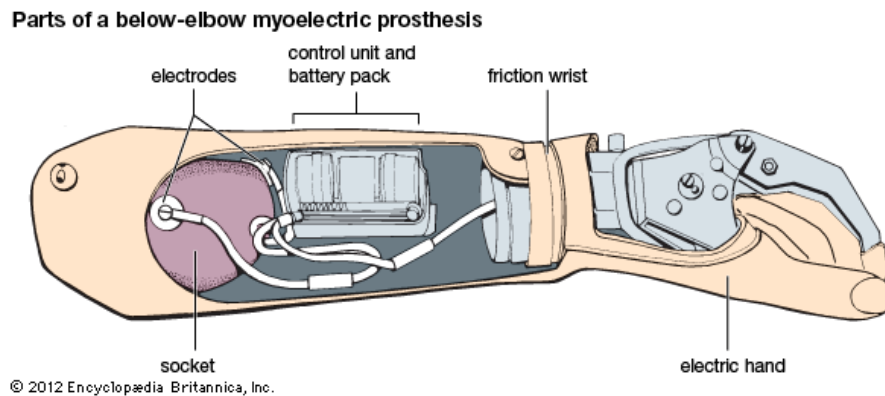


Figure 1

Proportional Control

Myoelectric with proportional control means the amputee by the length strength of muscle contraction can control how quickly the hand opens or closes and or the grip force once the finger make contact with an object so that the amputee can hold the object lightly or firmly as needed. For example, the amputee has the ability to gently hold a delicate object like an egg or more force can be applied to hold heavier objects like a book. The amputee can also control the speed that the hand opens and closes depending on the required task.

Electric Hands

The electric hand or another terminal device such as an electric hook receives the signal sent from the control sites.

Battery Power

The power to operate a myoelectric arm is provided by a battery. The battery is either by built into the prosthesis itself is plugged in to recharge it or alternatively, a removal rechargeable battery is used and can be replaced as needed. Lithium batteries are mostly used instead of nickel cadmium ones. Lithium battery are lighter in weight and can be charged at any time as compared to nickel cadmium batteries. They can be charged more quickly (4 hours or less) and can stay longer before they need recharging.

Application of Artificial Intelligence in Prosthesis

Implementation of artificial intelligence in controlling prostheses has increased drastically and thus enables the amputee to operate the prosthesis more desirably. Adaptive controlling would enable a system to perform closer to the desired output by adjusting the input with the help of a feedback system. The artificial Intelligence in upper extremity prosthesis used as direct control and indirect control from the neural network by various signal, sensor, controller and algorithm. The control signals are coming from the human in the two form for operation of upper extremity prosthesis i.e. electromyography (EMG) and Electroencephalogram (EEG). Prior attempts at voluntary control of the elements of prosthesis have focused on the use of electromyography (EMG) signals from muscle groups that remain under voluntary control. Most of this work has centered on control systems for upper extremity prostheses.

MATERIALS AND METHODOLOGY

Materials Used

- Myoelectric hand
- Inner hand
- Cosmetic glove
- Electrodes at the control sites send the muscle impulses to the electric hand
- The battery provides the power to operate electric hand
- Applicator glove

METHODOLOGY

Inclusion Criteria

- Patient with muscle grade of 3 or greater than three occurring medical research counselling (MRC) grading.
- Patient has transradial amputation with one-third or greater residual forearm length as determined by the contra lateral side.

- Patient's age 18 or above.
- Patient can speak and comprehend local language.
- Patient has undergone amputee rehabilitation, including being trained to wear and use a body-powered and myoelectric prosthesis.
- Patient report wearing upper limb prosthesis at least two hours per day.
- Unilateral amputation with preserved function of non-amputated arm, preserved function is investigator opinion to ask whether the patient
 - has the ability to independence on and off prosthesis.
 - has enough dexterity in the non-amputated arm to attach and detach the prosthesis control (PCI) cable and operate the PCI power switch.
 - has the dexterity to remove and replace the PCI battery.



Figure 2

Exclusion Criteria

- Patient is less than three months from amputation surgery or major injury of the target residual limb.
- Patient has major proximal to the level of amputation.
- In the opinion of the investigator, patient is prone to skin breakdown in the target residual limb.
- Known nerve transaction or palsy that may cause de-innervations of muscles in the target residual limb.
- Known genetic neuromuscular disorder.
- Patient has a bleeding or clotting disorder.
- Bilateral upper extremity amputation.
- Patient has major psychological disorders such as poorly controlled PTSD, schizophrenia, or paranoia such that cooperative status is inconsistent.
- Patient has an active implant.
- Patient has the history of adverse reaction to anesthetic agents.
- Patient has recently or is currently participating in research that may influence response to either study intervention, or be harmful to the subject in anyway.
- A female patient whose is pregnant, nursing or planning to become pregnant during the course of the study.

Study Set Up: Appolo Speciality Hospital, Tiruchirapalli, Tamil Nadu, India

Technique

Phases of Training

Training is an important factor when an amputee has been fitted with the myoelectric arm, it helps the amputee incorporate the artificial limb into his/her life as the amputee learns what the prosthesis can actually do for them.

Training Consists of Three Main Stages

Signal Training:

The first phase of training teaches the amputee to control the muscles required to operate the myoelectric arm. The amputee learns to produce signals at will and to inhibit signals when movement of the arm is not required. Electrodes are placed over the selected muscles in connected to a trainer which provides feedback as amputee contract the muscles.

Control Training

The second phase is control training of which time an amputee learns to control the muscles appropriately to perform required function. The training may include being computer games or an actual artificial limb, again providing feedback to the amputee. A trainer could either be a myoelectric hand or even something fun. For young children this could be modified toys like a toy train where the muscle impulses, when correctly made, will cause the train to move. A variety of objects of different sizes, shapes and textures may be used to practice grasp and release when the amputee is learning to control the hand.

Functional Training

It is important that the artificial limb fits correctly before beginning of phase of training. Functional training is the most intensive phase of training and can take between two weeks to months and it may vary for children. This phase of training helps the amputee to become accustomed to wearing the artificial limb, to become a proficient myoelectric user and to view the artificial limb as a part of their body image. The physiotherapist and prosthetics will also work together to teach the amputee tasks that can be performed on a daily basis at home. Training begins with simple task which are repeated to allow each pattern to be learned. Gradually more complex and real life activities are introduced suitable to the amputee's age. A problem-solving approach is also taught so the amputee will be able to use the myoelectric in new situations once the training is complete. It is important to increase to wear the myoelectric arm consistently and this means a gradual increase in wearing time. They can participate in fun activities while wearing the myoelectric arm to provide encouragement. Frequent review and booster training sessions with and physiotherapist required to help an amputee get the maximum function from their myoelectric arm. Any amputee, needs to learn that the prosthesis will provide function if he/she is to be expected to want to wear it.



Figure 3

MRC Muscle Power Scale

Score	Description
0	No contraction
1	Flicker or trace of contraction
2	Active movement, with gravity eliminated
3	Active movement against gravity
4	Active movement against gravity and resistance
5	Normal power

Figure 4

Trinity Amputation and Prosthesis Experience Scale (TAPES)

TAPES consists of 9 subscales. There are 3 psychosocial subscales: general adjustment, social adjustment, and adjustment to limitation. Each of these subscales contains 5 items, which are measured along a 5-point rating scale (strongly disagree, disagree, neither agree nor disagree, agree, strongly agree). Scores range from 5 to 25, with higher scores indicating greater levels of adjustment. The TAPES also contain 3 activity restriction subscales: functional activity restriction, social activity restriction, and athletic activity restriction. Each of these activity restriction subscales contains 4 items, which are measured along a 3-point scale (not at all limited, limited a little, limited a lot). Scores range from 3 to 12, with higher scores indicating greater activity restriction. There are 3 additional subscales that assess satisfaction with the prosthesis, measured along a 5-point scale (very dissatisfied, dissatisfied, neither dissatisfied nor satisfied, satisfied, very satisfied). The functional satisfaction subscale contains 5 items, with a potential score range from 5 to 25. There are 5 items in the aesthetic satisfaction subscale (eg, color), with a potential score range from 4 to 20. Because weight satisfaction contains only 1 item, scores in this subscale range from 1 to 5. Higher scores in each of the satisfaction subscales indicate greater satisfaction with the prosthesis.

CONCLUSIONS

The aim of the study is to show the efficacy of myoelectric prosthesis in functional independency for an upper limb amputation patient. Manual muscle testing is done to assess the muscle power using Medical Research Council Grading for patient to fix myoelectric prosthesis. Trinity amputation and prosthesis experience scale (TAPES) is used to realize the invisible function ability independently by using questionnaires. The myoelectric prosthesis hand fitting to the patient shows the clinical outcome by attaining independence self-care and making them to the maximum level of timing occupational jobs with modification. The use of myoelectric hand fitting to upper amputation patient shows near normal functional activities with only a couple of minor breakdown. Based on the study I would like to suggest the use of myoelectric hand for upper limb amputate patient to enhance the activities of daily living and to maximize their occupation related activities. The role of Physiotherapist is very essential in strengthening the muscles and in training the with prosthesis.

RECOMMENDATIONS AND SUGGESTIONS

Targeted Muscle Reinnervation (TMR) for the upper extremities is an approach that provides more intuitive control and a natural feel. Today's myoelectric prostheses use the existing muscles in the residual limb, and work by tensing or relaxing the muscles. Two sensors embedded in the prosthetic socket measure these muscle activities and convert them into impulses that control the motors, which is followed by the movement. TMR takes residual nerve endings from the stump and relocates them to muscles that are still intact. They subsequently assume the function of the muscles from which the nerves originally came. This allows amputees to move their prosthetic arm by simply thinking what movements they wish to accomplish as the nerves pass the signal on to the new targeted muscles to prompt them to contract. The muscle contraction enables more intuitive and natural control that is more precise. After TMR surgery, there are up to six electrodes compared to the usual two electrodes to control a myoelectric prosthesis. This approach and the rerouting to new muscle targets can lead to a further reduction of phantom pain. Combined with osseointegration, TMR could be the future of artificial limbs.

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**CONSTRUCTION OF HISTORY FROM THE PERSPECTIVE OF TOPOGRAPHY:
DELIBERATIONS ON DR. S. RAJASEKHARA'S WORK.****Mr Virupaksha¹ and Dr. S. K. Kallolikar²**¹Ph.D Research Scholar, Department of History and Archaeology Karnatak University, Dharwad – 580003²Research Guide and Professor, Department of History and Archaeology Karnatak University, Dharwad – 580003**ABSTRACT**

History is the study of past with use different methodology to understand and Pacific. Sources are utilised to construct the particular period. Maps always use in geography and topographical studies but in the history of Karnataka particular to the Vijayanagar period the pioneer work done throw the perspective of historical map carried out by one of the renovated historian Dr. S. Rajasekhara.

Is works mainly focus to the period of Vijayanagar and its contemporary maps not only seen as topographically context in his work elaborately discussed trade routes, trade station and social moments with specially created maps. History of Karnataka understand well with this purpose of the study of maps related works of Rajasekhara works to reconstruct the history of Karnataka with the purpose of effectively to understand history and used mainly secondary works are used this article. Some of the most complex historical incidents like the timeline and extent of the empires expansion prominent place Kings can be teach easy for student by map method. With the help of maps mainly modern period and emergence of nation state division also easily understand as political and administration division clearly identify through maps the maps are closely related to historical study.

Key words: Historical maps, the map approach, the drawbacks of map, benefits of map, deliberation of Dr S. Rajasekhara's work.

INTRODUCTION

Maps are one of the key contexts that researchers, cartographers, tourists, students, and others can use to test total land or a particular part of it. In simple terms, maps can be used as a general reference to show geographical, political, water sources, and urban locations.

Historical maps show the distribution of ancient cultures and states. Suggest social movements and trade routes. They are divided into archaeological, ethnographic, economic, historical, political, revolutionary, military and cultural. Historical maps may be common in these branches.

Map writing can be effective and useful from the perspective of the map. A study map is one of the most promising methods that can be used effectively to understand history. The history generated by the concept of this map improves the understanding and cognitive development of students. Karnataka provided a platform for many famous dynasties and rulers in Indian history. Although the history of Karnataka is exceptionally well documented, it is not yet based on specially created maps. Some of the available maps have also changed. It is necessary to propose history and geography. Dr. Kapoor was instrumental in creating the history of Vijayanagar through maps with reasonable accuracy. Rajasekhar's role is very great. It shows how the history of Karnataka has specifically influenced its geographical change.

Purpose:

Map writing can be effective and useful from the perspective of the map. A study map is one of the most promising methods that can be used effectively to understand history. The history generated by the concept of this map improves the understanding and cognitive development of students.

Methodology

To write this paper, mainly secondary data have been used from textbooks, reference books, websites etc. The study is mainly based on analytical study only.

The work of S.Rajasekhar- The map approach to Vijayanagar History in the Context of map's perspective

He noted that the events of the Vijayanagara Empire were rarely described with maps. By Rajasekhar. Vijayanagara Empire is the first work to be reviewed through maps of the founding, its growth and decline.

In this work, the author identified the areas conquered by the Vijayanagara kings through the maps. Prominently on that. First Bukka, Second Harihara, Devaraya I, Devaraya II, Salva Narasimha. The achievements and

occupied territories of Krishnadevaraya and Achyutaraya are shown in the map. The author also express that the book is useful for teaching history.

The Drawbacks in the Approach of Map's Perspective;

Maps without measurement give a poor idea of distance. Maps with no mythologies are often confusing. When maps are flawed, map users can be sent to the wrong place, or it can lead to bad decisions. But there are also some disadvantages inherent to geographical maps.

Maps are never perfect. In Small scale map, most of the real world details are missing even if there are no real errors. Specifications are simplified. Plot maps always involve distortion. Earth's curved topography cannot be tested on a flat sheet with perfect accuracy, and general use maps can be badly distorted, although there are some projections that faithfully reproduce areas or directions. One type of information must be left to be able to read the maps for one type of information. Otherwise, the map will become a mess. Most labels on maps obscure what is. For example the map of Europe now shows Crimea as part of Ukraine. But in fact it was subjugated by Russia in 2014. The map does not specify the date / time.

Maps are designed with specific uses or uses in mind. But maps never tell their intended uses. So it is common for people to use the map as intended, and generalizations, labels and accuracy are not really effective. The only solution is better "map literacy."

The Importance / Benefits of the Map:

Kofi Annan notes that "knowledge is the power, information is liberating," referring to maps that give the man the knowledge he needs to make decisions. If you look at the benefits from the maps

- Maps simplify complex information.
- Maps are functional tools.
- Maps support regional concept by helping students to visualize objects, places, cities, and countries are connected to each other.
- Maps are a blueprint for students. Maps give you a glimpse into how people understood their world at the time the map was created. When looking at old maps, you can see the variation of the geographical area between past and the present.
- Map's connect you to your memories.
- Maps presents where a story has occurred and over time, convey a complex stories with relevance.
- Maps motivate students.
- Maps help to reconstruct a historical event.

CONCLUSION

The map has its own significance in the construction of history as described above. Some of the more complex historical incidents like, the timeline, and the extent of the empire's expansion, prominent places of great kings can be teach easy for students by map method. The map's approach to teaching history should be able to increase student's achievement. This method is able to give meaning to simplified graphical form and graphical content. With this method, history can retain information in students' students mind for a clear and long time. In This direction,the work of Dr. S. Rajashekara – “The map approach to Vijayanagar history ” can be able to easily understand the history of vijayanagar empire.

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CORPORATE SOCIAL RESPONSIBILITY: CURRENTLY TRENDS, PRACTICES AND WAY FORWARD

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ABSTRACT

Background: With the growing Industrialization and competition, the main aim of any capitalist economy is to maximise its profit. But recently, the practice of CSR is gaining traction in both theory and practice. CSR in developing countries like India has played a significant role as the majority of the population living here is deprived of economic and social growth status. Such an idea of Social responsibility is also evolved in the modern corporates too. For the new generation of corporate leaders, profit optimization is more important than only profit maximization. Hence there is a shift in accountability from shareholders to stakeholders (including employees, consumers, and affected communities).

Today, CSR activity is on the agenda of many CEOs. It is also being considered seriously by the Governments (National and local), as well as NGOs, consumer groups, investors and other actors in civil society.

Method: In the present study an efforts has been made to find out the recent trends and practices with the help of secondary data & sources only between the years 20016 to 2021. The study focused on the various aspects of CSR like total amount spend by top 10 companies during the years, Development Sector wise, CSR spend, CSR Spent: PSU v/s Non-PSU Companies, CSR Spent by listed and unlisted companies, More than Prescribed Amount spend and less than Prescribed Amount spend by the companies during the last five years.

Current Trends & Practices: The analysis of the secondary sources shows that in FY 2016 – 17 highest amounts of CSR spent was in state of Maharashtra (2492 Cr.), Karnataka (888 Cr), Gujarat (871 Cr), Tamil Nadu (551 Cr.), AP (754 Cr.), Delhi (521 Cr.), Odisha (317 Cr), Rajasthan (327 Cr.), UP (328 Cr.) while lowest in Haryana (390 Cr.) In FY 2017 – 18 highest amounts of CSR spent was in state of Maharashtra (2833 Cr.), Karnataka (1162 Cr), Gujarat (984 Cr), Tamil Nadu (688 Cr.), AP (578 Cr.), Delhi (637 Cr.), Odisha (506 Cr), Rajasthan (445 Cr.), UP (442 Cr.) while lowest in Haryana (370 Cr.) In FY 2018 – 19 highest amounts of CSR spent was in state of Maharashtra (3207 Cr.), Karnataka (1280 Cr), Gujarat (1088 Cr), Tamil Nadu (900 Cr.), AP (669 Cr.), Delhi (808 Cr.), Odisha (691 Cr), Rajasthan (604 Cr.), UP (524 Cr.) while lowest in Haryana (381 Cr.) In FY 2019 – 20 highest amounts of CSR spent was in state of Maharashtra (3427 Cr.), Karnataka (1483 Cr), Gujarat (996 Cr), Tamil Nadu (1110 Cr.), AP (720 Cr.), Delhi (935 Cr.), Odisha (752 Cr), Rajasthan (735 Cr.), UP (585 Cr.) while lowest in Haryana (529 Cr.) and In FY 2020 – 21 highest amounts of CSR spent was in state of Maharashtra (2646 Cr.), Karnataka (967 Cr), Gujarat (1167 Cr), Tamil Nadu (749 Cr.), AP (589 Cr.), Delhi (840 Cr.), Odisha (496 Cr), Rajasthan (454 Cr.), UP (680 Cr.) while lowest in Haryana (398 Cr.)

Among the top 10 companies who spent the amount in development sector, Reliance Industries Ltd stands first, following below ONGC, TCS, Infosys, HDFC Bank, NTPC, ITC, Mahanadi Coalfields ltd, Wipro and NMDC Ltd.

From the analysis it was found that that CSR spent by listed companies is more than unlisted and it is observed that in FY 2019-20 CSR amount spent is highest compared to other financial years.

In the FY 2016-17 the total 1848 no. of Companies spend Highest number of amount as prescribed in their CSR projects budget and in FY 2018-19 total 736 number of Companies spend Lowest amount spend as prescribed in their CSR projects budget

Way Forward: on the basis of finding trends and practices it can be concluded that in future the educational support to be key agenda, Livelihood support to continue, more collaboration with public authority need to be done, Cross-organisational planning is required Bottom-up approach need to focus and , More utilisation of CSR funds need to ensure.

CSR Summary of 5 Financial Years (2016-2021)

Description: In the present study an efforts has been made to find out the recent trends and practices with the help of secondary data & sources only between the years 20016 to 2021. The study focused on the various aspects of CSR like total amount spend by top 10 companies during the years, Development Sector wise, CSR spend, CSR Spent: PSU v/s Non-PSU Companies, CSR Spent by listed and unlisted companies, more than Prescribed Amount spend and less than Prescribed Amount spend by the companies during the last five years.

From the secondary data it is clearly understood that in the 2019 the total no. of companies are more to spend on CSR and in the same year the total amount spend on CSR was also maximum during last five year. It is also understood that in the year 2020 -21 total no. of companies are very less to spend on CSR but the total amount

spend on CSR is high. On the count of companies the total amount spend was more than prescribed and this may be due to Covid -19.

Between the year 2018-19 and 2019-2020 the total no. of companies and the total amount spend is very high as well as the projects undertaken under these two years were also in maximum nos. in last five year. In comparison to the above years mention in the year 2020-2021 the total no of companies were less in nos. during the last five year and the amount spend is above twenty crore and the projects undertaken is on the higher side.

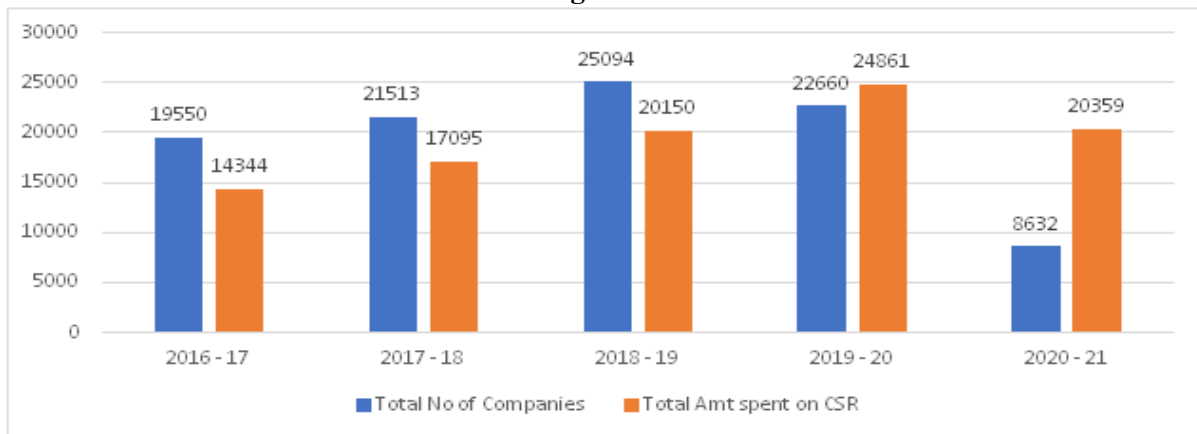
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Table – 1

Financial Year	Total No of Companies	Total Amt spent on CSR (in Cr.)	States and UTs Covered	Total no. of CSR projects	Development Sector
2016 - 17	19550	14344	38	22964	29
2017 - 18	21513	17095	38	26567	29
2018 - 19	25094	20150	38	31937	29
2019 - 20	22660	24861	38	34911	29
2020 - 21	8632	20359	37	25373	29

Figure - 1

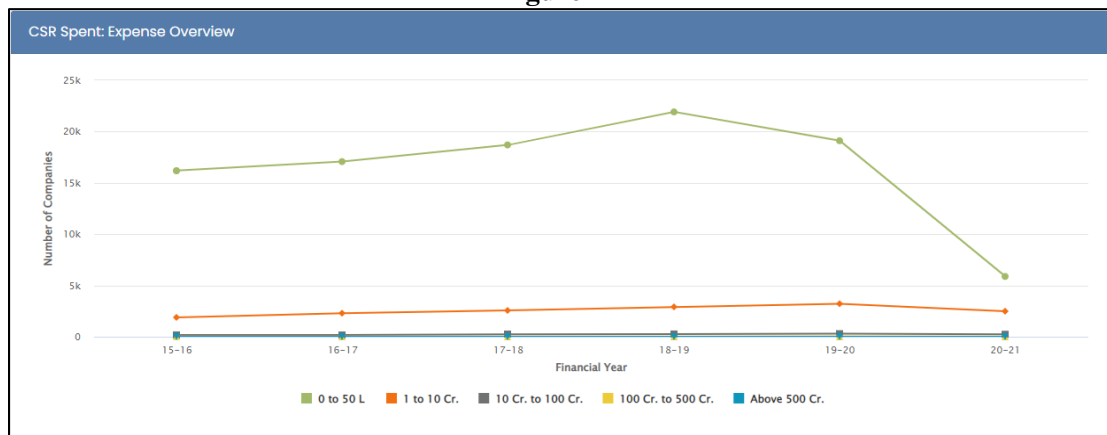


INTERPRETATION

The above table shows that in the year 2016-17 a total 19550 industries contributed in the field of CSR with the total amount of 14344, From the above chart, majority of companies spent high CSR amount in FY 2018-19 (25094 Companies and 20150 INR Cr.)

Overview

Figure - 2



FY 2016 – 17: Majority of 17071 companies spent 0 to 50 L amount, 2287 companies spent 1 to 10 Cr., 171 spent 10 to 100 Cr, 19 companies spent 100 to 500 Cr. while only 2 companies spent above 500 Cr approximately.

FY 2017 – 18: Majority of 18697 companies spent 0 to 50 L amount, 2559 companies spent 1 to 10 Cr., 234 spent 10 to 100 Cr, 22 companies spent 100 to 500 Cr. while only 1 company spent above 500 Cr approximately.

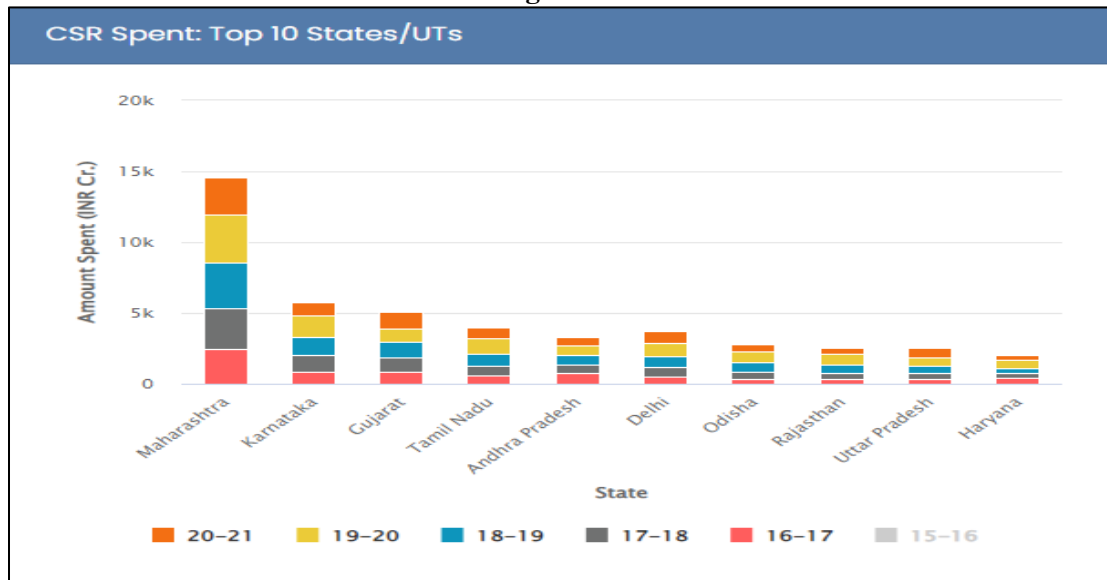
FY 2018 – 19: Majority of 21916 companies spent 0 to 50 L amount, 2884 companies spent 1 to 10 Cr., 265 spent 10 to 100 Cr, 27 companies spent 100 to 500 Cr. while only 2 companies spent above 500 Cr approximately.

FY 2019 – 20: Majority of 19110 companies spent 0 to 50 L amount, 3215 companies spent 1 to 10 Cr., 294 spent 10 to 100 Cr, 35 companies spent 100 to 500 Cr. while only 6 companies spent above 500 Cr approximately.

FY 2020 – 21: Majority of 5876 companies spent 0 to 50 L amount, 2487 companies spent 1 to 10 Cr., 238 spent 10 to 100 Cr, 26 companies spent 100 to 500 Cr. while only 5 companies spent above 500 Cr approximately.

CSR spent in Top 10 States

Figure - 3



INTERPRETATION

In FY 2016 – 17 highest amounts of CSR spent was in state of Maharashtra (2492 Cr.), Karnataka (888 Cr.), Gujarat (871 Cr), Tamil Nadu (551 Cr.), AP (754 Cr.), Delhi (521 Cr.), Odisha (317 Cr), Rajasthan (327 Cr.), UP (328 Cr.) while lowest in Haryana (390 Cr.)

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In FY 2019 – 20 highest amounts of CSR spent was in state of Maharashtra (3427 Cr.), Karnataka (1483 Cr), Gujarat (996 Cr), Tamil Nadu (1110 Cr.), AP (720 Cr.), Delhi (935 Cr.), Odisha (752 Cr), Rajasthan (735 Cr.), UP (585 Cr.) while lowest in Haryana (529 Cr.)

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CSR Spent: Development Sector wise

Figure - 4



INTERPRETATION: Compared to all development sector Majority of CSR Amount is spent in Education, Differently Abled, livelihood cumulative of all the financial year.

The highest of 9593 Cr. was spent in FY 19 – 20, 7983 Cr. in 2018 – 19, 7381 Cr. in 2017 – 18, 6463 Cr in 2020-21, 5559 Cr. in 2016-17, while lowest 4921 Cr. in 2015-16.

Figure - 5



INTERPRETATION: Compared to all development sector, CSR Amount spent in Environment, Animal Welfare, Conservation of Resources cumulative financial year wise data, is as follows:

The highest of 1793 Cr. was spent in FY 2019-20, 1701 Cr. in 2018-19, 1660 Cr. in 2017-18, 1318 Cr. in 2016-17, 1035 Cr in 2020-21, while lowest of 971 Cr. in 2015-16.

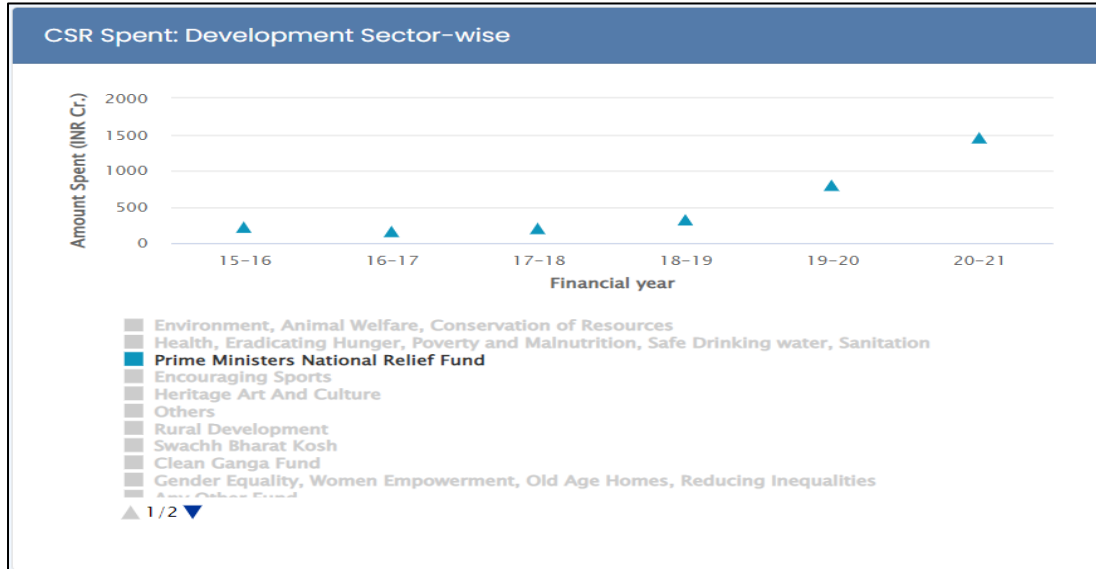
Figure - 6



INTERPRETATION: Compared to all development sector, CSR Amount spent in Health, Eradicating Hunger, Poverty and Malnutrition, Safe Drinking Water, Sanitization cumulative financial year wise data, is as follows:

The highest of 6920 Cr. was spent in FY 2020-21, 6808 Cr. in 2019-20, 5528 Cr. in 2018-19, 4633 Cr. in 2015-16, 4269 Cr in 2017-18, while lowest of 3669 Cr. in 2016-17.

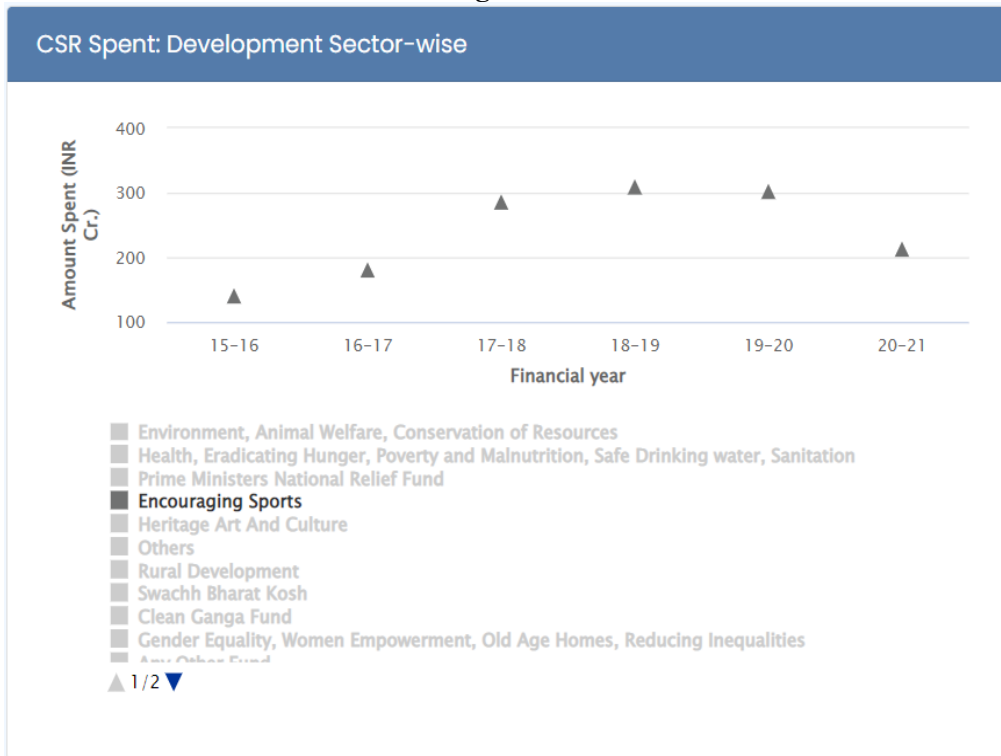
Figure - 7



INTERPRETATION: Compared to all development sector, CSR Amount spent in Prime Ministers National Relief Fund cumulative financial year wise data, is as follows:

The highest of 1453 Cr. was spent in FY 2020-21, 797 Cr. in 2019-20, 320 Cr. in 2018-19, 218 Cr. in 2015-16, 200 Cr in 2017-18, while lowest of 159 Cr. in 2016-17.

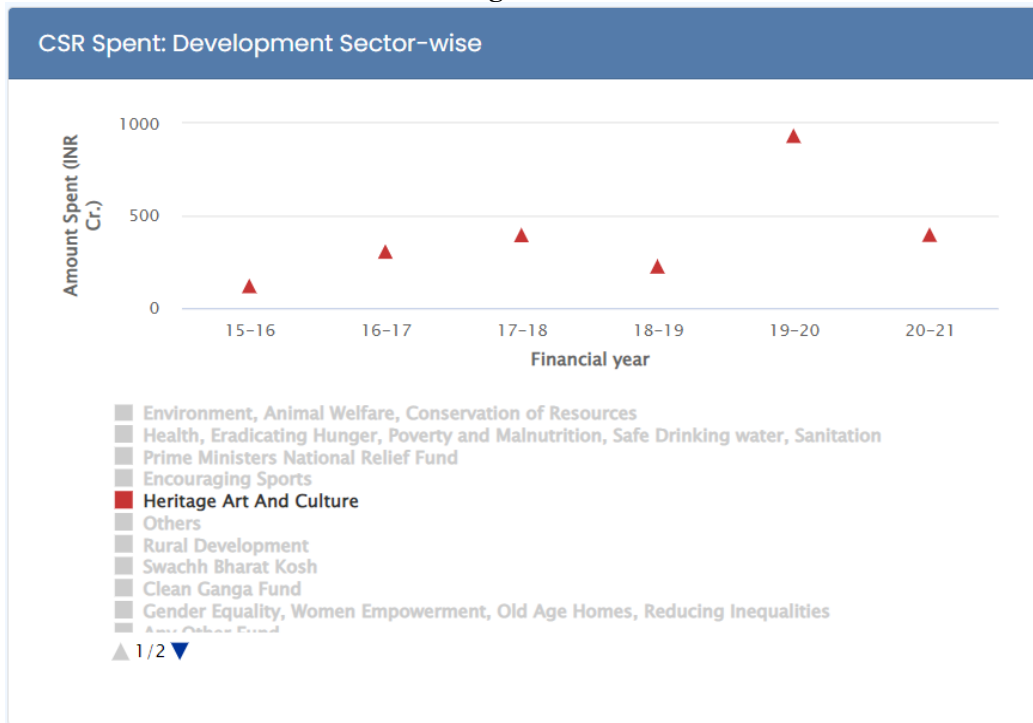
Figure - 8



INTERPRETATION: Compared to all development sector, CSR Amount spent in Encouraging Sports cumulative financial year wise data, is as follows:

The highest of 309 Cr. was spent in FY 2018-19, 302 Cr. in 2019-20, 285 Cr. in 2017-18, 213 Cr. in 2020-21, 180 Cr in 2016-17, while lowest of 140 Cr. in 2015-16.

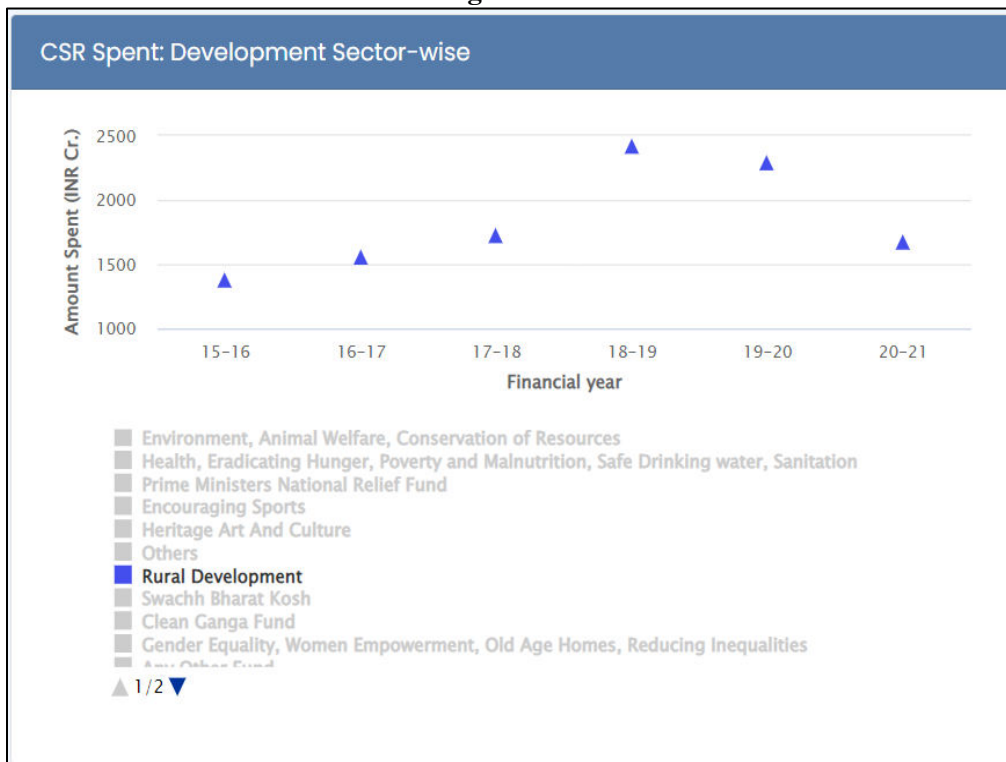
Figure – 9



INTERPRETATION: Compared to all development sector, CSR Amount spent in Heritage Art and Culture cumulative financial year wise data, is as follows:

The highest of 933 Cr. was spent in FY 2019-20, 397 Cr. in 2020-21, 395 Cr. in 2017-18, 306 Cr. in 2016-17, 225 Cr in 2018-19, while lowest of 119 Cr. in 2015-16.

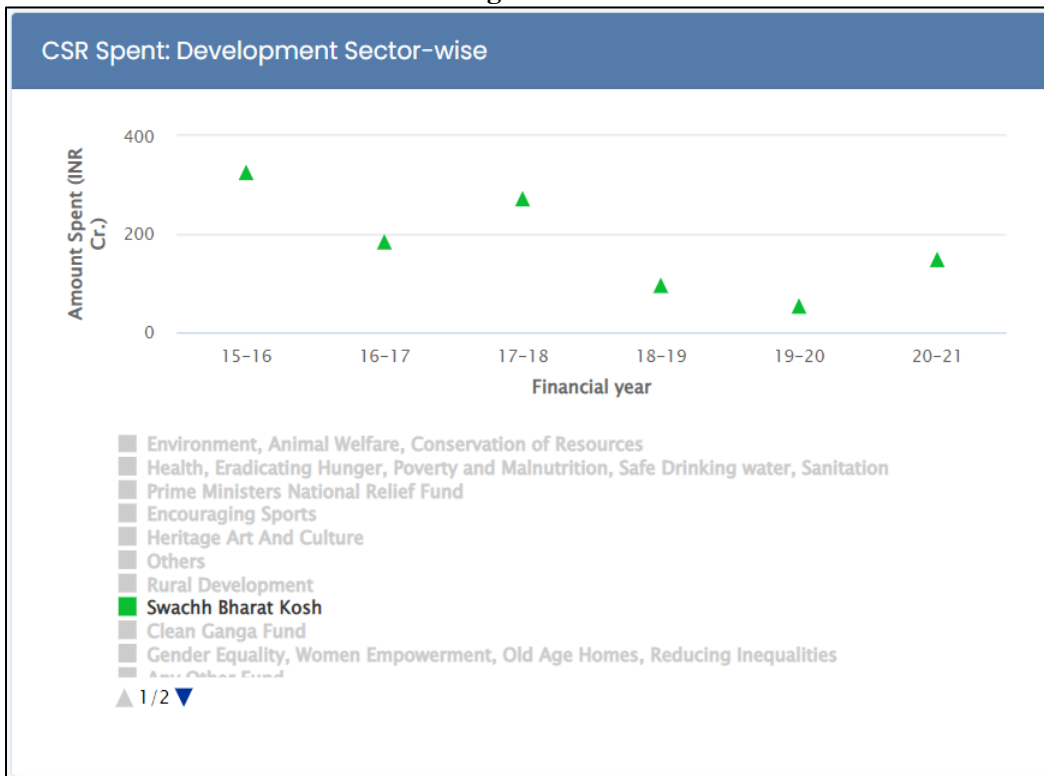
Figure – 10



INTERPRETATION: Compared to all development sector, CSR Amount spent in Rural Development cumulative financial year wise data, is as follows:

The highest of 2418 Cr. was spent in FY 2018-19, 2289 Cr. in 2019-20, 1723 Cr. in 2017-18, 1671 Cr. in 2020-21, 1555 Cr in 2016-17, while lowest of 1376 Cr. in 2015-16.

Figure - 11



INTERPRETATION: Compared to all development sector, CSR Amount spent in Swachh Bharat Kosh cumulative financial year wise data, is as follows:

The highest of 326 Cr. was spent in FY 2015-16, 272 Cr. in 2017-18, 184 Cr. in 2016-17, 148 Cr. in 2020-21, 96 Cr in 2018-19, while lowest of 53 Cr. in 2019-20.

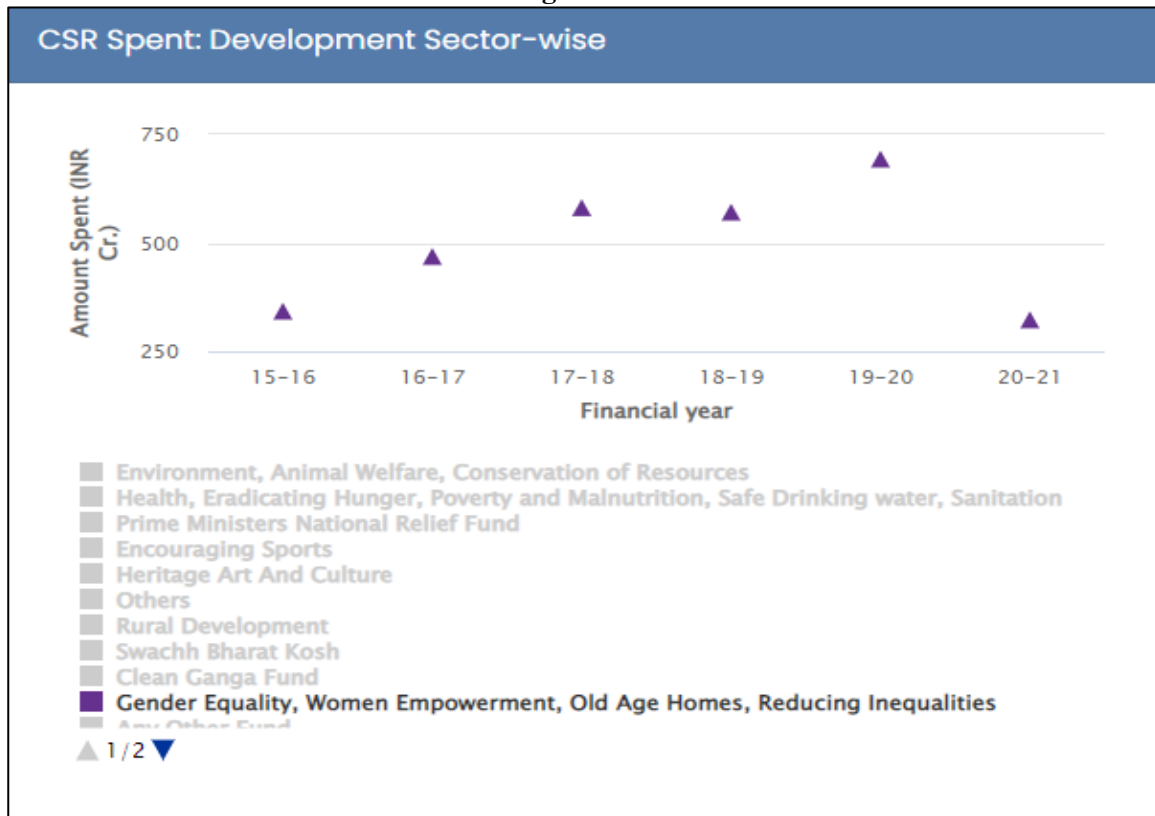
Figure - 12



INTERPRETATION: Compared to all development sector, CSR Amount spent in Clean Ganga Fund cumulative financial year wise data, is as follows:

The highest of 34 Cr. was spent in FY 2017-18, 33 Cr. in 2015-16, 24 Cr. in 2016-17, 8 Cr. in 2018-19, while lowest of 7 Cr. in 2020-21 & 2019-20.

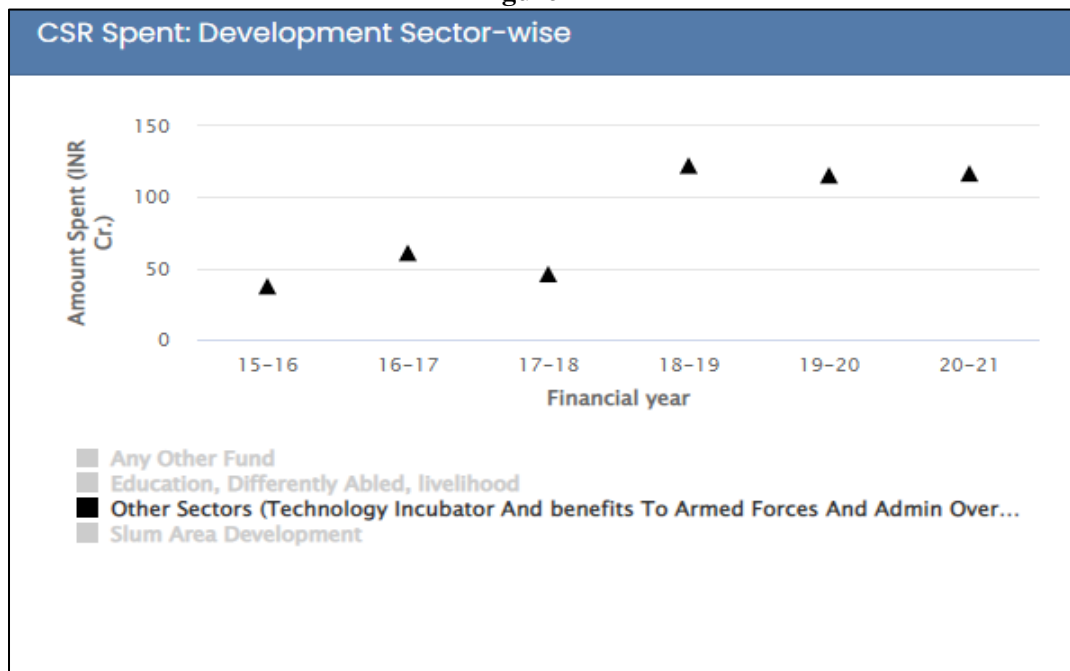
Figure - 13



INTERPRETATION: Compared to all development sector, CSR Amount spent in gender equality, women empowerment, old age home and reducing inequality - cumulative financial year wise data, is as follows:

The highest of 693 Cr. was spent in FY 2019-20, 581 Cr. in 2017-18, 571 Cr. in 2018-19, 469 Cr. in 2016-17, while lowest of 323 Cr. in 2020-21

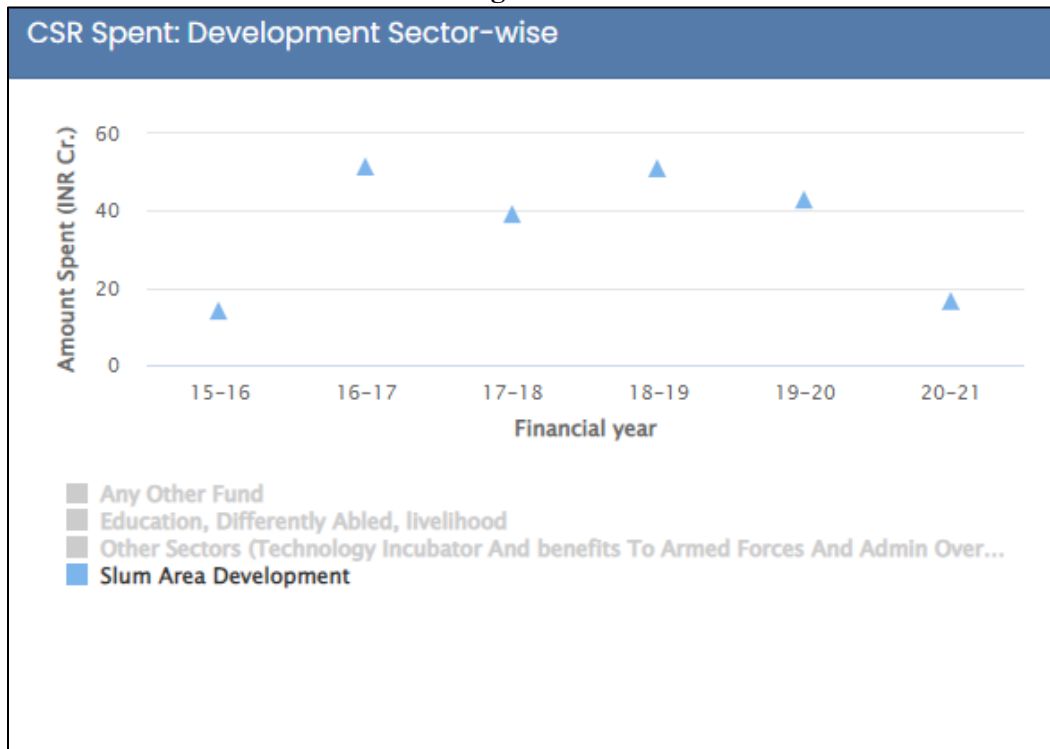
Figure - 14



INTERPRETATION: Compared to all development sector, CSR Amount spent in other sectors cumulative financial year wise data, is as follows:

The highest is in FY 2018-19 (122 Cr), followed by 115 Cr in FY 2019-20, 116 Cr in 2020-21, 61 Cr. in 2016-17 while lowest of 46 Cr. in 2017-18

Figure - 15



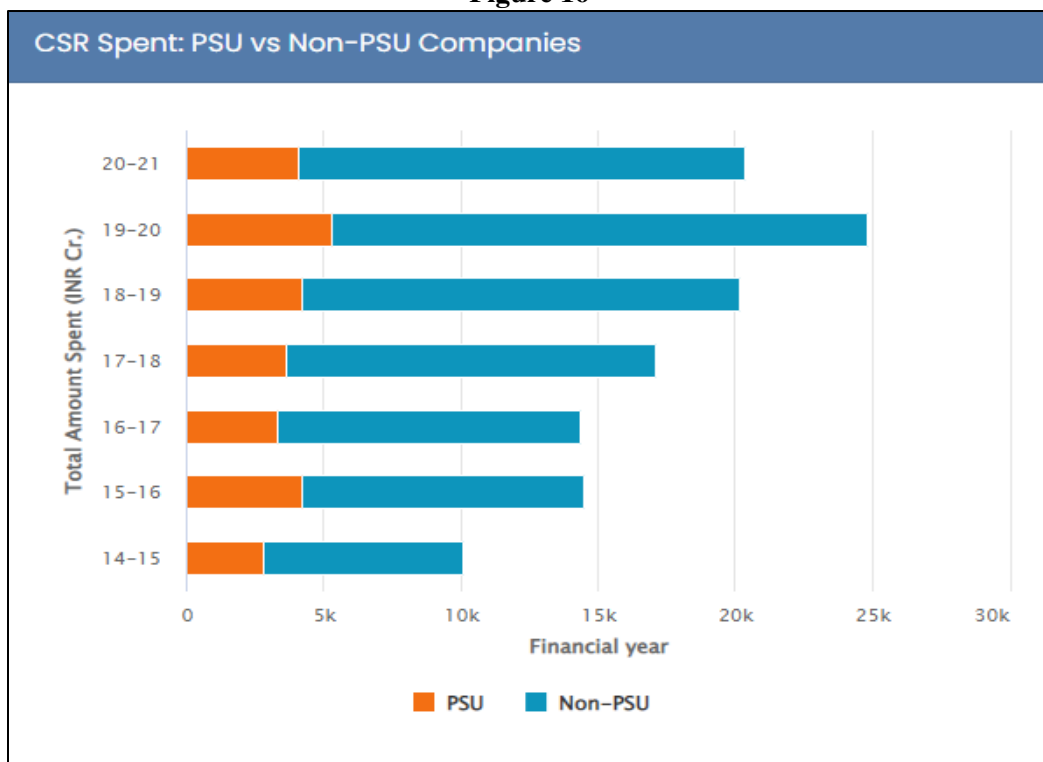
INTERPRETATION: Compared to all development sector, CSR Amount spent in Slum area development cumulative financial year wise data, is as follows:

The highest of 52 Cr. was spent in FY 2016-27, 51 Cr. in 2018-19, 42 Cr. in 2019-20, 39 Cr. in 2017-18, while lowest of 17 Cr. in 2020-21

CSR Spent: PSU v/s Non-PSU Companies

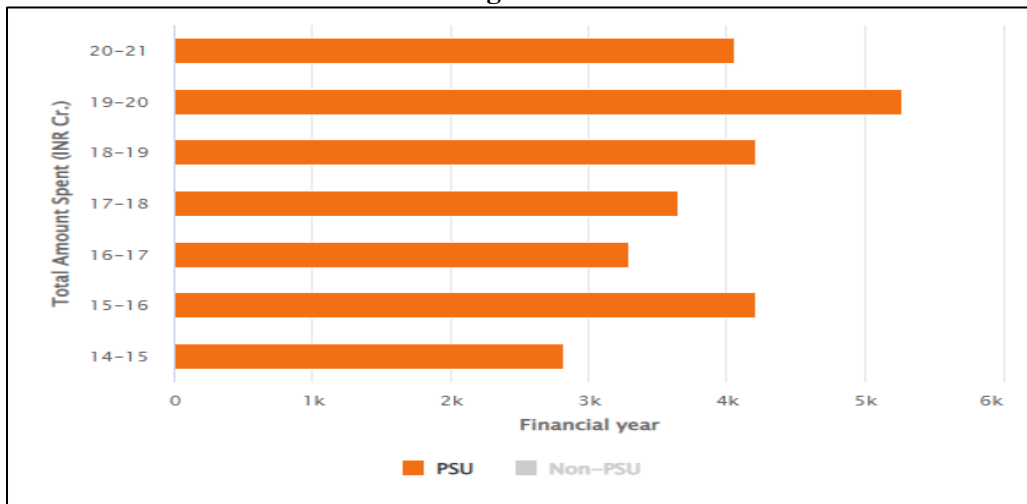
Cumulative Analysis of PSU and Non - PSU

Figure 16



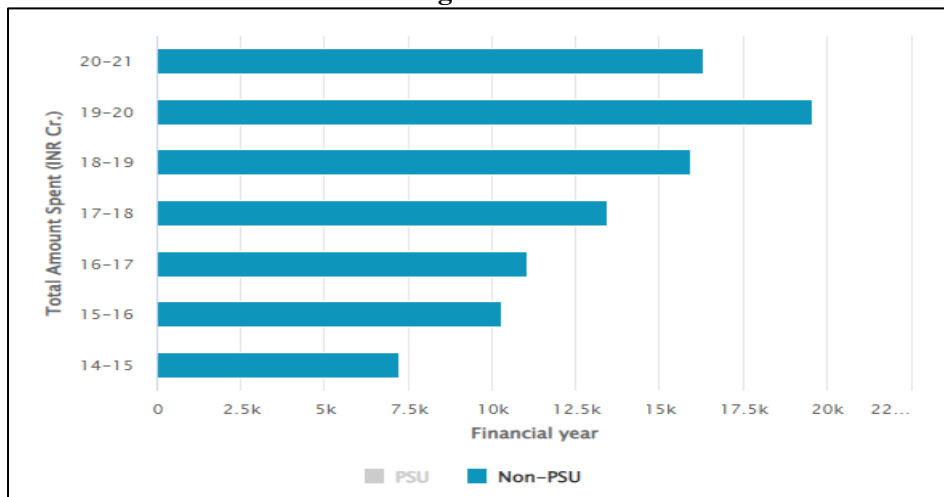
INTERPRETATION: From the above data CSR spent by non-PSU is higher than PSU.

Figure 17



INTERPRETATION: The highest CSR amount spent was in FY 2019 – 20 (5270 Cr.), 4215 Cr. in 2018-19, 4214 Cr. in 2020-21, 3650 Cr. in 2017-18, while lowest in 3296 Cr in 2016-17.

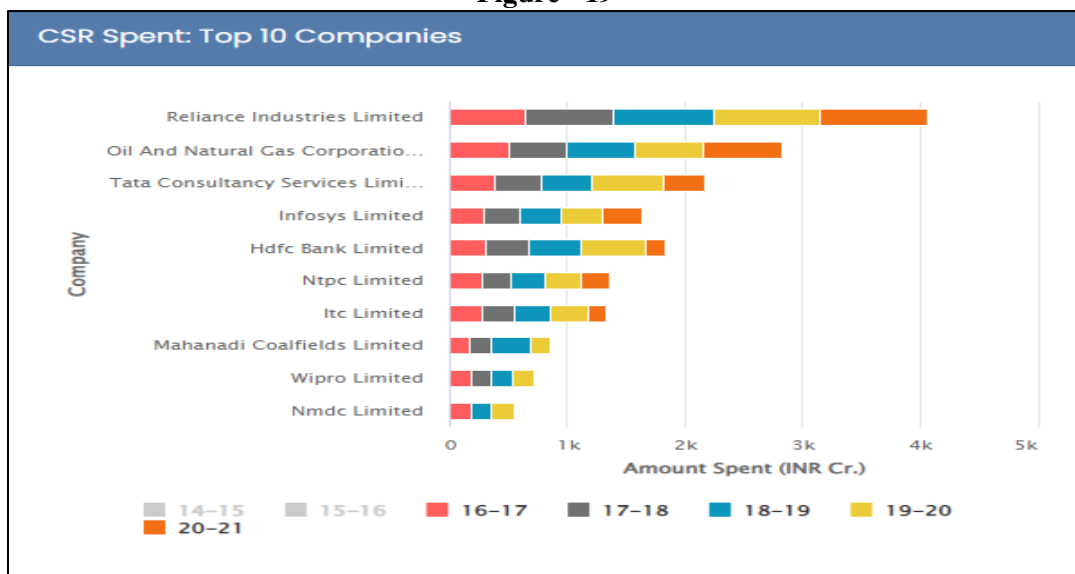
Figure - 18



INTERPRETATION: The highest CSR amount spent was in FY 2019 – 20 (19591 Cr.), 16303 Cr in 2020-21, 15935 Cr in 2018-19, 13444 Cr in 2017-18 while lowest 11048 Cr in 2016-17.

CSR Spent by Top 10 Companies

Figure - 19



INTERPRETATION: Among the top 10 companies who spent the amount in development sector, Reliance Industries Ltd stands first, following below ONGC, TCS, Infosys, HDFC Bank, NTPC, ITC, Mahanadi Coalfields ltd, Wipro and NMDC Ltd.

In FY 2016-17 Reliance spent 649 Cr, ONGC – 505 Cr, TCS – 380, Infosys – 289, HDFC Bank – 305, NTPC – 278, ITC 275, Mahanadi Coalfields – 167, Wipro – 186 while NMDC – 178 Cr in development sector.

In FY 2017-18 Reliance spent 745 Cr, ONGC – 482 Cr, TCS – 400, Infosys – 312, HDFC Bank – 375, NTPC – 242, ITC 268, Mahanadi Coalfields – 187, Wipro – 168 Cr in development sector.

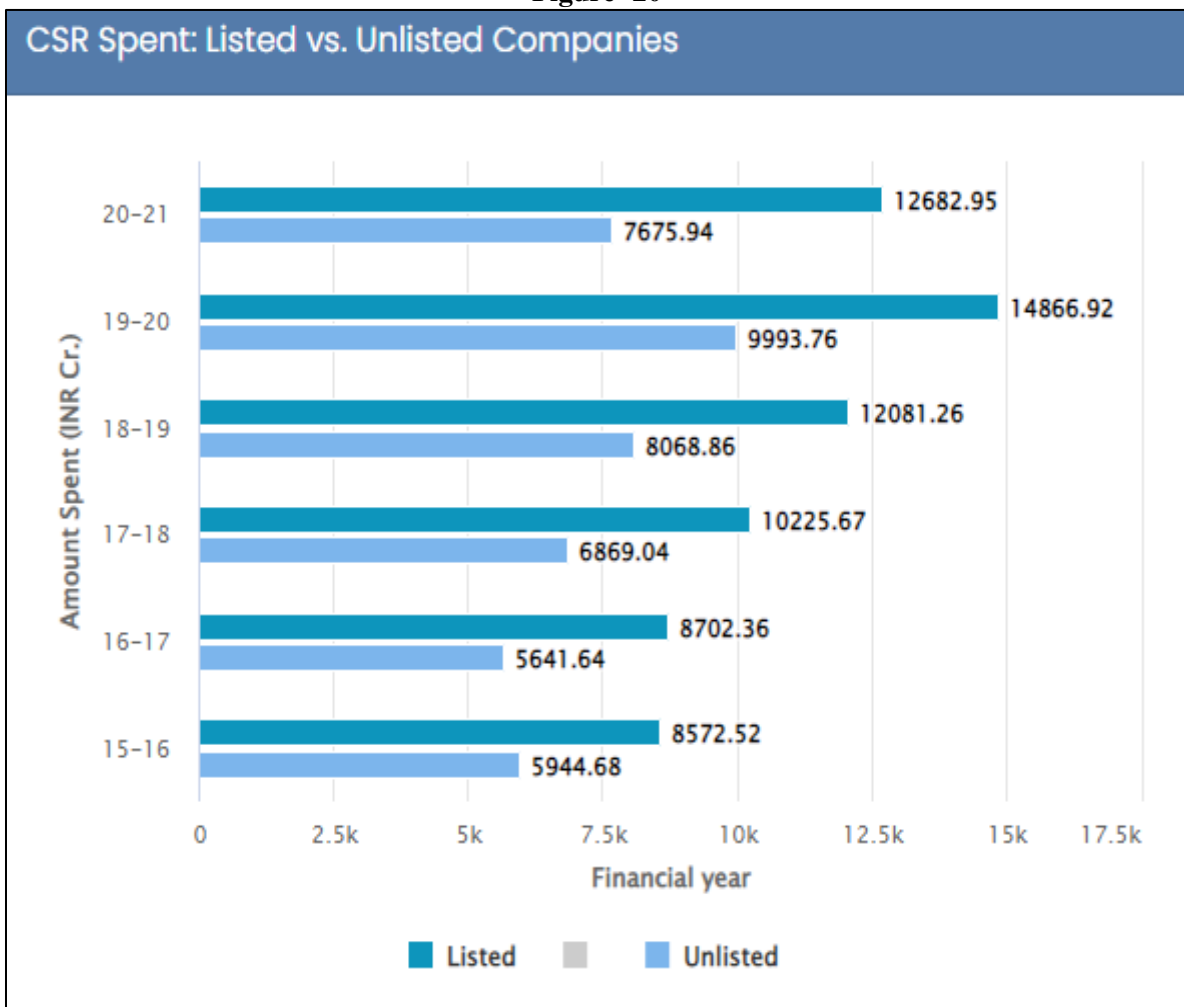
In FY 2018-19 Reliance spent 849 Cr, ONGC – 587 Cr, TCS – 434, Infosys – 342, HDFC Bank – 444, NTPC – 285, ITC - 307, Mahanadi Coalfields – 334, Wipro – 185 while NMDC – 167 Cr in development sector.

In FY 2019-20 Reliance spent 909 Cr, ONGC – 582 Cr, TCS – 602, Infosys – 360, HDFC Bank – 535, NTPC – 305, ITC - 326, Mahanadi Coalfields – 165, Wipro – 182 while NMDC – 200 Cr in development sector.

In FY 2020-21 Reliance spent 922 Cr, ONGC – 674 Cr, TCS – 362, Infosys – 335, HDFC Bank – 168, NTPC – 247, ITC – 159 Cr in development sector.

CSR Spent by listed and unlisted companies

Figure -20



INTERPRETATION: From the above analysis, CSR spent by listed companies is more than unlisted, as observed from chart in FY 2019-20 CSR amount spent is highest compared to other financial years.

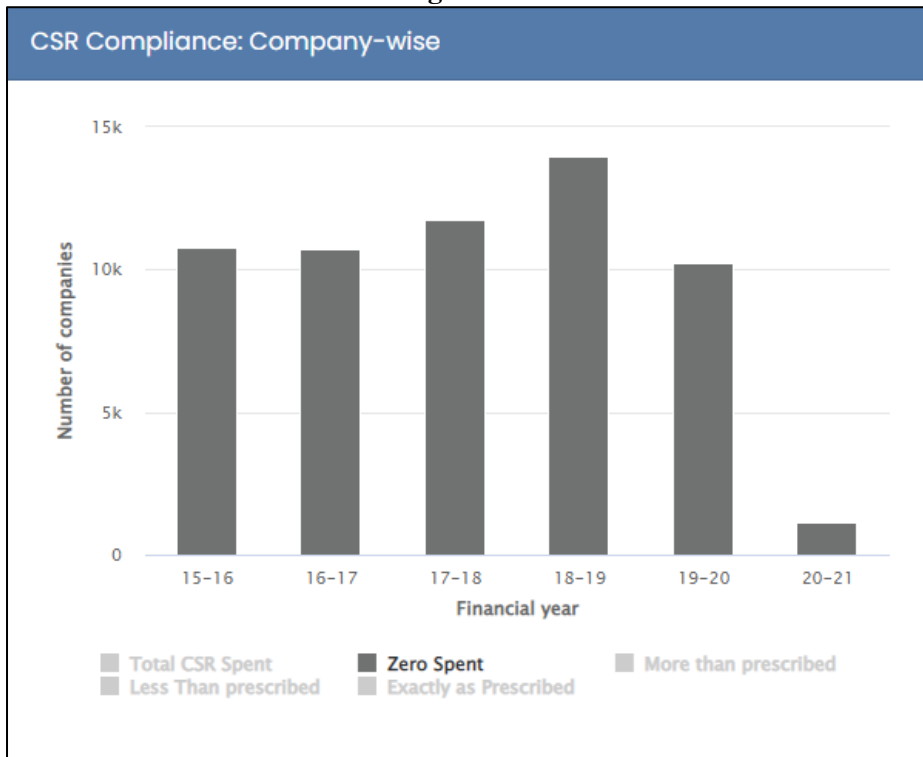
In 2019-20 CSR spent by listed companies is high (14867 Cr), 12683 Cr in 2020-21, 12081 Cr in 2018-19, 10225 Cr in 2017-18 while lowest amount spent was observed in FY 2016-17 of 8702 Cr.

In 2019-20 CSR spent by unlisted companies is high (9994 Cr), 7676 Cr in 2020-21, 8069 Cr in 2018-19, 6869 Cr in 2017-18 while lowest amount spent was observed in FY 2016-17 of 5642 Cr.

CSR Compliance: Company-wise

1. Zero Spent

Figure - 21



INTERPRETATION: Among all the financial years, below are the number of companies spent zero amount in CSR projects.

FY 2016-17: 10714 no. of Companies

FY 2017-18: 11743 no. of Companies

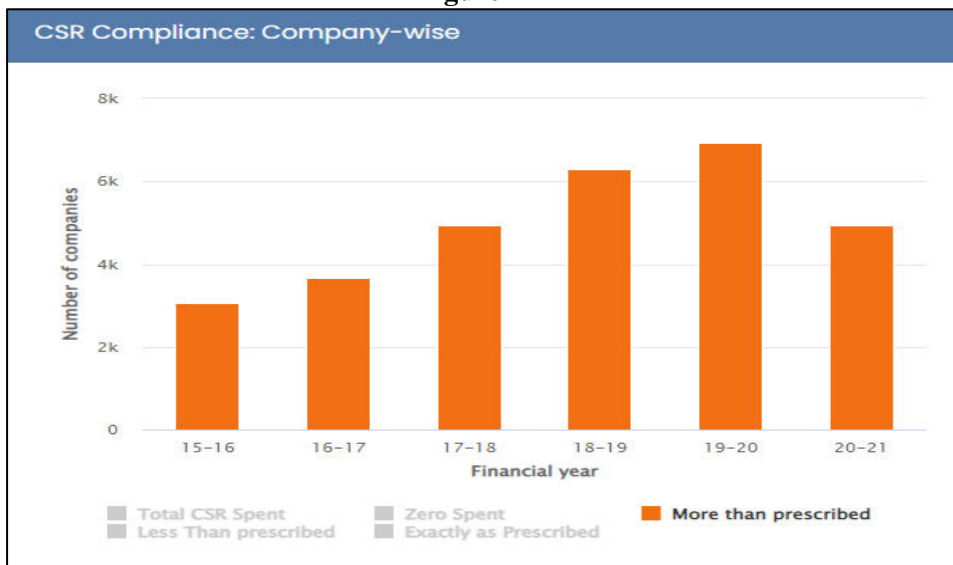
FY 2018-19: 13957 no. of Companies (Highest)

FY 2019-20: 10238 no. of Companies

FY 2020-21: 1149 no. of Companies (Lowest)

2. More than Prescribed Amount

Figure - 22



INTERPRETATION: Among all the financial years, below are the number of companies that spent more than prescribed amount in CSR projects.

FY 2016-17: 3654 no. of Companies (Lowest)

FY 2017-18: 4940 no. of Companies

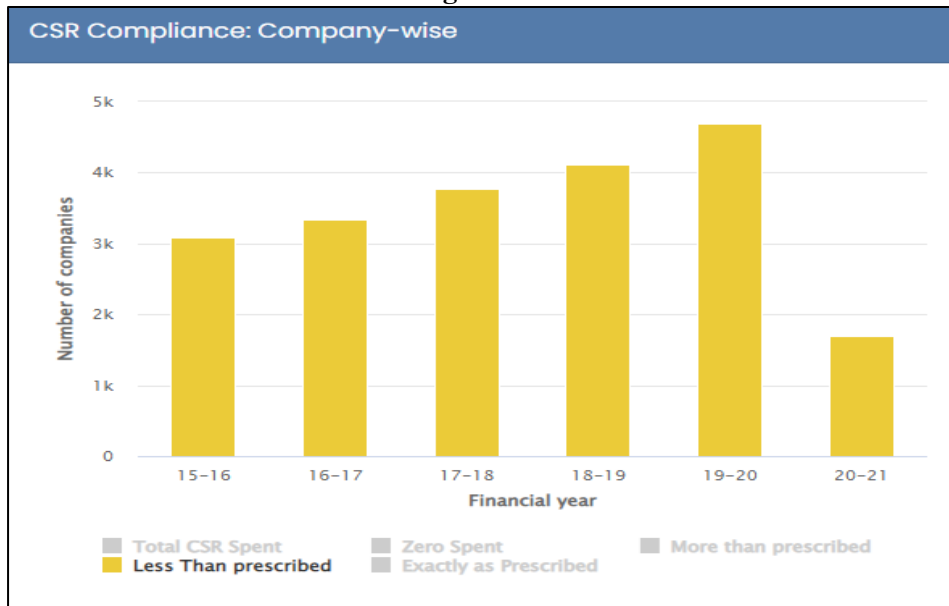
FY 2018-19: 6297 no. of Companies

FY 2019-20: 6936 no. of Companies (Highest)

FY 2020-21: 4942 no. of Companies

3. Less than Prescribed Amount

Figure - 23



INTERPRETATION: Among all the financial years, below are the number of companies that spent more than prescribed amount in CSR projects.

FY 2016-17: 3335 no. of Companies

FY 2017-18: 3765 no. of Companies

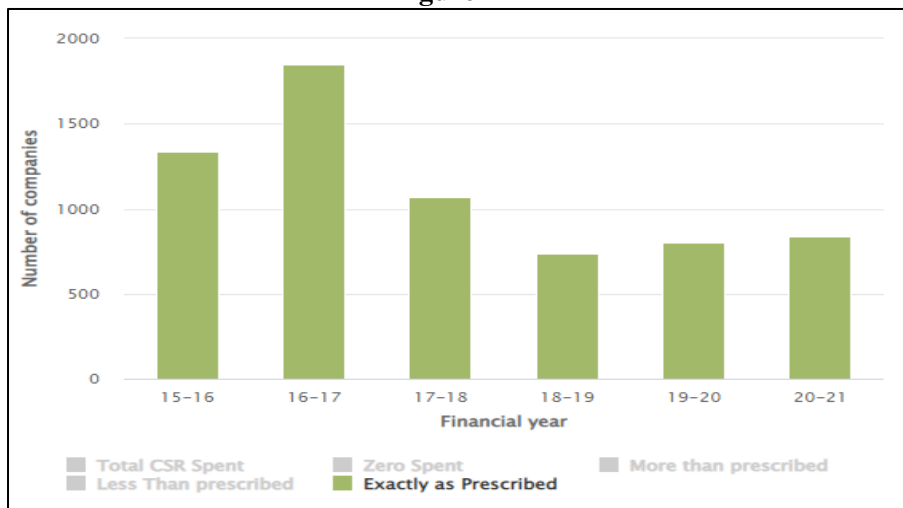
FY 2018-19: 4113 no. of Companies

FY 2019-20: 4687 no. of Companies (Highest)

FY 2020-21: 1702 no. of Companies (Lowest)

4. Exactly as Prescribed Amount

Figure - 24



INTERPRETATION: Among all the financial years, below are the number of companies that spent Exactly as prescribed amount in CSR projects.

FY 2016-17: 1848 no. of Companies (Highest)

FY 2017-18: 1066 no. of Companies

FY 2018-19: 736 no. of Companies (Lowest)

FY 2019-20: 799 no. of Companies

FY 2020-21: 839 no. of Companies

IMPACT OF DIGITAL MARKETING ON PURCHASE DECISIONS OF CUSTOMERS IN BENGALURU CITY**¹Dr. M. Rama Kumari, ²Dr. S. Mohana and ³Mr. M. Babjan**¹Associate Professor, Department of MBA, Sri Sai Institute of Technology and Science, Rayachoty²Assistant Professor, Department of Humanities, Annamacharya Institute of Technology and Science, Kadapa³Assistant Professor, Department of Management Studies, Sanskrithi School of Business, Puttaparthi**ABSTRACT**

This research article aims to “To study the impact of key attributes of digital marketing on purchase decision of customers”. The paper applies data reduction using Reliability Test, Exploratory Factor Analysis (EFA) and Multiple Linear Regression on a sample of 323 respondents and condenses a set of 16 items converted into a 4 digital marketing attributes. The present study proposes a model of the impact of key attributes of digital marketing on the purchase decision of customers. The study found that online advertising, mobile marketing, email marketing and social media marketing are impacting significantly the purchase decision of customers. Therefore, marketers should focus on the above factors to increase purchase decision of customers. The study investigated the impact of digital marketing key attributes on purchase decision of customers. Concluded that online advertising had the highest impact on the purchase decision of the customers followed by mobile marketing, email marketing and social media marketing.

Keywords: Mobile Marketing, Email Marketing, Online Advertising, Social Media Marketing and Purchase Decision.

INTRODUCTION

Nowadays, the Internet has opened the doors for firms to exploit incredible digital marketing chances. By using a variety of digital marketing channels, businesses cannot just share their products and services online; they can also increase the number of their customers, attract them and be able to increase their Return on Investment (ROI). Also, in the advancement of markets and technologies that are highly competitive with the use of the internet, digital marketing strategies have replaced the traditional marketing ones (Alnsour, 2018). Furthermore, digital marketing covers a vast area in the global market and includes business models that use digital technologies that reduce costs and grow businesses worldwide (Rafiq & Malik, 2018). At present, digital marketing has a more extensive scope to grow their business in the future because customers are much more satisfied with doing online shopping and find digital marketing much safer than traditional marketing (Alzyoud, 2018).

Additionally, Jordan is a place where every year, new digital marketing customers enter this section which is a very bright chance for marketers to market their products through digital marketing as consumers bring their mobile phones everywhere to access anything anytime. Furthermore, digital marketing has been considered a new marketing method and offers new chances for firms to do business. More specifically, Jordan's mobile market is one of the wildest rising markets due to the growing number of middle-income users. It is expected to reach millions of users in the coming decades. Therefore, research on digital channel advertising will significantly influence the way business is conducted. Consequently, digital marketing is seen as a technology evolution form of marketing that offers new ideas to businesses to try. Also, Marketing activities conducted through digital channels allow marketers to connect directly with potential customers regardless of their geographical location. Furthermore, digital marketing uses channels to reach the preferred target market through several channels, including social media, websites, multimedia ads, online advertising, E-marketing, communicating marketing such as opinion polls, game augmentation, mobile marketing (Garg et al., 2021). However, marketers can conduct online surveys to obtain the information they need from customers and analyze responses and take appropriate action based on customer responses to meet their needs. Finally, this study evaluated digital marketing channels such as (E-mail Marketing, online advertising, social media marketing, and Mobile Marketing) for marketers. It analyzes the impact of these channels on purchase decisions among the students of Jordanian universities.

Jordanians are becoming more comfortable with online, living more in the digital world, so businesses need to wake up for the future of digital marketing. Furthermore, changing consumer behavior requires organizations to restructure their marketing activities in the digital space. However, that digital and social media marketing influences consumer purchasing decision processes. Additionally, the consumer makes a purchase decision every day, and several factors influence the decision made by the buyer. Numerous internet applications, social media, mobile phone applications, and other digital communication channels have become part of the daily lives of various users in Jordan. Moreover, consumers have become more involved in the development of the products and services they purchase, and that has shifted control from producer to consumer. Generally, most researches have been conducted on digital marketing and

consumer behavior in Europe and the USA. However, within Jordan, few pieces of research have been carried out to analyze the effect of Digital marketing on the consumer purchasing decision. Finally, this research describes the value of choosing digital marketing platforms (Email Marketing, online advertising, social media marketing, and Mobile Marketing) for marketers and analyzes the influence of these channels on consumer purchasing decision processes in the Jordanian market.

Digital marketing technology permits customers to continue to simplify firm information (Sivasan, 2017). Lately, numerous customers are utilizing the Internet to update information about their products anytime. However, most customers know how to access one's firm website, how to evaluate products, and how to purchase online and offer feedback. Although numerous research studies have been performed worldwide to evaluate customer attitudes towards products or services, there is not enough research on students' attitudes toward digital marketing, especially in Jordan. This research study aims to develop the influence of digital marketing on purchasing decisions. This is significant because the number of similar studies in this field of marketing is inadequate. Finally, the results offer a better vision about how to use digital marketing as one of the influential channels to market their products.

This study aims to evaluate the influence of digital marketing on the process of purchasing decisions of students in the Jordanian market. Furthermore, the research study will focus on four digital marketing channels (Email Marketing, Online Advertising, Social Media Marketing, and Mobile Marketing) and fill the gap of the limited research conducted on the influence of this platform on purchasing decisions in the Jordan market.

REVIEW OF LITERATURE

In the modern era, digital marketing has increased its importance in Jordan. Consequently, to grow sales of products & services, marketers use this new form of marketing strategy. Furthermore, the development of digital marketing has changed the way brands and businesses use digital technologies and channels for marketing activities (Rai, 2018). Therefore, digital marketing campaigns are becoming more predominant and efficient as digital platforms are progressively integrated into marketing plans and daily life, and by the way, people use digital devices instead of going to physical stores (Maha&Ranj, 2016). In addition, Digital marketing is an electronic communication channel used by marketers to support products and services towards the market. Specifically, digital marketing is defined as the sale and purchase of information, products, and services through a computer or internet network (Rao &Ratnamadhuri., 2018). Finally, digital marketing aids marketers to reach their products for users through several channels such as E-Mail Marketing, online advertising, Social Media Marketing, Mobile marketing, etc.

E-mail marketing is one of the digital marketing methods used to distribute orders or target letters to the same individuals at a suitable time. With Email, businesses can send emails that meet customers' needs (Ugonna et al., 2017). Besides, Email marketing is a type of direct marketing that uses email to message or communicate promoting funds to connect audiences (Lodhi, &Shoab, 2017). In its widest logic, email marketing can be considered for every email sent to potential or existing consumers (Rai, 2018). E-mail is an essential form of communication within marketing tools where businesses can connect brand value suggestions to the preferred target audience. Moreover, consumers also connect their needs upstream to the businesses via E-mail (Reimers et al., 2016). To ensure the impact of email marketing, email letters are personalized to receive positive advertising messages. Nevertheless, understanding the needs, time, and interesting letters based on consumer preferences can help raise a positive attitude towards email ads that remind of challenges to practitioners (Bokde&Seshan, 2019).

Online advertising is a form of promotion that convinces customers to make purchasing decisions and provides information to the audience. When the information is offered in a pleasant context, the information is easily accepted (Mishra &Mahalik, 2017). Also, online advertising marketing is a strategy that utilizes the Internet to get website traffic and deliver marketing letters to the right potential consumers (Budiman, 2021). The most significant advantage of online advertising is the promotion of products without geographical borders (Khan & Islam, 2017). Thus, online advertising is a very vital portion of digital marketing. It is similarly called internet advertising, through which firms can distribute letters about products or services. The reason is that online advertising can seizure the chance to reach their users through numerous online platforms, to give awareness of their products, and to increase their sales in the future (Dhore&Godbole, 2019). Moreover, online advertising is supple and makes it easy for firms to update their products, services, and information (Lim et al., 2011; Afzal & Khan, 2015). On the other hand, due to the variety of products and services, growing consumer's desires and demands, manufacturers need faster and effective ways to achieve customer's loyalty (Aqsa &Kartini, 2015). Finally, online advertising's effectiveness in purchasing decisions, including the Jordanian users, is fairly used to online advertising with a positive attitude towards online advertising. In this study, the Internet has developed in acknowledgment as an advertising platform as it enables 24-hour interactivity between advertisers and users.

Social media marketing is a new tendency and a fast-growing method to reach targeted consumers effortlessly and efficiently. Additionally, Social media marketing can be modestly defined as using social media channels to encourage a business and its products (Bansal et al., 2014). This type of marketing can be considered as a subset of online marketing activities that complement traditional Web-based promotional strategies, for example, email newsletters and online advertising campaigns (Omar &Atteya, 2020). Thus, with this new outreach and marketing approach, new channels are being established and enhanced for businesses Social media marketers are now getting better and more impact insights by introducing analytics applications by the official social networking website platform (Nur, 2021). Finally, Social Media indicates to any software channel that allows and encourages engagement in discussions. Thus, general forms of social media comprise Facebook, Twitter, LinkedIn, and YouTube. At present, social media are a platform for marketers to have conversations with consumers. Furthermore, a brand is now attracting consumers through social media (Budiman, 2021). Finally, Kaplan and Haenlein (2010) find that social media is a group of Internet-based applications constructed on top of ideology and basics of web 2.0 technology and enables creating and exchanging content. Social media also explored websites and applications designed to permit customers to share content rapidly, efficiently, and in real-time.

Mobile marketing is considered one of the latest and most important digital marketing channels. Therefore, mobile marketing today is the broadest, fastest, cheapest, and most actual marketing channel where users can earn information and features of attractive goods easily with the possibility of completing the buying & selling process without the need for the buyer to go to the place of goods (Alam et al., 2015). Specifically, Mobile marketing provides access to consumers to know their benefits and needs and influence their purchasing decisions (Tiffany et al., 2018). On the other hand, Mobile Marketing is a group of practices that allow firms to communicate and interact with their audiences interactively and relevantly through any device or mobile network (Mohamed et al., 2016). Finally, Mobile marketing has emerged as one of the exciting interactive communication mode channels between firms and customers. Messages through such media affect their decision to buy.

After evaluating alternatives, purchasing decisions are the next step in the consumer decision-making process. Currently, consumers gain preference between brands, products/services being considered and intend to purchase the brand of choice (Stefan, 2019). Furthermore, Purchase decisions have been influenced by previous stages of the decision-making process, but marketers still have the opportunity to affect consumers who are already at the purchasing stage (Iblasi et al., 2016). At this level, marketers should provide their consumers with their products and ensure that the purchasing process is easy and convenient for consumers (Bui et al., 2021). By using digital technology, digital marketing channels such as email marketing, social media, online advertising, and mobile services can improve the consumer spending experience at the purchase level by making ordering, purchasing, and payment of products easier so as to save customers' time and money (Qazzafi, 2019). Finally, note that while buyers may have gone through all the steps carefully, purchasing decisions often depend on the accessibility of store management influences.

RESEARCH GAP

The gap in the purchase decision is broadened with the aspect of digital marketing. A detailed literature has been reviewed on the topic and it is found that there is a need for studying impact of digital marketing on purchase decision of customers. So far, no study had been taken on this topic in the geographical boundaries of the Bengaluru city state of the Karnataka.

RESEARCH PROBLEM

The customer purchase decision is affected by the effective and efficient online communications of marketing, regarding the frequency of purchase and consistent visit to the online stores of shopping. In this context, there arises the issue of exploring the influence of effective marketing through online techniques, proper communication as well as the regular online delivery of products, when the consumer consistently visits the online stores.

RESEARCH OBJECTIVES

1. To identify the key attributes of digital marketing.
2. To measure the impact of digital marketing key attributes on customer purchase decision.

RESEARCH HYPOTHESIS

The following hypotheses were improved and derived from the following literature reviews and theories:

- **Ho1:** There is no significant and positive effect of email marketing on the Purchase Decision of customers.
- **Ho2:** There is no significant and positive effect of online advertising on the Purchase Decision of customers.

- **Ho3:** There is no significant and positive effect of social media marketing on the Purchase Decision of customers.
- **Ho4:** There is no significant and positive effect of mobile marketing on the Purchase Decision of customers.

Statistical Tools

- Exploratory Factor Analysis
- Reliability Test
- Multiple Linear Regression

Sampling Procedure

Probability sampling contains numerous methods for the random selection of students from the entire population. Due to the researcher’s access to the whole population, the possibility of choosing each member of the population is known (Sekaran&Bougie, 2013). In order to achieve the objectives of the study, students will be selected using the probability sampling method; the justification for using random sampling probability is to allow the researcher to choose and focus on certain characteristics of the population interesting and will enable him to answer his research questions. The expected sample size is at least 357 or more to meet the recommendation criteria. The sample size of this study was 323, which met the proposal criteria.

Data Exploration

Reliability Test

Table: 1. Reliability test results of digital marketing key attributes

Factor Name	Number of Items	Cronbach's Alpha
Email Marketing	5	.842
Social Media Marketing	4	.787
Online Advertising	4	.751
Mobile Marketing	3	.720

Cronbachs alpha was utilized to measure and assess the instrument’s internal consistency efficiency and reliability. In addition to this, Cronbachs alpha methodology was utilized to examine the reliability of the findings, which came from measurements based on correlations between the factors of the study, also referred to as internal consistency. Furthermore, Cronbachs alpha is frequently utilized to test the average of items that can be evaluated in tests and their relationships. More specifically, SPSS software is applied to analyze the reliability of the data collected. Finally, the consistency of the general scale of the current and selected conditions is confirmed by Cronbachs alpha, which should exceed the acceptable scale of 0.70 (hair et al., 2006). In this study, Cronbachs alpha was used to measure item reliability. As shown below, the calculated Cronbach alpha is email marketing (0.842), social media marketing (0.787), online advertising (0.751) and mobile marketing (0.720) which is an excellent result (see Table 1).

Exploratory Factor Analysis

The KMO and Bartlett's test was led for assessing the examining sufficiency. The Kaiser-Meyer-Olkin test is a sphericity check. It could be proportion of testing sufficiency that is proposed to analyze the case to factors quantitative connection for the examination. In most instructive examinations and business, KMO and Bartlett's test assumes a pivotal part for tolerating the ampleness of test. While KMO goes from 0 to 1, the worldwide acknowledged list is 0.5. The Bartlett's trial of sphericity should be under 0.05 (Peri, 2012). The KMO Bartlett's test connects with the significance of the review, subsequently shows the dependability and legitimacy. Kaiser-Meyer-Olkin proportion of inspecting sufficiency was viewed as 0.856 and the Bartlett's trial of sphericity was viewed as 0.000 (See Table 1). This makes the example of this study satisfactory for factor examination. Thus, the instrument was suggested for additional review.

Table: 2. KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.771
Bartlett's Test of Sphericity	Approx. Chi-Square	3932.958
	Df	120
	Sig.	.000

Factor Analysis – Principal Component Analysis

The 16 statements relating to digital marketing were factor examined utilizing head part investigation with Varimax pivot. As obvious from the Scree plot (See Figure 1) which levels off to the investigation and a straight diminishing example, three central point were evoked. Each element contains factor loadings more prominent

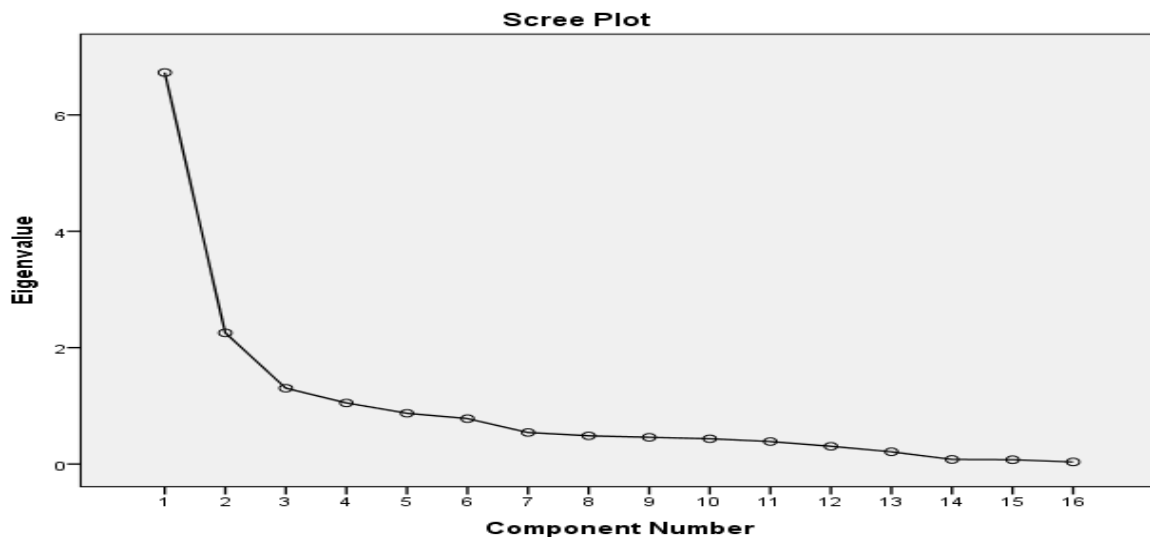
than 0.05. These four separated factors made sense of a complete cumulated fluctuation of 70.843%. The principal factor made sense of 22.104% of fluctuation and second element which portrayed a difference of 21.033%, third element which portrayed a difference of 15.577% and fourth element portrayed a difference of 12.129%.

Table: 3. Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	6.728	42.051	42.051	6.728	42.051	42.051	3.537	22.104	22.104
2	2.254	14.086	56.138	2.254	14.086	56.138	3.365	21.033	43.137
3	1.303	8.144	64.282	1.303	8.144	64.282	2.492	15.577	58.714
4	1.050	6.561	70.843	1.050	6.561	70.843	1.941	12.129	70.843
5	.872	5.452	76.295						
6	.780	4.876	81.171						
7	.541	3.383	84.554						
8	.485	3.032	87.586						
9	.459	2.872	90.458						
10	.435	2.716	93.174						
11	.387	2.419	95.593						
12	.305	1.908	97.500						
13	.210	1.315	98.815						
14	.079	.493	99.309						
15	.074	.465	99.774						
16	.036	.226	100.000						

Extraction Method: Principal Component Analysis.

Scree Plot



Rotated Component Matrix

Table: 4. Rotated Component Matrix^a

Statements	Component			
	1	2	3	4
Emotional appeals makes Ads effective than rational appeals in Ads.	.846			
Slogan & song make advertisement effective and memorable than annoying in Ads.	.815			
Online advertising promotes undesirable values in our society	.759			

The use of smartphone technology will have an overall positive impact on its users	.722			
Online advertising results in better products for the public.	.632			
Comparative Ads effective than non-comparative Ads	.586			
Internet marketing is useful		.807		
Only for selected products and services internet marketing will be successful.		.793		
It is immaterial whether it is industrial products / consumer products, internet marketing can be used successfully		.769		
Internet marketing will surely grow		.748		
Internet marketing improves the brand image of the Company or products or both.		.636		
Smartphone is more than the a normal mode of communication in today's world			.827	
Advertising affects your choice.			.717	
Smartphone device will be preferred by maximum consumers in near future			.634	
Online advertising helps to raise our standard of living.				.869
Online advertising is essential.				.853

Regression Analysis

Straight relapses were figured at 95% certainty stretch (0.05 edge mistake) to show the various direct connections between the autonomous and subordinate factors of the review.

Coefficient of Determination (R²)

Table 4 addresses that the coefficient of relationship (R) is positive 0.583. This intends that there is a positive connection between's effect of digital marketing key attributes on purchase decision of customers. The R square indicates that 64.2% of purchase decision of customers. The adjusted R² however, shows that 63.5% and Durbin-Watson measurement esteem is 1.893 It is nearer to the standard worth 2. In this way, that the supposition has in all likelihood been met.

Table: 5. Model Summary						
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson	
1	.583	.642	.635	1.274	1.893	
a. Predictors: (Constant), Mobile marketing , Email marketing , Online advertising , Social media marketing.						
b. Dependent Variable: Purchase decision						
Analysis of Variance						
Table 6 shows the significance is 0.000 which is < 0.05 shows that the model is measurably huge in anticipating how digital marketing key attributes on purchase decision of customers. The outcomes additionally show that the autonomous factors are indicators of the reliant variable.						
Table: 6. ANOVA ^a						
Model	Sum of Squares	Df	Mean Square	F	Sig.	
1	Regression	82.639	4	20.660	13.081	.000 ^b
	Residual	502.228	318	1.579		
	Total	584.867	322			
a. Dependent Variable: Purchase decision						
b. Predictors: (Constant), Mobile marketing , Email marketing , Online advertising , Social media marketing						

Regression Coefficients

From the Coefficients table (Table 7) the regression model can be derived as follows:

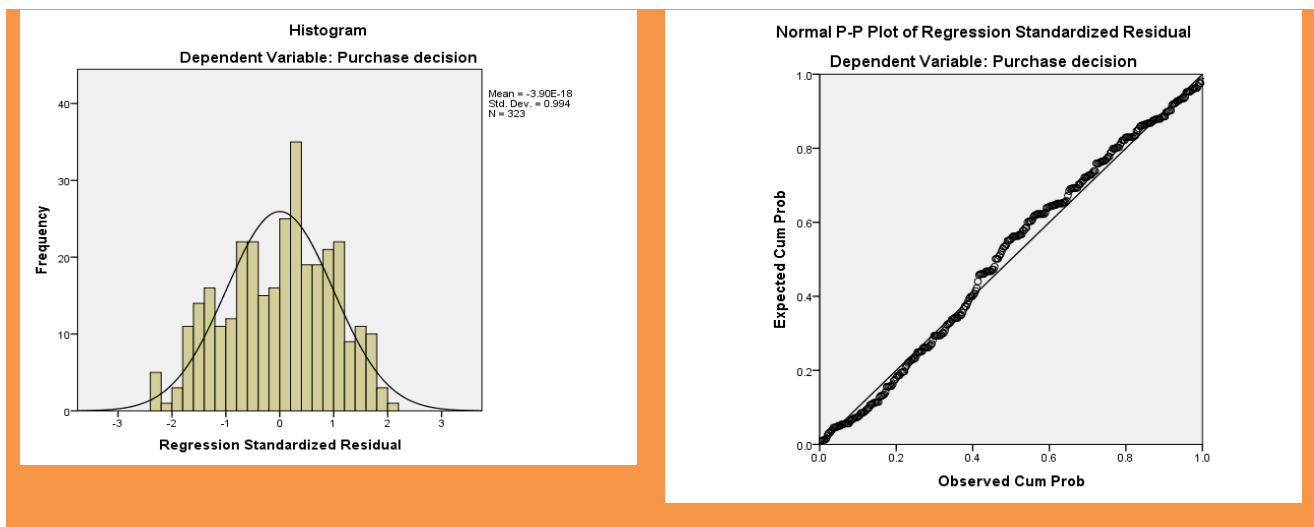
Y = 1.581 (Constant) + 0.256 (Email Marketing) + 0.191 (Social Media Marketing) +0.270 (Online Advertising) + 0.124 (Mobile Marketing)The table 7 reveals that all the independent variables (Email Marketing, Social Media Marketing, Online Advertising and Mobile Marketing) have a positive effect on purchase decision of customers. The most influential variable is with a online advertising regression coefficient of 0.270 (significance= 0.000, 0.040, 0.001 and 0.000). According to this model when an independent variable value is zero, purchase decision of customers will have a score of 1.581.

Table: 7. Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.581	.310		5.105	.000
	Email Marketing	.314	.069	.256	4.573	.000
	Social Media Marketing	.250	.122	.191	2.060	.040
	Online Advertising	.275	.084	.270	3.279	.001
	Mobile Marketing	.169	.089	.124	1.891	.000

a. Dependent Variable: Purchase Decision.

Histogram and Normal P-P Plot



The relapse buildup appropriation is checked for normality by utilizing histogram and probability plot graph and viewed as agreeable as in Figure 2. The relapse variate is found to meet the supposition of normality.

SUGGESTION

The study found that online advertising, mobile marketing, email marketing and social media marketing are impacting significantly the purchase decision of customers. Therefore, marketers should focus on the above factors to increase purchase decision of customers.

CONCLUSION

The study investigated the impact of digital marketing key attributes on purchase decision of customers. Concluded that online advertising had the highest impact on the purchase decision of the customers followed by mobile marketing, email marketing and social media marketing.

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IMPLEMENTATION OF LABOUR LAWS IN INFORMATION TECHNOLOGY INDUSTRY IN BENGALURU

¹Prof. H N Anuradha and ²Prof Dr. M R Ranganatha¹Assistant Professor, TOCBM, Bangalore²Director, SMART ACADEMY, Bengaluru**ABSTRACT**

Labour organizations play a pivotal role in the formation and implementation of Labour laws and regulations to protect the employees' rights and interests. Most of Laws are applicable only to organized form of employment and majority of the employees are unaware of their benefits. In India, workers of the Information Technology industry who represent one of the most sophisticated forms of workplace are also unaware of the benefits of many Labour laws due to the exemption of the industry from applicability of significant Labour laws. This paper attempts to examine the nature of labour regulations in Bengaluru and their prospective applicability to the Information Technology industry. Labour law also known as employment law is the body of laws, administrative rulings, and precedents which address the legal rights of, and restrictions on, working people and their organizations. As such, it mediates many aspects of the relationship between trade unions, employers and employees. In other words, Labour law defines the rights and obligations of workers, union members and employers in the workplace. The objective is to examine conditions of work in the IT industry and discuss their variation across gender and other socio-demographic characteristics. The concept of decent work has been used to examine the actual working conditions of workers in the IT industry. Data has been collected from selected IT employees using sampling method and the results have been used to discuss the deficiencies in the work conditions given the existing labour regulations.

Keywords: Labour Laws, Employment, Information Technology, Industry, Employees rights.

INTRODUCTION

Labour law arose due to the demands of workers for better conditions, the right to organize, and the simultaneous demands of employers to restrict the powers of workers in many organizations and to keep labour costs low. Employers' costs can increase due to workers organizing to win higher wages, or by laws imposing costly requirements, such as health and safety or equal opportunities conditions. Workers' organizations, such as trade unions, can also transcend purely industrial disputes, and gain political power - which some employers may oppose. The state of labour law at any one time is therefore both the product of, and a component of, struggles between different interests in society. The purpose of Labour legislation that is adapted to the economic and social challenges of the modern world of work fulfills three crucial roles: It establishes a legal system that facilitates productive individual and collective employment relationships, and therefore a productive economy; By providing a framework within which employers, workers and their representatives can interact with regard to work-related issues, it serves as an important vehicle for achieving harmonious industrial relations based on workplace democracy; it provides a clear and constant reminder and guarantee of fundamental principles and rights at work which have received broad social acceptance and establishes the processes through which these principles and rights can be implemented and enforced. Our Constitution provides some basic rights to the workers by enacting labour laws under various Acts. Indian labour laws generally divide the industry into two groups; Factory and Shops and Commercial establishments. IT industry comes in the category of Shops and Commercial Establishments and is thus not governed by the laws applicable to Factories. Being an industry which came up in the early 1990s after the new economic reforms, IT industry in India especially in Bengaluru has long been exempted from labour regulations in order to facilitate its rapid growth and competency in the global market. Although this is a sound argument in the wake of our developing economy struggling to sustain and expand economic growth in post-recession period, yet it needs to be examined whether the burden is not being borne by the industry's labour force. Many IT leaders agree with the view that labour regulations as such are not a requisite for them because of its flexi-time work culture and globally standardized workplace. In fact, there has been a proposal from the employers to allow them to formulate and regulate their own employment and labour policies. Interestingly, this issue has been dealt with rigor and interest in some of the studies highlighting the malpractices that are widely prevalent in IT industry to counter such proposals. 'Decent' work is a revolutionary agenda of International Labour Organization and requires a comprehensive set of indicators to assess it objectively. With the help of selected indicators, provision of decent work can be assessed in different ways in IT industry. Contemporary research in the area of decent work has focused on assessment of actual conditions of work in various sectors of an economy and developed appropriate methodologies for measurement of decent work. It is worthy to be noted that an

assessment of the gap between what are the actual working conditions and what need to be the ideal working conditions of a particular sector needs to be undertaken and given importance so as to understand the systematic flaws in theory and practice. Recent studies on the current status of decent work post Covid in the IT industry of Bengaluru have unfolded the real picture. The study is conducted using the following broad indicators of decent work at micro level :- Adequate earnings and productive work, stability and security of jobs, decent hours, safe work, work-life balance, fair treatment at employment, social security, social dialogue and complacent work. Measurement of decent work helps to understand the actual working condition in industries and such results can be used to examine the applicability of a country's labour laws in protecting the interests of the workforce.

LIMITATIONS

The study is relevant to the employers and employees of selected IT industries in Bengaluru and the data is collected between January 2022 to April 2022 only

OBJECTIVES OF THE STUDY

This paper has three broad objectives with respect to applicability of Indian Labour laws in the IT industry.

1. To know the applicability of present labour laws pertaining to employees working in IT industry in Bengaluru.
2. To analyze various conditions of work applicable to employees in IT industry in Bengaluru.
3. To examine the differences in conditions of work between male and female workers.

A discussion about the possible solutions to the existing problems among workers marks the end of the paper.

Conceptual Review: - Workers' Rights in India

In this paper an attempt is made to examine the rights of workers in India and to what extent they are being used in the IT industry. In majority cases these rights are directly or indirectly discouraged by the IT organizations. On the other hand most the workers are not aware of their rights which call upon for the need of their rights. The awareness programs have to be organized at regular intervals in all IT Organizations. In India Judiciary has taken enormous effort to ensure delicate balance between Freedom of Speech and Expression and Reasonable restriction. It has pronounced several land mark judgments. The essence of free speech is the ability to think and speak freely and to obtain information from others through publications and public discourse without fear of retribution, restrictions or repression by the Government. The Article 19 (1) of Indian constitution provides 6 fundamental rights in the nature of freedoms which are specifically summarized with sub-clauses of Article 19 (1) as under (a) Freedom of speech and expression; (b) Assemble peaceably and without arms; (c) Form associations or unions; (d) Move freely throughout the territory of India; Reside and settle in any part of the territory of India; and (f) Practice any profession, or to carry on any occupation, trade or business. Thus, article 19(1) (a) of the Constitution of India states that, "all citizens shall have the right to freedom of speech and expression". This fundamental right gives the freedom to the worker to form a group and organize regular meetings to discuss various issues pertaining to workers' development and welfare. The IT industry does not discourage its workers to form trade unions or formal worker unions about they are not functioning as per their objectives for which it is registered. In majority of the IT industry's the Trade Union are not registered. The characteristics of the employees need to be analyzed to understand as to why they do not form trade unions. First of all, workers are of relatively younger age group, highly educated and technically qualified and skilled coming from diverse regions of the country.

a. Right to Freedom from Discrimination

This right entitles the worker to be treated fairly in all the spheres of his or her work life and not to be differentiated on the grounds of gender, caste, religion, race or circumstances. Recruitment practices in the IT industry are generally based on academic performance and interviews at entry-level. Promotions depend on performance appraisals which are subject to inter-personal relations between the employee and their management. Instances of discrimination on the basis of gender, caste, religion and even paternity/maternity leaves have been found in IT industry. Most of the companies do have grievance cell where employees can register their grievances. However, it is left to the organization to take a suitable action in each case. The grievances have to be heard.

b. Right to Acquire Skills

Sustenance in IT industry requires an employee to constantly upgrade his technical skills. In doing so, an employee needs to upgrade his/her educational qualifications, knowledge, skills, statistical knowledge and the organization needs to provide maximum support to the employee to upgrade the same. This includes organization providing skill specific training, organizing workshops and seminars for knowledge up-gradation,

financially supporting employees in attending workshops/seminars/educational classes elsewhere. This right enables an employee to improve his/her productivity which is directly beneficial to the organization. In India, many IT companies do provide skill-specific trainings to the new employees and also allow them to pursue courses/programs to upgrade their skills subject to some specific conditions. This includes adopting exit-restricting policies so that the organization benefits from the acquired knowledge and expertise of the employee.

c. Right to Security of Work and Income

Right to security of work and income enables the worker to have access to work which is stable and gives adequate income. Security of work implies absence of risk of losing job in the near future and transparency in the termination policies. Any type of work that gives stability and security of work to the employee is likely to increase his/her productivity which is again directly beneficial to the organization. IT industry generally provides contractual employment to its employees where in contracts are of long-term nature i.e. greater than 3 years and provides higher incomes compared to other industries hiring the same type of employees.

d. Labour Regulations and India's IT Industry

The role of a State government is very important in deciding application of Labour laws to different industries. In Karnataka, especially in Bengaluru, this is better known as the IT hub of the country recently renewed the exemption of the IT industry from labour regulations. On the other hand, its neighboring State Tamil Nadu has recently given a nod to formation of labour/trade unions in the IT sector receiving mixed responses from the employer and employee community. Tamil Nadu has allowed this industrial sector to be covered by Industrial Disputes Act 1947, which allows formation of trade unions and grievance address mechanism. This move has come in response to the dismissal of around hundreds of employees in an IT industry which led to the formation of an employee Union known as IT employee's Union. Critics are of the view that the IT industry does not operate in the same manner as the manufacturing sector and so does not require formation of trade unions. It has also been said that formation of trade unions was never stopped/discouraged and as the industry ensures good conditions of work and takes care of employee's needs, the employees never chose to form unions on their own. Let us now take into consideration the labour regulations in Bengaluru with respect to IT industry and how far they have been successful in meeting their objectives.

Industrial Employment (Standing Orders) Act was passed in 1946 to streamline the functioning of organizations and to emphasize written clarification of what is expected and what not from employees. This Act requires the employer to have a clearly defined demarcation of roles of workmen whether they are permanent, temporary, contractual, probationers or apprentice. Industrial Employment (Standing Orders) Act applies to all organizations employing 100 or more workers and requires transparency in the matters of providing information related to working hours, number of holidays pay-days, wage-rates, shift-working, attendance and late coming norms, leaves, rights and liabilities of the employer in case of closure or reopening, transparency with respect to termination of employment, rules pertaining to suspension, dismissal, misconduct, formation of a grievance redressal mechanism and information about office premises. In Karnataka it has exempted the Industrial Employment (Standing Orders) Act in IT industry as per the notification dated 24th January 2014. The exemption is subject to the terms and condition that these establishments constitute an internal complaints committee as per sexual harassment of women at workplace, 2013, Grievance redressal committee, intimates the jurisdictional labour commissioner regarding any disciplinary actions taken and about service conditions of employees. The exemption of this Act reflects in the working of the industry. In IT companies, there is no clear demarcation of roles and functions and in many cases the roles of the employees are overlapping. As the roles assigned to old and new employees are blurred, it reflects in their salaries too.

Industrial Disputes Act 1947 provides provision in respect of promotion of measures for securing and preserving cordial relations between employer and employee, investigation and settlement of industrial disputes, prevention of illegal strike and lock-outs, relief in matters of lay-off and retrenchment and collective bargaining.

Contracts Labour Act applies to all those IT industries that are using services of 20 or more employees as contract labour in the preceding twelve months. The Act requires making arrangements for the health and welfare of contract labour, ensure timely payment of wages, appointment of inspecting staff, etc. It is interesting to note that IT industry can be brought under this act as in many cases the employees are sent to the on-site premises to deliver the required work. It is then open to debate whether an IT company is a contractor in that case who is using the services of its employees to cater to the requirements of their client.

The Payment of Gratuity Act passed in 1972 gives a statutory right of gratuity to all the employees in addition to any retirement benefits that already exist and are available to the employees. This Act has been enacted as a measure of social security and its significance lies in the acceptance of the principle of gratuity as a compulsory

statutory retirement benefit. It provides financial assistance to post-termination or retirement period. It is applicable to factories, shops or establishments employing ten or more persons in the preceding twelve months, any shop or establishment that has once been governed by the Act. Thus, the Act is wide enough to bring the entire organized sector within its scope. However, in case of IT industry, this Act is applicable to only those employees who have worked for more than 5 years in a company. In the recent years, attrition rate in the industry has been very high due to which less proportion of employees are eligible for gratuity in the companies. However, this Act continues to bring financial relief to the employees eligible for the scheme in IT companies.

The Trade Unions Act 1926 has made it legal for any seven or more employees to combine in a trade union. It requires the trade union to be registered under this Act for entering into collective bargaining or negotiation with the Management. The names of the office bearers are made known in order to enable social dialogue. The general purpose for the formation of a trade union should be ensuring welfare of the employees. Although the Act is applicable to IT industry, yet it has not found many IT industries. Voice from different class of employees have however led to formation of unions like UNITES (Union for Information Technology and Enabled Services). A survey found that more than 70% of the employees in the IT industry are in favor of trade unions. As per the study, organized trade unions would help in rationalizing the work hours, compensation and other issues in a much better manner especially for fresher's working in the industry who are the most exploited ones in such matters. It is interesting to argue that why the employees of this sector have not formed unions in their organization. The industry has come up mainly after the economic reforms of 1991 which promoted liberalization, privatization, globalization and end of bureaucracy.

Employees' Provident Funds and Miscellaneous Provisions Act, 1952 has been enacted to provide financial assistance for the future of an industrial worker after his retirement or early death. It encourages employees to save some proportion of their income regularly and mandates the employer also to contribute 12% of the wages, dearness allowance, etc if the establishment employs 20 or more persons and 10% of the basic wages, dearness allowance if less than 20 workers are employed. A part of the contribution is remitted to the Pension Fund and the remaining balance remains in Provident Fund Account. As IT industry generally employs 20 or more persons, they need to adhere to this Act and provide PF facilities to its employees.

The Maternity Benefit Act 1961 aims to regulate of employment of women employees in certain establishments for certain periods before and after child birth and provides for maternity and certain other benefits. The Maternity Benefit Act is one of the best steps taken by the government to protect women employment while they experience their Maternity. Maternity Benefit is basically the benefit of getting full paid absence from work. As per the government rules, every establishment having 10 or more employees need to apply this act in the organization.

The payment of Bonus Act, 1965 aims to regulate the amount of bonus to be paid to the persons employed in establishments based on its profit and productivity. The act is applicable to the whole of India for all establishments which had twenty or more persons employed on any day during the year.

Labour legislation that is adapted to the economic and social challenges of the modern world of work fulfills three crucial roles: It establishes a legal system that facilitates productive individual and collective employment relationships, and therefore a productive economy; by providing a framework within which employers, workers and their representatives can interact with regard to work-related issues, it serves as an important vehicle for achieving harmonious industrial relations based on workplace democracy; it provides a clear and constant reminder and guarantee of fundamental principles and rights at work which have received broad social acceptance and establishes the processes through which these principles and rights can be implemented and enforced.

RESEARCH MATHODLOGY

The study was conducted on measurement of decent work in IT industry which has given the real picture of work conditions in the IT industry. Data was collected from 100 IT employees working in IT companies in and around Bengaluru City only. The research methodology comprised of sampling technique. Employees were requested to fill a questionnaire about their work conditions and the results of the study are listed as under.

DATA ANALYSIS

For the purpose of this study the following parameters were considered and the questionnaire was prepared and administered to the 100 IT employees working in different location in Bengaluru. The parameters are Conditions of work, safety of work and impact on health, adequate wages, harassment at workplace, nature of employment, amenities at work place, leave entitlements, discrimination at work-place, social security, workers union, decent work in IT Industry. The responses given by them are shown in the Table 1:

Table-1: Responses from the IT employees

Conditions of work in India's IT Industry	% of employees who faced it
8 hours	20
8 to 10 hours	50
10 to 12 hours	20
12 hours and above	10
Safety of work and impact on health as against 100 employees	
Eye-strain/weak eye-sight	70
Back Pain	75
Obesity	75
Depression and Insomnia	40
Spondylitis	55
Blood pressure	55
Insulin deficiency	45
Constipation	60
Bronchitis	65
Headache / Migraine	70
Wages and salaries	
% of employees who faced it	
Adequate	70
Not adequate	20
Delayed payments	10
Harassment at Work place	
Physical harassment	6
Stalking	5
Offensive phone-calls or email messages	6
Exclusion/isolation from professional activities	20
Persistent negative attacks on personal or professional	20
Deliberate or unsolicited physical contact	6
Manipulation of personal/professional reputation	5
Persistent undermining of work	6
Unreasonable or inappropriate monitoring of performance	5
Setting objectives with unreasonable targets	5
Questions or insinuations about private life	5
Unreasonable refusal of leave	5
Biased perception	6
Nature of Employment	
Regular	70
Contractual	30
Amenities at work place as against 100 employees	
Use of mobile	80
Grievance Cell	30
Use of Crèche	20
Leave entitlements as against 100 employees	
Personal cause	40
Medical purpose	30
Sometimes	30
Discrimination at work-place	
Discrimination	40
Race and gender	40
Paternity/maternity	20
Social security	
PF for employees	70
No PF for employees	30

Workers union	
Permission for formation	30
No permission for formation	60
Oral permission	10
Status of decent work (Likert Scale)	
1	30
2	20
3	25
4	15
5	10

RESULTS & DISCUSSION

Major issues remain in the world of work especially in developing countries like India which need a silent thought-over, action-plan and fair implementation of labour laws and regulations. The foremost creation of employment opportunities vis-a-vis provision of decent work is necessitated. Creation of employment opportunities in the country is a secondary task for IT companies which employs roughly 12% of workforce, because of the vulnerability of global trends. IT companies, during Covid and in times of recession shown decline in projects and availability of work. Provision of decent work has therefore taken a backseat in this industry and at times it also tends to erode job security in the minds of existing employees. In reality, there is no trade-off between employment creation and decent work because providing decent working conditions is not a costly affair; rather it just requires some consolidated efforts from the management front. Application of labour laws to the IT industry can legally protect the interests of the IT employees. There is a need to make social dialogue mechanisms more effective. Decent work, both economic and social dialogue is inter-linked as the latter ensures the freedom of opinion. Social dialogue is a basic labour right. It is important that employers in any industry provide an enabling environment at their workplaces to encourage (or at most not discourage/bring hurdles in) setting up of social forums, invite participation from employees in decision-making, give them freedom to unite and bargain. IT employers were found to be providing such mechanisms at their workplaces and also on social networking sites. For ensuring fair employment and promotion practices, employers have revealed that the attributes which they examine in a prospective employee in the order of their preferences are work experience, logical and analytical ability, academic record, educational institution, family background, nationality/race, age and gender. This indicates a decent recruitment practice. The most common modes of recruitment were found to be employee-referrals, job advertisements and campus recruitments in the decreasing order of their rankings. Factors highly related to promotions in the company were found in the decreasing order of their preference to be work experience, number of projects handled, age/seniority, academic record, add-on qualifications and gender. If all the IT companies effectively follow such recruitment and promotion policies, then fair treatment at employment can add to the reputation of the industry too, thereby uplifting its image at the global level. Decent work provision in Bengaluru requires strong political and legal support system that ensures that there are no loopholes being taken advantage of by the employers. Several issues as discussed above are the hurdles in the way of decent work provision. It is so because broader problems require the intervention of the policy-makers and law-enforcement department which is a long and tedious process. It is important to make this process employee-centric and devise mechanisms for efficient and speedy solutions for the affected workforce. It also needs to be understood that decent work is a milestone in social upliftment and economic development. IT industry that provide decent work are in truest sense developed economies as by doing so they are creating a better world for the youths. The deficits in decent-work provision hold a bearing on the part of the strategists and management of the industry on one hand and the policy-makers as well as law regulation authorities on the other hand. The factor analysis of the various indicators of decent work and their sub-indicators have thrown light on few issues that can be easily dealt with and give way for adoption of decent work practices in any industry.

CONCLUSION

In India IT industry no matter is one of the most successful emerging industries of Indian economy in the century. Decent work conditions in IT industry are somewhat similar to that of Business Processing Management (BPM) and other ITES industries too. The technical analysis of the study has exposed various dimensions of decent-work deficits in the IT industry established in Bengaluru which can be addressed by reformulating strict employment policies from time to time. For the adoption of decent work practices, following points may be noted: - An employee must be considered as a human being first and every human being has aspirations in life related to family, career, education or self. Work which meets the aspirations of the employee can be rightly considered as decent as it gives a sense of social and economic fulfillment. To be able

to provide such an environment, IT companies need to become sensitive towards their workforce and their interest areas as well as their specializations and then assign or distribute work accordingly. IT companies need to evolve mechanisms for social dialogue between the employees of all the hierarchy along with the top management. In order to inculcate the sense of belonging among the employees, the management needs to follow the policies promoting employees participation in the decision-making process. Every effort must be needed to ensure that there is no gap between the employees and the employers as far as social dialogue is concerned. Security and stability of employment for an employee is a critical constituent of decent work. Measures adopted by the companies to tackle high attrition rate have been enactment of employee-friendly and family-friendly employment policies, active policies for decent work, improved employer- employee relations and by giving salary hikes, perks and promotions. In-depth questions about attrition rate gave the view that attrition was highest at the lower level. Retrenchment based on appraisals and tied to business cycles erodes the job-related security in the minds of IT employees and encourage them to search for better jobs on-the-job leading to their eventual exits and high attrition rates of the companies. Hence before dispensing with the services of any employee, companies should give advance notices to the concerned employees so that he/she can find an alternative job during that period rather than suffering a sudden loss of income. It is to be noted that retrenchment can take place due to two reasons - either due to uncertainty of project availability or due to the mismatch between constantly changing technology and skills of the employees. As the requisite skills in the industry are dynamic in nature, employees have to constantly update their skills and knowledge to secure their employment safe. Employers can confront such retrenchment-related issues by taking concrete steps to impart training, research and development skills to their employees which would further enhance the productivity of the industry and control the attrition rate too. Meanwhile after retrenchment / resignation by the employee from the company's post, the provision of social security benefits such as PF amount, etc. should be made available at the earliest to the employee. The flexi-work culture of the industry needs to be set in a way that the duration of working hours does not get extend beyond 8 hours daily. This may extend only under exceptional cases with due financial protection. To optimize flexi-time policies, employers may provide work-from-home options which would save travel-time enhance productivity and facilitate the employees towards maintenance of work-life balance. Adherence to stipulated duration of working hours will bring about a harmony in the work- life balance of the employees which in-turn will enable them to spend more time with their family, society and self. Moreover, it will also minimize the impact on health conditions of the employees' vis-à-vis this will support reduction in pollution in the Metropolitan city due to traffic. This is so because a vast majority of the IT employees have been found to be working for longer hours which have direct implications with work-life balance and their health in the long-run. Employee-friendly policies need to be devised wherein employees are given a room for participation in decision-making process of the companies at various levels. In this manner, the employee forums can be made more effective. Constitution of grievance cell at company level will be a positive step to reduce instances of favoritism, nepotism, and other modes of discrimination to the employees. Since majority of employees faced harassment at their workplaces, effective monitoring cell should be set up to prevent and resolve the complaints relating to harassment matters. As there is a direct linkage between work-life balance and higher productivity, work-life balance enabling policies need to be devised at all level. Facilities like crèche, sick child leave, and access to phone for personal use, recreational room, etc. will help the employees to balance their work and personal life commitments. To sum up, there is scope for improvement in the work conditions of IT industry Bengaluru by bringing it under the ambit of labour regulations.

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MODERNIST PATRIARCHAL DISCOURSE IN SYLVIA PLATH'S SELECTED WORKS

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ABSTRACT

The present paper entitled 'Modernist Patriarchal Discourse in Sylvia Plath's Selected Works' looks closely at the way canonical Modernism tried to preserve its gendered aesthetic bias by shutting off the voice of the woman writer. The paper examines with especial attention the short stories, novel and prose writings of Plath. It shows how in these writings Plath is highly alert to the imprisonment of the woman poet in the 'bell-jar' (Plath) of male formalistic objectivity. Primary aim of this paper is to identify the split within a woman between her biological entity and her literary self and explore how the latter is found to disintegrate among the commonly accepted aesthetic ideals that are relegated to modernism and are often used to define Modernism. For methodological purpose, this paper refers to the much celebrated, anthologized and influential essay 'Tradition and Individual Talent' in which T. S. Eliot rooted the individual author in the soil of tradition. This move keeps the woman writer as an outsider to artistic experience, for the tradition hardly allows space to the relatively new figure of the modern woman writer. Additionally, I have employed concept of Virginia Woolf, Edith Sitwell, Djuna Barnes and Gertrude Stein for a separate tradition of woman's writing, a history and future of literary forms and preoccupations particular to woman's minds and bodies. It alludes to Woolf's vision that women should not collaborate with the patriarchy, but should form 'societies of outsiders' to resist the configuration of male politics.

Keywords: Modernism, patriarchy, gender aesthetic, self and other.

INTRODUCTION

The diverse practices and contrasting theories that flourish from the second half of the nineteenth century and continue till the second World War contain movements such as Symbolism, Imagism, Futurism, Feminism, Cubism, Vorticism, Surrealism, Dadaism, Anarchism to name only a few. An examination of their manifestos reveals irreconcilable differences of perspectives and priorities. A homogenization of these critical categories occurred in the 1950s by virtue of what Raymond Williams calls 'the post-war settlement and its accompanying, complicit academic endorsements' (36). This selective canonization was thereafter known as 'High Modernism' and the essence of this Modernist impulse was the spirit of formal experimentation. Indeed an interest in language would seem to define the Modern and certain linguistic practices as evident in the work of Eliot, Joyce, Pound and Williams would characterize Modernism.

Hugh Kenner's (49-61) reading of Modernism uncovers its classical roots and recovers in the contemporary word the echoes of an historical and patriarchal past. The men of 1914 were schooled in the classics; men of the previous generation, of Henry James era, had participated in the 'classical Renaissance' that began in the 1870s with Heinrich Schliemann's discovery of Troy. Pound, Eliot and Joyce shared – as Kenner points out – knowledge of these ancient languages and cultures. These men participated in an educational process that demanded knowledge of the Greek and Roman cultures whose classical languages would be addressed by Modernist linguistic experiments. Another reading of the historical situation of Modernism, defines it specifically as post-World War One phenomena, emphasizing the role of war in creating a psychology of despair. Modernism is grounded in the ashes of burnt out rationalism and positivism. Against a bankrupt culture, argues Susan Stanford Friedman, only through the agency of language could culture be remade:

The search for order and pattern began in its own negation, in the overwhelming sense of disorder and fragmentation caused by the modern materialist world. The artist as seer would attempt to create what the culture could no longer produce: symbol and meaning in the dimension of art brought into being through the agency of language, the word or logos of the twentieth century. (Friedman, *Psyche Reform* 97)

It is possible to gauge the psychic need of a group, age, writer from the aesthetic style, and Modern aesthetics relied upon the suppressive and inorganic mode of 'abstraction' rather than that of a self-expressive and organic 'empathy'. In rooting the individual author in the soil of tradition, T. S. Eliot delineates women as outsiders to the artistic experience. For, this tradition hardly allows any space to the woman artist who is a relatively modern figure. Although Ezra Pound's commentaries on experimental writing spurred the work of his contemporaries, it was the public speeches of T. S. Eliot and his editorial direction of the *Criterion* that introduced the tenets of 'High Modernism', to a larger reading public. Peter Ackroyd comments that in *The Sacred Wood*

Eliot provided literature with an order and certainty all the more potent because these were the qualities lacking in social and political life after the First World War: the older generation has lost its authority, and the younger had not found any... But Eliot's stance was, in the end, more influential. He reaffirmed that the status of literature, as a way both of understanding the larger culture and of disciplining private feelings and experience. (Ackroyd, T.S. Eliot: A Life 107)

One of the seminal moments of establishing this patriarchal claim is the moment of Freudian psychoanalysis, which though an essentially male Modernist's cultural theory, made a complex deployment of gender. But to understand the full implications of the Freudian ambivalence on gender, one would have to read him alongside the revisionist version of Luce Irigaray. In Freud's oeuvre, the paradox of Modernist femininity is most stark. It is common knowledge that Freud developed his theories of psychoanalysis largely working on female patients. Drawing on Charcot's treatment of female hysterics in late 19th century Paris, Freud subsequently worked with his own female patients. Symptomatically true to Modernist patriarchal discourse, the entire corpus of Freud's theory relegated women to an inferior status. In the central Freudian Oedipal nuclear family drama of the psyche, which is dominated by the son as protagonist and the father as the antagonist, the mother is a passive object of their conflicting desire, and the daughter a near-invisible afterthought. Women are, by Freudian definition, 'castrated', defined by and as 'absence' and 'lack', in the Lacanian-Freudian formulation; doomed to permanent moral immaturity, with a sexuality characterized, when 'normal' as inherently masochistic.

Threatening and arresting – the ambiguity of these two conditional poles pervasively inhabit the male Modernist configuration of the feminine. In Conrad we notice this ambiguity as also in Picasso, arguably the founding father of Modernist Art. The racially 'primitive' is conflated with the empowered working class feminine in Picasso's iconic Modernist work *Les Femmes d'Alger*, 1907. *Les Femmes d'Alger* is a painting of nude female bathers, prostitutes, whose nudity is explicitly sexualized; that sexuality is marked simultaneously by degradation and accessibility to the male viewer/voyeur/customer. It is a radically stylized painting, not only in the harsh discord of his treatment of human figures but in its invention of the vocabulary of Cubism: the overall composition organized by, and the contours of the figures broken into, angular geometric shapes, the three dimensionality or depth illusion of traditional pictorial representation flattened, the figures radically stylized or distorted so as to seem splayed against the surface of the canvas, and the overtly non-realistic conventions, influenced by African tribal masks, in the drawing of the faces.

Les Femmes d'Alger fuses the invention of these Modernist formal practices with representation of an empowered sexual femininity. The female bathers are degraded within dominant convention as nude prostitute, but are transformed here by Modernist form. It was in the painting and repainting of these women that Picasso invented his version of Modernist art. By means of that art, these women become awesome, frightening, magnificent powerful figures. They are figures of Modernist art as the release into new form of the empowered sexual feminine. The figures are just as hideous and distorted as they are powerful and riveting – of that femininity.

Thus we notice a shift in the patriarchal discourse governing the limit conditions of female expressivity within Modernism – a shift from hostile misogyny to a more complex nuanced ambiguity which implicates and is implicated in the other of the feminine. This shift also marks the decline in the emphasis on viewing male and female Modernists as members of divergent literary species, though vigilantly recognizing the effort of the male Modernist to construct its artistic self at the expense of the feminine other. However, one of the key points in this connection is the ambivalence shared by male and female Modernists towards the threat/promise of revolutionary culture and political change within the discursive regime of patriarchal hegemony. The same ambivalence, differently inflected, characterizes the work of women Modernists.

DISCUSSION

Plath writes in 'The Disquieting Muses' about 'the kingdom you bore me to, / Mother, mother,' (The Colossus 21) hinting at an anxiety that Virginia Woolf does not explore in 'Professions for Women', when she declares that writing is in some way the most harmless occupation a woman can pursue. When Plath's mother, Aurelia Plath, produced her Wunderkind, Stein, H. D. Millay, Moore, Barnes and Woolf – many of the major female and mostly feminist Modernists – were publishing; a tradition that was handed down to Sylvia Plath along with that of the major male and mostly masculinist writers. The female Modernists were further divided into a less cultivated group formed by Teasdale, Millay, Olive Higgins Prouty and a more cultured, but presumptuous group, even labelled dangerous by H. D., Stein, Woolf and Moore.

Plath saw herself oscillating between these two, or rather three, unprecedented male and female poles. She clearly expresses her reverence for her 'beloved Yeats', Lawrence, Joyce and Thomas. At the same time there is a hint of rivalry at the declaration: 'I am learning and mastering new words each day, and drunker than Dylan,

harder than Hopkins, younger than Yeats in my saying' (Letters Home 45). About her poems she says they are 'not quailing and whining, like Teasdale or simple lyrics like Millay'. While sending poems to her mother from college, she expresses her admiration for female precursors – 'any resemblance to Emily Dickinson is purely intentional', and 'I get courage by reading Virginia Woolf' (187). She observes that she felt 'very akin to Woolf' (29), and that, 'her novels make mine possible' (98). She was careful to scrutinize the work of women whose sexual habits were at odds with hers: '... I am reading Elizabeth Bishop with great admiration. Her fine originality is always surprising, never rigid, flowing, and juicier than Marianne Moore who is her God mother'. (Kukil, *The Journals* 516)

Plath's stories 'The Wishing Box', 'Dreams' and 'Johnny Panic and the Bible' sum up the double-bind of the woman poet in a male literary arena. 'The Wishing Box' is the comic tale of a young married couple – clearly surrogates of Ted and Sylvia – who meet at breakfast to discuss his dreams which are visions of aesthetic triumph. Agnes, the wife, who has few dreams, mostly nightmares, finds herself 'wrestling with the strange jealousy which had been growing up on her like some dark malignant cancer ever since their wedding night' (Plath, *Johnny Panic* 35) She thinks that 'It was as if Harold were spending one-third of his life among celebrities and fabulous legendary creatures in an exhilarating world from which [she] found herself perpetually exiled, except by hearsay' (36). Agnes tries to restore her 'shaping imaginative powers' by reading novels, cookbooks, home appliance circulars and Freud on the sly, to fortify herself with 'a vicarious dream tale'. Language, however, is the ultimate foil, for the very letters she looks at writhe 'like malevolent little black snakes across the page in a kind of hissing, untranslatable jargon' (40). Ultimately a 'wishing box' of sleeping pills is her only possible escape.

In 'Johnny Panic', however, the female narrator becomes a dream connoisseur. Compared to the innocent poetic dreams of 'The Wishing Box', the nightmares of 'Johnny Panic' are intricate, metaphysical poems, they are the Plathian nightmares – 'dark glowering landscapes peopled with ominous unrecognizable figures' (36) – that Agnes had rejected in the earlier story. When the clinic director of the Adult Psychiatric Clinic shocks the transgressive dream connoisseur out of her mind, he is doing so because this dedicated transcriber's appropriation of dream books offer a challenge to his authority over them. Sandra M. Gilbert suggests that *Johnny Panic* 'is a revision of one of D. H. Lawrence's most ferociously misogynist tales 'The Woman Who Rode Away'. This stay recalls the misadventures of a bourgeoisie woman who ran away from a miserable marriage only to be captured, tortured and sacrificed by five Indian priests so that they could recapture 'the mastery that man must hold, and that passes from race to race'(Lawrence, *The Complete* 193). Lawrence's story gave Plath a terrifying summary of male Modernist reactions to the transgressing female writer.

The entire opus of Plath's works – which includes her short stories, novel, poems, journal and letters – is haunted by the sense of spectacle. The artistic purpose is constantly belied from the angle of the dispassionate observer. It creates the simultaneous sense of being both the observer and the observed. This, in fact, is the concept of the 'bell jar' - where one can not only be the eternal observer condemned to isolation, but one also has to constantly survive with the sense of being under observation. Plath herself connects this exile with her traumatic breakdown in the summer of 1953, which she felt was like a barrier between her and the normal world. However, this is the pathological situation of the woman-artist who is artist, observer and the observed at the same time.

Her letters indicate that she wrote prose with increasing difficulty though initially she dabbled with the idea of being a journalist and story writer, a fact explored in her autobiographical novel *The Bell Jar*. She did participate and win accolades in story writing competitions. The story and novel seem more suited as genres for female protest. She herself acknowledges Virginia Woolf as a source of inspiration. The stream-of-consciousness technique allows a form of writing which records details of the objective and subjective whims without any discrimination – which allows co-existence without imposing a hegemonic unity or universality. It circumvents the danger of being ensnared in a particular situation. The poem being more exclusive and esoteric in nature is basically rooted in a tradition of male abstraction.

Modernism with its formalistic agenda is, contrary to popular perception, recalcitrant to multiple interpretations. While it pretends to refrain from any subjective comment, it simultaneously throws a challenge to subjective analysis. Precision and order impose the structure of metaphor through impressive images and seem to arrest a metonymical slide of meaning. In 'A Comparison' (1962), Plath Says 'How I envy the novelist!' Talking specifically about woman writers she says, the novelist '...has all the time in the world' (Plath, *Johnny Panic* 13). The poet on the other hand has, 'So little time!' and 'become an expert on the packer of suitcases' (45). Although critics often trace a disjunction between Plath's early prose writings and her mature collection of

poems, the uneasiness of the female writer trapped in her own subjectivity without being granted the privilege of being a subject, can be traced throughout the entire body of her works.

The choice of recording dreams instead of interpreting them is significant in *Johnny Panic and the Bible of Dreams*. Here the analysis and judgement belong to the realm of male abstraction. Dreams, though relegated to the unconscious, are interpreted in terms of a preconditioned formula based on the concept of a fixed other that indirectly condones a monolithic concept of reality. To simply browse through other people's dreams without engaging in any sort of critical enterprise exposes the protagonist of the story to the danger of being judged as mentally unstable. Though the dreams are describe as vivid images, authorial hegemony is ruled out for it is clearly declared that they are 'borrowed' images with no claim to originality. Yet the narrator's experience is highlighted rather than the cohesive identity of the dreamer's and 'Johnny Panic' is the ironic name for a subjective experience. An endless stream of minds trickle into the large lake at night to 'one borderless common reservoir'— this nightmare of the female narrator 'cannot be written'. If 'the Unconscious is structured like language' (Lacan, *Ecrits* 30), it is only possible to copy dreams and not to write them. The narrator declares, 'this is my real calling' (Plath, *Johnny Panic* 4). There is no room for agency in this vast library of dreams. The woman can only gain and illegitimate entry to this dream repertory. The punishment for getting caught is the 'treatment' (6). The narrator claims, 'In our clinic, the treatment doesn't get prescribed. It is invisible'. (Plath, *Johnny Panic* 7)

CONCLUSION

In fact, each and every image of the benevolent individual is based ironically on an inimical homogeneity of established norm. Strangely enough, man or woman, character or person, husband or wife, father or mother, child or parent, virgin or whore, all becomes faces of the inimical other – part of a gendered patriarchy. The conspiracy is all-pervasive. Hence the subject becomes the eternally hunted object in Plath's case this friction or anger does not find release in writing initially, since language being structured and codified, exists a priori to the individual. Identification with the body or the physical realm is hardly a statement for it is an alternative position allowed by the existing cultural mode. On the other hand, abstraction as an exercise is entirely futile as it belongs to the gendered 'other' (Butler, *Gender* 56). It is as if the alternative position is equally mapped and cannot be converted into a privilege.

Holocaust imagery in poems like 'Lady Lazarus', 'Daddy' and 'Mary's Song' have been criticized by poets such as Seamus Heaney and critics like Harold Bloom for being too simplistic in its association with a general category of the oppressed. While Plath's 'Bee Sequence' presents powerful poems that seem to emphasize flight and rebirth from patriarchal restrictions, poems like 'Lesbos', 'Medusa', 'The Tour' and 'Eavesdropper' locate the speaker's private torment and disturbance and 'their metaphorical development in the context of certain social facts' (Dickie, 88). Linda W. Wagner sums up the critical perspectives on Plath over the last twenty years, the 'bitch goddess', 'martyr' and chronically 'mad poet' (*Critical Essays* 207-209) and counters them with the idea of Plath as a culturally determined woman, an idea substantiated by the publications of the *The Ladies' Home Journal*, perhaps one of the most supportable views of Plath is none of these, but rather that of the fifties, caught in the pervasive cultural rise of conformity. Concentrating on the short stories Plath wrote specifically for women's magazines like *The Ladies' Home Journal*, Wagner explores the way they reflect the 'confirming 1950 Patriarchal structure'. (Gilbert, *Critical Essays* 67)

Plath wrote in 'The Applicant' about the new woman of the fifties as 'a living doll, everywhere you look' (Plath, *Collected Poems* 221) substantiated in her story 'The Fifteen- Dollar Eagle'. The ambivalence in Plath is where the narrator is overwhelmed by distaste both at the sight of the blood-stained tattoo made by the male artist and at the sight of the unblemished body of Laura, the tattoo-expert, Carmey's wife. 'Perfection is terrible, it cannot have children' (262) as Plath writes in 'The Munich Mannequins'. She observes in one of her last poems: 'The woman is perfected / her dead body / wears the smile of accomplishment' (272). The use of 'the smile' instead of 'a smile' emphasizes the meaninglessness of such a universal category. The 'perfect' women can only be a corpse. Both in her early stories and late poems the only possible sense of identification for Plath occurs with the dead and ailing. The idiot boy is transformed into the stature of a tragic hero by his accidental death in 'The Daughters of Blossom-Street'. (Plath, *Johnny Panic* 62)

In this hegemonic and monolithic structure of meanings, the woman cannot turn artist through the process of emulation. That is an easy trap. The rebellious suicidal patient in Plath's novel and short stories thus chooses death and silence as the ultimate protest and victory. Her own experiences at a mental hospital, the autobiographical portrayal of Esther Greenwood in *The Bell Jar*, reflect a pathological fear of the inability to perform meaningfully. While under treatment the patient hankers for a normal life and the freedom of choice, but once outside, the sense of exile never seems to release them. The abstract structures of social and aesthetic

norms and the concrete structures of the hospital merge, so that the neat transition from the observed to the observer is never made.

Plath is well aware of being a misfit in a world of forms which, through apparently open to interpretation, absolve the necessity of meaning in art. Unlike the male artist who is absolved of the necessity to communicate meaningfully, by the casual shift to the observer's stance, this change of form does little to reduce her sense of responsibility. Being the literary 'other' she becomes both observer and observed. The sense of irony that masks the subjective 'I' in Modern poetry with a deliberately formalistic agenda, imprisons the woman poet and forces her into a tragic objectivity. The convenient shift from artist to observer in Modern art does little to alter the male gaze and this patriarchal positioning becomes a clever move to wipe out alternative positions and evade all questions of artistic/political responsibility. For the woman-poet, with her newly found political agenda and fresh awareness of a female literary canon, it becomes impossible to be assimilated into this aesthetics of non-commitment. Such an agenda would rob her of her own voice. Under the hegemonic umbrella of post-war literary Modernism, this smothers all dissenting voice with its formalistic regime; the woman artist is exposed to an invisible all- pervasive panopticon. Thus, *The Bell Jar* ends 'the eyes and the faces all turned themselves towards me, and guiding myself by them as by a magical thread I stepped into the room'. (Plath, *The Bell Jar* 234)

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POLITICAL PHILOSOPHY OF Dr. B. R. AMBEDKAR**¹Mr. Praveen Chalawadi Ph.d and ²Dr. S.K. Kallolikar**¹Research Scholar, Department of History and Archaeology Karnatak University Dharwad – 580003,²Research Guide and Professor, Department of History and Archaeology Karnatak University Dharwad – 580003**ABSTRACT**

Dr Ambedkar was not only a learned scholar and an eminent jurist but also a revolutionary who fought against social evils like untouchability and caste restrictions. He was one of our most prominent political and social thinkers, whose ideas on various social and political problems such as caste system, the pernicious practice of untouchability, the emancipation of the downtrodden through political action etc, open up new vistas and horizons. His findings on all these and similar other problems that plague the contemporary Indian society and polity are original and characteristically his own. He delved deep into the Indian social and political history and contributed a good deal to the under-standing of Indian society and polity through his writings. Dr. Ambedkar's main concern all along his life was to fight against this injustice, by all possible and necessary means and to establish a just and egalitarian society. In this article an attempt is made to evaluate his political thought more particularly his political philosophy. It is true that the teachings of the French Revolution, influenced Ambedkar and thus shaped his human and liberal ideology. But his ideology of emancipation of the Dalits and social reconstruction in India was primarily based on the teachings of the Buddha. Over all his political philosophy was based on the teachings of Buddha. The method of study opted in this is historical analysis.

Keywords: Dr. Ambedkar, Government, Democracy, Liberty, Equality and Fraternity

➤ INTRODUCTION

India has produced many a social and political thinker and philosopher in the course of its long history. Among the galaxy of thinkers and philosophers of India, Bharat Ratna Dr. Babasaheb Ambedkar occupies unquestionably the most important place. He "has carved out for himself a unique position in society, Whatever label he wears in future, Dr. Ambedkar is not the man to allow himself to be forgotten."¹ His personal bitter experiences, progressive and liberal Western education, extensive reading and research, wide mass contacts provided him the required perspective, theoretical frame, the depth and dimension for understanding and analyzing any problem, be it social, political or economic. He had an incisive mind and problem-solving skill that always stood him in good stead in his relentless search for truth. Dr. Ambedkar was a rare and curious combination of a scholar, thinker, writer, leader, legal luminary, constitutional expert and a champion of the downtrodden masses.

➤ GOVERNMENT

According to Babasaheb Government, has to execute the role of a welfare agency. It has to guarantee speedy progress and equal distribution of the output of that growth. The role of the government is not restricted to industry only but is expected to be active in the area of banking and insurance. Moreover, the government must also control the agriculture. Government, by owning major industries and controlling agriculture, there will be able to curb economic injustice. In other words, changes of a revolutionary nature are to be brought about through the efforts of the government.

➤ DEMOCRACY

According to Dr. B. R. Ambedkar the most accepted form of government of the world is democracy. His vision about democracy was closely related to his ideology of a "Good Society". He did not leave room for any ambiguity regarding the nature of this ideal. There are two views regarding the democracy one view is that democracy is a form of government where the government is chosen by the people-where government is a representative government. According to this view democracy is just synonymous with representative government which means adult suffrage and periodical elections. According to another view a democracy is more than a form of government – it is a form of organisation of society.

There are two essential conditions which characterises a democratically constituted society.

- absence of stratification of society into classes,

a social habit on the part of the individuals and group which is ready for continuous readjustment or recognition or reciprocity of interests.²

1. To him “democracy” meant much more than a democratic government. Dr. Ambedkar said, “There is one thing which I think is very necessary in the working of democracy and it is this that the name of democracy there must be no tyranny of the majority over the minority. The minority must always feel safe that although the majority is carrying on the government, the morality is not being hurt, or the minority is not being hit below the belt.” He further stated that, “Democracy is not a form of government, but a form of social organisation.”³

➤ **Liberty, Equality and Fraternity**

Ambedkar was deeply influenced by the principles of liberty, equality and fraternity. These form the guiding principles in all of his writings. He visualized a new society based on these principles. He was conscious that liberty alone would not be adequate. Liberty and equality must exist simultaneously. This alone will ensure that the quality of moral and material life of all individuals will progress. He considers political democracy without social democracy and economic justice is meaningless. But equality and liberty will be realized only when there is a strong sense of unity among members of the society. People must first realize that they have common interests, a common future. In a society divided by caste and class barriers, people of one caste or class will be suspicious of people of other castes or classes. A society can have a common goal only when its members share the sorrows and joys of their fellow beings. This sense of brotherhood - a feeling that we belong to the same social fabric - must emerge in the society.

➤ **Separate electorate for untouchables:**

For Ambedkar, joint electorate or separate electorate as modes of representation is not a matter of principle but mechanisms to achieve certain ends. Separate electorates guarantee that a representative enjoys the self-assurance of the electorate who are his special concern. It is justified in the context when social identities closed on themselves hold on to their particular interests with few prospects of forging stable common interests. If there is homogeneity of interests, then joint electorates with reservation for affected groups seems to be, in his opinion, a better option.⁴ Far from the argument that separate electorate for untouchables, whom he clearly recognized as the bearers of a set of particular interests, will lead to fissures within Hinduism, Ambedkar felt, “social considerations and not religious affiliation is the basis of the acceptance of the electorate.”⁵ He considered the argument that separate electorates will reinforce anti-national spirit baseless, as every group that demands separate electorate was not anti-national. The demand need not necessarily have religious or communal considerations. However, a majority, according to him, cannot have separate electorate as it would be a permanent domination of the majority over the minorities. As a consequence, “given two candidates belonging to different groups but purporting to represent the same interest, the voters will mark their votes on the person belonging to the same community”⁶ or someone they regard as their “man” or “woman.” It may result in an entire group or community from being counted out. He felt, untouchable communities suffered the baneful effects of such exclusion the most.

➤ **Dr Ambedkar: and the Indian Constitution**

The first President of India, Dr Rajendra Prasad, praised the services rendered by Dr Ambedkar in the making of the Constitution and said: “I have carefully watched the day-to-day activities from the presidential seat. Therefore, I appreciate more than others with how much dedication and vitality this task has been carried out by the Drafting Committee and by its chairman Dr Bhim Rao Ambedkar in particular. We never did a better thing than having Dr Ambedkar on the Drafting Committee and selecting him as its chairman”.⁷ Due to his determining role in the framing of the Indian Constitution, Dr Bhīma Ambedkar is popularly known all over India as the chief architect of the Indian Constitution. His efforts to eliminate social evils were extraordinary and that is why he is called the —messiah of the Dalits and downtrodden in India. Dr Ambedkar was appointed the Chairman of the Constitution Drafting Committee. The text prepared by Ambedkar provided constitutional guarantees and protections for a wide range of civil liberties for individual citizens, together with freedom of religion, the abolition of untouchability and banning all forms of discrimination. Ambedkar argued for extensive economic and social rights for women, and also won the Constituent Assembly’s support for introducing a system of reservations of jobs for members of the SC and ST. Ambedkar kept the clauses of the Constitution flexible so that amendments could be made as and when the situation demanded. He provided an inspiring Preamble to the Constitution ensuring justice, social, economic and political, liberty, equality and fraternity. Further he not only led different social movements for the upliftment of the depressed sections of the Indian society but also contributed to the understanding of the socio-economic and political problems of India through his scholarly works on caste, religion, culture, constitutional law and economic development. He was appointed as the nation’s first Law Minister and was posthumously awarded the Bharat Ratna in 1990.⁸

➤ CONCLUSION

Dr. Ambedkar was a social revolutionary. He passionately denounced the inequalities which the Hinduism had imposed upon the untouchables since ages. Dr. Ambedkar was the most renowned and the most militant champion of the untouchables. Through his scholarly writings, he made significant awareness about the political, economic and social problems of the untouchable community. Though provoking and provocative, his life is highly instructive to everyone who stands for human dignity and equality in social relations. More than any other Indian it is he who fought for the cause of social equality. His ultimate achievement lay in ushering in a silent social revolution in Indian society. He stood for the social liberation, economic emancipation and political advancement of the downtrodden. Dr. Ambedkar's other major contribution to Indian progress is his faith in constitutional order. Though he believed in change, but stood for change through constitutional method only. The civil-disobedience methodology could be a dominance of anarchy, he thought. His contribution as a parliamentarian, scholar, statesmen and a reformer was outstanding. Notably, the chief Architect of the Indian constitution also drafted and introduced the Hindu code bill to end the complexities of marriage system in India.

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QUALITY ASSESSMENT OF GROUNDWATER POTENTIAL ZONES IN BANAS RIVER BASIN OF RAJSAMAND DISTRICT, RAJASTHAN

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ABSTRACT

Water quality issues have become more serious than quantity issues, as environmental issues in many parts of the world get more serious day by the day. Soil, geology, sewage disposal, effluents and other environmental circumstances in which water chooses to stay interacting with ground and biological properties. This has a significant impact on a region's groundwater quality.¹ The Banas river basin, which spans 702.55 km², is located in Rajsamand Districts, Rajasthan. The climate in the research region is tropical. It is hot in the summer and quite frigid in the winter. The annual rainfall averages 625 mm. Surface water bodies (lakes) and groundwater are the primary sources of drinking and industrial water in the studied area. Groundwater (wells and handpumps) is currently the most common source of irrigation. The quality of groundwater and its hydrochemical development have been investigated. Ca,²⁺ Mg,²⁺ Na,⁺ K,⁺ Cl,⁻ SO₄,²⁻ CO₃,²⁻ and HCO₃,⁻ concentrations were used to conduct hydrochemical analysis. SAR, %Na, Permeability Index (PI), pH, Total Dissolved Solids (TDS), Total Hardness (TH), and trilinear diagrams have all been investigated. The SAR value varies between 5.76 mg/L to 30.68 mg/L. The %Na ranges from 64.76 to 94.26%. The Permeability Index is between 33.46 to 99.58%. The pH fluctuates between 7.71 to 8.61. The hardness scale runs from 76 to 1024%. The results of the Na and PI tests show that the groundwater in the basin is appropriate for agriculture.² As a result, the current investigation demonstrates that the basin's groundwater is of moderate to good quality and adequate for all purposes.

Keywords: Groundwater quality, Hydrochemical facies, Sodium Adsorption Ratio (SAR), Total Dissolved Solids (TDS), Permeability Index (PI)

INTRODUCTION

Rajsamand district lies in Rajasthan's southernmost region, spanning north latitudes of 24°46'32" and 26°1'36" and east longitudes of 73° 28'30" and 74°18'55". It covers 4522.26 km², or 1.39% of the state's total area. Seven tehsils and seven blocks make up the district. According to the 2011 Census, the district's population is 1156597 people. With a population density of 248/km² people, the rural and urban populations are 972777 and 183820, respectively.³ The Geological Survey of India conducted systematic hydrogeological surveys and other investigations in the district till 1972, and thereafter the Central Ground Water Board did so from 1972 to 1985.

In the years F.S.P. 1986-87 and 1987-88, the Central Ground Water Board conducted reappraisal hydrogeological studies in the district. Water level monitoring is done four times per year by 30 National Hydrograph Network Stations. Throughout order to designate probable aquifer zones and determine aquifer features, 48 exploratory boreholes, 2 observation wells, and 7 piezometers were sunk in the district as part of a groundwater exploration effort.⁴ Table 1 summarise the most important aspects of groundwater exploration in the district.

S.N.	Type of well	No. of sample	Depth drilled (m)	SWL (m)	Transmissivity (m ² /day)	Discharge (lpm)	EC (micromhos/cm) at 25°C
1.	EW	48	8 – 203	1 - 39.3	985 – 7944	10 – 1110	300 – 3440
2.	OW	2	160 – 194.6	5.22 – 15	-	-	1485
3.	PZ	7	87 – 199	2.3 – 21	-	-	580 – 1450

Table 1: Salient features of ground water exploration

Ground Water Quality

In all formations, groundwater is found mostly around the water table. Gneisses, granites, schists, phyllites and limestone are important water-bearing formations in addition to alluvium. In hard rock formations, foliation/bedding planes, fractures, joints solution cavities and other structurally weak planes control the occurrence and flow of ground water. Water flows freely through the weathered mantle of hard rocks. Groundwater is found in the interstices of unconsolidated sand and gravel in alluvium. In both hard rock and alluvium, semi-confined situations can be found.

In the form of valley fills, alluvial deposits of recent origin occur in narrow discontinuous regions along the channels of the Banas, Khari and other rivers. They are made up of stream-deposited sand and gravel as well as silt, clay and kankar.⁵ Aside from this, blown sand can be found in isolated spots. Alluvium thickness ranges from a thin veneer near outcrops to 19m in the south of Bamania Kalan. A boulder gravel bed with a thickness of 2 to 6m covers the bed rock. In boulder and gravel beds, groundwater collects in limited spaces. Alluvium saturated thickness has been found to range between 3 to 12m .

Ground Water Levels

The depth to water level was measured between 2.25 mbgl in Railmagra block and 18.04 mbgl in Kumbhalgarh block during the pre-monsoon season (May, 2011). More than half of the wells studied had a depth to water level of between 10 and 20 mbgl. In isolated places in the Kumbhalgarh, Rajsamand, and Railmagra blocks, shallow water levels of 2 to 5m have been seen. The depth to water level varied from 0.7 mbgl in Railmagra block to 15.95 mbgl in Kumbhalgarh block during the post-monsoon season (November 2011). Water levels in the range of 0 to 10 mbgl were found in 83% of the wells examined.⁶ In areas of the Rajsamand, Kumbhalgarh, Khamnor and Railmagra blocks depths to water levels of 10 to 20 mbgl have been recorded.

Tehsil	Pre-monsoon depth to water level (mbgl)		Post-monsoon depth to water level (mbgl)	
	Minimum	Maximum	Minimum	Maximum
Amet	10.08	26.15	3.15	9.75
Bhim	5.09	14.65	2.02	6.89
Kumbhalgarh	3.21	18.04	1.81	15.95
Khamnor	-	-	-	-
Railmagra	2.25	13.49	0.7	9.95
Rajsamand	4.91	13.73	3.44	15.02

Table 2: Tehsil wise minimum and maximum depth to water levels during pre- monsoon and post-monsoon periods

Chemical Quality of Ground Water

The quality of ground water is potable in major part of the district. However, presence of excess Fluoride, Nitrate, Iron and Electrical Conductivity in groundwater has been reported from some pockets in the district. The Electrical Conductivity (EC) in groundwater varies from 1120 $\mu\text{S}/\text{cm}$ at 25°C at Barar, Bhim block to 5920 $\mu\text{S}/\text{cm}$ at 25°C at Nadiawala, Rajsamand block. In most parts of the district, EC has been found to be within 3000 $\mu\text{S}/\text{cm}$ at 25°C. However, in Rajsamand and Amet blocks, EC above 3000 $\mu\text{S}/\text{cm}$ at 25°C has been reported.⁷ Fluoride content in ground water varies from 0.5 mg/l at Baghana to 3.8 mg/l at Ghata in Bhim block. Fluoride content in ground water is within the maximum permissible limit of 1.5 mg/l (as prescribed by BIS) in major part of the District. Excess Fluoride in ground water has been reported from parts of Rajsamand, Railmagra, Kumbhalgarh and Bhim blocks. Iron content in ground water is generally within the maximum permissible limit of 1 mg/l. Excess Iron content has been reported from Railmagra and Bhim blocks. Maximum concentration of 4.89 mg/l has been reported from Ghata in Bhim block. Nitrate concentration in groundwater varies widely from 2.8 mg/l at Baghana, Bhim block to 500 mg/l at Nadiawala, Rajsamand block. Nitrate content in excess of maximum permissible limit of 45 mg/l has been observed in parts of Amet, Kumbhalgarh and Rajsamand blocks.

Ground Water Resources

Using GEC'97 criteria, CGWB and the State groundwater department worked to estimate the district's groundwater resources. When estimating groundwater supplies, saline and steep terrain were not taken into account. Annual replenishable groundwater resources in the district are expected to be 103.6106 MCM. The district's net annual groundwater availability is predicted to be 93.2495 MCM. The total annual groundwater intake for all users is 118.1735 MCM with a groundwater development stage of 126.734%. According to the dynamic groundwater resource estimation (2009), groundwater development is at 126.73% and all seven blocks are overexploited. Despite the fact that a number of hydrograph stations have exhibited a rising trend as a result of considerable measures taken to improve natural groundwater recharge such as certain places in the district have shown a dropping trend due to an increase in the pace of groundwater development. The district's net irrigated areas are increasing due to several factors, which is reflected in the district's water level trend.

Ground Water Related Issues & Problems:

All of the blocks in the district have been over-exploited to the point where groundwater development has reached 100%, leaving no room for further development. These barriers necessitate careful groundwater

development. Except for a few spots where excessive Electrical Conductivity, Fluoride, Nitrate, and Iron have been documented, the quality of groundwater is normally potable.

MATERIAL AND METHOD:

Study Area

Water samples were taken from several sites in the field. In plastic bottles that had been carefully cleansed and rinsed with distilled water, 23 samples were collected. To avoid spilling during transit, the plastic bottles were firmly sealed. Standard procedures were used to examine samples for various physical characteristics and chemical contents. Titration agents EDTA were used to calculate hardness and calcium.⁸

$$\text{Hardness (mg/L)} = \frac{\text{EDTA used} \times 1000}{\text{mL of sample}}$$

$$\text{Calcium(mg/L)} = \frac{\text{EDTA used} \times 400.8}{\text{mL of sample}}$$

Chloride was calculated by titration against silver nitrate

$$\text{Chloride(mg/L)} = \frac{(\text{mL} \times \text{N of AgNO}_3) 1000 \times 35.5}{\text{mL of sample}}$$

Magnesium was calculated by

$$\text{Magnesium (mg/L)} = \frac{(b - a) 400.8}{\text{Vol. of sample} \times 1.645}$$

b = EDTA used in hardness

a = EDTA used in calcium

Sulphate was calculated by gravimetric method

$$\text{Sulphate (mg/L)} = \frac{(\text{BaSO}_4 \text{ in mg}) 411.5}{\text{mL of sample}}$$

Sodium and potassium was calculated by Flame Photometer. The whole analysis was carried out in the Laboratory.

RESULT AND DISCUSSION

The quality of groundwater for irrigation and the hydrochemical evolution of groundwater have both been investigated. Ca,²⁺ Mg,²⁺ Na,⁺ K,⁺ Cl,⁻ SO₄,²⁻ CO₃,²⁻ and HCO₃,⁻ concentrations were used in the hydro chemical analysis.

The SAR, %Na, permeability index (PI) and trilinear diagram have all been investigated. In water chemistry investigations, the Piper Trilinear Diagram (Fig. 1) is widely used to depict the percentage composition of different ions. The principal cations were displayed on the Trilinear Diagram by putting Na⁺ and K⁺ together. CO₃²⁻ and HCO₃⁻ are also clustered, resulting in three primary anions groups. The cations and anions were plotted as a single point in left and right triangles.⁹ These points are then projected parallel to the core diamond's upper edges into the central diamond shaped area. The overall ionic distribution is represented by all of these spots in the diamond-shaped area. A single point in the diamond-shaped area was obtained for each water sample, which reflects the complete ionic distribution.

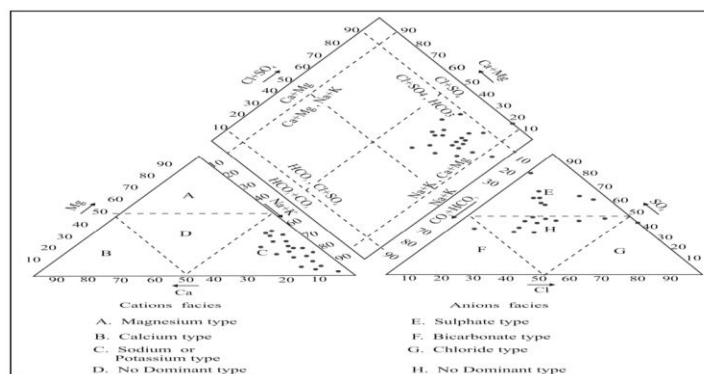


Fig. 1: Chemical facies of groundwater of study area in Piper diagram

S . N	Location	Water type	pH	Hardness (mg/L)	TDS (mg/L)	SAR	% Na (%)	PI (%)	Na ⁺ (mg/L)	K ⁺ (mg/L)	Ca ²⁺ (mg/L)	Mg ²⁺ (mg/L)	CO ₃ (mg/L)	HC O ₃ ⁻ (mg/L)	Cl ⁻ (mg/L)	SO ₄ ²⁻ (mg/L)	EC micromhos/cm	RSC (epm)
1	Delwara lake	SW	8.60	147	1884	9.27	76.08	86.98	334	47	43.27	34.10	161	359	161.87	411.4	721	6.26
2	Near Delwara lake	HP	8.15	183	1751	9.33	78.71	87.91	291	38	35.26	23.38	81	181	124.95	493.7	1221	1.92
3	Nathdwara	HP	8.16	171	01	10.95	81.63	88.81	331	07	24.03	27.27	101	131	122.12	493.7	681	2.01
4	Banas river		8.44	239	01	9.73	76.96	82.82	344	40	25.64	42.87	121	121	159.03	576.0	641	1.12
5	Nichla Nohra	HP	7.96	179	01	10.70	80.84	85.40	331	32	6.40	39.94	181	60	79.52	411.4	921	0.37
6	Mundawala	HP	7.84	1023	01	23.10	78.73	79.71	1700	80	94.57	191.98	0	111	17.03	1069.8	882	16.05
7	Chchota Bhanuja	HP	8.06	307	01	17.64	83.96	83.36	710	53	84.95	23.38	81	0	522.55	567.0	1394	-6.15
8	Bada Bhanuja	HP	7.96	471	01	13042	76.75	7980	670	80	36.86	92.57	0	171	340.7	658.3	1817	-5.34
9	Gaonguda	HP	7.97	243	01	8.63	74.66	82.95	310	36	19.22	47.74	41	191	90.87	493.7	2012	0.21
10	Jhalo ki	HP	8.08	462	01	12.73	81.48	76.58	630	527	57.70	77.95	61	30	389.07	822	1514	-5.46
11	Machind	HP	8.32	91	01	30.67	94.25	99.57	6670	41	19.22	10.71	101	181	198.70	658.3	704	4.45
12	Tula	HP	7.71	271	01	12.21	81.67	85.10	460	167	16.02	56.51	100	171	244.23	576.0	3261	1.32
13	Gogunda	HP	7.76	287	01	11.44	82.58	84.74	444	311	59.30	34.10	121	230	210.23	329.1	1004	2.65
14	Jaswantgarh	HP	7.60	403	01	7.93	68.30	73.58	364	60	41.67	73.08	141	192	215.83	740.6	4291	1.34
15	Tarpal	HP	8.42	367	01	7.50	67.80	68.67	330	45	64.11	50.66	41	20	218.67	576.10	5182	-4.38
16	Kagdi		8.0	255	01	13.26	87.63	98.68	304	35	32.05	42.87	80	204	144.83	411.50	634	0.14
17	Semol	HP	7.65	311	01	1155	87.04	89.52	335	271	41.67	50.66	60	111	187.43	493.80	1211	-2.44
18	Kamol	HP	8.13	75	01	1456	79.70	81.82	631	26	22.43	4.86	60	150	235.71	493.80	761	3.1
19	Semod	HP	7.81	135	1275	5.94	64.75	33.45	231	17	32.07	13.63	20	150	59.63	411.50	1300	0.38
20	Padrara	HP	7.64	323	01	832	77.66	79.91	344	256	9.60	73.08	80	290	181.75	493.80	6214	0.81
21	Sayera	HP	7.77	275	01	5.75	67.34	76.14	221	72	28.84	49.71	60	230	105.07	411.50	5961	0.22
22	Rankpur	HP	7.80	323	01	7.96	70.58	82.14	331	48	9.60	73.08	20	470	127.80	329.20	1121	1.86
23	Betinadi	SW	7.70	300	1598	6.27	65.97	77.47	251	31	24.03	58.46	140	300	79.51	329.20	2191	3.55

Table 1: Hydrogeochemical characteristic of the water samples of the Banas river basin in mg/L

In anionic facies 8 samples are of sulphate type, 1 sample is of bicarbonate type, 1 sample is of chloride type and 12 samples are of no dominant type. SAR (Fig. 2) USSL value ranges from 5.76 – 30.68 mg/L. %Na value ranges from 64.76 – 94.26. Permeability Index ranges from 33.46 – 99.58. pH values range from 7.71 – 8.61. The value of hardness ranges from 76 – 1024. In USSL diagram (Fig. 2), C3 – S2 indicates high salinity, medium sodium type. This type of water can be used to irrigate salt tolerant and semi tolerant crops under favorable drainage conditions. In Wilcox diagram (Fig. 3), 16 water samples falls in permissible to doubtful category.¹⁰ 5 water samples falls in doubtful to unsuitable category whereas 2 samples falls in unsuitable category.

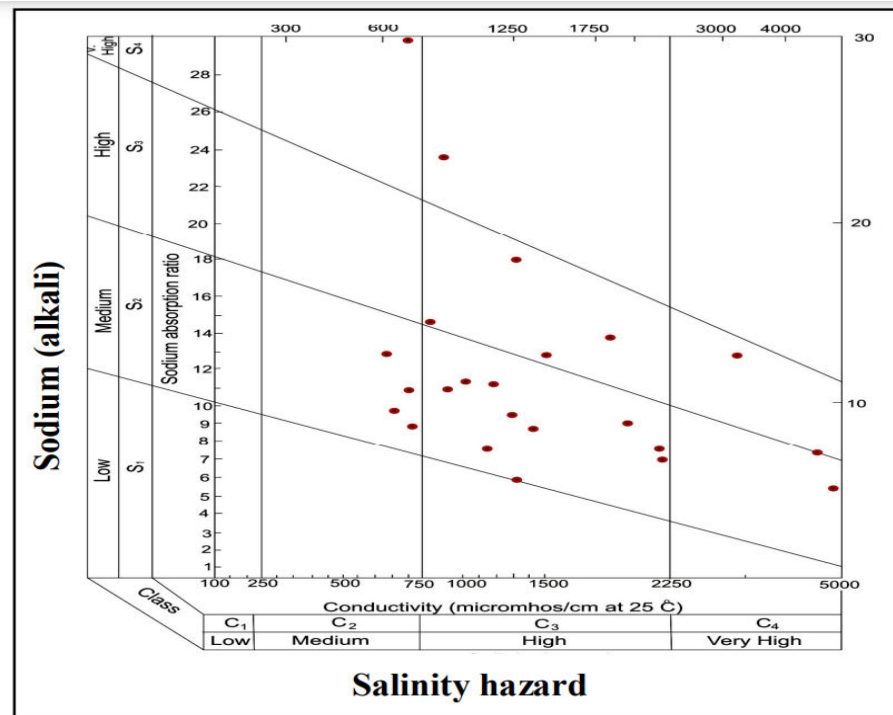


Fig. 2: USSL diagram

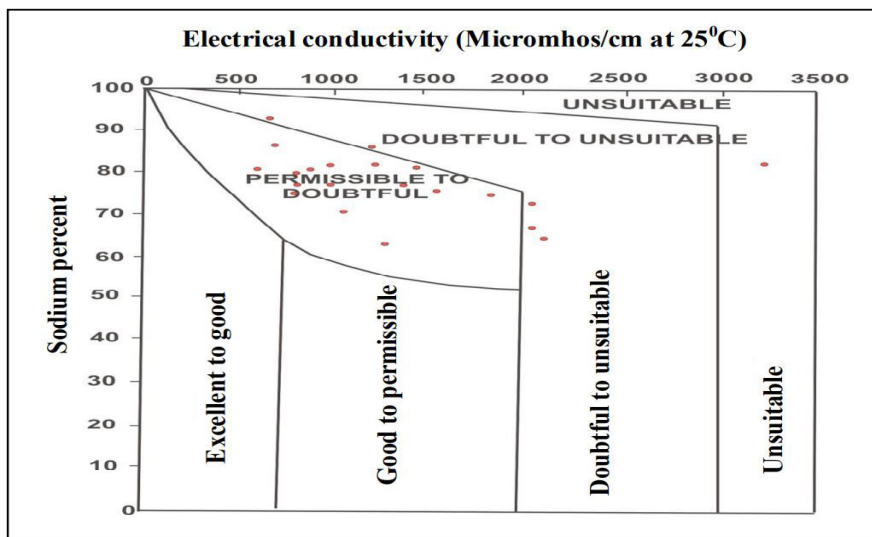


Fig. 3: Wilcox diagram

Permeability Index (PI)

Permeability index has been used as an important parameter for determination of suitability for groundwater in irrigation use (Table 2). It is defined as:

$$PI (\%) = \frac{Na^+ + FHCO_3^- \times 100(meq/L)}{(Ca^{2+} + Mg^{2+} + Na^+)}$$

S. No.	Water class	Sample location	Type of water
	Class – I	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 16, 17, 18, 20, 21, 22, 23.	Very good water quality >75% of maximum soil permeable.
	Class – II	-	Good water quality 75% of maximum soil permeable.
	Class – III	14, 15, 19.	Moderate water quality
	Class – IV	-	Bad water quality <25% of maximum permeable.

Table 2: Quality of groundwater based on permeability index

Percent Sodium

Another method for determination of suitability for agricultural use in groundwater by calculating sodium percentage (Table 3) because sodium concentration reacts with soil to reduce its permeability Todd %Na is calculated as

$$\text{Percent Sodium (\%)} = \frac{(\text{Na}^+ + \text{K}^-) 100 (\text{meq/L})}{(\text{Ca}^{2+} + \text{Mg}^{2+} + \text{Na}^+ + \text{K}^+)}$$

S. No.	% Sodium	Water class	Type of water
	<20	Excellent	-
	20 – 40	Good	-
	40 – 60	Permissible	-
	60 – 80	Doubtful	1, 2, 4, 6, 8, 9, 14, 15, 18, 19, 20, 21, 22, 23.
	>80	Unsuitable	3, 5, 7, 10, 11, 12, 13, 16,17

Table 3: Quality of groundwater based on percent sodium

Sodium Adsorption Ratio (SAR)

To determine the suitability for irrigation use, the sodium or alkali – hazard expressed in terms of Sodium Adsorption Ratio (SAR) was used (Table 4).

S. No.	SAR	Water class	Number of samples
	Less than 10	Excellent	9.28, 9.34, 9.74, 8.64, 7.94, 7.51, 5.95, 8.33, 5.76, 7.97, 6.28
	10 to 18	Good	10.96, 10.71, 17.65, 13.43, 12.74, 12.20, 11.45, 13.27, 11.56, 14.57
	18 to 26	Permissible	23.11
	Greater than 26	Unsuitable	30.68

Table 4: Quality of groundwater based on SAR

CONCLUSION

In USSL Diagram (Fig. 2), 70% of the water samples fall in the moderate water class. 22% of the water samples fall in poor water class and 8% of the water samples fall in the bad water class. In Piper trilinear diagram Na-K-SO₄ type facies predominate the study area. The present study shows that groundwater quality is greatly influenced due to rapid urbanization. It has also been observed that poor sanitation system, washing and cleaning activities near the wells, water logging around the wells, open defecation, and animal sheds near the wells and a general lack of awareness contribute deterioration in the groundwater quality.

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QUANTITATIVE ANALYSIS OF CRITICAL FACTORS AFFECTING THE IMPLEMENTATION OF QUALITY MANAGEMENT SYSTEM IN MANUFACTURING INDUSTRY OF DELHI-NCR REGION**Sandeep Kumar Dubey and Murali Krishna.M**

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ABSTRACT

Quality-orientated management change and innovation are central strategies for firms. Implementing both quality improvement and innovation poses significant managerial, organizational and technical challenges, and may also involve significant lags before benefits are realized. It is essential for the organization to implement Quality Management Interventions to attain competitive control; externally and internally. The objective of the study is; Quantitative Analysis of Critical Factors affecting the Implementation of Quality Management System in Manufacturing Industry of Delhi-NCR Region. The research design used was descriptive survey method. The data collected comprised of primary data that was both quantitative and qualitative. Both descriptive and inferential statistics was used to analyze the data. From the findings all activities show that customer focus practices have been adopted in the respective organizations at large extent. This study recommends that manufacturing firms should consider adopting and implementing other quality management practices and compare the benefits and the challenges of these quality management practices. This will provide a better platform of choosing the quality management practices that lead to improved organizational performance. The study also recommends that manufacturing firms in India should benchmark themselves with the best performing firms globally in order to find out the quality management practices that the firms use in enhancing competitiveness. This will shed more light on the best quality management practices to adapt to increase organizational performance.

Keywords: Quality Management Practices, Organizational Performance, Manufacturing Industries, Statistical Analysis, Chi-square test for Independence, ISO Standard.

1. INTRODUCTION

Throughout the history, men have been attempting to find various techniques and methods to bring improvement in quality of the products/services under their control. During the process many quality gurus have tried to build various paths, models approaches, methods, statistical tools and techniques for overall quality building. From this quest for a totality the Total Quality Management (TQM) was born. The TQM and documentation systems in terms of ISO-9000 QMS have also come into existence. TQM seeks to expand the boundaries of quality to solve the problems.

The expected results of quality management are better organizational performance, enhanced productivity, efficient processes and competitive goods and services that satisfy the consumer and enhance the organizational competitiveness. Organizational performance stands out as the most critical variable in the administration look into and without a doubt the most imperative pointer of hierarchical achievement.

Quality management has gained prominence in the recent past as it directly impacts on the overall performance of manufacturing organizations. Quality has been noted to affect the whole organization and comes with a dramatic cost implication. Poor quality becomes a big problem when it leads to dissatisfied customers and eventually leads to loss of customers. From an academic point of view, quality management has been adopted by firms keen on leveraging their overall performance. Thus key decision makers within a given organization should incline their operational tendencies towards quality management practices for enhanced performance.

Establishment of quality culture is getting very important task, now days, in almost every walk of industrial lives and this culture can be achieved only through TQfy/I philosophy. This philosophy encourages employees in the organization in different areas namely formation of quality circles, transparency in work assignment, accountability, responsibility, authority, bench marking, education, loss control, profitability and reduction of waste.

1.1 Manufacturing Industry in India

Manufacturing has emerged as one of the high growth sectors in India. India is expected to become the fifth largest manufacturing country in the world by the end of year 2020.

The Gross Value Added (GVA) at basic current prices from the manufacturing sector in India grew at a CAGR of 4.34 per cent during FY12 and FY18 as per the second advance estimates of annual national income published by the Government of India. Quarterly GVA at basic prices from manufacturing sector grew by 10.92

per cent in the third quarter of FY18. Under the Make in India initiative, the Government of India aims to increase the share of the manufacturing sector to the gross domestic product (GDP) to 25 per cent by 2022, from 16 per cent, and to create 100 million new jobs by 2022. Business conditions in the Indian manufacturing sector continue to remain positive.

With the help of Make in India drive, India is on the path of becoming the hub for hi-tech manufacturing as global giants such as GE, Siemens, HTC, Toshiba, and Boeing have either set up or are in process of setting up manufacturing plants in India, attracted by India's market of more than a billion consumers and increasing purchasing power. Cumulative Foreign Direct Investment (FDI) in India's manufacturing sector reached US\$ 73.70 billion during April 2000-December 2017.

The Government of India has taken several initiatives to promote a healthy environment for the growth of manufacturing sector in the country. Some of the notable initiatives and developments are:

- As of March 2018, Government of India is in the process of coming up with a new industrial policy which envisions development of a globally competitive Indian industry.
- The government has introduced two new World Bank assisted projects viz. SANKALP scheme and STRIVE scheme for skill development in the country.
- In Union Budget 2018-19, the Government of India reduced the income tax rate to 25 per cent for all companies having a turnover of up to Rs 250 crore (US\$ 38.75 million).
- Under the Mid-Term Review of Foreign Trade Policy (2015-20), the Government of India increased export incentives available to labour intensive MSME sectors by 2 per cent.
- The Ministry of Electronics and Information Technology is in the process of formulation of a new electronics manufacturing policy. The aim of the new policy will be to create an ecosystem of manufacturing in the country, enable India to become a significant global player in some of these categories.
- Ministry of Home Affairs liberalized Arms Rules to boost 'Make in India' manufacturing policy of the government. The liberalization of the policy is expected to encourage investment in the manufacturing of arms and ammunition and weapon systems and promote employment generation.
- The Government of India has launched a phased manufacturing program (PMP) aimed at adding more smartphone components under the Make in India initiative thereby giving a push to the domestic manufacturing of mobile handsets.
- The Government of India is in talks with stakeholders to further ease foreign direct investment (FDI) in defense under the automatic route to 51 per cent from the current 49 per cent, in order to give a boost to the Make in India initiative and to generate employment.
- The Ministry of Defense, Government of India, approved the "Strategic Partnership" model which will enable private companies to tie up with foreign players for manufacturing submarines, fighter jets, helicopters and armored vehicles.
- The Union Cabinet has approved the Modified Special Incentive Package Scheme (M-SIPS) in which, proposals will be accepted till December 2018 or up to an incentive commitment limit of Rs. 10,000 crore (US\$ 1.5 billion).

The manufacturing sector of India has the potential to reach US\$ 1 trillion by 2025 and India is expected to rank amongst the top three growth economies and manufacturing destination of the world by the year 2020. The implementation of the Goods and Services Tax (GST) will make India a common market with a GDP of US\$ 2.5 trillion along with a population of 1.32 billion people, which will be a big draw for investors.

1.2 Research Problem

Previous studies have not provided adequate evidence on the relationship between quality management practices and organizational performance of manufacturing firms. This study aimed to answer the question is there a significant relationship between quality management and performance of firms in Indian manufacturing industry?

1.3 Research Objectives

1. To establish quality management practices among manufacturing firms in Delhi-NCR.

2. To establish the performance of firms in manufacturing industry in Delhi-NCR.
3. To establish the relationship between quality management and performance of firms in the manufacturing industry in Delhi-NCR.

1.4 Importance of The Study

The study will have significant value for policy makers and development partners who lend a hand in the growth of private sector programs that contribute to a diversified and productive manufacturing industry. With regards to quality and performance, policies and regulations will be implemented to boost and stimulate both factors. This stands to benefit the managers of manufacturing firms who are the key players in organizational performance.

2. Literature Survey

Jane Bourke Et Al (2017) highlight the short term disruptive and longer-term beneficial effects of QIM adoption on product innovation performance. Results suggest that maximizing the returns to innovation and quality improvement requires consideration of the soft and/or hard nature of individual QIMs and the timing and sequencing of their adoption [5].

Young Sik Cho Et Al (2017) empirically examines the relationship between technical and behavioral quality practices by collecting survey data from both US-based and China-based firms. The analysis uses the structural equation modeling technique, and shows that behavioral QM practices fully mediate the relationship between technical QM practices and firm performance [11].

Luis Miguel Fonseca Et Al (2017) highlights the need for the automotive industry OEM and Suppliers to properly monitor the organizational (internal and external) context and identify the key issues that affect the ability of their QMS to deliver quality products, and to plan, design, implement and control change in an effective and timely manner, within the whole supply chain [6].

Sudeshna Roy Et Al (2017) identified the factors governing the quality of newly developed products to recognize the importance of control over the product quality in Indian manufacturing industries. The Structural Equation Modeling (SEM) approach has been used to build a causal relationship between success factors and measures by using AMOS 5.0 software package along with SPSS [9].

Wafi Al-Karaghoul Et Al (2016) provided empirical evidence leading to advancement in the understanding of direct and indirect influences of IRFC components on TQM implementation [4].

Vanajah Siva Et Al (2016) reviewed research in which Quality Management methods, tools or practices have been used in conjunction with sustainable development initiatives. They have identified four themes that synthesize the research on Quality Management and its support to approaches for sustainable development: (I) supporting sustainability through integration of management systems, (II) Quality Management as support to the implementation of Environmental Management Systems and to the management of sustainability, (III) supporting integration of sustainability considerations in daily work, and (IV) supporting stakeholder management and customer focus [10].

Rajesh Kumar Jain Et Al (2015) undertook a pragmatic study on the Real Quality Practices of Gujarat based Manufacturing Industries. The outcome of this research will help gauge the level of Quality Practices which also may lead to the suggestive steps to be implemented by other Organizations in the Country as a whole [8].

Frank Wiengarten Et Al (2012) investigated the importance of quality management practices for the success of environmental management initiatives. The study makes significant contributions to the quality and sustainability literature and implications are drawn to practice [2].

Dongli Zhang Et Al (2012) investigated how contextual factors influence the relationship between Quality Management (QM) practices and manufacturing performance. It contributes to the contingency theory of QM effectiveness. The analysis empirically investigates the internal fit with organizational structure and the external fit with environmental uncertainty on the relationship between Quality Exploration, Quality Exploitation, and operational performance. The findings provide insights for managers on how to customize QM programs to achieve optimal performance benefits [1].

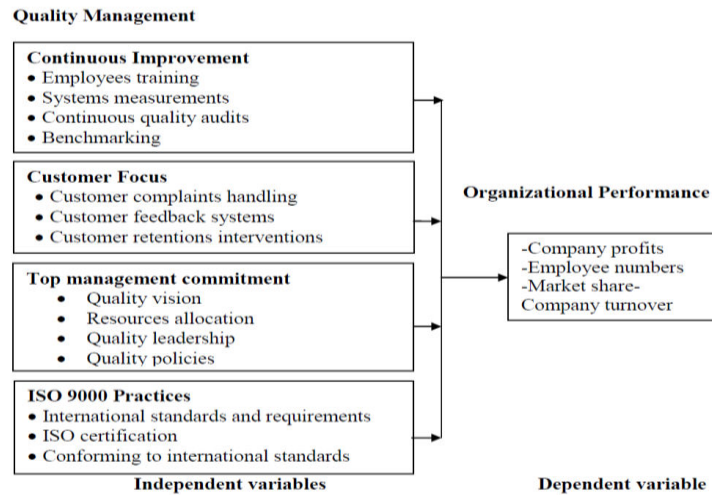


Figure 1: Conceptual Framework of QM

3. Research Design

According to the All India Association of Industries (AIAI) manufacturing firms in India operating in different sectors are classified into 12 sub categories which are based on the raw materials that the companies import or the products that they manufacture. The large percentage of manufacturing industries of India is based on Delhi-NCR. Thus Delhi-NCR presented a suitable study area as large numbers of the manufacturing organizations are located in it.

A sample of 60 manufacturing firms from 8 sub categories in Delhi-NCR was selected for the research study. This study ensured that the selected sample was a representative of the manufacturing firms in the County. This is crucial as it allowed for the making of valid inferences such that the conclusions that were drawn reflected the entire population.

3.1 Data Collection

The data collected comprised of primary data that was both quantitative and qualitative. As a means of creating measures for the study geared towards an investigation of the research topic as well as the objectives, the study used a self-administered structured online survey questionnaire prepared in Google Form as the main tool for collecting data. This questionnaire is described in Appendices.

The questionnaire was divided into two sections; Section A contained background data, while section B contained quality management practices and its impact on organizational performance. The content of the structured questionnaire are designed as multiple choice questions based on 5-point Likert scales and also the use of scripted introduction and order of questions as per the research objectives.

Quality assurance manager was considered appropriate respondents for the study hence the questionnaire was administered to them. The online survey questionnaire was administered through emails and social networking.

3.2 Parameters (Table 1)

Quality Management Parameters	Variables
Continuous Improvement	Training Policies
	Employee Development Programs
	Efficient Quality Improvement System
	Quality Management Benchmarking
	Efficient Product Delivery System
	Regular Quality Audits
	Internal Quality Feedback System
	Improved Quality Policy
Customer Focus	Customer Feedback Mechanism
	Customer Care Services
	Customer Retention Policies
	Customer Demand Management System
	Regular Marketing Survey
	Customer Needs Benchmarking

Top Management Commitment	Company Vision
	Review of QMS Effectiveness
	Financial Support for System Development
	Quality Policy Support
	Quality Policy Reviews and Improvement
	Quality Team Leadership
	Commitment for Quality Improvement
	Recognition for Quality Improvement Efforts
ISO 9000 Practices	Follow-up for International Standards
	International Standards Certification
	Prevention of Non-conformity
	ISO Certification Training
	Effective Documentation of ISO
	ISO Maintenance Programs

3.3 Tools for Hypotheses Testing

Hypothesis testing is used to find out the possibility that a given hypothesis is true or not. The procedure of hypothesis testing involves these steps:

1. Plan the null hypothesis Ho (i.e. the observations are the outcome of pure chance)
2. To evaluate the truth of the null hypothesis it is necessary to identify the statistical test.

For hypothesis testing the following statistical techniques are been used on the tabulated data.

- Reliability test:
- Normality test:
- Chi-Square test for Independence

4. Data Analysis and Interpretation

4.1 Demographic details of Respondents

Table 2.1 Gender of Respondents		
Gender	Frequency	Percentage
Male	48	80 %
Female	12	20 %
Total	60	100 %
Table 2.2 Age Group of Respondents (In Years)		
Age Group	Frequency	Percentage
18-25 Years	4	6.67%
26-35 Years	28	46.67%
36-45 Years	22	36.67%
Above 45 Years	6	10%
Total	60	100%
Table 2.3 Work Experience (In Years)		
Experience	Frequency	Percentage
Below 1 year	3	5 %
1-5 years	9	15 %
6-10 Years	15	25 %
11-15 Years	18	30 %
15-20 Years	9	15 %
More Than 20 Years	6	10 %
Total	60	100.00%
Table 2.4 Educational Qualification		
Qualification	Frequency	Percentage
SSC or below	02	3.33%
Diploma	09	15%
Graduate	21	35%

PG or above	28	46.67%
Total	60	100%

Table 2.5 Job Designation of Respondents

Designation	Frequency	Percentage
Civil works	06	10%
Mechanical	18	30%
Electrical	12	20%
Materials	15	25%
Finance	09	15%
Total	60	100%

Table 2.6 Employment Status

Employment	Frequency	Percentage
Permanent	42	70%
Temporary	3	5%
Contractual	15	25%
Total	60	100%

Table 2.7 Current market region

Market Region	Frequency	Percentage
Local	36	60.00%
Regional	15	25.00%
International	9	15.00%
Total	60	100.00%

Table 2.8 Type of Standardization in Organization

Standardization	Frequency	Percentage
BIS	3	5.00%
ISO 9000	24	40.00%
ISO 9001-2008	33	55.00%
Total	60	100.00%

Table 2.9 Size of Organization (No. of Employees)

No. of Employees	Frequency	Percentage
Less than 100	9	15.00%
Equal or more than 100	36	60.00%
Equal or more than 1000	15	25.00%
Total	60	100.00%

Table 2.10 Type of Industry of Respondents

Industry	Frequency	Percentage
Chemical	6	10.00%
Electrical / Energy	4	6.67%
Leather	4	6.67%
Machineries	8	13.33%
Rubber & Plastic	5	8.33%
Paper & Board	10	16.67%
Metal Fabrication	12	20.00%
Food Products	11	18.33%
Total	60	100.00%

4.2 Continuous Improvement

Table 3.1 Reliability Statistics

S. No.	Factors	Cronbach's Alpha	Cronbach's Alpha with missing item
1	Training Policies	0.813	0.772
2	Employee Development Programs	0.813	0.813
3	Efficient Quality Improvement System	0.813	0.808
4	Quality Management Benchmarking	0.813	0.794
5	Efficient Product Delivery System	0.813	0.771

6	Regular Quality Audits	0.813	0.779
7	Internal Quality Feedback System	0.813	0.769
8	Improved Quality Policy	0.813	0.824

It is clearly evident that Cronbach's Alpha is 0.813, which indicates a high level of internal consistency for our scale with this specific sample. It is interpreted that the data collected from these Manufacturing Organization has been reliable.

S. No.	Factors	Mean	SD	Wt.
1	Training Policies	4.20	0.860	0.840
2	Employee Development Programs	4.25	0.856	0.850
3	Efficient Quality Improvement System	3.92	1.046	0.783
4	Quality Management Benchmarking	4.17	0.785	0.833
5	Efficient Product Delivery System	4.15	0.860	0.830
6	Regular Quality Audits	4.38	0.904	0.877
7	Internal Quality Feedback System	4.33	0.877	0.867
8	Improved Quality Policy	4.18	0.813	0.837

The descriptive statistics shown in the above table depicts the ranking of continuous improvement on selected parameters. Top three parameters highlighted in the table on which continuous improvement has major impact are: Regular Quality Audits, Internal Quality Feedback System and Employee Development Programs.

S. No.	Factors	chi-sq	p-value	sig
1	Training Policies	41.848	0.045	yes
2	Employee Development Programs	45.064	0.022	yes
3	Efficient Quality Improvement System	42.897	0.036	yes
4	Quality Management Benchmarking	42.654	0.038	yes
5	Efficient Product Delivery System	44.709	0.024	yes
6	Regular Quality Audits	43.235	0.033	yes
7	Internal Quality Feedback System	42.218	0.041	yes
8	Improved Quality Policy	45.052	0.022	yes

The null hypothesis is accepted, since for all 8 operational factors the p value < 0.05, that fulfills 95% confidence level of responses. It shows that there is no significant difference amongst the opinion of quality managers with different type of industry regarding the selected operational factors. Therefore impact of continuous improvement on all above mentioned factors is same with respect to the quality managers with different type of industry.

4.3 Customer Focus

S. No.	Factors	Cronbach's Alpha	Cronbach's Alpha with missing item
1	Customer Feedback Mechanism	0.822	0.820
2	Customer Care Services	0.822	0.769
3	Customer Retention Policies	0.822	0.826
4	Customer Demand Management System	0.822	0.773
5	Regular Marketing Survey	0.822	0.788
6	Customer Demand Benchmarking	0.822	0.773

It is clearly evident that Cronbach's Alpha is 0.822, which indicates a high level of internal consistency for our scale with this specific sample. It is interpreted that the data collected regarding customer focus from these Manufacturing Organization has been reliable.

S.N.	Factors	Mean	SD	Wt.
1	Customer Feedback Mechanism	4.050	0.910	0.810
2	Customer Care Services	4.117	0.993	0.823

3	Customer Retention Policies	4.200	0.879	0.840
4	Customer Demand Management System	3.867	1.065	0.773
5	Regular Marketing Survey	4.250	0.950	0.850
6	Customer Demand Benchmarking	3.950	1.048	0.790

The descriptive statistics shown in the above table depicts the ranking of customer focus on selected parameters. Top three parameters highlighted in the table on which customer focus has major impact are: Regular Marketing Survey, Customer Retention Policies and Customer Care Services.

Table 4.3 Pearson’s Chi Square Test for Independence – Type of Industry

S. No.	Factors	chi-sq	p-value	sig
1	Customer Feedback Mechanism	41.934	0.044	yes
2	Customer Care Services	44.262	0.026	yes
3	Customer Retention Policies	43.516	0.031	yes
4	Customer Demand Management System	45.181	0.021	yes
5	Regular Marketing Survey	44.817	0.023	yes
6	Customer Demand Benchmarking	44.221	0.026	yes

The null hypothesis is accepted, since for all 6 operational factors the p value < 0.05, that fulfills 95% confidence level of responses. It shows that there is no significant difference amongst the opinion of quality managers with different type of industry regarding the selected operational factors. Therefore impact of customer focus on all above mentioned factors is same with respect to the quality managers with different type of industry.

4.4 Top Management Commitment

Table 5.1 Reliability Statistics

S. N.	Factors	Cronbach's Alpha	Cronbach's Alpha with missing item
1	Company Vision	0.813	0.794
2	Review of QMS Effectiveness	0.813	0.777
3	Financial Support for System Development	0.813	0.778
4	Quality Policy Support	0.813	0.783
5	Quality Policy Reviews and Improvement	0.813	0.810
6	Quality Team Leadership	0.813	0.793
7	Commitment for Quality Improvement	0.813	0.822
8	Recognition for Quality Improvement Efforts	0.813	0.771

It is clearly evident that Cronbach's Alpha is 0.813, which indicates a high level of internal consistency for our scale with this specific sample. It is interpreted that the data collected from these Manufacturing Organization regarding Top Management Commitment has been reliable.

Table 5.2 Descriptive Statistics

SN	Factors	Mean	SD	Wt.
1	Company Vision	4.17	0.785	0.833
2	Review of QMS Effectiveness	4.15	0.860	0.830
3	Financial Support for System Development	4.38	0.904	0.877
4	Quality Policy Support	4.33	0.877	0.867
5	Quality Policy Reviews and Improvement	4.18	0.813	0.837
6	Quality Team Leadership	4.28	0.922	0.857
7	Commitment for Quality Improvement	4.23	0.810	0.847
8	Recognition for Quality Improvement Efforts	4.08	0.907	0.817

The descriptive statistics shown in the above table depicts the ranking of Top Management Commitment on selected parameters. Top three parameters highlighted in the table on which Top Management Commitment has major impact are: Financial Support for System Development, Quality Policy Support and Quality Team Leadership.

Table 5.3 Pearson’s Chi Square Test for Independence – Type of Industry

S. No.	Factors	chi-sq	p-value	sig
1	Company Vision	43.362	0.032	yes

2	Review of QMS Effectiveness	41.449	0.049	yes
3	Financial Support for System Development	47.541	0.012	yes
4	Quality Policy Support	43.814	0.029	yes
5	Quality Policy Reviews and Improvement	46.973	0.014	yes
6	Quality Team Leadership	44.409	0.025	yes
7	Commitment for Quality Improvement	41.618	0.047	yes
8	Recognition for Quality Improvement Efforts	44.043	0.028	yes

The null hypothesis is accepted, since for all 8 operational factors the p value < 0.05, that fulfills 95% confidence level of responses. It shows that there is no significant difference amongst the opinion of quality managers with different type of industry regarding the selected operational factors. Therefore impact of Top Management Commitment on all above mentioned factors is same with respect to the quality managers with different type of industry.

4.5 ISO Practices

S. N.	Factors	Cronbach's Alpha	Cronbach's Alpha with missing item
1	Follow-up for International Standards	0.815	0.774
2	International Standards Certification	0.815	0.764
3	Prevention of Non-conformity	0.815	0.762
4	ISO Certification Training	0.815	0.829
5	Effective Documentation of ISO	0.815	0.787
6	ISO Maintenance Programs	0.815	0.792

It is clearly evident that Cronbach's Alpha is 0.815, which indicates a high level of internal consistency for our scale with this specific sample. It is interpreted that the data collected regarding ISO 9000 practices from these Manufacturing Organization has been reliable.

S. N.	Factors	Mean	SD	Wt.
1	Follow-up for International Standards	4.17	0.827	0.833
2	International Standards Certification	4.28	1.010	0.857
3	Prevention of Non-conformity	4.23	0.998	0.847
4	ISO Certification Training	4.17	0.942	0.833
5	Effective Documentation of ISO	4.20	0.971	0.840
6	ISO Maintenance Programs	3.98	0.983	0.797

The descriptive statistics shown in the above table depicts the ranking of ISO 9000 practices on selected parameters. Top three parameters highlighted in the table on which ISO 9000 practices has major impact are: International Standards Certification, Prevention of Non-conformity and Effective Documentation of ISO.

S. N.	Factors	chi-sq	p-value	sig
1	Follow-up for International Standards	44.759	0.023	yes
2	International Standards Certification	43.867	0.029	yes
3	Prevention of Non-conformity	44.800	0.023	yes
4	ISO Certification Training	41.813	0.045	yes
5	Effective Documentation of ISO	47.419	0.012	yes
6	ISO Maintenance Programs	42.996	0.035	yes

The null hypothesis is accepted, since for all 6 operational factors the p value < 0.05, that fulfills 95% confidence level of responses. It shows that there is no significant difference amongst the opinion of quality managers with different type of industry regarding the selected operational factors. Therefore impact of ISO 9000 practices on all above mentioned factors is same with respect to the quality managers with different type of industry.

5. FINDINGS & CONCLUSION

Continuous quality improvement is practiced between a very large extent and large extent. Training policies for employees, employees are continuously trained to enhance internal quality performance, continuous improvement of quality systems leading to increased revenue, firms benchmarks its quality against other quality management practices best practices, set time limit to meet efficiency of products delivery, quality audits are carried out continuously as per ISO certification requirements, continuous improvement reviews through internal quality audits and policy for making continuous improvement of products quality for every individual in the company.

Customer focus practices have been adopted in the respective organizations at large extent. Mechanism for customer complaints handling, customer care employees are well trained as telephone customer care, company is committed to customer retention by ensuring quality products, customer needs and expectations are communicated throughout the company, the company conducts customer feedback surveys regularly and benchmarking with other company helps the company to measure performance progress.

Top management commitment practices have been adopted in the respective organizations at large extent. It was established that Quality management is embraced in the vision of the company had been adapted to large extent. It was also established that top management reviews organizations QMS at planned intervals to ensure continuity, adequacy and effectiveness and devotes resources for development and support for ISO certification. Finally it was established that top management establish trust and commitment to quality improvement by eliminating fear.

ISO 9000 practices have been adopted in the respective organizations at large extent. The respondents indicated that their firms observe international standards and requirements, is ISO certified and prevent non conformity.

The successful implementation of quality programs depends on workforce. If manufacturing industry would have more trained, involved and empowered employees it is more likely to realize benefits of implementation of quality management techniques. The findings of research study suggest that management of manufacturing industry should be more involved in quality improvement programs.

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REVERSIBLE WATERMARKING FOR SECURITY OF BIOMETRIC IMAGES

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ABSTRACT

The field of biometric security is rapidly expanding. Because biometric data might be utilised by attackers, it's critical to keep it safe. Watermarking is one of the most widely accepted methods for increasing the security of biometric data. Reversible watermarking, which allows the original image to be fully recovered and the watermark to be retrieved, is a more acceptable, new important advance in this domain. However, in the field of biometrics, reversible watermarking remains a little-studied topic. The excellent quality of biometric data is maintained through reversible watermarking. As a reversible watermarking approach for biometric photos, this work presents Rotational Replacement of LSB. PSNR is a standard approach for evaluating biometric data quality. We also show in this study that the SSIM Index is a good indicator of quality.

Keywords: Biometric, Reversible Watermarking, Difference Expansion, SSIM Index, Image Processing

INTRODUCTION

In today's digital world, balancing security and privacy can be difficult. Biometric authentication, which is more convenient for privacy protection, defeats conventional methods. However, convenience has brought with it new dangers. Because the data isn't updated as frequently, it's vulnerable to attacks. As a result, protecting biometric data is critical. Watermarking plays a crucial part in data protection, even though there are several methods being presented for this.

Watermarking is the process of concealing a message or image in some data in order to obtain new data that is indistinguishable from the original data, preventing an attacker from removing or replacing the message. As a result, it has become a significant component of data concealment. In communications, watermarking is used to send secret messages. Watermarking is possible in a variety of domains, including spatial and frequency domains. Actual pixel values are modified in the spatial domain, whereas coefficients employed in altered image representations are modified in the frequency domain. For incorporating watermark data, various solutions use LSBs. The alterations to the original data become irrevocable in the majority of these cases. There's one more way the original can be interpreted.

A watermark is embedded into an image in reversible watermarking, and the original image and watermark are retrieved from the watermarked image. Because the recovery process does not require the original image, this method is known as blind. Data compression, difference expansion, histogram operation, and LSB Replacement are all methods of reversible watermarking. The difference between traditional and reversible watermarking approaches is seen in Figure 1. Reversible watermarking with difference expansion and LSB replacement is the subject of this paper.

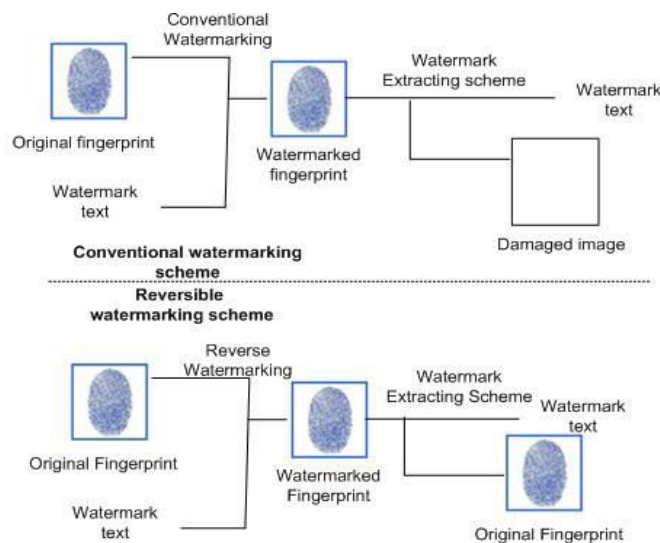


Figure 1: Difference between conventional and Reversible watermarking system

In biometrics, the quality of the watermarked photographs is crucial. Watermarking should be done in such a way that it does not defeat the goal of watermarking. Although there have been a variety of watermarking

techniques created, the quality of watermarking is typically assessed using PSNR. PSNR is a basic average error-based measure of image quality. This method is well-known for its lack of precision. PSNR is still widely reported despite its flaws since it is simple to calculate. The SSIM Index is introduced in this work as a more accurate method of assessing the quality of biometric watermarked photographs. This is accomplished by comparing the suggested rotational replacement of the LSB approach to the well-known reversible watermarking scheme.

Barton devised the first reversible watermarking system. The most well-known approach for reverse watermarking is DE. Tian was the first to propose reversible watermarking with DE. For his investigations, Tian used ordinary photos. The DE approach is used in this paper to watermark biometric images.

Because it is simple to calculate and adjust, PSNR is the most commonly used quality measuring technique for watermarked photos. However, they don't seem to be well related to perceived visual quality. The SSIM (Structural SIMilarity) Index is based on the quality of full-reference images. Local patterns of pixel intensities that have been adjusted for brightness and contrast are compared using the SSIM Index. Because the SSIM Index is designed to outperform established approaches such as PSNR, employing it to assess quality will add value to the reversible watermarking process.

In this study, reversible watermarking is accomplished using both Tian's reversible watermarking technique and the proposed rotational replacement of LSB. SSIMIndex is used to evaluate and compare the quality of watermarked photos.

Difference Expansion Watermarking

The Difference Expansion approach was introduced by Tian. In this method, pairs of pixels in the host image HI are discovered and transformed to a low-pass image LI using integer transformation with integer average and a high-pass image HI including the pixel differences using integer transformation with integer average. If x and y are the pixel-intensity pair's values, then α and δ are defined as

X and y can be computed from α and δ as

By appending an information bit i to the LSB of the difference δ , a new LSB can be created. The watermarked difference is

$$\delta_w = 2\delta + i$$

The resulting pixel gray-levels are calculated from the difference (δ_w) and integer average α

Using (3) and (4).

For an image with n -bit pixel representation, the gray levels satisfy $x, y \in [0, 2^n - 1]$, if and only if α and δ satisfies the following condition:

Where $R_d(\alpha)$ is called the invertible region. Combining (5) and (6) we obtain the condition for a difference δ to undergo DE.

$$2i + R_d(p) \text{ for } i = 0, 1$$

This condition is called the expandability condition for DE. If an integer average is given and the difference satisfies the expandability condition, it is called an expandable difference.

Another method used by Tian in his Difference Expansion technique, other than embedding which is already discussed is replacing LSB. Here, an information bit will be used to replace the LSB of the difference. Since the LSB is replaced in the embedding process, this cannot be considered as lossless as the first embedding technique. However, here the information about the true LSBs of the differences that are embedded by replacing LSB are saved and embedded with the payload, to ensure that it is not lossy.

The LSB of a difference can be flipped without affecting its ability to invert back to the pixel domain if and only.

This is called the changeability condition. A difference satisfying the changeability condition, given a corresponding integer average, is called a changeable difference. An expandable difference is also a changeable difference. A changeable location remains changeable even after its LSB is replaced, whereas an expandable location may not be expandable after DE, but it remains changeable.

Rotational Replacement of Lsb in Watermarking

The original image's LSB is replaced with the watermark's MSB in standard LSB replacement techniques. To accomplish this, first determine the number of bits required, and then replace the LSB with the MSB of the watermark. To get the watermark, get the LSB for the number used, then change them to MSB and use them to make a new image. The image that is restored will be of poor quality in this case. The same bit will be utilised to hold the secondary LSB of the original image and the watermark in rotational LSB replacement.

Create matrices of the original image and the watermark before embedding the watermark with LSB rotational replacement. Assume that the original image is in good condition.

[11111111]	[10101010]
[10101010]	[11111111]
[01010101]	[10101010]
[11011011] +[10101010]	⇒
[00110100]	[10101010]
[11100010]	[11011011]
[10001000]	[10101010]
[11000001]	[10001000]

Figure 2: Rotational replacement of LSB while embedding

The extraction procedure will be identical to the embedding method, in which blocks are determined using the value. The first row LSB will be used to rebuild the watermark based on the size of the watermarked data. The subsequent rows are rotated in the reverse order of embedding once the first row is removed. The data from the previous row will be replaced by the data from the next row.

Structural Similarity Index (Ssim Index)

Zhou Wang proposed the SSIM Index, a system for assessing quality based on structural information deterioration. Calculating the structural information difference for the human visual system can provide a decent estimate to the image distortion perceived. The luminance of an object's surface is determined by the product of illumination and reflectance, but the structures of the scene's objects are unaffected by illumination. The structural information in an image is defined by the SSIM Index as those properties in an image that indicate the structure of objects in the scene, regardless of average luminance or contrast.

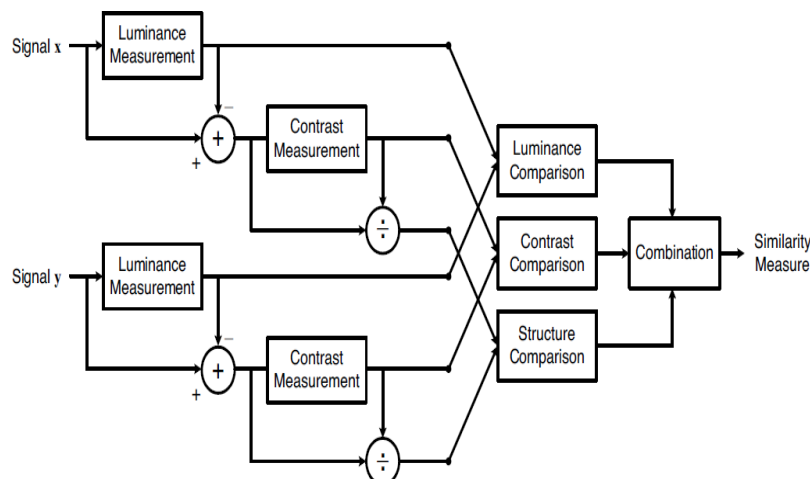


Figure 3: Diagram showing calculation of SSIM Index

In SSIM Index, the similarity measurement is done by making comparison of luminance, contrast and structure. Let x and y be two image signals.

Luminance of each signal is calculated as:

$$1^n$$

The structure comparison is calculated:

$$(X + y_x) / x \text{ and } (y + x_y) / y$$

Combining these three, the SSIM index is calculated as:

$$(2x_x y y + C_1)(2x_{xy} y C_2)$$

$$SSIM(x, y) = \frac{(2x_x y y + C_1)(2x_{xy} y C_2)}{(x_x^2 + C_1)(y_y^2 + C_2)}$$

Where C & C are included to avoid instability when $x^2 + y^2$ is very close to zero.

$$C_1 = (K_1 L)^2 \text{ where } K_1 = 0.01$$

$$C_2 = (K_2 L)^2 \text{ where } K_2 = 0.03$$

$$L = \text{dynamic range of the pixel values.}$$

Design Overview

This study is unique in that it introduces Rotational Replacement of LSB as a reversible watermarking strategy and shows that the SSIM Index is a superior alternative for assessing biometric data quality. PSNR is the most often used measure since it is simple to calculate; nevertheless, investigations demonstrate that the SSIM Index can be a more effective and efficient alternative. The approach uses LSB's Rotational Replacement and Difference Expansion to watermark a biometric image (fingerprint). These reversible watermarking approaches reduce noise while watermarking, making them ideal for biometric photos. SSIM index is calculated using the watermarked fingerprint picture. For watermarked images with varying payloads, the SSIM Index is computed.

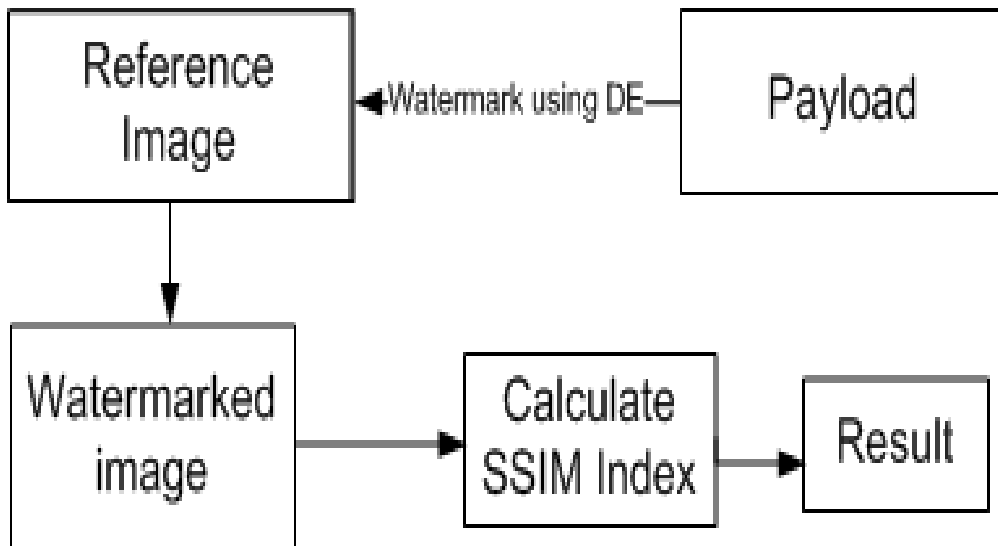


Figure 4: Calculation of SSIM Index of watermarked image

Results and Experimental Setup

Because the quality of an image is damaged more as the payload increases, the experiment was conducted with a single fingerprint image with varying payloads. The finger print [http://www.nist.gov] was obtained via the internet and has a resolution of 512*512. Using Image APIs in Java, the experiment was carried out. For varied payloads, watermarking was done using LSB and DE Rotational Replacement. The watermarked photos' SSIM index has been discovered. The purpose is to show that for biometric image watermarking, the SSIM Index-based quality measurement is a better alternative to PSNR, and that rotational replacement of LSB is a better reverse watermarking approach than DE.

Fig 5 shows the original image and the watermarked images used for the experiment using rotational replacement of LSB. As it can be seen, the images are visually not tampered by watermarking.

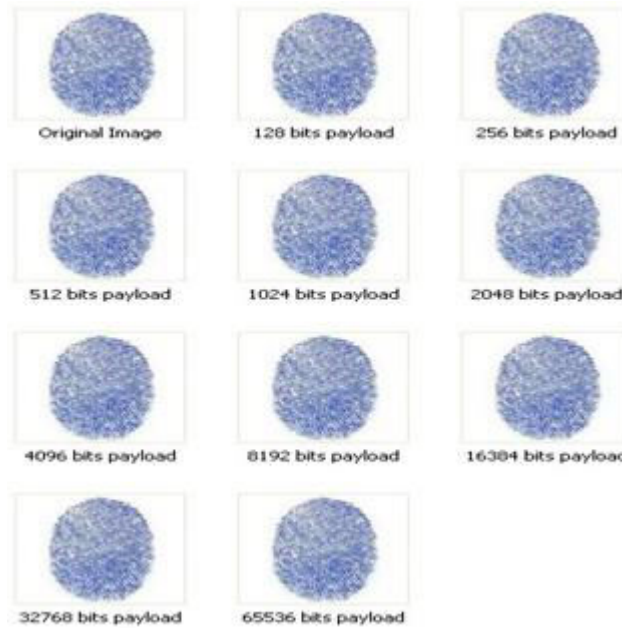


Figure 5: Watermarked samples with different payload

Experimental results show that Rotational replacement of LSB is a better reverse watermarking scheme than DE by measuring the quality using SSIMIndex. It is also proved that the execution time for Rotational replacement of LSB is much less than DE and payload capacity of Rotational replacement of LSB is more than DE

The SSIM Index for all the watermarked images mentioned here were found out. Figure 6 shows that SSIMIndex for DE watermarked images has a lower value indicating more noise and Figure 7 shows that the Rotation LSB replacement is faster than DE for a given payload.

Payload	DE	LSB
128	1.00000000	1.00000000
256	1.00000000	1.00000000
512	1.00000000	1.00000000
1024	1.00000000	1.00000000
2048	1.00000000	1.00000000
4096	1.00000000	1.00000000
8192	1.00000000	1.00000000
16384	1.00000000	1.00000000
32768	0.99999990	1.00000000
65536	0.99999936	1.00000000

Table 1: Value of Ssimindex for Different Payloads Using DE and RRL

Payload	DE	LSB
128	3954	688
256	3937	687
512	3953	719
1024	3968	672
2048	4125	703
4096	3984	672
8192	3985	703
16384	4500	687
32768	4953	703
65536	6906	672

Table 2: Value of Execution Time for Different Payloads Using DE and RRL

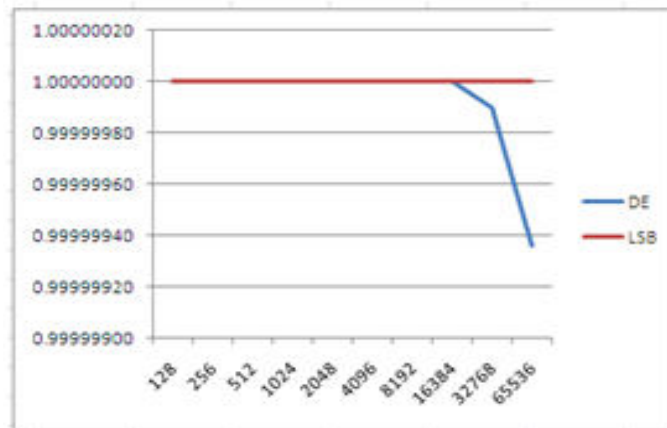


Figure 6: Graph corresponding to Table 1

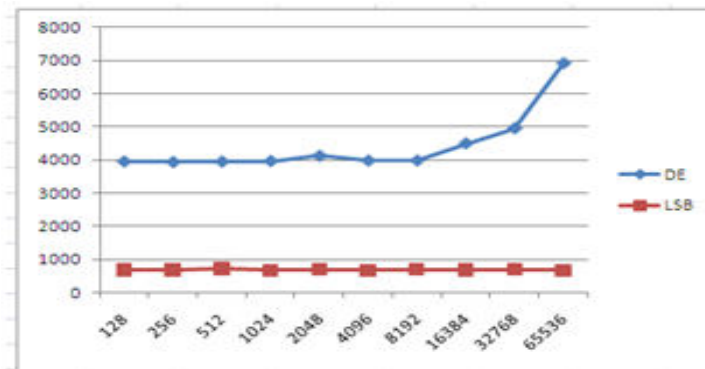


Figure 7: Graph corresponding to Table 2

CONCLUSIONS AND FUTURE WORK

Watermarking is a way to protect biometric pictures. Watermarking that is reversible allows us to have photos that are as distortion-free as possible. The original image can also be retrieved for future use. For moderate payloads, LSB Rotational Replacement is a high-performance method. The SSIM Index has been shown to be more accurate in determining the quality of a watermarked image. As a result, SSIM Index can be employed instead of PSNR in the field of biometric image security to achieve superior results. There is a maximum payload limit for reversible watermarking, which is determined by the original image's capacity.

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SPECTRAL FEATURE BASED EMOTION CONVERSION IN HINDI LANGUAGE

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ABSTRACT

The speech signal is produced by an exciting vocal tract system with impulse-like excitation. The information about vocal tract shapes is captured by spectral features. Therefore, in this work, we have performed spectral mapping for synthesizing emotional speech. The framework required for spectral mapping to convert neutral utterance into target emotional utterance has been developed in this work. We also developed feed forward neural network (FFNN) model based soft computing system using MATLAB programming for mapping to transform spectral parameters from neutral speech to emotional speech. Subjective and objective tests reveal that FFNN based spectral mapping performs better than GMM based spectral mapping. The evaluation measures reveal that the proposed FFNN model based spectral mapping converted speech signal for emotion transformation in Hindi language with better accuracy and resultant efficiency.

Keywords: Spectral mapping; Hindi signal datasets; emotion transformation; GMM; FFNN; emotional speech;

1. INTRODUCTION

Speech signal processing for emotion conversion has been a recent emerging and frontline research in the human-machine interface domain. In present times, people are constantly trying to make computers intelligent so that they can do almost all the work easily like humans [1]. This intelligent computer can not only reduce human effort but also save time [1]. The communication between human and computer occurs in both directions [2]. This communication should have two important features of speech technology, speech recognition and speech synthesis. It is known that human uses emotions frequently to convey the intended message. Therefore, it is expected that the machine should be able to understand and generate desired emotions [3][4]. Most of the existing speech systems can generate only neutral style speech. In this situation, the transformation of emotion is applied to convert the neutral style speech to desired expressive style speech.

The modules of emotion transformation are used for making speaking instruments for disabled people, and telling the stories in automatic way [5][24]. Generation of emotional speech is a challenging research problem. Some research works have attempted to generate expressive speech using text-to-speech synthesis (TTS) technique. Researchers have used following methods for expressive speech synthesis: (i) Formant synthesis or rule-based synthesis, (ii) Di-phone concatenation synthesis, (iii) Unit selection synthesis and (iv) HMM-based parametric speech synthesis. Emotion transformation approach differs from expressive speech synthesizers, because it takes input as neutral speech, while the input of expressive speech synthesizer is text. It can be used with any speech synthesizers to convert their neutral speech output to desired emotional speech. It generates emotional speech by creating emotional parameters into neutral speech [6][7]. A formant vocoder for synthesize the speech transformation showing the contour mapping of the target emotion through neural network [25]. For synthesizing emotional speech, the most important issue is to identify features which carry the emotion-specific information. Among various speech features, the widely used features for discrimination of emotions are prosodic and spectral features. The existing emotion transformation techniques transform neutral to emotional speech using prosody manipulation [8–10]. In this paper, we have generated emotional speech by the mapping of spectral features from neutral to target emotions in Hindi language.

2. Dataset Collection and Database Preparation

Spectral feature mapping framework needs parallel utterances of source and target emotions to perform emotion transformation process. Around 30 to 50 parallel utterances are sufficient to build emotion-specific mapping functions [11][12]. In this work, we have selected 100 parallel utterances from the emotional speech database collected from one male and one female speaker in Hindi language. These utterances have been recorded in four basic emotions angry, happy, neutral and sad. For training and testing purpose, we have used 70 and 30 parallel utterances, respectively.

3. Proposed Method for Emotion Transformation

In this work, feed forward neural network has been explored for emotion transformation. In the literature, GMM has been used for mapping features from one domain to others. However, the weakness of GMM is that it uses the assumption that the shape of mapping function is Gaussian. In addition to it, GMM requires to fix the number of mixtures before mapping process. These weaknesses motivated us to explore feed forward neural network (FFNN) to develop emotion transformation system. Normally, it contains 2 hidden layers for capturing

global and local information between input and output parameters [13–15]. Any continuous valued function can be simulated by considering two or more hidden layers in the neural network [16]. Hence, two hidden layers are sufficient for developing mapping functions. We have considered three hidden layers in place of two hidden layers to take the additional benefit of symmetric structure. The symmetric structure is useful to map input parameter to output parameter [16–20]. The FFNN is depicted in Fig. 1. The third hidden layer of FFNN compresses the dimension of input parameters. It captures global information while other hidden layers capture local information required for developing mapping functions. The accurate mapping functions are developed by selecting appropriate structure of FFNN. The mapping function $F(t)$ can be expressed as following:

$$F(t) = g(W^4h(W^3h(W^2h(W^1g(t)))) \tag{1}$$

Where $g(t) = x$, $h(t) = a \tanh(\lambda t)$, $a = 1.72$ and $\lambda = 0.66$. W^1, W^2, W^3, W^4 are weight matrices of the neural network. FFNN uses back-propagation learning to learn the relation between input and output features.

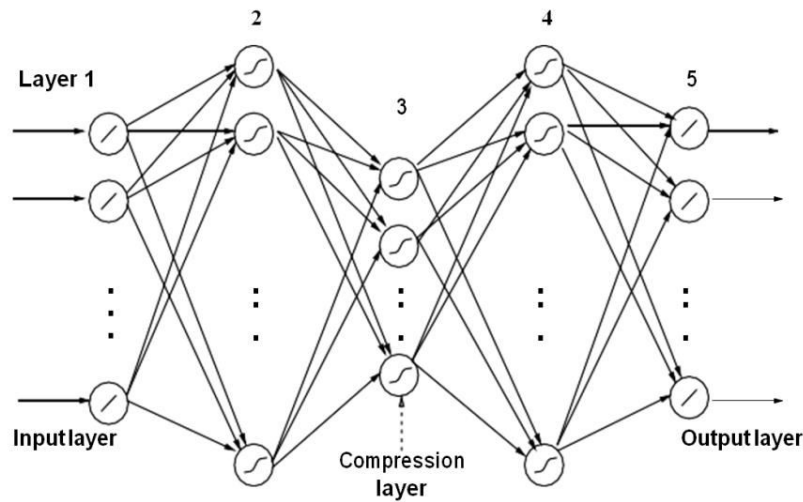


Fig. 1: The diagram 5 layers feed forward neural network model

3.1. Architecture of Emotion Conversion Framework

Emotion transformation process is performed in two steps: (i) training, and (ii) testing. During training process, GMM and FFNN models are developed to map MCEPs from neutral to target emotional speech as shown in Fig. 2. The average and standard deviation of F0 are computed from both neutral and emotional speech to perform mapping of F0 using equation 2. Fig. 3 shows the block diagram of testing phase in emotion transformation framework.

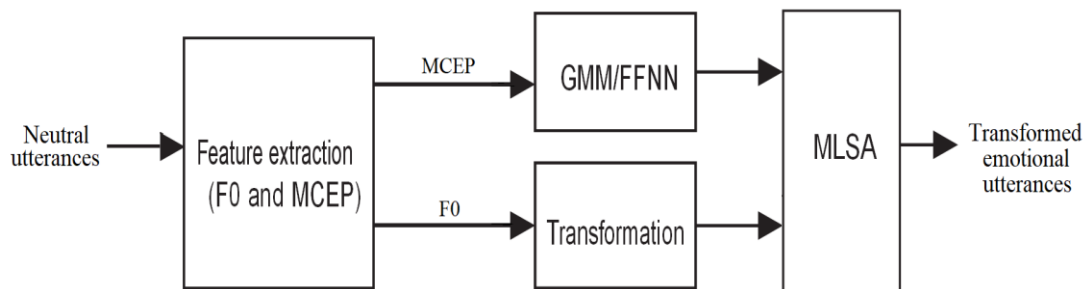


Fig. 3: Block diagram showing testing process

During the testing phase, the mapped MCEPs and F0 are given as input to MLSA filter [21] to generate the emotional utterance. In this work, for synthesizing the emotional speech, pulse excitation and random noise excitation have been used for voiced and unvoiced sounds, respectively.

3.2. Feature Alignment

Mel-cepstral coefficients (MCEPs) have been used as spectral features. Twenty- five MCEPs are computed for every 20 ms frame with the overlap of 5 ms. The durations of parallel utterances differ for neutral and target emotions. Therefore, the number of Mel-cepstral vectors extracted from parallel utterances also differs. Here,

each Mel-cepstral vector represents 25 MCEPs extracted from one frame. To align Mel-cepstral vectors from neutral and target emotions, dynamic time warping (DTW) [22][23] has been used in this work.

3.3. Mapping of Excitation Source Parameter

In this work, pitch frequency (F0) has been used as excitation parameter for generating emotional speech. F0 of neutral speech are mapped to the F0 of target emotion using following expression:

$$\log(F0_{conv}) = \mu_t + \frac{\sigma_n}{\sigma_t} (\log(F0_n) - \mu_n) \tag{2}$$

Where μ_n and σ_n are the average and variance of F0 for neutral speech in logarithmic domain, μ_t and σ_t are the mean and variance of F0 for target emotional speech in logarithmic domain. $F0_{conv}$ is the mapped pitch frequency corresponding to the $F0_s$ of neutral speech.

4. Synthesized Speech Evaluation

The synthesized emotional speech by FFNN based method is compared with recent GMM based emotion transformation method. The GMM based method uses the maximum likelihood estimation of the spectral parameter at utterance level. For implementing GMM based approach, festival framework has been used in this work. The optimal number of mixtures is 64. For FFNN based mapping, empirically determined optimum network structure is 25L 75N 10N 75N 25L. We have used both objective and subjective evaluations for measuring the synthesized emotional speech.

4.1. Objective Evaluation

For objective evaluation, in this work we have used Mel cepstral distortion (MCD). MCD is calculated using following expression:

$$MCD = \frac{10}{\log 10} * \sum_{i=1}^{25} (mc_i^t - mc_i^e) \tag{3}$$

Where mc_i^t and mc_i^e are the i^{th} Mel cepstral coefficient of the transformed and target emotional speech frames, respectively. MCD is known to be correlated with the results of subjective evaluation. For objective evaluation, we have considered 100 utterances from each emotion to build emotion transformation system for generating emotional speech from neutral speech. For computing the objective scores, 50 test utterances have been considered in this work. **Table-1** shows the MCD score for synthesized emotional speech by FFNN and GMM based mapping techniques. From the table, it is observed that MCD score is slightly less for FFNN based system compared to GMM based system. For sad emotion, MCD score is slightly less than other emotions. It may be due to the fact that characteristics of sad emotion are more close to neutral speech than angry and happy emotions.

Table-1: Objective evaluation using MCD

MCD (in db)	Emotion transformation method	
	GMM	FFNN
Angry	6.89	5.83
Happy	6.13	5.41
Sad	6.04	5.23

The chart of objective evaluation for MCD test of emotion transformation using GMM and FFNN is shown in Fig. 4.

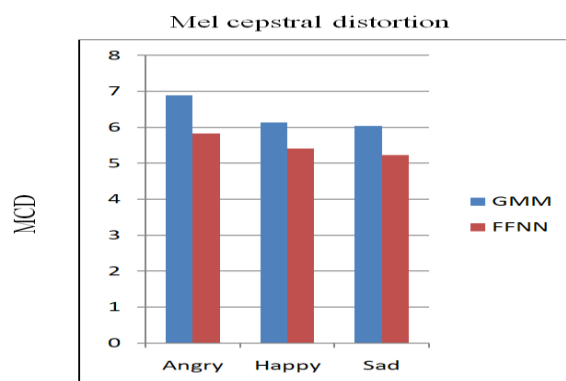


Fig. 4: MCD test for objective evaluation

4.2. Subjective Evaluation

Subjective evaluation is the average opinion of listeners, and it is directly related to human perception. **Table-2** shows the MOS test score for synthesized emotional speech by GMM and FFNN based mapping techniques. In this work, we have considered two subjective tests: (i) mean opinion score (MOS), and (ii) ABX test. In mean MOS method, listeners are instructed to give their opinion score for each test utterance on a 5-point scale. In ABX test, listeners are asked to give their decision whether given test utterance is close to neutral speech (A) or target emotional speech (B) or different from both (X).

Table-2: Subjective evaluation using MOS test

MOS	Emotion transformation method	
	GMM	FFNN
Angry	2.14	2.43
Happy	2.33	2.54
Sad	2.62	3.83

FFNN and GMM based mapping methods. From the table, it can be observed that MOS score of FFNN based method is slightly higher than GMM based method. The testing analysis and evaluation of t-test measures shows the significant difference of MOS score between GMM and FFNN based mapping methods at 95% confidence level. It is interesting to note that MOS score for sadness is slightly higher than anger and happiness. This fact is also supported by objective evaluation (see **Table-1**). **Table-3** shows ABX test score for evaluating the synthesized emotional speech.

Table-3: Subjective evaluation using ABX test

ABX	Emotion transformation method	
	GMM	FFNN
A	24 (4.0)	17 (2.8)
B	529 (88.2)	549 (91.5)
X	47 (7.80)	34 (5.7)

During the evaluation measures using ABX test, it is clearly observed that most of the synthesized file near around 90% is close to target emotion (B) in both GMM and FFNN methods. But, in comparison of GMM and FFNN methods, FFNN is more efficient and better than GMM in emotion transformation. **Figs. 5(a) and 5(b)** show the results of MOS and ABX tests in the form of bar-chart. **Fig. 5(a)** shows that mean opinion score of FFNN based method is significantly higher than GMM based method. **Fig. 5(b)** shows the results of the ABX test indication that listeners have given more preference to the synthesized files using FFNN based method.

5. CONCLUSIONS

In this work, spectral mapping function has been developed to map associations between spectral parameters of neutral and target emotions. Subjective and objective tests reveal that FFNN based spectral mapping performs better than GMM based mapping.

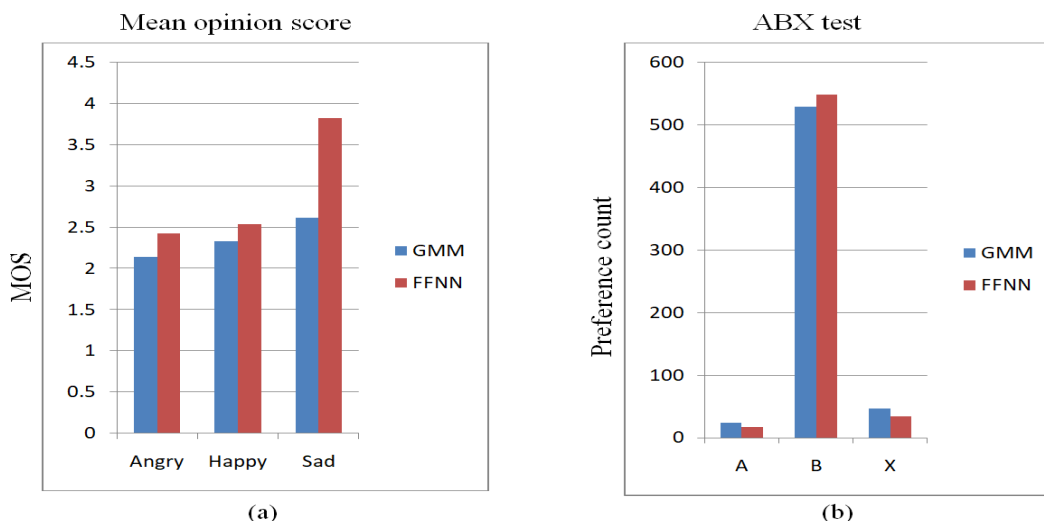


Fig. 5: Subjective evaluation: (a) MOS scores, and (b) ABX test scores for angry, happy and sad emotions

Prosodic and spectral parameters contain complementary emotional information. Thus, this experimental study of spectral mapping of both subjective and objective evaluation measures reveal that the proposed FFNN model converted speech signal for emotion transformation in Hindi language with better accuracy and resultant efficiency. Therefore, in the future work, both spectral and prosodic mappings will be performed together to improve the performance of subjective tests.

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TO ANALYZE THE IMPACT OF OTT PLATFORM ON SCHOOL STUDENTS IN THE AREA OF KALYAN, ULHASNAGAR, AMBERNATH & BADLAPUR**Sunil N Shah and Padmavati Deshpande**

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ABSTRACT

The telecom industry has been one that has had to deal with a continuously changing business and technology environment more than most other industries over the past half century. Traditionally the principal revenue streams for telecom operators have been voice and messaging (SMS) with data coming in at a far third till recently. But while telcos had been quick to react to previous game changing developments such as the internet explosion and the emergence of cellular mobile communications in the 1990s, they seem to have been caught napping in the face of the newest challenge to their revenues, Over The Top (OTT) service providers. The growing impact of OTT services on telcos' voice and messaging revenue is a widely accepted phenomenon. Their impact on mobile data traffic and telco data revenue are also areas that have been acknowledged as critical points for consideration. This study attempts to link these issues to shift in consumer preferences, identify the underlying factors there of and to understand the factors driving users towards OTT services.

An OTT platform, also known as a Via Top platform, is broadcasting and organizing service for audio and video that is provided directly to users over the Internet. Originally, identity agencies supervised key OTT services in India, such as Netflix, Hoststar, Amazon Prime, and others. However, in 2020, the Indian government will place these Over The Top platforms under the Ministry of Communications. The Information Systems Rules 2021, which went into effect on May 26, 2021, include new restrictions for OTT Platforms. Over The Top (OTT) refers to a system that would allow users to broadcast video and audio content over the internet. It has eliminated any cable operator, submarine link, or broadcast media interference. Mobile phones, computers, smart TVs, and other audio formats with an internet connection can readily access these media services. Anyone who has paid for a membership can register and gain limitless knowledge about the various platforms' news and entertainment sources. OTT platforms received one of the most significant increases during the COVID-19 epidemic, when the sector grew by a factor of ten. It played a crucial part in the knowledge society and development by providing India and abroad material. There has never been a centralized organization in India to govern OTT platforms. However, in 2019, in response to numerous concerns and challenges expressed over digital content on these internet platforms, the government decided to take action. The Supreme Court ordered the Central Government to take over the responsibility for the digital content displayed on these platforms in October 2020, and the OTT platforms will henceforth be governed by the Ministry of Information and Broadcasting. Eight video streaming companies signed a self-regulatory agreement in January 2019 that outlined a set of guidelines for the content that can be displayed online. There were, however, five terms and conditions that had to be allowed. There shall be no material on these platforms that would be disrespectful to the national emblem or flag. Content that might offend religious sensibilities could not be streamed. Visual effects that promote child porn will be outlawed. Content that is prohibited by national law or order could not be broadcast. Terrorism, in whatever form, cannot be encouraged.

❖ OBJECTIVES

- Finding in the study impact on youth
- Finding in the study content has been show of violence is valid
- Finding in the study to show study contain in ott platform
- Finding in the study how much student are spending their time watching ott webseries
- Finding in the study the nudity shown in the contain is valid

❖ HYPOTHESIS

On students, the influence of the ott platform is addictive. The impact of the ott platform on adolescents is addictive on students, as we have observed. During the pandemic and lockdown, we saw that everyone became increasingly glued to viewing online series. the pupil who is putting in the most effort. Technology is improving at a rapid rate on a daily basis. In youth, there have been both beneficial and harmful effects. The entertainment sector is unpredictably profitable because the majority of revenues are determined by a television channel's TRP or the box office collection of a film, for example, if a film grosses more than 100-200 crores. It is considered to be a blockbuster and a hit film, however this is not always the case. Whichever films fail to meet this criterion at

the box office are judged to be ordinary, despite the fact that they may have an excellent script or directing. During the pandemic and lockdown, single people are increasingly addicted to watching online series. the pupil who is putting in the most effort. Technology is improving at a rapid rate on a daily basis. In youth, there have been both beneficial and harmful effects. The entertainment sector is unpredictably profitable because the majority of revenues are determined by a television channel's TRP or the box office collection of a film, for example, if a film grosses more than 100-200 crores. It is believed to be a blockbuster and a hit film, despite the fact that other films have failed to meet this standard. Despite the fact that some films may have an exceptional storyline or directing, they are thought to be average at the box office.

H1: Impact of OTT platform on youth

H2: Unlimited chapters in cheap rate

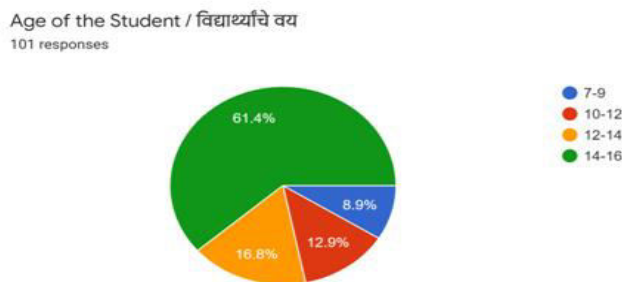
❖ **RESEARCH DESIGN AND METHODOD:**

We have accumulated the details by circulating a Google form. We had conducted this survey in the area of Kalyan, Ulhasnagar, Ambernath, Badlapur. The total number of responses was 101 out of which 58.4% were females and 37.5 were males. The responses we got are mostly form the 14 - 16 age group and 12 - 14 age group. According to our survey we got the information that 78.2 % people think that OTT platform are most popular because of no censorship and 21.8 doesn't think the same. 53.5% of people like to watch national content on OTT platforms and 46.5% of people like to watch international content on OTT platforms. 51 % of people's favorite online platform for streaming videos contains Netflix. 38 % of people watch Disney hostar. 37 % people watch Amazon prime. 27 % of people watch MX players. 23% of people watch Zee 5. 18 % of people watch Sony liv. 16 % voot. And most of the people think that web series show the real life and most watch OTT at the night And most of the people thinks that theme stories are attractive element of web series And some people think that intimate scenes are attractive elements of web series

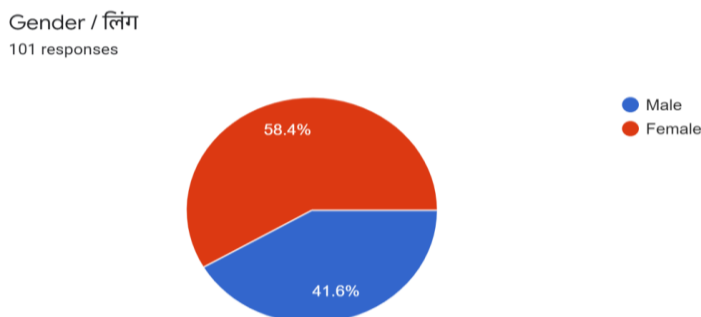
❖ **RESEARCH METHODOLOGY:**

The study develops a conceptual framework for understanding consumer preferences of OTT which leads to a shift from old to new media. This study uses exploratory and confirmatory factor analysis to provide an approach to identifying the important implications in consumer replies through a structured online survey done among various age groups. The statistical technique is used to better understand the relationships between measured variables and constructs.

❖ **Preliminary work / survey:**

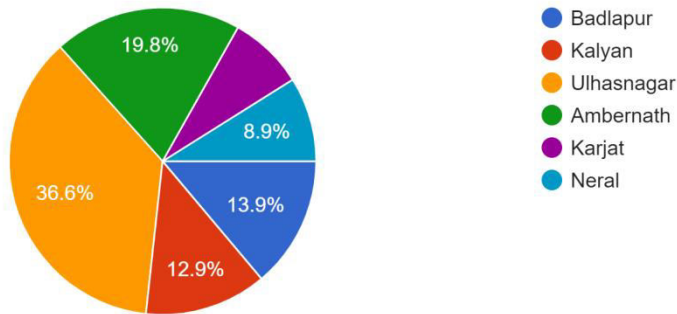


Above pie chart shows that the age group of 14-16 is highly interested in OTT platforms at 61.4% and the age group of 12-14 was second highest in age group and this group has 16.8% people interested in OTT platforms and the age group of 10-12 has almost 12.9% interest in OTT platforms and at last the age group of 8.9% interest in OTT platforms.



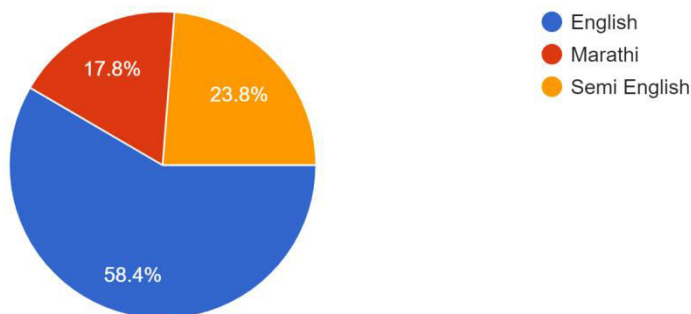
Above pie chart shows that as compared to male female have more interest in OTT platforms. This pie chart shows 58.4% of females are interested in OTT platforms and 41.6% Male's are interested in OTT platforms.

Area of Residence / निवासाचे क्षेत्रफळ
101 responses



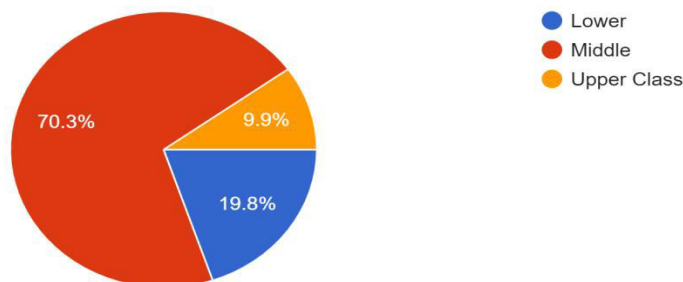
Above pie chart shows that people of Ulhasnagar were interested by 36.6% in OTT platforms and 19.8% people of Ambarnath and 13.9% of people of Badlapur and 12.9% of people are from Kalyan and 8.9% people of Neral and At last some people are from Karjat.

Medium of Education / शिक्षणाचे माध्यम
101 responses



Above pie chart shows that 58.4% of people belong to English Medium and 23.8% people from Semi English and 17.8% people from Marathi Medium.

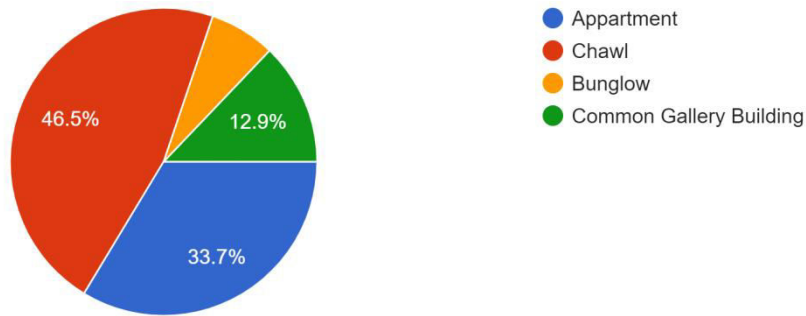
Class of Family / कुटुंबाचा वर्ग
101 responses



Above pie chart shows 70.3% of families are Middle Class Families and 19.8% and 9.9% Families belong to Lower and Upper class respectively.

Building Type* / इमारतीचा प्रकार

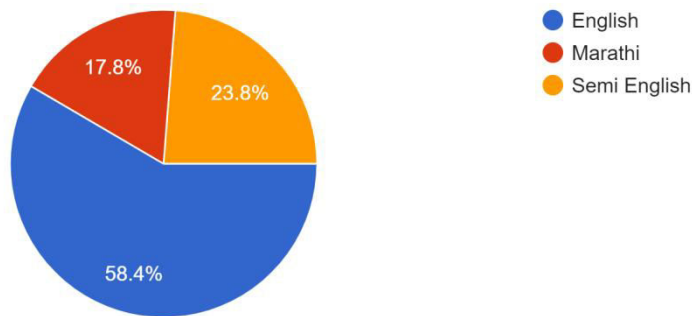
101 responses



Above pie chart shows 46.5% people are living in a chawl and 33.7% people are living in apartments and 12.9% people living in the Common Gallery Building.

Medium of Education / शिक्षणाचे माध्यम

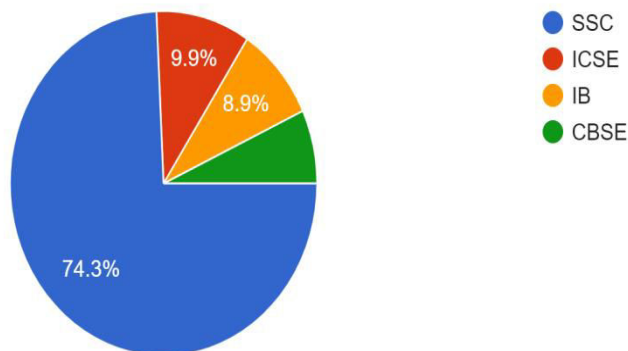
101 responses



Above pie chart shows 58.4% have studies from english medium and 23.8% are semi english medium and 17.8% are from marathi medium

Board of Passing / उत्तीर्ण मंडळ

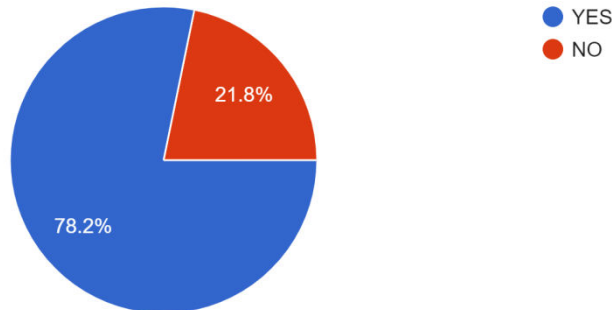
101 responses



Above pie chart shows 74.3% are from SSC board passing and 9.9% are from ICSE and 8.9% are IB

Are OTT platforms more popular because of no censorship ? / सेन्सॉरशिप नसल्यामुळे OTT प्लॅटफॉर्म अधिक लोकप्रिय आहेत का?

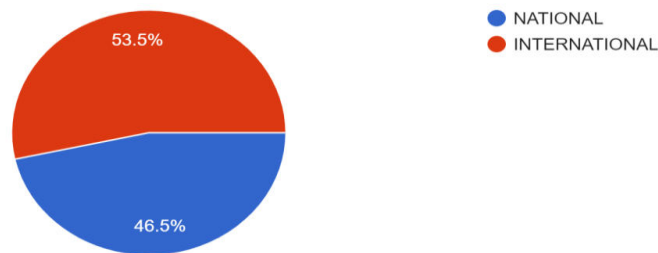
101 responses



Above pie chart shows 78.2% people think OTT platforms are more popular because of non censorship and 21.8% doesn't think same

What do you like to watch more on OTT platforms ? / तुम्हाला OTT प्लॅटफॉर्मवर अधिक काय पाहायला आवडते?

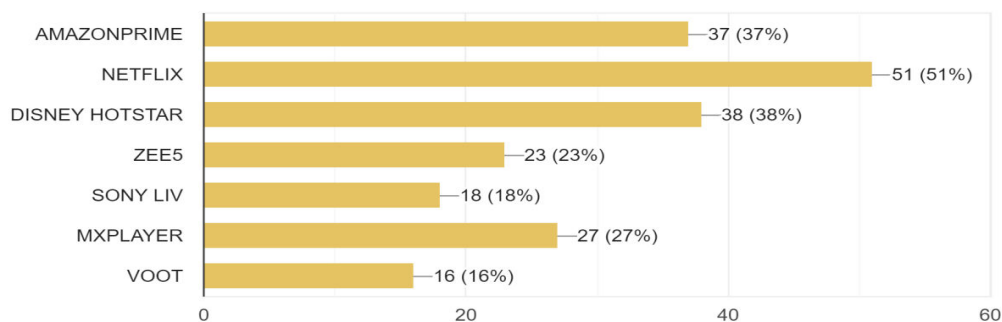
101 responses



Above pie chart shows 53.5% people like to watch national contain on OTT platforms and 46.5% people like to watch international contain on OTT platform

Which is your favourite online platform for streaming video content / व्हिडिओ सामग्री प्रवाहित करण्यासाठी तुमचे आवडते ऑनलाइन प्लॅटफॉर्म कोणते आहे

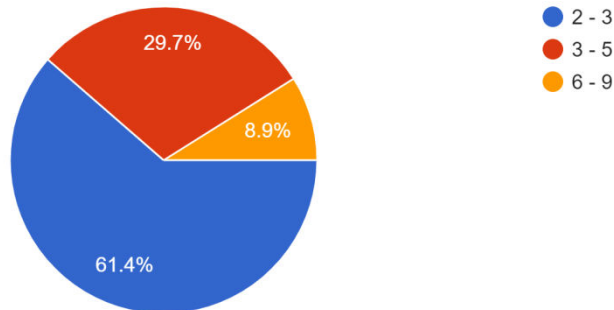
100 responses



In the above bar diagram showing us that 51% of people's favorite online platform for streaming video contain is netflix , 38 % of people watch disney hotstar, 37 % of people watch amazon prime , 27% of people watch mx player,23% person watch zee 5 , 18% of people watch sony liv , 16% of people watch their favorite contain on voot .

How much hours you watch the web series or video content online everyday / तुम्ही दररोज किती तास वेब सीरिज किंवा व्हिडिओ कंटेंट ऑनलाइन पाहता

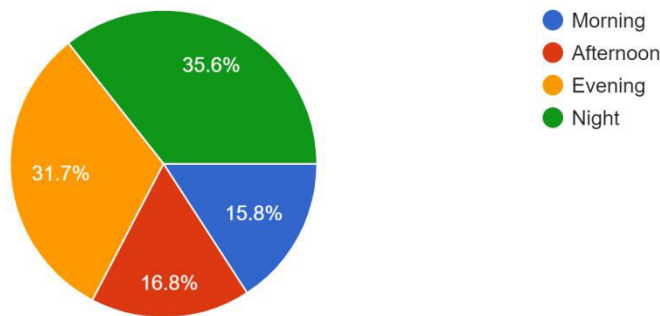
101 responses



Above pie chart shows that 61.4% of people watch webseries 2-3 hrs and 29.7% of people watch 3- 5 hrs and 8.9% of people watch 6- 9 hrs webseries.

Ideal time when you Watch / तुम्ही पाहता तेव्हा आदर्श वेळ

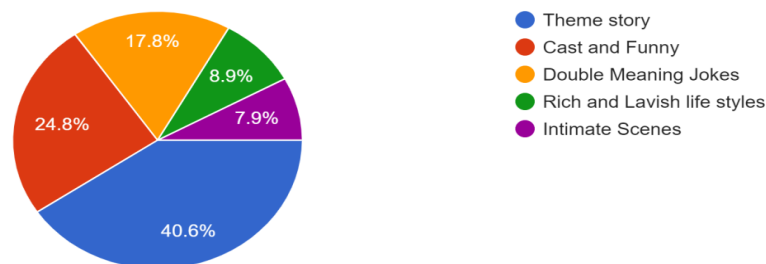
101 responses



Above pie chart shows that 35.6% of people's ideal time to watch web series is at night time and 31.7% people watch in evening and 16.8% of people watch in the afternoon and 15.8% people watch at morning time .

What is the most attractive element about web series ? / वेब सीरीजमधील सर्वात आकर्षक घटक कोणता आहे?

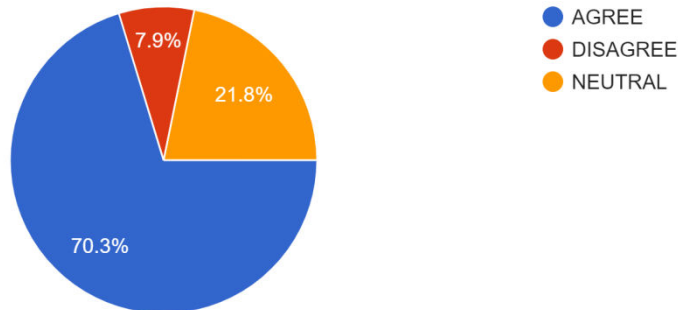
101 responses



Above pie chart shows that 40.6% of people think's theme stories are most attractive element about webseries and 24.8% of people think's cast and funny are most attractive element and 17.8% of people think double meaning jokes are most attractive element and 8.9% of people think rich and lavish lifestyles are most attractive element and 7.9% people think intimate scenes are most attractive element in web series.

Do you think that web series shows are changing the perception of youth strongly agree ? / वेब सिरीज शोमुळे तरुणांची समज बदलत आहे असे तुम्हाला वाटते का?

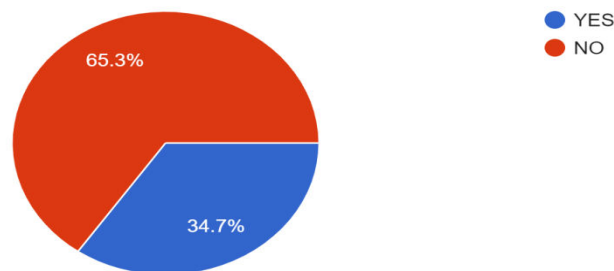
101 responses



Above pie chart shows that 70.3% of people agreed that web series shows are changing perception of youth strongly and 21.8% are neutral and 7.9% are disagreed

Do You Feel Nudity Should be Shown in Web Series ? / वेब सिरीजमध्ये नग्नता दाखवली जावी असे तुम्हाला वाटते का?

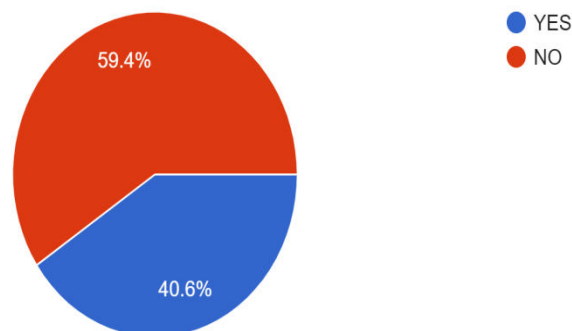
101 responses



Above pie chart shows that 65.3 % think nudity should be shown in web series and 34.7% don't think the same.

Do You Feel Crimes / Violence Scene Should be Shown in Web Series / वेब सिरीजमध्ये तुम्हाला गुन्हे / आवाजाचे सीन दाखवले जावेत का ?

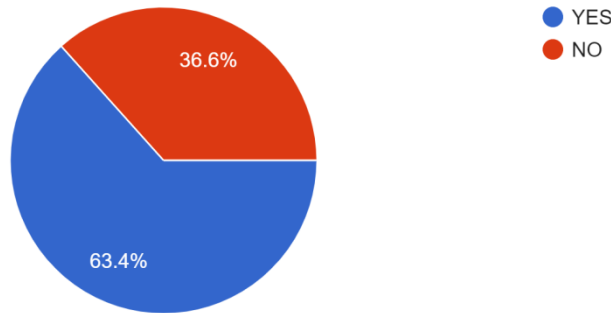
101 responses



Above pie chart shows that 59.4% of people think crime / violence scenes should not be shown in web series and 40.6% of people don't think the same.

Do You Think Web Series are Shown like a Real Life / वेब सिरीज खऱ्या आयुष्याप्रमाणे दाखवल्या जातात असे तुम्हाला वाटते का?

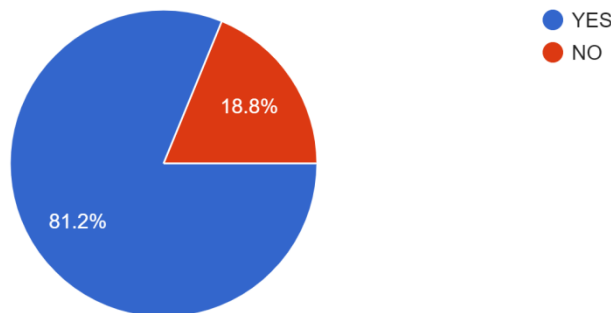
101 responses



Above pie chart shows that 63.4% of people think web series are shown like a real life and 36.6% don't think the same

Do You Think Education related Series are Shown / शिक्षणाशी संबंधित मालिका दाखवल्या जातात

101 responses



Above pie chart shows that 81.2% of people think Education related series should be shown more and 18.8% don't think the same.

❖ **Expected Outcome:** The outcome of the OTT platform in the above report , females were interested in OTT platform as compared to male and the age group of 14 to 16 age was highly interested in OTT platform . people of ulhasnagar were highly interested in OTT platforms . Nearly 36.6% people of Ulhasnagar were streaming on OTT platform. If we talk about their medium of study, a lot of people studied from English medium. As shown in the above report most of the people are Qualified “SSC” and they are teenagers. Usually People who belong from middle class families are used to streaming on OTT platforms because of their cheaper rates and unlimited contents. OTT platforms become more popular because of their no censorship and their sensitive content.

People were watching international web series because of their better content and Netflix was in first position according to their subscribers because it shows more international content as compared to other platforms. People were spent their lots of time by watching OTT platforms and most of people like to watch web series in night because most of people has free time in night and lots of people were like to watch theme stories and youth were changing their perception because of OTT platforms and many people strongly agree to this. Nowadays people want web series based on real life stories and education. Most people were against web series based on nudity and crime or violence . By the above survey we get to know that people are more interested in OTT platforms and people have their different opinions and views. We get to know this survey is very important for our knowledge and for our awareness.

❖ **Benefits to the Society:**

- **It is a Creative Method of Using Media:**

As we all know, OTT platforms have very creative and interesting content and many people show their creativity by creating their own content.They can make money by creating their own content. This can make

their career better and they can live a better life. ``Youtube " which is owned by Google is the major application used by people of India for creating their own content. By using this application there are lots of people in India who come up with their creative ideas and They are influencing other people in India.

- **Influencing People**

It's human physiology we human's easily trust what we see with our eyes and we start applying that in our life too. OTT platforms doing exactly the same thing they are influencing people by other content and people are getting influenced by their content and they are applying those things to their life. Many people are motivating other people by their contents. Some people try to explore the world in front of people. some creating comedy videos and some share their life story and by this all things people get influenced in their interest area and they start living in that way.

- **No Age Limit :**

OTT platform contains content form for all age groups. Online contents are available for all like for kids there are many cartoon series are there for example : simba, frozen etc. for youths and teenagers there are lots of web series are available for example : Money heist campus diaries etc. And for old age people there are lots of spiritual videos and web series available for them also. Generally youths and teenagers are getting attracted to OTT platforms. They like to spend their time by watching web series on OTT platforms.

- ❖ **Cost Benefit Analysis: Max 200 (Mangesh)**

- **It 'S Pocket Free :**

Indian people are very sensitive about price and their budget and the cinema halls are being costly for normal people in India it may charge 320 to 600 indian rupees per person. OTT platforms are price relevant for normal people. It may charge 499 to 600 Indian rupees per year for subscription and it allows a maximum of 2 devices and we can watch content with our family members.

- **Less Efforts**

After subscription you don't have to make any kind efforts just ON your device and you can watch content that you want. Before that you have to go to cinema halls and after taking tickets then you can watch that movie and in cinema hall contents are limited.

- **Unlimited Content on Cheaper Price**

OTT platforms provide unlimited content for their viewer and it is cheaper than theater and theater has limited content for example: At a time we can watch only one movie but on OTT platform we can watch a number of content's and it costs less than watching a movie in a theater. In the theater we can watch movies only once but on the OTT platform we can watch our favorite content anytime and anywhere.

- ❖ **Future Scope**

We all have witnessed the changes in the telecom industry that had a lot of changes in the past few years . they had to deal with a constantly changing business and technology environment and more. Voice and sms have been the primary revenue stream from telecom carriers , whereas telcos were quick to respond to prior game-changing like the internet explosion and the emergence of cellular mobile communication they have been caught off guard by the newest threat to their income, over the top services of telecom voice and messaging income is a well known trend . According to the research we have seen, people are more attracted to Web series nowadays

- ❖ **Swoc Analysis / Limitations**

A SWOC Analysis is perhaps the most well-known and commonly utilized planning method in the field of social care. However, it's good going through the fundamentals again. SWOC identifies the Strengths, Weaknesses, Opportunities, and Challenges, and it's a terrific approach for a team to come up with new ideas and solve a problem. Every section of the huge square is identified with the SWOC subjects.

- **(S)Strength**

Increase at an accelerating rate Image of the organization Impact on the world wide scale Netflix's original film television Shows provide a wealth of options for budding producers Ability to adapt. In a number of Southeast Asian countries, It is budget friendly.

- **(W) Weakness**

Increased obligations due to a lack of copyright In numerous places, there is a scarcity of unique content. Continuity with the North American market Customer service employees are in short supply. In numerous nations, there has been a decline in the desire for high-priced subscriptions.

- **(O) Opportunity**

The OTT platform is in high demand. Netflix original programming product line growth, such as video games and magazines Significant collaboration. When contrasted to other OTT platforms, the material on this platform is superior. The ad-based business model is on the verge of being phased out.

- **(C) CHALLENGE**

Covid19 has halted the creation of a number of television series and films. Government laws and restrictions Content piracy A single account shared by multiple users Government rules and restrictions in various countries.

- ❖ **LIMITATION**

OTT platforms have a great future. The popularity and utilization of OTT platforms will only grow when 5G services are launched. Because India is such a large market for OTT platforms, the only way to ensure faster absorption and growth is to offer various plans to cater to a diversified user base with varying income levels.

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TOXIC MASCULINITY AND STIGMA REGARDING ASKING FOR HELP IN INDIAN EMERGING ADULTS: A MIXED METHOD STUDY**Kashika R¹ and Maheshbabu N*²**¹Author - Student, 2st year MSC Psychology (Clinical and Counselling), SDMC Ujire, Affiliated to Mangalore University

Assistant Professor, Dept. of P.G Studies and Research in Psychology, SDMC Ujire, Affiliated to Mangalore University

ABSTRACT

The study is based in India where the patriarchy is celebrated in most parts of the country and mental health of men is overlooked. Adding on to it, the emerging trends of male personalities (alpha, sigma, omega and more) adds to the masculine norms and stereotypes that already exists. The aim of the study is to examine the relationship between toxic masculinity and stigma regarding asking for help and the trends that exists in emerging Indian adults. The study adopted mixed method, sequential explanatory research analysis to obtain the results. The sample included for quantitative analysis was 150 college aged Indian men, for the second phase, 10 participants who lie as outliers were selected. The results show the relationship between adherence to masculine norms and stigma regarding asking for help. In the second phase of research that is, the qualitative data analysis derived the common themes in men that were restricted emotionality, restricted close circle, success preoccupation and need for violence which directly or indirectly impacted men and people around them. The themes that emerged out of the high and low scorers show the difference in opinions on the adherence to masculine norms and help seeking behaviors. The contrasting views existed mainly in viewing manning up as downfall or useful, acceptance or disregard towards gender roles, views on magnification of heterosexuality and equity and finally on help seeking behaviors.

Keywords: Toxic masculinity, Indian college aged students, stigma regarding asking for help.

Toxic masculinity is a term often used to provide an explanation for the factors of exaggerated masculine trends. The term has advanced through the years and has a place every in academia and normal speech. In contemporary-day society, human beings often use the term toxic masculinity to provide an explanation for exaggerated masculine developments that many cultures have substantially normal or glorified. This risky concept of masculinity moreover locations extensive importance on ‘manliness’ based absolutely on: strength, loss of emotion, self-sufficiency, dominance and sexual virility. (johnson, 2020)

Whereas, ‘Healthy masculinity’ is focused on men engaging their emotions, rather than being controlled during times of emotional vulnerability (Nagayama Hall 2017; Andrea 2019).

Given the meaning of the term, toxic masculinity has been emerged as a popular term and the differentiation came about recently of toxic and healthy masculinity quite recently by 2015 by the concept has been existing from way before. Now, the term toxic masculinity is being over used in academic literature and public discourse.(Waling.A, 2019)

As dimensions of toxic masculinity, according to APA guidelines for psychological practice with boys and girls (2018) toxic masculinity refers to adherence to the traditional norms which are harmful to men and to the society, these include:

- a. Power over women which means the rejection of feminine ideals and norms and behaviours such as dominance and superiority over women in seen.
- b. Intimate partner violence follows as a chain when the men tries to exert dominance over women and the intimate partner using violence. This could be done to regain control.
- c. Aggressive behaviour used by men especially to be seen as strong or heroic this could be because of the desire to win.
- d. Emotional detachment is the characteristic of toxic masculinity which is suppression of vulnerable emotions or emotional expression to avoid being seen as someone who is weak.
- e. Heterosexual self presentation could be overly seen as there is exhibition of behaviours which prove one’s identity and outrageously reject feminine norms or behaviours that could be mistaken for homosexuality.

Toxic masculinity glorifies dangerous habits. It's the belief that "self-care is for women" and guys have to deal with their bodies like machines via way of means of skimping on sleep, operating out even if they're injured, and pushing themselves to their bodily limits. In addition to pushing themselves tough physically, toxic masculinity discourages men from seeing doctors.

A 2015 study determined that men who sold into conventional notions of masculinity held extra of a poor mindset about looking for mental health services in comparison to people with more flexible gender attitudes. (Yousaf, O., Popat, A., & Hunter, M. S, 2015).

Drawing on greater than forty years of research, they advise that conventional masculinity is psychologically harmful. They additionally report that socializing boys to suppress their feelings creates damage, each inwardly and outwardly (APA guidelines)

Males having stigma regarding asking for help was well expected and explained in the previous research. An article which was published in the year 2018 titled Mental health literacy, stigma, and help-seeking behaviors among male college students assessed mental health literacy, psychological determinants and help seeking behaviours among male university students. The results highlights that there was statistically significant differences in between undergraduate and graduate students and undergraduate men had moderate mental health literacy and low intentions of help seeking behavior. (Rafal, Gatto & DeBate, 2018).

A similar correlational study as the present study with slightly different variables and methodology was found. The article titled, Toxic Masculinity: An Exploring toxic Masculinity: An Exploration of Traditional Masculine Norms in Relation to Mental Health Outcomes and Help-Seeking Behaviors in College-Aged Males by Benjamin Harris found that men who adhere to toxic masculinity are less likely to seek help for mental health issues and results also found that, certain dimensions of toxic masculinity (heterosexual self-presentation) may be more clearly linked to specific mental health challenges in men. (Harris. B., 2021)

Thus toxic masculinity is emerging as a trend and is being popularized through media and various other sources in different names such as Alpha or sigma male and the like which uplifts the ideas in the form of rules that being emotionally inhibited, being a lone wolf, preoccupied with success and are to simply abide by the romanticized idea of being more manly where these form the main characteristics of toxic masculinity. The literature shows that apart from toxic masculinity causing mental health issues in men it also comes with a huge stigma attached to it which withholds men from asking for help in day to day life which could worsen the condition.

The aim of the current study is to see the presence of relationship between toxic masculinity and stigma regarding asking for help in Indian emerging adults and to explore the trends in the selected sample using mixed method.

OBJECTIVES

- To know the correlation between toxic masculinity and stigma regarding asking for help in Indian men
- To understand the trends that exist about masculine norms and help seeking behaviours among Indian college aged students

Participants

The sample included 150 college going students. The average age of the sample was 18 to 25 of age. The sample was taken mainly from the students whose nationality is Indian and studying in dakshina kannada district of Karnataka. Males with Indian nationality but staying away from India for more than 2 years are excluded. Males of this age range and is not exposed to the education setting are excluded

Procedure

Primary data was collected by administering the tools which was inclusive of the consent form and the two standardized scales those are masculine role scale and stigma regarding asking for help scale. The scales were directly administered to the target sample who satisfy the sampling criteria with attached consent forms. Instructions were given and the limits to confidentiality were explained before administration. The data was analyzed. Post analysis, outliers were assessed. Semi-structured interview schedule was prepared as per the objectives of the study. Telephonic interviews were conducted to obtain the in-depth data. The data was further transcribed and analyzed using N-Vivo software to obtain the themes and subthemes.

Tools Used. The following tools will be used.

The Masculine Role Scale. (Snell, W. E., Jr.,2013) The Masculine Role Inventory (MRI) consists of 30 items designed to assess the three conceptual domains those are success preoccupation, restrictive emotionality, inhibited affection subscales. The subjects are asked to indicate how much they agreed or disagreed with the statements, using a 5-point Likert scale, running from A (strongly disagree) through C (neither agree nor disagree) to E (strongly agree). Self-disclosure correlates were also investigated. The results demonstrated adequate reliability and validity for the MRI.Cronbach's alpha for this subscale was .88.

Self-Stigma of Seeking Help Questionnaire. (Vogel et al., 2006) The scale is a 10-item Self-Stigma of Seeking Help scale (Vogel, Wade, & Haake, 2006). Prior studies indicate strong internal reliability with the 22 survey instrument (0.91; Vogel et al., 2006). Participants were asked to indicate their level of agreement with the statement made (e.g., seeking psychological help would make me feel less intelligent) in each item on a scale of 0 (Strongly agree) to 6 (Strongly disagree)

Data Analysis

Statistical package for social sciences (SPSS) was used to conduct the statistical analysis of the study. After collecting the data, the data was uploaded to SPSS software to derive the descriptive analysis. Prior to further analysis, normalcy of the data was tested using Shapiro-wilk statistic. Later, Pearson correlation was used to satisfy the objectives. Further qualitative data was obtained using semi structured interviews to explain the trends that exists. The data was transcribed and coded using the N-Vivo software to obtain the themes and subthemes. Thematic analysis was used and the process for data analyzes included reading and rereading the transcriptions, generating codes from the data, developing sub- themes and themes.

Ethical Considerations

Informed consent was obtained before the interview, confidentiality was ensured and they were informed about their rights to withdraw.

RESULTS AND DISCUSSION

Quantitative Analysis

H₀1 there is no significant correlation between toxic masculinity and stigma regarding asking for help in college aged Indian men

Table 1: Correlation between toxic masculinity and stigma regarding asking for help

			SRAH
TM	Pearson Correlation	1	.268**

Table 1 shows the correlation between toxic masculinity and stigma regarding asking for help at 0.01 significance and the value, r= .268 which shows that it has significant correlation between two variables. Thus the null hypothesis was rejected.

Qualitative Analysis

Table 2: Themes and sub-themes derived from the low scorers in the area of toxic masculinity and stigma regarding asking for help

Themes	Sub- themes
Manning-up as a downfall	Inhibited expression
disregard gender roles	No strict distinction Increased tolerance to rules
equity	Respect instinctively breaking barriers
Beyond the binary	Acceptance of third gender Vouch for equality
Open to asking for help	Support

The themes of the low scores will be represented by the letter ‘L’ followed by the numbers

L1: Manning Up As A Downfall

The participants (5) believed that masculinity is a societal construct which pushes a man to be strong, be a protector, daring and courageous. The participants see the repercussions of it being a downfall as it crosses the

line of healthy masculinity. Under this theme, a few repercussions that was found harmful by the participants are noted as subthemes.

L1.1: Inhibited Expression

In the name of being 'manly' or 'manning up' the men are withdrawn from expressing their emotions and feelings though they feel the need of it. The pent up emotions could come out in a way when it reaches a peak according to the majority of the participants. The idea of men not showing one's expression is normalized by the responses given.

PH: "Men are not supposed to cry they should act like a stone and they are treated like they don't have feelings"

RM: "but if you look at the societal definition of manning up its mostly don't cry or don't express or don't get emotional stuff like that so that's a bad thing and that shouldn't be right."

L2: Disregard Gender Roles:

The participants mostly disregard the traditional gender roles. They had a negative outlook towards it and found it discriminatory among the gender that was not appreciated.

L2.1: No Strict Distinction

The participants did not see any point in distinguishing gender roles as it did no good but discrimination according to them.

PV: "I don't find traditional gender roles attractive because it does not give scope for equality"

PH: "The gender roles which disturb equality like girls has to be housewife I don't like that. Men can also cook and clean. And regarding dresscode, they don't care what men wear but it matters for a woman. This is why I don't like"

L2.2: Increased Tolerance To Rules:

There is acceptance and insight that the gender roles exist and it is a societal construction. A positive outlook of the situation was gained out of participants responses.

RM: "I think I'm quite oppositional to the earlier traditions but if there is meaning to it and use of it in current generations or if genZ can look some use in it and make some applications of those superstitions why not have it."

LH: "gender roles seen in a real sense with no stereotype is not harmful but it need not be imposed in other way"

L3: Equity

The participants following is this outliers, vouched for quality of being fair and impartial. This was particularly when it came to the opposite gender. Here the participants went one step ahead and celebrated the achievements of the opposite gender, empathized, moved beyond stereotypes and looked highly of the one's who broke the barriers to attain equity

L3.1: Respectful Instinctively:

The participants felt all genders deserved equity and respect for all the success and achievements. When that was witnessed they were proud and practiced respect themselves.

RM: "it's good to see men and women both achieving together in places where they are not supposed to at least in a traditional sense a man being able to cook a biryani is an amazing thing a women being able to throw a short put over a distance of 20mts"

PV: "women achieving something makes me happy just like anyone achieving. There is no difference I see in both, both working hard will achieve"

L3.2: Breaking Barriers

The participants who were the low scorers found the need to break the barriers of traditional gender roles if it were restrictive in any way for any gender. They found that attractive and felt that it was the way for gaining more equity.

PN: "I will be very happy and proud. I have two siblings two elder sisters I want them to grow and achieve. It gives me joy and it will increase my respect to them"

RM: "so I love watching & admiring people who are breaking barriers I love women in places they are not expected to be."

L4: Beyond the Binary

Preoccupation with masculinity being above all was not evident and the need and consideration of women only as the opposite sex rule was not found but interestingly, the participants looked beyond the heterosexuality and showed acceptance towards the third gender and saw equality for all as a need.

L4.1 Acceptance of Third Gender

Interestingly all the chosen participants completely accepted the third gender and looked beyond heterosexuality. They was against the discrimination that persisted.

PV: “I don’t have any separate opinion on any gender as such. They can live according to their wish.”

LH: “I don’t feel anything. It is their interest. Its not like they are that way from birth but while growing up maybe they might feel that way and its okay. Im accepting of it”

L4:2 Vouch For Equality

The participants not just accept and look beyond the binary but also see the discrimination happening and see the strong binary that exists and want to see equality for all the genders including the third gender.

RM: “ discrimination... they should be eradicated from the world and every person should have their own freedom of choice and every individual should have their own way of living style granted to them it should be exercised in a very equal manner”

NK: “I want to stand for them. I feel like helping them and they should also get equality in society”

L5: Open To Asking for Help

The participants scored less on stigma regarding asking for help and as an explanation when the questions were asked in the interview, it was found that they were very much open to asking for help and had a positive outlook to it.

L5.1 Support

The participants were of the open that a man would need support from the people around for accomplish something great along with hardwork of their own. They believed in themselves that having a proper aim, commitment towards something help them achieve something along with necessary support

PN: “Some problems we only can solve it . if we cant, we can take help from others”

Nk: “I will ask for help and atmost determination I will try my best”

Table 3: Themes and sub-themes derived from the high scorers in the area of toxic masculinity and stigma regarding asking for help.

Themes	Sub-themes
All-male	Discarding Muliebrity
Restricted expression	Weakness Perceived danger
Heterosexuality	Non-consideration of third gender
Manning –up as useful	Pushing of limits
Resistance towards asking for help	Magnification of self- reliance Personalization of the problem

H1: All- male

The literal meaning of the term is ‘consisting of or intended for men only’. This means that there was magnification of masculine behaviors and there were deliberate differentiation of male and female characteristics and avoidance of stereotyped feminine characteristics.

H1.1: Discarding Muliebrity

Muliebrity means womanly qualities or womanliness. Discarding any stereotypically considered women characteristics were seen where there were deliberate distinction made as manly and less manly characteristics.

PK: “I will never do a thing that a girl does. Nothing”

SG: “I usually do comedy in class and home. They record it and when they do I get really shy but not girls shy but that is one thing because I don’t like this tik tok things”

H2: restricted expression

The participants who were the high scores did not see any good in expressing their emotions or sharing as they viewed that it did them more harm than good.

H2.1: Weakness

The participants felt that expressing one's emotions could be a weakness. As most of the people thought being mentally tough was to not show their emotions and never to shed their tears.

KL: "boys usually don't show their emotions because they don't want to look weak"

CY: "qualities like not sentimental, emotional, should be there to be mentally tough"

H2.2: Perceived Danger

The participants not only saw that expressing their emotions is a sign of weakness but that saw the consequences of expressing their emotions as dangerous and can be taken advantage of or can be help against them.

SG: "It dangerous to share our feelings we need to be very careful friends might turn enemies so they shouldn't know our weakness"

VU: "I will never share my feelings to others at all I don't like it because its like we are falling prey to them. They might blackmail knowing our feelings and weakness. So I never share. If I really want, I will type and keep it."

H3: Heterosexuality

The participants of high scores viewed heterosexuality as ultimate and weren't looking beyond. The idea and division of men and women existed was limited to that.

H3.1: Non-Consideration of Third Gender.

The participants refused to form an opinion beyond the binary which is very much differing from the high scorers. There were out right disregard to neutral expression seen.

CY: "I don't have a good opinion on them. I have a bad opinion only. In foreign country they have accepted but in Indian they have not accepted. I don't think they should also. Because I don't like it."

PK: "I don't have any opinion on feeling on them, I don't want to have any opinion of them also"

H4: Manning – Up as Useful

The participant looked at masculinity in general as a strength and to play the roles of a protector, be competitive, be able to withstand any kind of mental breakdown or face all sorts of difficulty.

They saw these are something that motivates them to achieve and build themselves stronger.

H4.1: Pushing of Limits.

Manning up being the motivator to achieve things, it sort of pushed their limits to do more or not feel weak.

SG: "Helpful when we get sentimental, when they say why are you being like a girl, then I will be a little strong"

KL: "sometimes I will think I'm a man and I can do it and it motivates me to take the responsibility"

H5: Resistance towards Asking For Help

The participants had outright resistance to asking for help. The reasons revolved around them believing that the solution lies within them and only they can solve the problem or some said the male ego didn't give the room for asking for help and the like.

H5.1 Magnification of Self Reliance

The participants in this group mostly believed that they are enough to solve a problem and they can only deal with it being alone.

PK: "solutions to my emotional problem is with me that is why I don't tell or anything about my feelings to anyone"

SG: "I can solve on my own, if not it will pass with time nothing will stay."

H5.2: Personalization of the Problem

Another recurrent idea about the participant was that the problem is personal and others could not understand it or do anything about it as there was extreme personalization.

CY: “I will try to do it otherwise I will leave it. I will try 100% if I cant I will leave. Because it is my problem, if I can’t how can others so”

KL: “I sleep through it. I talk to best friends to cheer me up. I don’t talk about the problem. I shouldn’t show my feelings to others because it is my problem, only I can solve it.”

Table 4: Common Themes and sub-themes derived from the participants in the area of toxic masculinity and stigma regarding asking for help

Themes	Sub- themes
Role models	Male lead Male personalities
Success preoccupation	Self respect Increased need to prove oneself
Selective openness	Restricted close circle
Need for violence	Mode of expression Regaining respect

C1: Role Models:

All the 10 participants had their own role models for their way of being masculine and to define masculine characteristics. This emerged as a common theme both in low and high scorers.

C1.1 Male Lead

The participants looked upto a male in a family mostly the male head, influencers on media, celebrities, business man, sports man and the like and desired certain qualities of them in them to be masculine and to behave in a certain way.

KL: “My father’s brother because I like his positive attitude and he knows how to talk to others and I want to build a character like him.”

RM: “Shah Rukh Khan for his masculinity although he is a very aggressive person although he has a lot of stubbornness and anguish sort of person when it comes to reaching goal he channels most of his energy in maintaining harmonious relationship with people around him and has immense respect towards people who also respect him so that would be an example of masculinity”

C1.2: Male Personalities

There has been male personalities and few test available to know the male personality types. Which are majorly divided into sigma, alpha, beta and omega respectively and have a few characteristics listed.

VU: “Sigma alpha beta division have you heard? In sigma only few but in alpha almost all the characters like friendly, leadership qualities, sigma male has that they don’t talk a lot but they observe everything that is going on so those things.”

NK: “I like who don’t interfere into anything and be on their own and so their work. I want to be like that”

C2: Success Pre-Occupation

Collectively, the participants placed the success as utmost important. The competitiveness, need to win and attain something in particular was commonly seen among all the 10 participants.

C2.1: Self Respect

Success was important to the participants to gain respect for themselves and some even viewed that it is the only way to have the respect is to win or be successful.

SG: “Aim is important and hardwork, all investments 90;10 ration of hardwork and fun”

RM: “course nowadays I think there is a part of me which also tells that you should make a lot of money and it’s probably my early adult identity crisis that is trying to make me think of such things but I think some part of me tells that make money and buy stuff and get rich sort off there is a part of me which tells me that you can live a fruitful successful life if you have these things as well so that is also important in the present scenario but ultimately for me as a person it’s the process of any procedure of goal setting the plan that has been achieved that is success.”

C2.2: Need to Prove Oneself

The participants collectively had the need for proving themselves and more than 50% of them were willing to risk to prove themselves either for others or themselves.

VU: "I like to and in many things. I need to show a lot of things. I need to prove but doesn't mean others should give credits to it."

NK: "sometimes we need to prove ourselves for name and fame and if I see something good in it"

C3: Selective Openness

All the participants had selective people with whom they would form close relationships with and would be okay with sharing their feelings with. Everyone felt the need of choosing their own circle and the limit of people did not cross more than 5 including the parents.

C3.1 Restricted Close Circle

The participants deliberately restricted their close circles and didn't want to share their feelings to anybody else apart from them even though they felt the need to do.

SG: "Time waste in talking in mobile and stuff, few restrictions, fear of losing the person. This is what I know from other's experiences."

RM: I'm a very conservative person I don't form a close relationship with a lot of people... I as a person would not prefer more than 5 people in life who are close to me including family.

C4: Need for Violence

The participants when enquired about the need for violence, majority of them felt that the violence was sometimes necessary. The reasons were mostly that it is necessary as an expression for losing temper or being angry or for regaining the respect in varied situations.

C4.1 Mode of Expression

The violence was said to be sometimes necessary be it verbal or physical to show the anger or to express it. They believed that it is not realistic to stay calm all the time in all situations.

KL: "Yes, violence is sometimes necessary. We can't be same all the time right. It is necessary."

PV: "Yes, sometimes only way to teach is violence and to get peace in some situation."

C4.2: Regaining Respect

The participants believe there is a need for violence to get something done or to regain their power or respect in varied situations.

NK: "violence is useful because when people don't listen when told in normal words, violence path works"

VU: "violence is necessary. In life we have to see everything and experience everything. If they are violent we will be violent. I can't take it when people are touching people who are important to me. Then I get violent. "

DISCUSSION

The relationship between adherence to gender roles and masculine norms with stigma regarding asking for help in general and seeking professional help has been established by the literature throughout. The current study adds to the same as there was significant correlation between toxic masculinity and stigma regarding asking for help.

The research done on the men on various settings such as jail also contributes to the heightened resistance in psychotherapy and different varieties of intellectual fitness remedies. (Kupers, A. T., 2005).

Research done on college settings where they compared the mental health literacy and help seeking behavior among undergraduate and post graduation level students found that there were statistically significant differences between undergraduate and graduate students and undergraduate men had moderate mental health literacy and low intentions of help seeking behavior. (Rafal, Gatto & DeBate, 2018) which backs up the current study where the participants mostly included undergraduate students and college going with some being exceptions to having healthy ideas about the same which was further explored using the qualitative method.

Recent study done in 2020 also establishes that before seeking treatment, men's help-seeking behavior was affected negatively by internalized masculine norms. As a conclusion, it is said that intervention is needed to reduce the stigma regarding asking for help in men and the stigma that it is 'unmanly' to do so. (Staiger et al., 2020) which is also explored why they feel so in the second phase of research.

And finally a study done in 2021 also backs up the results of the current study that men who adhere to toxic masculinity are less likely to seek help for mental health issues and results also found that, certain dimensions of toxic masculinity (heterosexual self-presentation) may be more clearly linked to specific mental health challenges in men. (Harris. B., 2021)

There were no studies done that contradicts the current study results. Further with the researchers interest an attempt was made to check correlation between the dimensions restricted emotionality, inhibited affection and success preoccupation with stigma regarding asking for help. The results of the current study found no significant correlation so as the literature.

Whereas, the qualitative analysis finds other mediators for stigma regarding asking for and even the literature provides other reason that could lead to the stigma such as, Toxic masculinity includes the want to aggressively compete and dominate others and encompasses the maximum elaborate proclivities in men. These identical male proclivities foster resistance to psychotherapy(Kupers.A. T., 2005).

The current study found that the resistance to asking for help was because of magnification of self reliance and personalization of the problem saying it is their problem and only they can solve it and others could not be of any help. With magnification of their self reliance the participants who scored high on both toxic masculinity and stigma regarding asking for help do see highly of oneself and asking for help was perceived as an act of showing one's weakness to others.

The dimensions that the standardized scale measured was further attempted to explain the reasons for the same and the trends that exist apart from that. The dimensions that were measured by the scale were inhibited affection, restricted emotionality and success preoccupation. These also emerged as common themes from all the participants irrespective of the scores being high or low.

The interrelationship between these themes could also be observed as success preoccupation existed and they overlooked forming close relationships resulting in limited close circle and selective openness.

Masculine power is granted via conforming to standard gender norms that give a boost to male dominance. (O'Neill, 1990). This was derived as a theme from both high and low scorers. This was exerted in the form of violence and they felt the need for it as a means of expression and as a means of regaining self respect.

The literature provides considerable insights about men indulging in violence, patriarchal influence that is highly seen in India and that being the target population and impacts on women because of the probable toxic masculinity in men.

Dimensions of toxic masculinity, according to APA guidelines for psychological practice with boys and girls (2018) lists power over women, intimate partner violence, aggressive behavior, emotional detachment, heterosexual self presentation. Out of these, except intimate partner violence, the other dimensions emerged as common themes among all the participants and few in high scorers. Following of role models and opinions on manning up were the two unique themes. Where the opinions evidently deviated in the opinions of manning up among high and low scores along with other themes.

IMPLICATION

- The study supports the prior research that men adhering to masculine norms is directly correlated to stigma regarding asking for help.
- By establishing the direct relationship, the study traces the common trends in men that could be restricted emotionality, restricted close circle, success preoccupation and need for violence which directly or indirectly impacts men and people around him.
- Awareness of the same can help in retraining the present generation about the stereotypes around gender roles which helps in changing of toxic masculinity to healthy masculinity making the world a better place to be in.
- The study finds its contribution fruitful as it is done in India where patriarchy is celebrated in most parts of the country followed by the impacts of its power on the people and stereotypes that are attached to it makes it more relevant.
- The study brings to light the male mental health and calls for improvement in the way boys are treated in childhood and healthy socialization.

LIMITATION

- The sample was self selected and small.
- Included college students from different districts of Karnataka but studying in that same institution thus it can't be easily generalizable.
- The responses of their opinions on deferent dimensions of toxic masculinity and help seeking behaviours and other trends depended on limited set of questions and dimensions.
- Increasing in mental health literacy and excess exposure to media among young adults would have impacted their opinions on deferent dimensions of toxic masculinity and help seeking behaviours.

FUTURE RECOMMENDATION:

- The study could be done on a more generalizable sample including sample from different parts of India and can be done across ages for better understanding
- Other factors which can impact help seeking behaviors apart from toxic masculinity could be explored.
- The findings of the current study suggest further research on mental health impact because of toxic masculinity and stigma regarding asking for help which may contribute to the adverse mental health outcomes.
- The study also establishes the need for intervention based study for increase in healthy masculinity among men.

CONCLUSION

The results of the study support the prior research that men adhering to masculine norms is directly correlated to stigma regarding asking for help. In the second phase of research that is, the qualitative data analysis derived the common themes in men that could be restricted emotionality, restricted close circle, success preoccupation and need for violence which directly or indirectly impacts men and people around him. The themes that emerged out of the high and low scorers shows the difference in opinions on the adherence to masculine norms and help seeking behaviors. researcher's validation of the data analysis with the participants makes the study more credible.

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Stigma Regarding Seeking Help Scale

INSTRUCTIONS: People at times find that they face problems that they consider seeking help for. This can bring up reactions about what seeking help would mean. Please use the 5-point scale to rate the degree to which each item describes how you might react in this situation. 1 = Strongly Disagree 2 = Disagree 3 = Agree & Disagree Equally 4 = Agree 5 = Strongly Agree

1. I would feel inadequate if I went to a therapist for psychological help.
2. My self-confidence would NOT be threatened if I sought professional help.
3. Seeking psychological help would make me feel less intelligent.
4. My self-esteem would increase if I talked to a therapist.
5. My view of myself would not change just because I made the choice to see a therapist.
6. It would make me feel inferior to ask a therapist for help.
7. I would feel okay about myself if I made the choice to seek professional help.
8. If I went to a therapist, I would be less satisfied with myself.
9. My self-confidence would remain the same if I sought professional help for a problem I could not solve.
10. I would feel worse about myself if I could not solve my own problems. Items 2, 4, 5, 7, and 9 are reverse scored.

Masculine Role Inventory

The items below inquire about some of your attitudes and opinions. For each item indicate how much you agree or disagree with that statement. (As used in the following statements, the phrase close relationship refers to the interactions that take place between two people who choose to see each other on a relatively exclusive basis.)

Use the following scale for your responses: A = Strongly Disagree. B = Slightly Disagree. C = Neither Agree nor Disagree. D = Slightly Agree. E = Strongly Agree.

1. Close relationships can detract from career developments.
2. I don't devote too much time to personal relationships.
3. A close relationship may cause others to think I lack success potential.
4. I avoid discussing my feelings because others might think I am weak.
5. Even if I have known someone for a long time, I still prefer not to talk about the more private aspects of myself.
6. I sometimes assume an indifferent attitude toward loving someone, otherwise people might consider me immature.
7. I am somewhat hesitant to commit myself to another person.
8. A successful career means more to me than a successful close relationship.
9. It is impractical for people to make long-range commitments in a close relationship, until they have started a career.
10. I would be tempted to end a relationship if my partner asked me to devote any more time to her/him.
11. There are career drawbacks associated with investing oneself in a relationship.
12. It is easy for me to express feelings openly to someone close to me.
13. I don't search for too much personal fulfillment from a relationship with another person, because of the potential costs to my ambitions.
14. If I committed myself to another person, I would not have enough time to wholeheartedly pursue a career.
15. I prefer not to be emotionally involved with another person.
16. There are professional costs associated with sustaining a close relationship.
17. Strong involvement in a love relationship will ultimately interfere with career activities.

18. It's costly to admit that one is emotionally upset.
19. If people thought of me as a sensitive person, they might exploit me.
20. A person would be wise not to display any affection for his/her friends.
21. I would feel uncomfortable about my future, if others thought I was sensitive.
22. If people knew how strongly I respond to other's feelings, they would consider me a "soft" person.
23. I would prefer that others not think of me as a kind person.
24. People who are sensitive cannot become effective leaders.
25. In order to become a successful person, it's important not to show emotional weakness.
26. People cannot succeed in business unless they suppress their sensitivity to other people's feelings.
27. If I were involved in an affectionate relationship, I would not have enough time left over to develop a career.
28. If others know how you really feel, your career can be hurt.
29. People who cry will not get anywhere in the working world.
30. I am comfortable with the idea of committing myself to another person.

Semi- Structured Interview Schedule

1. What does masculinity mean to you?
2. What traits would you consider to be masculine?
3. Do you find traditional gender roles/ traits attractive?
4. What does it mean to be "manly" or to "Man up" to you?
- 4a. in what ways is this harmful or helpful?
5. Who are your role models when it comes to being masculine?
6. Does the world need more masculinity or more femininity?
- 6a. why do you think so?
7. What does "being mentally tough" mean to you?
8. Are there any incidents where you have restricted yourself from doing anything because you felt it was "less manly" to so?
- 8a. if yes, can you give examples?
9. What is your take on a man "displaying one's emotion or expressing one's emotions"?
- 9a. is it good thing or a bad thing?
- 9b. Reasons for being good
- 9c. Reasons for it being a bad thing
10. What do you do when you can't accomplish a particular Task on your own?
11. What does it take to be successful according to you? (masculine)
12. Is forming close relationships with others helpful / harmful?
- 12a. Reasons
13. If there is something that is really bothering you or something you are really worried about, what would you do?
14. How comfortable are you in talking about your feelings to your friends and family members?
15. Do you find yourself taking a lot of risks to prove yourself?
16. How do you feel when you see women in power or being equal to men in any profiles?

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-
17. Do you believe that solution to all emotional problems lies within you and only you can solve it being alone?
 18. Do you think violence is sometimes necessary?
 19. Take on Third gender?
 20. Could you explain whether and if yes, how masculine norms influenced your help seeking decisions
 21. Is there anything that was not discussed in the interview but was important to you?

WOMEN EMPOWERMENT IN INDIA - CURRENT SCENARIO**Advocate Sweety Jain**

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ABSTRACT

Women empowerment has been thoroughly discussed in the last two decades it refers to increasing and improving the social, economic, political and legal strength of the women, to ensure equal- right to the women. Women are significant contributors to the growing economy. Women empowerment is essential for the achievement of sustainable development. The full participation and partnership of both women and man is required in productive and reproductive life. In all parts of the world, women are facing threats to their lives, health and well-being as a result of being overburdened with work and of their lack of power and influence. The current scenario of women empowerment is very disbalance across the various segment of the society. Literacy plays a crucial role in promoting women's right, achieving empowerment , enhancing overall livelihood and social status of women. Various measures have been taken by ways of enacting laws and implementing policies to empower women, but still there is a big gap that needs to be filled by way of implement more stronger policies and laws and creating an environment of awareness.

Keywords: Women Empowerment, Literacy, Urban, Rural, Adult education, Sexual abuse, Domestic Violence, Physical abuse, Social Struggle, Government Role, Status of Women

It is impossible to think about the welfare of the world unless the condition of women is improved. It is impossible for a bird to fly on only one wing.”

INTRODUCTION**Swami Vivekanand**

In Vedic times, women were deemed to be equal of men in all the way, there was no restrictions on the women. This was accepted by scholars like ‘Sir Herbert Risley’ that the women of Vedic period in India had enjoyed more freedom than the European women of even today. She acquired the good position in the society, but the freedom did not continue for a long time and 18th and 19th century women had to face many bad evils like Sati, Purdahpratha, Child marriage etc. Although by the great efforts of social reformers these evils were

Vanished, but they did not get the same freedom like Vedic time and continued living a downtrodden life.¹

Before independence, the status of women within India was in a much -deprived state. They were overwhelmed by the practices of polygamy, sati, child marriage, female infanticide etc. bad evils.

Improvements came into their conditions from the great efforts of social reformers like Raja Ram Mohan Roy, Swami Vivekananda, Ram Krishna Param hansa etc. After Indian constitution came into existence the formation of laws abolished the evils and started women empowerment process by giving them many rights.

Women empowerment can be defined to promoting women’s ability to determine their own choices and their right to influence social change for themselves and others. Women’s empowerment and promoting women's right have emerged as a part of a major global movement and is continuing to break new ground in recent years. By standing up for equality, women have helped other women speak up and empowered them.

In the words of ‘Gloria Steinem’, an American feminist, journalist and social political activist, “Women are always saying ‘we can do anything that men can do’ but men should be saying, ‘we can do anything that women can do’”.

A Pakistani activist for female education and the youngest Nobel Prize laureate ‘Malala Yousafzai’ said “I raise up my voice - not so I can shout, but so that those without a voice can be heard we cannot succeed when half of us are held back”.

The position of women and their status in any society is an index of its civilization. Women are to be considered as equal partners in the process of development. But, because of centuries of exploitation and subjugation, Indian women have remained at the receiving end. Their empowerment of women becomes necessary as they are being discriminated at all fronts .

The concept of women empowerment was introduced at the International women's conference² held at Nairobi in 1985. Women empowerment means emancipation of women from the various grips of social, economic, political, caste and gender-based discrimination.

It means granting women the freedom to make life choices. Women empowerment itself elaborates that social rights, political rights, economic stability, judicial strength and all other rights should also be given equally to women.

¹ Sir Herbert Risley was a British ethnographer and colonial administrator, a member of Indian Civil Service who conducted extensive studies on the tribes and castes of the Bengal Presidency.

² In 1975 the United Nation approved the celebration of international women's year. The first world conference on women in 1975 in Mexico city. The 1985 conference held from 15th and 26th July in Nairobi.

Swami Vivekanand quoted that "there is no chance for the welfare of the world unless the condition of women is improved." Kofi Anan quoted that, "We cannot all succeed if half of this are held back".

There are many attributes of women's empowerment, which are as follows:

Social Empowerment

Social empowerment refers to the ability of women and girls to act individually and collectively to change social relationships and the institutions. It means that women and girls can build positive relationships, participation in social activities and decision making without being restricted by gender norms.

Through social empowerment, accessibility of women is increased by providing them equal access to all the basic minimum services, as to enable them to realize their full potential.

Economic Empowerment

Economic empowerment is a process by which women increase their right to economic resources and power to make decisions that benefit themselves, their families and their communities. Economic empowerment encourages the women to build better livelihood, to earn more income, to create businesses that provide jobs to women. This ensures provision of training, employment and income generation activities with both forward and backward linkages with the ultimate objective of making all women economically independent and self-reliant. Thus, it is extremely important to ensure that women are economically empowered. CARE³ defines women's economic empowerment as the process by which women increase their right to economic resources and power to make decisions that benefit themselves, their families and their communities.

Political Empowerment

Political empowerment is necessary for achieving comprehensive, unbiased and sustainable development. Women need to actively participate in government policies and politics in order to maintain democracy. Global statistics clearly show that women are under-represented as leaders, elected officials, and voters due to cultural and social norms, which limit their participation in the political process.

Problem And Issues Faced By The Women

Although women are now leading Governments, business and non-government organizations than in previous generations still women comprise the majority of the world's poor, uneducated and unschooled. Low assets and low income are mutually reinforcing. Low education translates into low income, which translates into poor health and reduced educational opportunities. The woman related problems are as follows :-

³ Co-operative For Assistance And Relief (CARE) everywhere formerly Co-operative for American Remittance to Europe, is the major international humanitarian agency founded in 1945.

Health Problems

We have made progress in several areas related to health as evidenced by the success in eliminating or controlling diseases such as smallpox, leprosy, polio and TB, however there are other indicators which highlight serious problems. High prevalence of malnutrition continues to affect our children and women limiting their learning capacity. Our maternal mortality rates and infant mortality rates are still far too high. The incidence of anaemia among women and children is at unacceptable levels. Our rural population continues to lack access to affordable healthcare (GOI 2007⁴). The weak social infrastructure such as the lack of adequate schools or health centres, drinking water, sanitation and hygiene facilities inhabit a very large section of man and woman.

Problems Related To Education And Literacy

A broad objective of the national policy on education (NPE), 1986 modified in 1992 has been that education should play a positive and interventionist role in correcting social and regional imbalances, empowering women.

Education is the most important strategic variable affecting the status of women. In our country, due to conservative traditionalism, women's status has, through ages been considered to be lower than that of man, in spite of the recognition of women's status equal to that of man, the majority of them suffer in primitive ignorance as ever before. Parental attitude, lack of infrastructure, lack of security, superstitions related to girls, socio economic condition of parents are the major challenges for promoting girl's education in India.

Violence against Women

Women are getting affected by the various violence almost every day which is disrupting the society. Women are being victims of the violence at huge level day by day because of increasing crimes against women. They may face violence within the family (dowry related harassment, death, marital rape, wife battering, sexual abuse, deprivation of healthy food or, outside the family - kidnapping, rape murder etc.

Gender Discrimination

Women are considered as weaker section off the society than the man and given less importance. There are also discrimination of power and work between men and women because of the patriarchal system families in India. Gender discrimination affects woman in the areas like nutrition, education, health care, decline of female population, public life etc.

Role of Government in Women's Empowerment

Government of India has taken enough initiative to promote women empowerment by introducing different schemes and policies, which not only improves the social status of the female population but as a solution of different social plights like maternal mortality, female infanticides, female foeticide. Apart from government schemes, different bills and acts aspires for a society which is forward looking, bias free, and radical thinking. The government

⁴ Health ministry is regularly compiling and disseminating information on rural health care services through publication rural statistics in India. Data provides rural health statistics 2007 released under Nation Data Sharing and Accessibility policy (NDSAP)

Operating both in pre independence and post-independence phases has also taken necessary steps to introduce new regulations that reduce the social hostilities towards women. Some of the important Laws enacted during the British rule include:-

- a) Prohibition the Practice of Sati Act, 18
- b) Hindu Widow Remarriage Act, 1856
- c) Female Infanticide Act, 1870
- d) Indian Evidence Act, 1872
- e) The Married Women Property Act, 1874
- f) The Age of Consent Act, 1891 Practitioners (Women) Act, 1923
- g) The Indian Succession Act, 1925
- h) The Child Marriage Restraint Act, 1929
- i) The Hindu Women Right to Property Act, 1937

Post-independence Act

Some of the acts that ensured a special provision and preserve the interest of women belonging to different caste, from immediate post independent to recent days include:

- a) The Special Marriage Act, 1954
- b) The Hindu Marriage Act, 1955
- c) The Hindu Adaptation and Maintenance Act, 1956
- d) The Hindu Minority and Guardianship act, 1956
- e) The Hindu Succession Act, 1956
- f) The Immoral Traffic (Prevention) Act, 1956
- g) The Dowry Prohibition Act, 1961

- h) The Maternity Benefit Act, 1961
- i) The Medical Termination of Pregnancy Act, 1971
- j) The Equal Remuneration Act, 1976
- k) Indecent Representation of Women (Prevention) Act, 1986
- l) National Commission for Women Act, 1990
- m) Prohibition of Child marriage Act, 2006
- n) Sexual Harassment of Women at Workplace (Prevention, Prohibition and Redressal) Act, 2013

All these provisions were successful not only in uplifting the status and position of women but also improve the social and economy circumstances of the country. This was the episode of awakening of the nation from the slumber of darkness.

Different Government Schemes Supporting Women Empowerment

Different programs and schemes are launched by the government to specify the society from the fiery discord that recoils the progress towards any unexpected social catastrophe. Government has recognized the issue related to women and introduced different schemes to fight with the atrocities against the woman and uplift their spirit.

The Beti Bachao Beti Padhao⁵ scheme launched on 22nd Jan 2015 aims to generate awareness. The objective of the scheme aims to prevent the sex selective abortion. It also aims to ensure survival and protection for the girl child and ensure education for them. Pradhanmantri Mahila Shakti Kendra scheme launched in 2017 aims to promote communicating participation through involvement of student volunteers for empowerment of the rural woman.

Women Helpline Scheme is another important initiative that aims to provide immediate emergency response to women affected by violence with a helpline of 24-hour service. It was launched on first April 2015

The Nand Ghar Yojna launched in June 2015 aims in providing nutrition to children of 0-6 age group and also to pregnant or lactating mothers to fight malnutrition.

Rajiv Gandhi Nation Creche Scheme launched in 2012 encourages the working and economic participation of women with greater sense of independence.

The one Stop Centre Scheme is a wise endeavour to provide support and assistance to the women who are victims of the violence in public and private space. The scheme is to be funded by the "Nirbhaya fund".

Working Women's Hostel is the scheme that envisages providing safe and affordable hostel for women. Support to training and employment program for women is a scheme that guarantees upgradation of skills of women who are marginalized.

Pradhanmantri Mantri Vandana Yojna was first launched in 2010 aims to ensure safe delivery and good nutrition for mothers having their first child.

The Swadhar Greh Scheme aims to provide temporary accommodation to homeless girls and women.

The Rashtriya Mahila Kosh launched in 1993, promotes and supports entrepreneur skills among women

The Mahila E-Haat aims to strengthen financial inclusion of women entrepreneurs in the economy

Mahila Police Volunteers scheme aims to increase the number of women police force, and ensuring the safety and security of citizens in general, and women in particular.

The National Mission For Empowerment Scheme is to empower women holistically

The Pradhanmantri Ujwala Yojna was launched in 2016, it promises to provide LPG fuel to the women who are below poverty line. Its main objective include protecting health of women and empowering them

⁵ Beti Bachao Beti Padhao is the campaign of the Government of India, launched on 22nd January, 2016. <https://wcd.nic.in/bbbp-schemes>

There are many other schemes like above to protect, strengthen and empower women.⁶

Role of Education in Women Empowerment

If you educate a man you educate an individual, however, if you educate a woman you educate a whole family. Woman empowered means mother India empowered” - Pandit Jawaharlal Nehru.

Women education in India plays a very important role in the overall development of the country. It not only helps in the development of half of the human resources, but in improving the quality of life at home and outside. It is said that education is the key to all problems. According to M. Phule⁷, “Education is that which demonstrates the difference between what is good and what is evil”. If we consider the above condition, we come to know that whatever revolutions that have taken place in our history, education is at the base of them. Education means modification of behaviour in every aspect, such as mentality, outlook, attitude etc. Education as means of empowerment of women, can bring about a positive attitudinal change.

Education is considered as a basic requirement and a fundamental right for the citizens of any nation. It is a powerful tool for reducing inequality as it can give people the ability to become independent. Women, who come across discrimination in many spheres, have a particular need for this. Women Empowerment is a global issue and discussion on women political rights are at the fore front of many formal and informal campaigns worldwide. Education is regarded as an important milestone of women empowerment because it enables them to face the challenges, to confront their traditional role and change their life. Education of women is the most powerful tool of change their position in the society. Still large womenfolk of our country are illiterate, backward, weak, and exploited. Education also reduces inequalities and functions as a means of improving their status within the family. Empowerment and capacity building provides women an avenue to acquire practical information and learning for their improved livelihoods. India can become a developed nation only if women contribute to the best of her capacity and ability which is possible when she is educated and empowered.

Current Status of Women

In modern India, status of women has improved considerably in past few decades, but still in spite of having so many laws and mechanism of awareness, women are still discriminated based on their gender. Women are typically underrepresented in power and decision-making roles. While some progress is being made in various parts of the world, there is still a great deal left to be done to fight the problems of gender inequality.

⁶ Women Empowerment Schemes – <https://wcd.nic.in/schemelisting/womenempowermentschemes>

⁷ Mahatma Jyoti Rao Govind Rao Phule was an Indian social activist, thinker, anti-caste social reformer. https://en.wikipedia.org/wiki/Jyotirao_Phule

The current scenario of women empowerment is very disbalance in reference to literate and illiterate women, working and non-working women, rural and urban women, young and middle age women, regional variations, rich or poor. We see that a working literate woman who has capacity to earn money is aware about her right, but an illiterate working lady who is doing physical work and earning money is not aware about her rights.

Although women have completely transformed in the modern day, the urban women specially have changed from being a mere home maker to the modern-day women. Now she is a multitasking woman, handling many responsibilities without fear and balance their family lives with their professions. This is the scene in most of the urban households today. But the women in rural backgrounds have still to complete a lot in terms of their urban counterparts. Not that the rural women are backward in any aspects, but the change and transformation is definitely slower in rural women in comparison to women in urban area.

Therefore, it is vital to generate awareness, formulate measure that would help in eliminating all these problems and encouraging them towards attainment of empowerment opportunities.

Literacy is crucial for promoting women's right, achieving empowerment, enhancing livelihood skills, strengthening their participation and leadership in the public sphere and ensuring gender justice. Rural women can be sustainably empowered by adult education and training, capacity building and improving their social, economic and financial skills.

We see, in past few decades, status of women has improved but still in spite of having so many laws and mechanism of awareness, women are still discriminated based on their gender. If women are empowered it may help to reduce in domestic violence, sexual abuse, emotional and physical abuse.⁸

CONCLUSION

Achieving change requires policy and programme actions that will improve women's access to secure livelihoods and economic resources, alleviate their extreme responsibilities with regards to housework, raise social awareness through effective programmes of education.

Education is one of the most important means of empowering women with the knowledge, skills and self-confidence. Therefore, it is vital to generate awareness and formulate measures that would help in eliminating all practices that discriminate against women, violence against women, discriminatory practices by employers against women and encouraging them towards attainment of empowerment opportunities.

Government should establish mechanisms to accelerate women's equal participation and equitable representation at all levels of the political process and public life in each community

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[https://en.wikipedia.org/wiki/Women%27s_empowerment#:~:text=Women's%20empowerment%20\(or%20female%20empowerment,awareness%2C%20literacy%2C%20and%20training.](https://en.wikipedia.org/wiki/Women%27s_empowerment#:~:text=Women's%20empowerment%20(or%20female%20empowerment,awareness%2C%20literacy%2C%20and%20training.)

and society. Although many efforts have been taken by Indian government like Protection of women from domestic violence Act, 2005 have been enacted to criminalise instances of dowry and domestic violence. The government has also increased maternity leaves for women in employment from 12 weeks to 26 weeks under Maternity Benefit Act in 2017. But still there is huge gap that needs to be filled, participation of Government, common people and various organization is required to spreading awareness about rights of women, and taking all measure to increasing literacy, adding skills and upgrade livelihood of women, and thus leading to required empowerment of women.

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CORONAVIRUS ANXIETY AS A SOURCE OF MASS PSYCHOLOGICAL DISTRESS: A STUDY OF ITS DEVELOPMENT AND IMPACT**¹Sejal Kumari, ²Dr. Sneha Nathawat and ³Dr. Sneha Nathawat**¹Student, the IIS (Deemed to be) University, Assistant Professor, the IIS (Deemed to be), University²Student (Department of Psychology) The IIS (deemed to be) university SFS, Gurukul Marg, Mansarovar, Jaipur Rajasthan³Assistant Professor (Department of Psychology) the IIS (deemed to be) university, SFS, Gurukul Marg Mansarovar, Jaipur Rajasthan**ABSTRACT**

The Viral outbreak entered the world with uncertainty, significant change and unexpected situation. Millions of deaths, social isolation, quarantine rules, occupational, economic and personal loss is impacting the world psychologically. People are experiencing elevated and prolonged fear and anxiety related to coronavirus. There has also been a surge in the cases of depression, post-traumatic stress disorder, generalized anxiety disorder etc. Students, employees, businesses, frontline workers or children none have been left untouched by the psychological impact of the pandemic. The pandemic promoted unexpected situation, uncertainty and psychological distress resulting in high level of anxiety. This anxiety has been termed as coronavirus anxiety. The objective of this theoretical paper is to understand coronavirus anxiety and how it is affecting the overall well-being of individual and factors responsible in developing of coronavirus anxiety. Coronavirus anxiety refers to the worried thoughts, stress, fear and concerns related to contracting the disease and mere thought of the disease, to an extent that is visible in the psychological, behavioural response and leads to being dysfunctional.

This anxiety has been recently given a name by Asmundson and Taylor as

Coronaphobia. Anxiety and stress are most common response in such pandemic situation, but when this response leads to impairment of daily activities it calls for intervention. As it is a new and emerging phobia it is open to wide scope for research.

Keywords: Coronavirus, Coronavirus anxiety, Coronaphobia, Anxiety, Fear.

INTRODUCTION

The coronavirus was declared a pandemic by WHO on March 2020 when it started creating havoc in many countries by spreading at a faster rate, infecting many and leading to deaths of hundreds and thousands. Schools, universities, public places, sports complexes, offices were shut down in no time. Gradually the world shifted to online mode and this sudden transition changed the way people live. This was “worrying” and uncomfortable for many. Anxiety being the most common response in such situation began arousing among people. As the situation got worse with the coronavirus cases (people contracting the disease) approaching the peak and increasing number of deaths the anxiety rose to a dysfunctional level disrupting normal functioning of a person. This anxiety is termed as coronavirus anxiety also called coronaphobia.

Conceptualizing Coronavirus Anxiety

Anxiety is an emotional state marked by worried thoughts, feeling tensions, fear, and behavioural changes like increased blood pressure, heart palpitations etc. Anxiety, fear and worrying are the normal responses when faced with such distressing and unexpected situation. It is this anxiety that regulates and balance the emotion and help in coping with such situations. Relax! As our anxiety up to a certain level is helping us. Beyond that level anxiety reaches another tier and results in impairment of daily activities.

Coronavirus anxiety is also an emotional state. It has become a matter of concern because it has rose to a level that is disrupting normal functioning of an individual making them dysfunctional. This may lead to mental health pandemic as is being anticipated by health organization.

Coronavirus anxiety refers to the worried thoughts, stress, fear and concerns related to contracting the disease and mere thought of the disease, to an extent that is visible in the psychological, behavioural response that leads to being dysfunctional.”

Continuous research and evolution of the disease appended to the term “Coronaphobia” for coronavirus anxiety. The term coronaphobia was coined by Asmundson and Taylor. Phobia is an anxiety disorder, which

incorporates extreme, irrational and persistent fear of any object, situation person, animal, activity. A phobia drives people to avoid things triggering fear or generates intense anxiety and distress.

Based on the review of studies coronaphobia can be defined as excessive and irrational fear of contracting coronavirus; triggered by mere thought of coronavirus, reading the news, travelling, hearing of death or illness of loved ones, meeting people, standing in a crowded place and even stepping out of the house, accompanied by excessive concern over physiological symptoms, stress related to occupational and economic loss leading to emotional response marked by intense worrying and anxiety to a level that it gets in the way of everyday life.

The coronavirus anxiety is reflected in the following forms in a human being:

Cognitive: The cognitive expressions include preoccupation with thoughts of covid 19. For example, a person might think continuously about contracting the virus himself and dying. Thoughts can also include family members and loved ones being affected and dying. Apart from contracting the virus the person may have negative thoughts regarding occupational loss or being unemployed. These thoughts reinforce sadness and anger.

Physiological: Anxiety is marked by physiological responses like breathlessness, restlessness, increased heart palpitations etc. Anxiety related to coronavirus is no different. Sherman A. Lee in developing coronavirus anxiety scale to identify person with dysfunctional coronavirus anxiety has included such physiological symptoms. Dizziness, tonic immobility, sleep disturbances, abdominal distress were some of the symptoms focused in the scale.

Behavioural: The fear generated from thoughts of coronavirus and its consequences instantly calls for actions to avoid them. Overindulgence into safety and reassuring behaviour like frequently washing hands, recording the body vitals constantly (temperature, spo2), constantly checking for the absence of disease etc. These protective and reassuring behaviours have also been found to triggering and worsening the cases of OCD.

Psychological distress: There is a surge in the no. of cases of depression, generalised anxiety disorder, post traumatic disorder, insomnia since the pandemic started. Coronavirus anxiety has been found to be associated with all these disorders (Lee, et al., 2020; Luo et al., 2019). Prevalence of suicidal ideation among individual has also been reported in countries like India, where there have been cases of suicide because of anxiety related to the virus (Goyal et al., 2020).

The anxiety related to the virus is not only because of the fear associated to contracting and death from the coronavirus infection. The COVID outbreak has raised concern regarding the economic strife, social isolation, lack of social support along with millions of deaths.

Factors Responsible In Development of Coronavirus Anxiety:

1. **Acquiring New Behaviours:** with the onset of the disease there were many new non-social protection measures introduced like washing hands, wearing a mask, avoiding crowded places, regular sanitization of products, and avoid touching face and eyes etc. All these behaviours require conscious thoughts and mindfulness to practice and make them habits. Habit formation and avoiding something humans do unconsciously (like touching face) is difficult initially and major source of discomfort. This discomfort brings anxiety and stress. Further, inability to acquire them makes a person fall into vicious loop of anxiety making a person susceptible to chronophobia.

On the contrary, excessive compliance with non- social protection measures (washing hands and wearing masks was found to be associated with high level of coronavirus anxiety. (Milman et al., 2020).

2. **Uncertainty, Novelty and Evolution of Disease:** With still no accurate information on the source of the virus and continuous mutation of disease with more deadly variants and faster spreading rate is contributing in the development of fear and anxiety. Also, uncertainty regarding lifting up of lockdowns and life back to normal are source of stress and constant

worrying. Change being threatening and hard to adapt leads to discomfort and loss of stability making people vulnerable to dysfunctional anxiety. Uncertain character and unpredictable course of disease has also been expected to be a cause of mass fear of COVID-19 (Srivastava et al., 2020)

3. **Cyberchondria and Infodemic:** Cyberchondria is excessive anxiety about health exacerbated searching medical information on internet. Due to its mysterious and novel nature coronavirus, COVID-19 were one of the most searched term on google in 2020. In a study by Jungmann & Witthoft (2020) Cyberchondria was found to be

associated with the coronavirus anxiety and this relation was also observed to be moderated by health anxiety. Possibly people with high health anxiety being obsessed with the thought of infected by the coronavirus searched internet for medical information leading to increased virus anxiety. Thus, cyberchondria and health anxiety were established to be a risk factor for coronavirus anxiety (Jungmann & Witthoft, 2020).

Social media, news and other online sources are flooded with information (accurate and fake) regarding the virus, making it hard to find trustworthy sources. This misinformation about possible cures and symptoms eventually leads to panic, confusion among people. This, too much information both fake (misleading) and accurate spreading at faster rate digitally and in physical environment has been termed as infodemic. The COVID-19 infodemic is the first true social media infodemic (Hao & Basu, 2020). In contrast to the misleading information adding up to anxiety, right knowledge was found to be predictor of lower level of anxiety (Rias et al., 2020)

4. **Death Anxiety:** Death anxiety is excessive fear of death. It was found to be one of the factors related to high degree of coronavirus anxiety. Attitude of an individual towards death was found to estimate the level of coronavirus anxiety. Spitzenstätter & Schnell (2020) measured attitude towards death through death avoidance and neutral acceptance (death acceptance), and found death anxiety and death avoidance to be positively associated with coronavirus anxiety while neutral acceptance to be negatively related to it. Death anxiety was also found to be responsible for burnout among frontline worker and this relation was mediated by obsession with COVID-19 and coronaphobia (Enea et al., 2021). Thus, it can be said death anxiety predicts coronavirus anxiety (Spitzenstätter & Tatjana Schnell, 2020) and at other times death anxiety is elevated by coronaphobia (coronavirus anxiety).

5. **Spirituality:** The lockdown imposed during the initial phase of pandemic resulted in shutdown of temples, churches, mosques and all other religious places. This also affected religious coping and spiritual well being of people. Religious coping and spirituality help

reduce emotional distress caused by stressful situation. Rias et al. (2020) in their study observed that individual with low levels of spirituality had high level of coronavirus anxiety, in general population. Older adults are dependent on religious places and groups for religious coping, closure of these places and social distancing protocols results in lowering of religious coping. Rababa, Hayajneh & Bani-Iss (2021) in their study with old adults observed same pattern, older adult participant had lower spiritual well being and religious coping and high death anxiety.

6. **Social Isolation and Loneliness:** Social isolation is one of the protective factors of coronavirus anxiety. Following social isolation policies is related to conservation of core belief and also dependent on what meaning one extracts of their experience of the pandemic. As noted in a study by Milman, Lee and Neyemer (2020) coronavirus anxiety was lower when people adhere to the social isolation policies. This happened because this adherence strengthens their core beliefs like, control, better future predictability, belief about self and one's spirituality. Also, this relation depended on individual's comprehensibility i.e., what meaning one derives of their experience with pandemic. However, views vary on social isolation as protective factor. Early studies on psychological impact of social isolation measure have revealed increased worrying, anxiety and depression among the population with a lower no. of people reporting feeling good (Robb et al., 2020). Social isolation is a protective or risk factors depends on duration, age, gender and a person's acceptance or adaptability to change.

Social isolation leads to feeling a sense of loneliness in individual. This loneliness was found to predict anxiety and also resulted in overuse of social media (Boursier et al., 2020), which in turn lead to anxiety.

7. **Neuroticism and Other Pathological Domains of Personality:** People with high level of neuroticism, health anxiety and reassurance seeking behaviour experience high level of psychological distress. Other than predicting psychological distress (resultant of coronaphobia), these vulnerability factors also significantly contribute in development of coronaphobia (Lee et al., 2020). Neuroticism is also related to death anxiety and this relation is reinforced by perceived stress of virus (Pradhan et al., 2020). Negative affect domain of personality along with other pathological domains of personality have been found to be responsible in predicting the symptoms of coronavirus anxiety (Zemestani et al., 2021).

8. **Age, Gender and Co-Morbidities:** Studies have found women's to be more prone to experiencing coronavirus anxiety than men (Lee et al., 2020; Srivastava et al., 2020; Luo et al., 2020; Arora et al., 2020). Also, older adults had high level of death and health anxiety were more likely to have higher level of coronavirus anxiety and higher psychological

morbidities (Srivastava et al., 2020). People with co-morbidities like diabetes, blood pressure who were classified to have severe infection also were on high chance of developing dysfunctional anxiety.

Impact

Everything associated with the pandemic from new terms like quarantine, social isolation, social distancing, non-social protective measures like washing hands, wearing masks rules like avoiding crowded places to virus itself, its new variants and

now even vaccine have an impact on mental health. Reduced social contacts and disruption of daily routine due to acquiring of new behaviour has led to frustration and boredom and increased stress and anxiety. The pandemic has badly affected people around the world psychologically.

Some of the impacts of this dysfunctional anxiety are discussed here:

1. **Life Satisfaction:** Coronavirus anxiety promote psychological distress and poor mental health. Poor mental health affects every aspect of an individual's life, occupation, relationships, physical health etc. This impacts an individual's evaluation of his/ her overall quality life. Cong Doanh Duong (2021) in his study stated coronavirus anxiety lowers life satisfaction as it creates psychological distress which further also leads to sleep disturbances. Life satisfaction is affected by psychological distress with higher level of distress leading to lower life satisfaction.
2. **Well-Being:** Well-being is an indicator of a person's health, happiness and prosperity. Coronavirus anxiety affects a person's health and ergo their well-being. Well-being has been found to be negatively associated with coronavirus anxiety. Coronavirus anxiety is marked by worried thoughts and behavioural changes in response to the anxiety. A study by Chen, et al., (2020) described coronavirus anxiety to be consisting of two factors Perceived vulnerability (worried thoughts) and threat Response (behavioural changes). These factors affect the subjective well-being of an individual differently. The worried thoughts about coronavirus lowers the perception of person towards self-health and subjective well-being and simultaneously also increased negative emotional response and psychological distress. On the other hand, the threat response of the individual towards the anxiety generated by coronavirus levelled up self-rated health and assessment of one's subjective well-being while lowering the negative emotions and psychological distress (Chen et al., 2020). This can be attributed to a sense of safety attained through behavioural response to prevent coronavirus infection.

With so many news of deaths and personal loss all around, maintaining positivity gets harder. A person starts to process the risk from the virus at faster pace affecting one's happiness and experiencing higher death distress. This relation is mediated by positivity which itself gets directly affected by worried thoughts and risk perceived (Yildirim & Güler, 2021).

3. **Subjective Vitality:** It is a feeling of aliveness and positive energy. With the pandemic taking toll on the mental health of individual and leading to psychological distress, keeping up this aliveness and energy is hard. Mental health requires psychological energy to maintain it however since the viral outbreak major portion of this energy is consumed by the excessive worrying and conscious efforts to adapt to protective behaviour. A study by Arsalan, Yildirim and Aytac (2020) found subjective vitality decreased in people with high coronavirus anxiety. With their study on students, they found detachment from social world and closure of colleges and increased dysfunctional anxiety resulted in a feeling of loneliness and rumination. Coronavirus anxiety is negatively impacting students with increased rumination among college students mediated by subjective vitality and loneliness. Coronavirus anxiety also has contributed in the increasing no of cases of depression, GAD, post traumatic disorder, suicides. Increase in drug/ alcohol coping, lower spirituality has also been observed among people.

CONCLUSION

Coronavirus anxiety or coronaphobia is a result of the unexpected change and unforeseen reality, continuous evolution of the virus and the uncertainty the pandemic has brought. As observed through the studies, coronavirus anxiety is contributing to what may be termed mental health pandemic soon. There has been huge spike in the use of anti-anxiety drugs, cases of depression and other psychological disorders, suicides, leading to mass psychological distress. Thus, planning interventions should be an emergency now. This study will assist future researches to come up with better intervention and policies to tackle the coronavirus anxiety and its impacts. Positive psychology can be a boon to human species in this viral outbreak and planning intervention. Future research can focus on this field of psychology to better handle this pandemic.

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A COMPARATIVE ANALYSIS OF MACHINE LEARNING ALGORITHMS FOR PREDICTION OF DIABETES MELLITUS

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ABSTRACT

Patient care is possible by means of big data Analytics in the biomedical and Wellness care domain in the early detection of diabetes diseases. Incomplete and low-quality medical data results in inaccurate analysis of predicting the disease. However, a lot of research has been conducted on this topic but still, the prediction of accurate diabetic disease is challenging. Predictive Analytics assist the medical practitioners in diagnosing the disease and helps them in initiating medical treatment. The objective of the paper is to address the challenge and to build Machine learning (ML) models to predict diabetic disease. We used four different Machine Learning Algorithms in this paper. PIMA Indian diabetes data has been obtained for experimenting purposes and on this data several ML algorithms have been applied. In this study, we do comparisons of various ML techniques to identify the best algorithm that leads to prediction of diabetes.

Keywords: Machine Learning, XGBoost, RandomForest, Naïve Bayes, Decision Tree, Diabetes

I. PROBLEM STATEMENT

Studies reveal that diabetes mellitus is on the rise, and despite the overwhelming evidence that the repercussions of diabetes can be prevented with proper training and education, many people lack the competence to effectively manage their disease. It is widely known that diabetics are responsible for their own treatment and care. Consequently, diabetics must learn the appropriate skills and attitudes. In light of this, it is imperative that patients and their families receive comprehensive diabetes education (Diabetes Education 2001:4). Diabetes education can be improved by using the findings of this study, which the researchers believe will lead to a rise in treatment compliance among patients and their families.

II. OBJECTIVES

- The primary goal is to assess the accuracy of each algorithm when it comes to efficiency and effectiveness in terms of classification accuracy.
- Building a new model based on machine learning algorithms that is as accurate as the Pima Indian Diabetes dataset in determining whether or not a person has diabetes in real time.
- To create a machine learning model that can accurately predict if a patient has diabetes based on diagnostic measures.

III. INTRODUCTION

Advancement of Technology has resulted in devices generating massive amounts of medical data all day. There is however, a dearth in the availability of reliable data in medical research across the globe. The heterogeneity and complexity in the huge volumes of data calls for new software tools and techniques to manage visualize and analyze data [1]. Although, the big data domain started to grow exponentially in 2012, this field still draws more and more research communities.

Diabetes is a fatal metabolic disease that occurs in a person with high sugar and blood pressure. Complications arise when diabetes is left untreated. Acute complications are nonketotic coma and ketoacidosis. Long-term risk factors are kidney failure, vision problems, and heart disease [2]. 1.6 million people die each year because of diabetes, according to the WHO (World Health Organization). Medical experts confer that patients become diabetic when the pancreas gland in the body cannot secrete sufficient insulin [2]. After the digestion mechanism of consumed food is completed it releases glucose. Insulin, a blood hormone that travels from the bloodstream to body cells, causes cells to absorb blood glucose and convert it to energy. The cells cannot consume glucose if pancreas cannot secrete sufficient Insulin so glucose inundates the blood. Hence, this results in elevated blood sugar/glucose content in the blood [3]. The individual body's normal blood sugar levels range between 70 and 100mg per deciliter. If the patient's glucose level is higher than 126mg/dl, he or she is diabetic. Prescribing a person as having prediabetes if their blood glucose level is between 100 and 125mg/dl [4]. A person having high blood sugar will have life-threatening health problems like nerve damage, kidney failure,

stroke, and heart disease [5,6]. Diabetes cannot be cured permanently. Long span diabetes causes most common health complications like Microvascular and Macrovascular problems. If diabetes can be diagnosed at an early stage it could be controlled efficiently. It could be prevented by the maintenance of a balanced diet and effective fitness practice [7]. The medical practitioners gather a huge amount of patient data from medical records, hospital administration records, and several medical examination results reports. For early detection of diabetes, the prediction of the disease currently relies on the knowledge of the examiner derived through experience in his/her past. This methodology is susceptible to errors and hence inaccurate. Hence the manual prediction of disease is highly suspect. Manually, the insight pattern of data is not noticeable which affects decision making; hence patients could be deprived of appropriate treatment. Advanced automated techniques with high prediction accuracy are crucial for the early detection of diabetes disease. [8,10].

In recent year's big data analytics and ML techniques play a prominent role in the health care domain. Big data analysis helps to preprocess and choose appropriate features from the medical sources and ML models are used for automated prediction of diabetes [11]. Big data analysis and ML techniques help to recognize hidden insight of data by utilizing cutting edge techniques. Data mining is a framework, which includes several techniques like statistics, ML, database systems to investigate patterns from the enormous volume of the data set [12]. As stated by Nvidia: ML uses different classification algorithms to master from the passed data and to predict the disease [13].

The paper will now be ordered as follows Segment 2 describes the associated work of ML techniques. Section 3 illustrates the methodology of ML. Section 4 presents the structured analysis, followed by Section 5 the conclusion and recommendations for future course of action.

IV. RELATED WORK

Many researches enforced ML techniques for predicting diabetes by downloading and using PIMA Indian diabetes dataset (PIDD). This data set consists of 768 Records and 9 attributes which describe the details of female patients. This section discusses a few works that are closely related. Alam, TMO, et al. [14] used ML techniques on PIDD and achieved 75.7 percent accuracy. Sajida Perveen et al. [15] in their research incorporated dataset from Canadian Primary Care Sentinel Surveillance Network (CPCSSN). This dataset contains data about SBP (Systolic Blood Pressure), DBP (Diastolic Blood Pressure), TC (Triglycerides), Fasting Blood Sugar, gender, and HDL. In their study they have incorporated Boosting, decision tree model and Adaptive Boosting. They concluded by suggesting application of Adaboost to predict diseases like hypertension, cardiovascular problem and diabetes. Sisodia et al. [16] discovered that when different ML techniques such as DT, NB, and SVM were applied to PIDD, the NB algorithms demonstrated a high accuracy of 76.30 percent. Tigga et al. [17] used logic regression to predict Diabetes using PIDD. They discovered that among all the PIDD attributes, BMI, number of pregnancies, and glucose range are the most closely associated elements for Prediction of diabetes. They used PIMA dataset for analysis and to process and for visualizing the data they adopted R studio. The developed model was able to predict with a 75.32 percent accuracy. In Zou et al.'s [18] implemented DT (Decision tree), ANN and RF (Random Forest) algorithms on PIDD after doing feature engineering process by adopting minimum redundancy maximum relevance (MRMR) and Principal Component Analysis (PCA) procedures. They discovered that maximum accuracy of 77.21% was achieved by using Random Forest with MRMR method of PIMA dataset. Amour Diwani et al.'s [19] employed Naive Bayes and decision tree by training and testing the dataset with 10 cross validations. After that they conducted performance evaluation and compared with other ML algorithms by utilizing WEKA.

V. METHODOLOGY

Almost all traditional systems are either difficult or inaccurate [20]. The primary goal of our work is to create an efficient framework capable of resolving these two issues. In this section, we will first present the dataset that will be employed in the implementation. The most crucial issue in the ML technique is to select the most appropriate features and the most suitable classifier. The goal of our research is to determine whether or not a patient is diabetic. In this research we have deployed Naive Bayes (NB), Decision Tree, XGBoost, and Random Forest for predicting diabetes. Incorporated several measurement methods for evaluating the performances of all the classification models.

3.1. Dataset

The most crucial issue in ML technique is to select most appropriate features and most suitable classifier. Our investigation of the study is to predict whether or not a patient is diabetic. We have applied Naive Bayes (NB), Decision Tree, XGBoost and Random Forest for predicting diabetes. Several measurement methods are used for evaluating the performances of all the classification models.

Table 1. Summary of Dataset

	Pregnancies	Glucose	Blood Pressure	Skin Thickness	Insulin	BMI	Diabetes Pedigree Function	Age	Outcome
0	6	148	72	35	0	33.6	0.627	50	1
1	1	85	66	29	0	26.6	0.351	31	0
2	8	183	64	0	0	23.3	0.672	32	1
3	1	89	66	23	94	28.1	0.167	21	0
4	0	137	40	35	168	43.1	2.288	33	1

Table 2. Statistics of Data

Attributes	count	mean	std	min	max
Pregnancies	768	3.845052	3.369578	0	17
Glucose	768	121.6816	30.43602	44	199
Blood Pressure	768	72.25481	12.11593	24	122
Skin Thickness	768	26.60648	9.631241	7	99
Insulin	768	118.6602	93.08036	14	846
BMI	768	32.45081	6.875374	18.2	67.1
DiabetesPedigreeFunction	768	0.471876	0.331329	0.078	2.42
Age	768	33.24089	11.76023	21	81
Outcome	768	0.348958	0.476951	0	1

3.2. Proposed MI Classification Algorithms 3.2.1 naive Bayes Classification

It is a probabilistic ML technique enforced for classification problem. It is centered on the Bayes theorem. It is possible to prove that all pairs of parameters can be liberated from the class variable if the class variable's values are known. It is possible to prove that all pairs of parameters can be liberated from the class variable if the class variable's values are known. Bayes theorem describes the subsequent association for a given class y and dependent feature vector m1, . . . , mn:

$$P(n|m_1, \dots, m_n) = \frac{P(n)P(m_1, \dots, m_n|n)}{P(m_1, \dots, m_n)} \tag{1}$$

By naive restricted notion

$$P(m_i|n, m_1 \dots, m_{i-1}, m_{i+1}, \dots, m_n) = P(m_i|n) \tag{2}$$

For all I, relationship can be simplified

$$P(n|m_1, \dots, m_n) = \frac{P(n) \prod_{i=1}^n P(m_i|n)}{P(m_1, \dots, m_n)} \tag{3}$$

Since P(m1, . . . , mn) is constant for given output we can adopt the Classification rule as follows

$$P(n|m_1, \dots, m_n) \propto P(n) \prod_{i=1}^n p(m_i|n) \tag{4}$$

$$n = \operatorname{argmax}_y P(n) \prod_{i=1}^n p(xm_i|n) \tag{5}$$

Maximum a posterior (MAP) estimate can be taken to approximation (n) and P(mi|n); the preceding in the training set becomes comparative frequency of class y.

Naive Bayes worked pretty well in reversal real world problem because of their over simplified assumptions. To estimate significant parameter, they require only minimal amount of training data. In our work Naïve Bayes classifiers and learners performed are extremely fast when compared with other ML model.

3.2.2 Decision Tree(Dt)

A DT is a well-known classification approach. It is ML supervised learning model. When the target element is categorical, the DT can be deployed. The decision tree resembles a tree in structure model which enumerates the classification method contingent on input features. Input elements can be of any form like text, graph continuous, and discrete.

Algorithm

- Select the best attributes from the dataset and place at the root.

Training set of data is split into subsets. Subsets should be organised in such a way that each subset has the same value for each attribute. The tree's branches will have leaf nodes by the time you've completed steps 1 and 2 for all subgroups.

In our work, we used information gain to estimate the information that all attributes contain in it. For random variable X we measure the randomness or uncertainty by entropy. Our work is a binary classification problem with two classes 0 and 1.

- If all the cases are 0 or all are 1 then entropy will be zero that is it will be low
- If half of the records are 0 and half of the records are 1 then entropy is one that is it will be high.

$$H(x) = -\sum_{x \in X} P(x) \cdot \log(x) \quad (6)$$

By computing the entropy size of every parameter, we can measure the detail gain. An attribute that has a better value cannot be considered as a root and the branch that has 0 entropy need to be considered as a leaf node. The branch that has an entropy of more than 0 needs to be split further. Cross-validation of data can be adopted to identify whether expanding nodes can improve accuracy or not. The node should not be expanded if it reduces the accuracy and the node need to convert as a leaf node.

3.2.3 Random Forest

It is considered an ensemble ML model. This algorithm is utilized for regression and classification problems. It gives high accuracy when compared to other algorithms. This method handles large datasets easily. By reducing variance, it improves the performance of the Decision tree. During training, it constructs a multitude of DT and outputs the class is the mean prediction of the single tree.

Algorithm

- Select “R” features from the total feature “m” where $R < m$.
- From R Features node select the finest divided point
- Using best split nodes are split into sub nodes.
- Continue steps 1-3 until “1” node has been achieved
- Repeat steps 1-4 to build a forest i.e “a” amount of times to form “n” number of trees. The random forest can find the best split using the gini index cost function as follows.

$$\text{Gini} = \sum_{k=1}^n P_k x(1 - P_k) \quad (7)$$

Where $k = \text{All class}$.

P = Training instance properties

In the first step, we have to identify the developed DT to forecast the result and store the anticipated score at the target place. The second step calculates the votes of all predicted targets and the target variable with a high number of votes is considered as the ultimate result of the prediction. Few options of random forest are capable of predicting the result correctly.

3.2.4 XG Boost Classifier

XG Boost (Extreme Gradient Boosting) is one of the best efficient supervised learning algorithms that can predict the output accurately. It is a Robust system that can handle a variety of data types and distributions. XG Boost can be employed for regression and classification problems.

X-G Boost Features

☐ **Regularization**

This is one of the predominant factors of the XG Boost techniques. By adopting regularization, we can get rid of the model from overfitting.

☐ **Cross-Validation**

WR can perform cross-validation by importing sklearn function whereas XG Boost is activated with the inbuilt function of CV.

☐ **Missing Value**

XG Boost is designed to handle missing value efficiently. It is capable of tracking the trends in the missing values and captures them.

☐ **Flexibility**

The algorithm supports the objective function. These functions can be used for performance evaluation and also it is capable of handling user-defined validation matrices.

☐ **Save and Load**

This algorithm is highly efficient to save data matrix and reload whenever it is required. This not only saves time but also saves resources.

Our study, we have used XG Booster as one of the ensemble techniques to reduce previous model errors in the new model.

Developing a Model

For predicting diabetes, the most significant phase is developing a model. We implemented several ML classification algorithms that are discussed above for predicting diabetes. Python Programming Language was adopted for coding using the Enthought Canopy tool. This tool provides a scientific and analytical python package for developing an application, data analysis, and visualization [29].

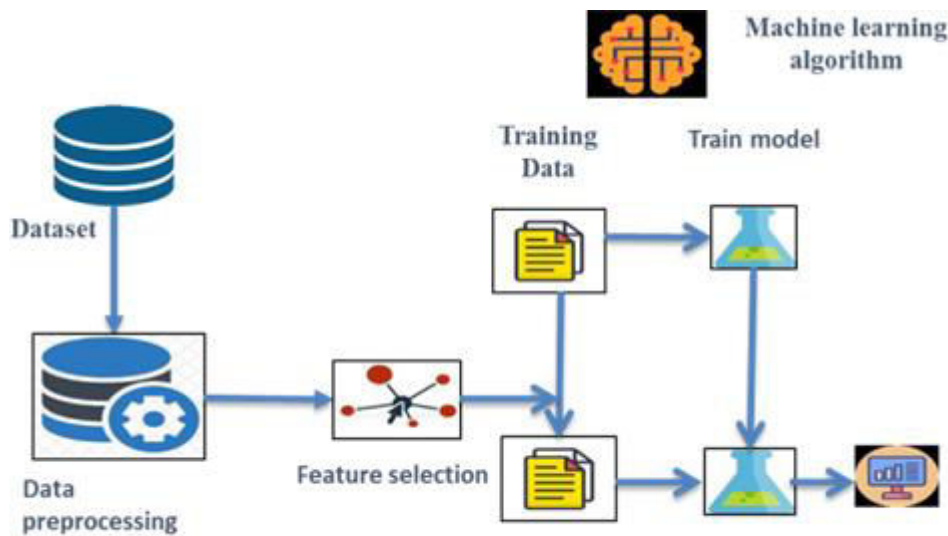


Fig .1 Framework for evaluation of algorithms [1]

Step 1. Downloaded the data from the University of California at Irvine's repository
 Step 2. Data preprocessing was carried out to remove missing values.

Step 3. Divided data set as 80% training set and a test set of 20%

Step 4. Applied ML algorithms like Naïve Bayed, Decision Tree, Random Forest, and XG Boost
 Step 5. Developed a model for ML algorithm centered on the training set.

Step 6. Check classifier model was built for ML algorithm based on the test set.

VI. RESULT AND DISCUSSION

In this research study, we used 4 ML algorithms NB, RF, DT, and XG boost. Applied this algorithm on the same PIMA dataset and results were attained.

The significant parameter applied in this work was predicting accuracy. Accuracy was the keyword and overall success rate for the algorithm. Accuracy is defined in the following equation [8]

$$\text{Accuracy} = \frac{TP + TN}{P + N} \quad (8)$$

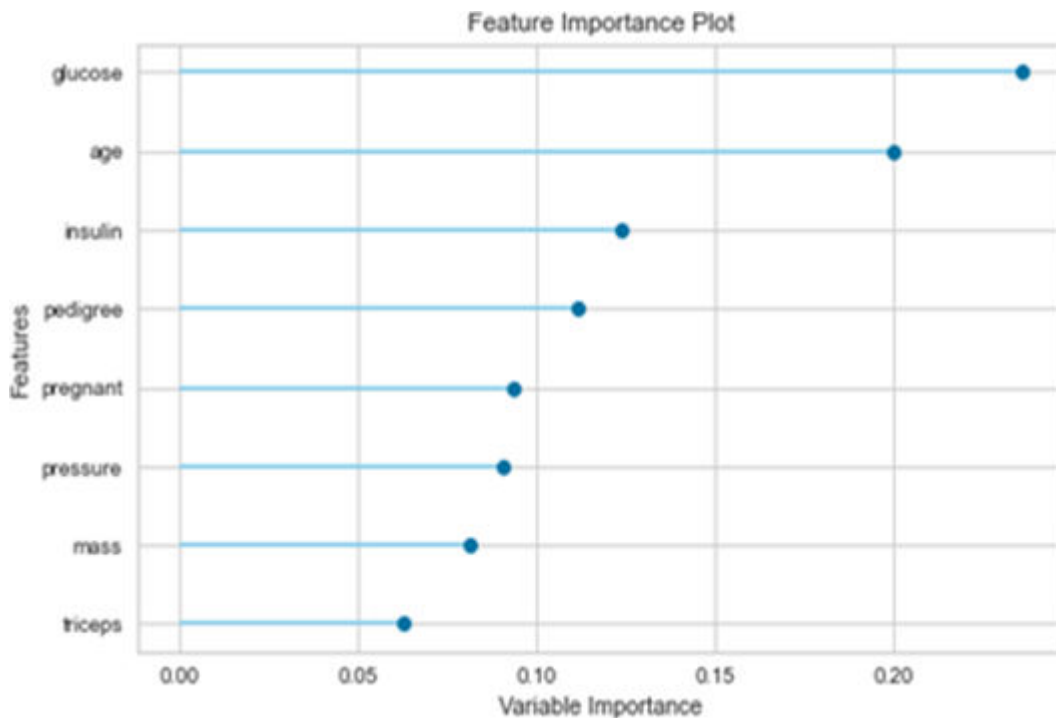


Fig.2 Significant features of the Dataset

All positive and negative values are split by the projected value TP (true positive) and TN (true negative) FN. TP (True positive), TN (true negative), FP(false positive), and FN (false negative) are the four types of true positives. Machine learning approaches are shown in Table 1.. [2].

TP stands for both predicted and actual diabetes in our research. FN indicates actual diabetes is predicted not to be diabetes. Fig1. Proposed Method architecture followed for evaluation of algorithms. FP represents predicted diabetes but the patient was not diabetic. TN implies the patient is actually not diabetic and the prediction is also not diabetes.

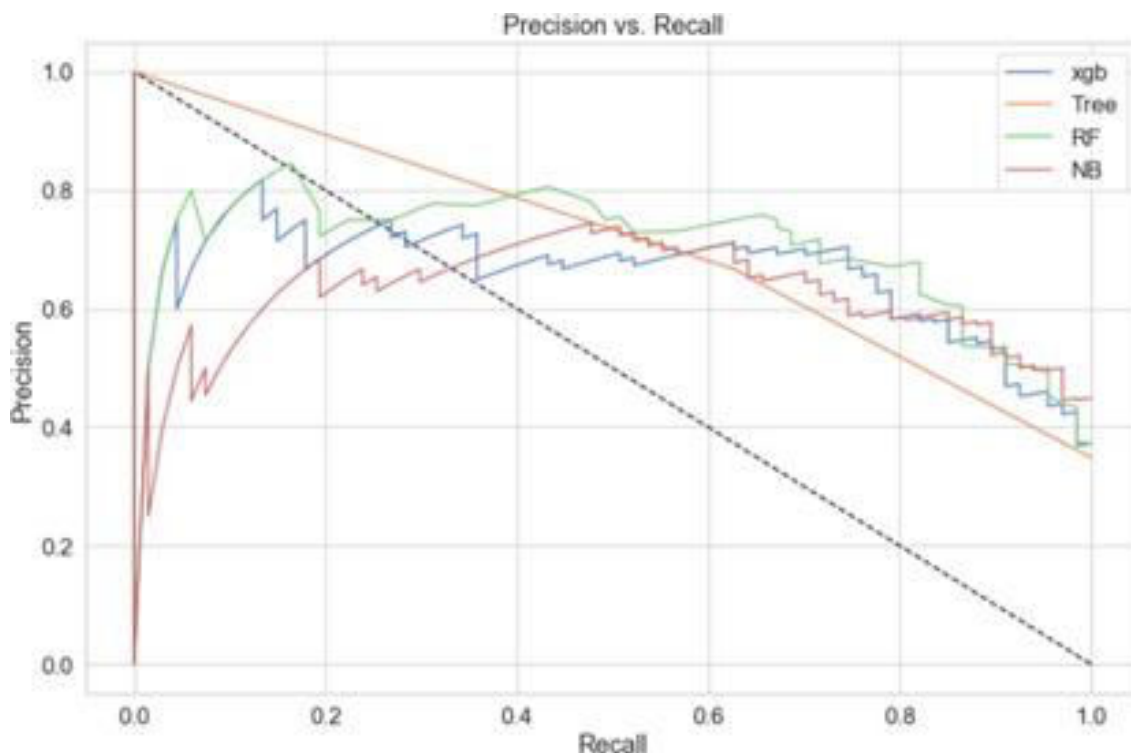


Fig. 3 Demonstrates Precision vs Recall

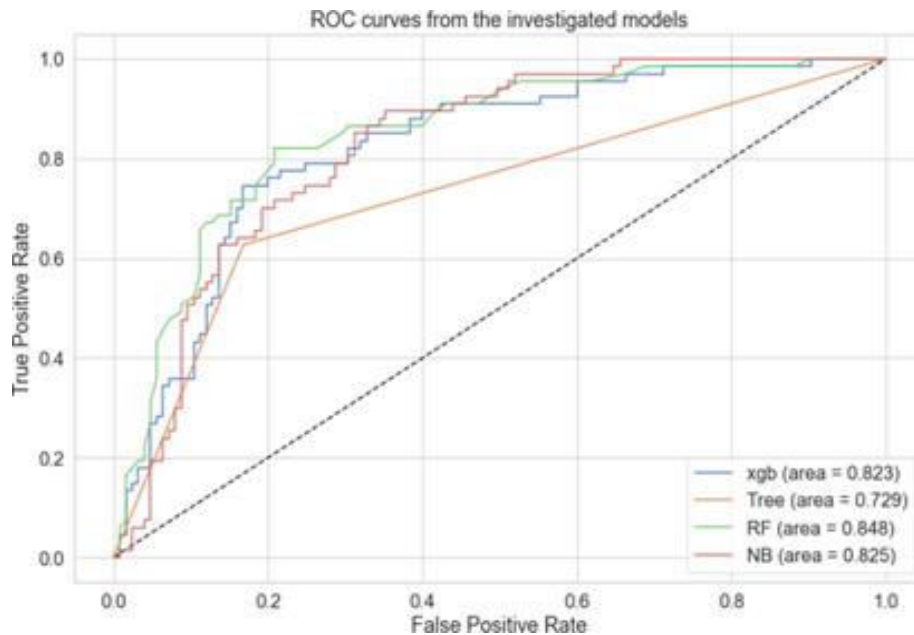


Fig 4. ROC curve of ML classifiers

The fig.2 shows the significant features of the dataset. It is observed that plasma glucose has the uppermost significance when compared with other features and age are considered as second important features. It is concluded that 2 features play the most significant role in the prediction of diabetes.

Precision vs Recall presented in Fig. 3. With greater recall (target = 1 i.e. having diabetes), precision (target=0, i.e. no diabetes) drives down. The reliability of various machine learning methods was measured and conferred in fig (4) NB has 82.5% accuracy, RF gives 84.8%, 72% DT and 82.3% was achieved by using the XGboost algorithm. Based on the outcomes of the experiments, we conclude that the Random Forest Algorithm is suitable for forecasting the patient's diabetes state.

VII. EXPECTED OUTCOMES

- Diabetic complications include damage to both large and tiny blood arteries, which can cause heart attack and stroke, as well as kidney, eye, foot and nerve disorders..
- Many individuals' lives can be saved if diabetes is discovered early.

VIII. BENEFITS FOR THE SOCIETY

Model evaluation methodologies and difficulties linked with diabetes prediction are discussed as well as remedies provided by the authors using the framework. Health care workers, stakeholders and academics in the field of diabetes prediction may benefit from this study's findings. Models can be used to predict cancer, Parkinson's disease, heart disease, and COVID-19 in other healthcare domains.

IX. CONCLUSION

Predictive analytics in the medical domain assists the medical practitioner and researcher to obtain insight of medical data to make a timely decision. Different ML algorithms used are NB, RF, DT, XG boost on the PIMA dataset which consists of 768 records and 8 parameters were chosen for the purpose of training and testing the prediction framework. From the investigational outcomes we can see Random Forest has the highest accuracy of diabetes predictions, according to the exploratory results. Comparing with the other three methods employed in this study, this algorithm has the maximum accuracy of 84.8 percent. Therefore, we can conclude that the Random Forest is the finest model for diabetes prediction.

This work can be further enhanced by filling the missing value of attributes and increasing the dataset size. A high-volume dataset with zero nulls is required to build a 99.9% accurate diabetes prediction framework. Our future work focuses on incorporating other techniques into the used model and achieving high accuracy by tuning the model parameters. The model is next tested on a large dataset with no missing values, which provides a better insight of the data and allows for high prediction accuracy.

X. FUTURE SCOPE

In the future, we want to implement the proposed categorization and prediction algorithms in an Android app for the diabetic remote monitoring. Genetic algorithms may be able to be employed for better monitoring if the proposed method is implemented.

XI. LIMITATIONS

The accuracy of these predictive models varies based on the input factors, and there is no guarantee that the models can be reproduced in other races or groups in addition to those already created.

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BLOCKCHAIN: PLATFORMS FOR IMPLEMENTATION**Geet Kiran Kaur**

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ABSTRACT

Blockchain is immutable decentralized distributed technology that has taken the world by storm. Its properties make it applicable as a viable solution for many diverse fields. Although the work in blockchain is catching up. Still, beginners find it difficult to understand the various platforms that are involved in blockchain implementation. This paper tries to provide an overview of various technologies and platforms that are used for the implementation of blockchain.

Keywords: Blockchain, Ethereum, Hyperledger, private blockchain, public blockchain, Distributed ledger, Blocks

I. INTRODUCTION

Blockchain is a version of distributive ledger technology.

Industry and academia circles perceive blockchain as a subversive technology. Bitcoin [1] popularized blockchain as it was the underlying technology on which the blockchain was based. It is a database that is distributed, sharable and untampered. Blockchain stored transactions through peer-to-peer networks. Blockchain has found applications in many domains for its features like immutability distributiveness and decentralized nature.

Each block in Blockchain is made up of two parts: a blockhead and a block. Blocks represent transaction records or transactions (which the database must maintain), which can include everything from monetary transactions to health data to system logs to traffic information [2]. Block headers contain two sets of metadata: one for mining, such as timestamps, difficulty objectives, and Nonce values, and the other for the block itself, such as fields linking parent blocks, version numbers, and Merkle tree roots [2]. After hashing all of the block's transaction records Each block in Blockchain is made up of two parts: a blockhead and a block. Blocks represent transaction records or transactions (which the database must maintain), which can include financial transactions, health data, system logs, traffic data, and so on [3]. Block headers contain two sets of metadata: one for mining, such as timestamps, difficulty objectives, and Nonce values, and the other for the block itself, such as fields linking parent blocks, version numbers, and Merkle tree roots [2]. After hashing all of the block's transaction records Each block in Blockchain is made up of two parts: a blockhead and a block body. All the transaction in the block body is hashed together in a group of two. The result is again hashed in the group of two. This process continues, till we get one single hash called Merkle root.

Blocks are immutable owing to the encryption mechanism, which means they can't be altered once they've been added to the chain. The blockchain system [1] relies on a consensus method to keep the network running, which is maintained by all nodes, which can be any device. The consensus process ensures that even if one node fails, the other nodes can continue to function normally, overcoming the drawbacks of the classic centralized, which is prone to malicious attacks and tampering. Blockchain is a type of credit system that differs from the typical distributed network's trust model of trusted third-party endorsement.

It's a "no trust" system in a sense. This system is not based on any laws or regulations, and it is implemented using machine language [2]. Public blockchains, private blockchains, and consortium blockchains are the three types of blockchains [3]. In a broad sense, private blockchain and consortium blockchain are private chains. Any individual or group that shares a blockchain is referred to as a public blockchain. Any group or individual can participate in the consensus process as long as the recipient of the chain can submit transactions on it and the transaction can be properly certified by the blockchain.

II. TYPES OF BLOCKCHAIN

Blockchain is classified into three types based on its functioning.

A. Public Blockchain

One of the various types of blockchain technology is the public blockchain. A public blockchain is a permission-less distributed ledger that anybody can join and conduct transactions on. It is a non-restrictive form of the ledger in which each peer has a copy. This also means that anyone with an internet connection can access the public blockchain.

The bitcoin public blockchain was one of the first public blockchains to be made available to the general public. It enabled anyone connected to the internet to do transactions in a decentralized manner.

The verification of the transactions is done through consensus methods such as Proof-of-Work(PoW), Proof-of-Stake(PoS), and so on. At the cores, the participating nodes require to do the heavy-lifting, including validating transactions to make the public blockchain

A public blockchain will become non-functional if it does not have the required peers participating in transaction processing. There are also many sorts of blockchain platforms that employ these diverse types of blockchain as their project's foundation. However, in addition to the standard capabilities, each platform provides new ones.

B. Consortium Blockchain

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C. Private Blockchain

One of the different types of blockchain technology is a private blockchain. A private blockchain is a blockchain that operates in a restricted environment, such as a closed network. It's also a permissioned blockchain that's managed by a single entity.

Private blockchains are ideal for use within a privately held company or organization for internal purposes. You can effectively use the blockchain and allow only selected participants to access the blockchain network this way. The organization can also control the network's parameters, such as access and authorization.

S.No	Types of Blockchain		
	Public	Private	Consortium
Who can Join	Open to All, anyone can join a public blockchain	It is not open to all; participation is through permission	It is open only to a member of the consortium.
Who takes validation decision	All members build trust by participating in a consensus	Selected Members or owners, participate in the validation of transactions	Selected members participate in the validation of transactions
	Members are incentivized for their work toward building public blockchain	No incentive is given	No incentive is given
	No Middle man is required for processing. It is decentralized and peer to peer network	There is a centralization, owners takes the decisions	Less centralized as members of the consortium take decision
	All members build trust by participating in a consensus	Selected Members or owner, participate in the validation of transactions	Selected Members participate in the validation of transactions
	Data is available to everybody hence increasing the transparency	Data visibility is subject to the decision of the owner of blockchain.	It is less transparent

III. BLOCKCHAIN PLATFORMS

Blockchain is becoming increasingly essential. Blockchain first appeared in 2009 as Bitcoin, but it has evolved into a popular technology. Apart from bitcoin, blockchain now has a variety of applications. It's employed in industries, healthcare technology, supply chain, logistics, and a variety of other disciplines of technology[4]. It was created to make the goal of making corporate operations more efficient and transparent. 10 best blockchain platforms to use and to build a blockchain embedded ecosystem surely and quickly will be discussed in this section.

A. IBM Blockchain

IBM Blockchain Platform's features are based on the Linux Foundation's Hyperledger Fabric. The IBM Blockchain Platform is a fully managed full-stack blockchain-as-a-service(BaaS) offering that can be delivered in a variety of environments, including the IBM Cloud, on-premises, or third-party clouds. It enables members to build, run, govern, and expand a network with the performance and security required for even the most demanding use cases in regulated industries. The IBM Blockchain Platform allows you to quickly set up a blockchain network and manage networks, channels, and smart contracts through a simple interface.[4]

B. Tron

Tron (TRX) is a decentralized entertainment ecosystem built on blockchain technology. Tron, founded by Justin Sun, aims to grow the market for decentralized digital content apps by making them easier to design and implement. The Tron main net was introduced in June 2018, and it has since evolved into a blockchain-based operating system [5]. Tronix TRX is the Tron blockchain's native cryptocurrency coin.

The challenge many developers encounter in learning to build from scratch on wholly new protocols is one of the reasons for the slow adoption of blockchain technology. Tron is meant to make this transition easier, hastening the decentralization of current platforms and the creation of new decentralized applications (dApps).

C. Stellar

After Bitcoin, but before Ethereum, Stellar was launched in 2014. Stellar employs a considerably more environmentally friendly synchronization method than either platform, and it was built primarily for remittances and payments, thus it has "cashlike" (i.e. extremely small) waits between transactions and is more or less free to use (transactions cost way less than a penny). Stellar, like Ethereum, lets you create additional assets (such as a digital version of a dollar or a peso) and exchange them inside the network extremely quickly[6].

Stellar, unlike virtually all other blockchain systems, can link to real-world endpoints, allowing consumers to convert their digital representations of money into cash. The Stellar Development Foundation is putting a lot of effort into expanding its network of real-world partners.

D. Tezos

Tezos is a smart contract platform that has been banned by Golem and MakerDAO as an Ethereum alternative. It has a safe language with a formal verification system for smart contracts, which is nothing more than a procedure that mathematically ensures the accuracy of numerous code features. Each and every code in Tezos is independently checked. It has many integration options that allow users to update the Tezos system on a regular basis[7]. Tezos' built-in consensus mechanism allows it to implement the right to vote in the event of protocol changes.

E. Corda

Corda is a worldwide blockchain ecosystem built on an open-source blockchain technology. The use of smart contracts ensures complete secrecy. It also allows the company to trade directly and offers a cost-effective way to simplify processes.

The key distinction is in the way Corda manages transactions. It is a distributed ledger technology (DLT) that aims to enhance blockchain practicality, speed, and scalability by not requiring each peer to maintain a complete ledger. Corda will employ this strategy if a transaction can be completed between two peers without telling the entire network[8]. It's also built to involve additional participants, making it simple to track the transaction and verify its legitimacy. It is a business-oriented distributed ledger technology.

F. Ethereum

Ethereum is a decentralized, open-source blockchain that allows users to create smart contracts. The platform's native cryptocurrency is Ether (ETH or). Ether is the second most valuable cryptocurrency after Bitcoin in terms of market capitalization. [2] Vitalik Buterin, a programmer, created Ethereum in 2013. Gavin Wood, Charles Hoskinson, Anthony Di Iorio, and Joseph Lubin were also among the Ethereum founders. Work on crowd-funded development began in 2014, and it became online on July 30, 2015.

Ethereum enables anybody to create permanent and irreversible decentralized apps that consumers may interact with. Decentralized finance (DeFi) apps allow cryptocurrency users to borrow against their holdings or lend them out for interest without the use of traditional financial intermediaries like brokerages, exchanges, or banks. [9] Ethereum is also a cryptocurrency.

G. Multichain

On July 20th, 2020, Multichain was created as Anyswap to address the evident need for distinct and diverse blockchains to connect with one another. Each blockchain has its own community and development ecosystem, as well as its own set of services[9]. We need a rapid, secure, economical, and reliable mechanism to exchange value, data, and exercise control between the chains for our industry to advance to the next level for customers.

Multichain's technologies enable practically all blockchains to communicate with one another. There are no restrictions on Ethereum-like chains (e.g. Binance Smart Chain), or different Layer 2 chains requiring Ethereum finality (e.g. Polygon), or a network of parachains (e.g. Moonbeam in the PolkaDot system), or Bitcoin types of chain (e.g. Litecoin), or a network of parachains (e.g. Moonbeam in the PolkaDot system), or a network of parachains (e.g. Moon

H. EOS

EOS provides fundamental functionality that enables organisations and people to construct blockchain-based apps in the same manner that web-based applications are created. EOS provides secure access and authentication, permissions, data hosting, use control, and dApp-to-Internet connectivity. EOS is backed by an online toolkit store that attempts to make app creation as painless as possible. The EOS ecosystem is made up of two main components: EOS.IO software and EOS tokens.[10]

EOS.IO is similar to a computer's operating system. The EOS blockchain network is managed and controlled by it. For vertical and horizontal scalability of DApps, the program employs blockchain architecture. The EOS token is the EOS network's cryptocurrency. To access network resources and construct and run DApps, a developer merely has to keep EOS tokens rather than spend them. Token holders who do not have any apps running can rent or transfer their bandwidth to other participants who do.

I. Hyperledger Fabric

The Linux Foundation's Hyperledger fabric architecture. Blockchain technology is divided into two categories. Permissionless and permissioned blockchain are two types of blockchain. The Hyperledger Fabric is a permissioned blockchain technology with a modular design that operates on Linux (plug-and-play).

Container technology is used by Hyperledger Fabric to house its smart contract (Chaincode), which holds the application logic. Hyperledger was founded by the Linux Foundation in 2015 as an umbrella organization for open-source projects and technologies. We'll look at the core components of the Hyperledger Fabric architecture in this post[3].

The Hyperledger Fabric is led by IBM. It was created with the goal of creating scalable blockchain applications through the use of permissions flexibility.

J. Open Chain

The term "open-chain" refers to a type of blockchain technology. If we take the word "blockchain" literally, Openchain is more of a cousin than a blockchain. A block chain is a data structure that uses hashing to cryptographically link blocks of transactions.

The idea of blocks is not used in Openchain. Transactions are no longer organised into blocks and are instead directly chained with one another. The requirement to arrange transactions into blocks causes a delay. Even though some systems can cut the block time to a few seconds, it is still a long period for latency-sensitive applications like trading. As soon as a transaction is sent to the network, it is linked to the chain in Openchain.

K. Quorum

Bitcoin and Ethereum are slower than Quorum. It can process about 150 transactions per second. This is due to the quorum's straightforward consensus method. By default, quorum uses RAFT consensus for fault tolerance and IBFT consensus for Byzantine fault tolerance, and it restricts participation to a known set of nodes that must be provisioned to be part of the blockchain network. As a result, it is not open to everyone and is only used between participants who have been pre-approved by a designated authority.

It did away with the idea of utilizing gas to add cost to a transaction. On the quorum network, there are no monetary charges connected with processing transactions.

Quorum enables public and private transactions on the blockchain. The open transactions are identical to those of Ethereum, however

L. Hyperledger Sawtooth

Hyperledger Sawtooth is a blockchain platform allowing businesses to construct distributed ledger apps and networks.

The design philosophy focuses on distributing ledgers and making smart contracts secure, especially for corporate use[3].

Sawtooth makes it easier to create blockchain apps by isolating the core technology from the application domain. Without knowing the underlying design of the core system, application developers can declare the business rules relevant for their application in the language of their choosing.

Sawtooth is also a very modular system. Because of this modularity, businesses and consortia may make policy decisions that are best suited to their needs. The primary design of Sawtooth lets applications pick the transaction rules, permissioning and consensus methods that best suit their needs.

IV. COMPARISION OF PLATFORMS

There are many blockchain platforms. Each platform has unique features: IBM blockchain is open source and is connected to the Kubernetes cluster. It is a permissioned blockchain.it supports java and Go languages. Tron is a platform that provides high performance, scalability, and throughput to users. Counterfeit chains can be removed in this blockchain. Steller allows smart contracts and takes 3 seconds to confirm transaction. Tezos use delegated proof of stake consensus and is a seif amendment protocol. Corda provides high security and is agile and flexible. Ethereum provides the concept of tokenization and is used for fast deployment it supports python and C++ languages. Multichain is used for timestamping ad data sharing it support languages like python javascript and c++ language. EOS supports better usability and governance multiprocessing is supported by this blockchain. hyperledger fabric is used mostly by enterprises and supports multi-language contracts. Open chain has a modular design and supports free transactions. It is also used as Sidechains. Sawtooth allows uses of sawtooth library.

V. CONCLUSION

In many industries, such as commerce and real estate, blockchain removes the need for intermediaries. This is only feasible now because of its decentralized nature. Blockchain provides for faster transactions than traditional financial institutions by permitting P2P cross-border payments with a virtual currency. An external audit is offered whenever a trade of things is logged on a Blockchain. This audit determines where the things came from, and the blockchain ledger allows for this.there are so many platforms .this paper allows researchers to get an insight into different platforms of the blockchain

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CULTURAL HERITAGE OF THE 'KHIAMNIUNGAN' TRIBE OF NAGALAND AND SOME OF ITS UNEXPLORED ASPECTS**Dhritee Tapati Dey****ABSTRACT**

The cultural heritage of India is known for its remarkable diversity. A considerable part of its attributes are from the culture of the existing tribal communities who are immensely diverse among themselves as well. Their cultural heritage, in terms of folklores, fabrics, craftsmanship and most importantly, music and dance, draw inspiration from common activities such as worships, agriculture, trees etc. This paper discusses about some of the special and less explored aspects of the cultural heritage associated with a tribe from the state of Nagaland (present in the north eastern part of the country) called the "Khamniungan". We will also discuss about how their folk culture that mainly revolves around the agricultural practices performed by them, that has some very interesting and unique rituals.

Keywords: [Khamniungan, cultural heritage, agriculture, Nagaland, northeast]

INTRODUCTION: THE KHAMNIUNGAN TRIBE

The Khamniungan are one of the major tribes of Nagaland. They inhabited the place long before official records were made by the British and hence their origins remain uncertain. However, oral traditions, legends and myths give us some information about the place where they first started the generation. According to one such popular myth, the Khamniungan people trace back their origin to a place called Khamngan. According to the myth, there was a flood which caused the people to evacuate the place and to move to elevated lands. Thus, when the water level came to normal condition, some of the people came back to the area again, marking the beginning of the Khamniungan tribe. The word Khamniungan is a compound word formed by three words: 'Kham' means water, 'Niu' means great and 'Ngan' means source. Thus, the meaning of the term Khamniungan is 'source of great water or river'. Hence, to some extent the myth might actually be true as the nomenclature goes hand in hand with it. After spending three generations in Khamngan, the people began dispersing to different regions, ultimately settling down in areas of Nagaland and Myanmar. When the Swedish journalist Bertil Lintner first came into contact with the Khamniungan Nagas in the 1980s, he called them Kalyo-Ken nyu – "dwelling in stone houses" – a name they earned owing to their mountainous habitat in the snow-clad Patkai ranges. A majority of these people reside in the Noklak district (35%), some reside in Naga self administered Zone, and some have settled in the Hkhamti district of Myanmar. They are linked linguistically as well as culturally to the Tibeto-Burman family.



Fig: Dusk view of a region in the Noklak district.



Fig: map of Nagaland showing the Noklak district.

AGRICULTURAL PRACTICES AND THE ‘EIOAHSHANG’:

The main cultural heritage of the tribe revolves around agricultural practices and related customs. The Khiamniungans are primarily subsistence agriculturists cultivating paddy and vegetables on the hilly slopes along the Indo-Burma border. The process starts around the month of April which highlights a very important phase: the sowing season. During this season many different types of crops suitable to the climate are sown, the main one being rice.



Fig: Men ploughing the field using bamboo stick.

The men folk of the tribe are responsible of the ploughing of the fields or as they like quoting it “making holes in the ground” using a long, slender bamboo stick. The women follow along by scattering the seeds into the pits.



Image source: www.sahapedia.org/interview-khiamniungan-tribe-nagaland

Men often sing a mild music while working in the fields. It is known as “EIOAHSHANG”. The next section discusses more about it in detail.

THE MUSIC OF CULTIVATION: EIOAHSHANG

During this ongoing process of sowing a special type of tune/song with minimal syllables is sung by the men folk, known as ‘EIOAHSHANG’. The word translates to ‘EIO’ meaning field, ‘AH’ meaning cultivation and ‘SHANG’ meaning tune. This is mainly done to keep the people entertained throughout the sowing process. The syllables sung may not make sense in particular, but the tune radiates a feeling of enthusiasm in such a way that the work done by the group remains synchronised and the activity feels vibrant.

After the cultivation of rice is done, a type of dance along with minimal musical accompaniment, is performed which depicts the steps of the cultivation process.

PRE-HARVEST RITUALS: TSOKUM SUMAI FESTIVAL

The Tsokum Sumai is one of the most important festivals of the khiamniungan tribe. The festival is celebrated in the month of September or in the first week of October to invoke blessing for a rich harvest. The celebration continues for 8 days where each day has a specific type of ritual to be accomplished. The rituals mostly consist of sacrifices and prayers made to their deity known as ‘Ko-a’. Tsokum Sumai marks the beginning of harvest before which no one is allowed to reap and take the newly harvest rice/food as it is believed that unfavorable events and famine befalls upon the village or the family.

POST HARVEST CEREMONY: THE KHAOTZAO SEY HOK-AH AND THE JAMHANG TSOUTHONG TRIBAL DANCE

Khaotzao Sey Hok-ah sumai is another important festival of Khiamniungan Naga which marks the end of all agricultural activities for the year, a time to rest and give thanks to god for the bountiful harvest and triumph over adversities all throughout the year. During this time the people enjoy the end of the year by drinking rice wine, dancing and singing with their fellow people. Khaotzao Sey Hok-ah is a combination of four words; the word ‘Khaotzao’ refers to bamboo container (mug) used for drinking rice beer, ‘sey’ means preparation of rice beer inside a large container made of bamboo, ‘hok’ means leg and ‘ah’ means rest. Thus in short ‘Khaotzao Sey Hok-ah’ means festival of rest and feast with abundance of rice beer. It is celebrated in the month of January (Hok-ah lei)

Yet another special type of dance is performed by them, post-cultivation of rice, it is known as the ‘Jamhang Tsouthong’. The signature dance of the Khiamniungan tribe, mainly performed by the men. The dance begins with men holding each other’s arm and dancing. Alongside dancing, a continual chant of certain syllables, typically the common ones such as ‘Hai....ho...ho...hai!’ or ‘hay...hah!...hay...hah!’, is also done. The entire dance depicts the steps of the cultivation process.



Fig: khamniungan tribesmen performing Jamhang Tsouthong

CONCLUSION

In this paper we have discussed the some of the unexplored components that make the cultural backbone of the tribe. The scope of research in the field of ethnomusicology and cultural studies of Nagaland is ample. Thus, future studies and works may include many more such less explored components like the ‘Eioahshang’ music, the ‘Jamhang Tsouthung’ dance etc.

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CYBER-CRIMES: A CHALLENGE FOR CYBER-SECURITY IN THE 21ST CENTURY DIGITAL ERA**Fr. Baiju Thomas**

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ABSTRACT

The current study deals with cyber-crimes: challenges for cyber-security in the 21st-century digital era. The first thing that leaps to mind when people think of cyber security is 'cybercrime,' which is on the rise every day. Governments and corporations approach cybercrime protection in a multitude of ways. Despite various cyber security programs, many people are worried about cyber security. The study's primary focus is on the cyber security risks posed by modern technology. New cyber security technologies, ethics, and cyber security developments are also explored. Cybercrime was made brought about by technological advancements, which scared web users. In the current environment, it is no longer possible to generalize crime throughout the globe because cybercrime has become a global concern. Knowledge and rules about cybercrime must be international rather than national. Only by implementing new laws and developing global preventive and defensive technologies can we safeguard our society from the evil of "Cyber Crime." The area of involvement has expanded as an outcome of digital technology, turning borderless and global. Any criminal behavior carried out over the internet for monetary or non-monetary gain is defined as a crime. Cybercriminals use confidential information to carry out their crimes. The most common offenses are stalking, hacking, phishing, internet fraud, identity theft, and virus transmission. Cyber-security has transformed into a significant and fast-moving security challenge in the era of information, Communication, and Technology (ICT). Cyber threats appear likely to infiltrate every nook and cranny of national economies and infrastructure facilities as the world's reliance on ICT grows; indeed, a rise in cyber-attacks aimed at people, businesses, and governments worldwide has accompanied the broader structure of computers and Internet-based connectivity. Meanwhile, some governments increasingly see ICT as a national security advantage and a battleground for strategic fights. This study illustrates the role of cyber security in today's security issues, building on the strategy by examining cyber security from a global context. More people will enter the digital arena as an outcome of their modern lifestyles and use technology for online shopping and banking. At the same time, safeguarding data has become more complex. Furthermore, online crime, often known as cybercrime, has increased due to the extensive use and development of social media. In the field of information technology, data security is vital. Cyber security is among essential priorities in the 21st-century digital era.

Keywords: Cyber-Crimes, Challenges, Cyber-Security, 21st century, and Digital Era.

INTRODUCTION

Cybercrime is a brand-new type of criminal conduct. Any illegal behavior on or through computers, the internet, or other technology recognized under the Information Technology Act is referred to as cybercrime. Cybercrime is the most common crime in modern India, and it has a terrible impact. People who break the law not only cause harm to society and the authorities, but they often remain undetected. Criminals with technical knowledge utilize the internet to engage in various illegal activities. It's an endless and incomprehensible medium. With all of its advantages, the internet also has drawbacks. Cybercrime and widespread denial-of-service assaults are both instances of cybercrime. Computers or web-based technologies are used as a tool, goal, or site for unlawful activity. It could also refer to conventional illegal activities made more accessible by technology or networks. Cybercrime may bring down any system in seconds, halt any railway anywhere, mislead aircraft in flight by sending out wrong signals, expose classified military data to foreign countries, block e-media, and bring down any system (Sumanjit Das and Tapaswini Nayak, 2013). Cyber stalking, cyber warfare, email spoofing, email bombing, cyber pornography, and cyber defamation are some of the more recent cybercrimes. The use of computers and the internet to perpetrate crimes are known as cybercrime. Cyber security has entered "real space," or a whole society, generating a lot of assaults across a wide variety of sectors (Li 2006). Cybercrime, or illegal action carried out by internet users in cyberspace, is a relatively new form of crime. This expresses concern about the capacity of the current legal system to deal with cybercrime. The evolution of crime is inextricably related to social change at micro and macro levels. Cybercrime is the most started talking issue of the twenty-first century. Internet and mobile usage are growing in the global technology sector, raising concerns about individual security and privacy. As an outcome, all users must be informed about cyber security and cybercrime. Any unlawful actions that use a computer or the web as a tool, a goal, or both as a tool or a focus can be described as a crime. Although courts in India have defined "cybercrime" in several cases, no Indian

legislation or regulation does. As our society relies on technology, cybercrime has become an unavoidable plague. Computers and other associated technologies have become increasingly prevalent in daily life, and they have evolved into a requirement that enhances user convenience. As an outcome, cyber terrorism poses a significant threat to global corporations. Terrorist groups employ technology to spread hatred among the general public and recruit and train militants through online learning programs. They are also developing websites to teach people how to make explosives and handle guns, among other things in the 21st-century digital era.

THE CONCEPT OF CYBER-CRIME

Cybercrime has wreaked havoc on individuals, institutions, and even governments in today's world. Cybercrime detection and classification methods have had various degrees of success in preventing and protecting data from attacks. Several laws and procedures have been enacted to combat cybercrime, with offenders facing harsh penalties (Usha Mary Sharma, 2014). Cybercrime, a term that has yet to be defined, appears to be humanity's next affliction, and it has taken the lead role. The term "cybercrime" has been heard by almost everyone involved in using computers and the internet, whether people, corporations, or institutions, national, international, or global. It is rooted in the monetary losses to which all citizens are currently or will be subjected shortly, as internet telecommunications are the actual means by which social connection, worldwide trade, and business are transacted; on the other hand, it is rooted in the certainty of it. The terms "cybercrime" and "attack" characterize criminal behavior that occurs online and is perpetrated by attackers. Only a few examples of cybercrime include cyber stalking, identity theft, malware viruses, and other forms of cybercrime. Government agencies and enterprises are increasing their investments in cybercrime training and recruitment due to these actions. Individuals and small businesses used to be the sole perpetrators of cybercrime. The most common crimes involve the use of a computer and a network. The number of cybercrime activities is growing as the web grows since a criminal no longer needs to be present physically when committing a crime. Because of fear of potentially terrible immediate consequences and a depiction of the scene of the invention that is now penetrating our daily lives, stories concerning "cybercrime" make the main page.

On the other hand, the numerous accusations of cybercrime in such media frequently necessitate a definition of "cyber." Terms like Internet extortion, theft, explicit sexual leisure, abortion, virus, and so on have a "traditional" ring to them regarding alleged cybercrime incidents (Team, Bodin, Echilley, & Quinard-Thibault, 2015). The age of the respondent has no bearing on their understanding of cybercrime. In addition, there is no correlation between respondents' knowledge of cybercrime and their educational level. This means that educational activities must be transmitted in various mediums across the country. Incredibly, cyber-crime losses are unaffected by anti-virus software or computer usage time. As per this advice, users should be aware of their online presence and be cautious when engaging in online activities. In today's world, cybercrime has no borders (Jackson, 2016; Maskun et al., 2013; Roscini, 2013; Von Solms & Van Niekerk, 2013). This cybercrime study is an essential tool for preventing cyber-attacks. For various reasons, it is now used by the vast majority of people. To protect one from online bullies, scammers, and blackmailers, you must understand essential security practices. It is necessary to know what to do in the case of an attack. Cybercrime is a type of hostile attack that can affect a company or an individual financially or personally. Cybercrime has resulted in significant financial losses for both the company and the individual on a few occasions. Computers have become the primary source of all data in our advanced technological environment. An attack on computers and other digital devices is referred to as "cybercrime." These cyber-attacks might jeopardize not only the organization but the entire country. Cyber-attacks have become more common in India and around the world, necessitating the deployment of more stringent security measures. If these attacks are not addressed quickly, they may have a significant economic effect on the country in the 21st-century digital era.

THE HISTORY OF CYBER-CRIMES

The first cybercrime was recorded in the year 1820. Given that the abacus has been used in India, Japan, and China since 3500 B.C. and is considered the world's first computer, this isn't unexpected. On the other hand, Charles Babbage's different engines marked the start of the modern computer era. Joseph-Marie Jacquard, a French cloth designer, developed the loom in 1820. This technique allows some elements to be spun to mimic a range of procedures. Employees at Jacquard feared that their professional jobs and lifestyles would be endangered. They attempted to undermine Jacquard's announcement of the various techniques in the future. This is the first case of cybercrime in its broadest sense! (R. R. Choudhury, S. Basak, and D. Guha, 2013). Since then, computers have progressed a lot, with neural networks and Nano computing claiming to transform each atom in a glass of water into a computer performing billions of operations per second. Cybercrime is a current issue that has arisen due to our rapidly changing technology. In an age when computers run everything from microwave ovens and refrigerators to nuclear power plants, cybercrime has reached lethal dimensions. Cybercrime has existed since the emergence of the first computerized phones in the 1970s. People who work in

the gadget industry created a code system to avoid paying for long-distance calls. Since they figured out how to take advantage of the situation by modifying hardware and software to steal long-distance phone time, they were dubbed the "first hackers." This demonstrates how easily computers and digital devices can be hacked and used for evil purposes. Anyone who uses the internet is suddenly putting themselves in grave danger. It has caused havoc on several countries' economies. As technology advances, the consequences become much more severe. As a result, authorities have a more challenging time combating cybercrime (Prakash, F., Sadawarti, H. K., & Baskar, K., 2019). Since the introduction of computer technology, the research has been looking for weaknesses in programs and equipment. People who engaged in illegal hacking in the 1990s did so solely to improve their understanding of the frameworks they were using, at a time when P.C. innovation was still relatively new. Systems were attempting to achieve noticeable quality, so they could compete with other programmers and be crowned the best programmer when P.C. innovation was still relatively new, and systems were attempting to achieve noticeable quality to compete with other programmers and be crowned the best programmer. Attacks on military outposts or economic relationships, for instance, were indeed a shock to the system. The first step was to break into someone's computer and steal their personal information to commit a cybercrime. On the other hand, criminals target high-security networks to steal confidential data. Emotional and business computers will undoubtedly be afflicted by a virus that criminals have distributed. An anti-virus program's principal role is to protect a computer from computer viruses. Malware, known as an "awarded the status attack," can infect many computers at the same time. Because of their use of these scams, people's bank accounts and credit card details are compromised. They didn't talk to an attracted security threat or build tension to the level often associated with illegal authority since they were not finished with their goal of having the upper hand. However, as history has shown, when people develop skills that give them a competitive advantage over society, they will abuse and deceive the community. With a large quantity of money moving across the web and massive growth in P.C. usage, determined thieves found out how to execute digital fraud. At the moment, the appearance and technological prowess of this new breed of hackers is enough to attract them.

FEATURES OF CYBER CRIMES

The term "cybercrime" refers to new sorts of criminal activity that have occurred in the process of the internet. Cybercrime is rising, and current technological solutions aren't keeping up. This emphasizes the importance of taking more pre-emptive measures to reduce cybercrime. Just as it's vital to evaluate illegal traits to know criminal motivations and, as a result, develop and implement prevention initiatives, knowing victims, or those who use services, is equally vital (Jahankhani, H., Al-Nemrat, A., & Hosseinian-Far, A., 2014). As an outcome of the attention they've received, the specific elements of cybercrime deserve more investigation.

- There are experts in web and network technology in the room.
- Cybercriminals operate across national borders, presenting a geographical challenge in cyber security.
- In the virtual environment, crimes are being committed.
- The inability to gather the evidence to show in court is mainly due to a lack of accountability.
- Both in terms of financial and non-monetary damages, the total is incalculable.
- These crimes are assumed to include low-risk, increasing actions.
- If people lack the appropriate skills and competencies, it isn't easy to track down cyber-attacks.
- Crimes are committed from afar, with the offenders not present.
- Due to a lack of high-tech capabilities, investigative agencies have difficulty discovering and countering cybercrime.
- Due to the apparent fear of potential exposure or a loss of public trust, cyber violations are not revealed.
- It may be the outcome of greed, hatred, and manipulation rather than a violent effort.
- Cybercrime is becoming more complex as the line between being and non-existence blurs.
- Due to the apparent availability and exposure, anyone can engage in cybercrime.
- Cybercrime has far-reaching impacts, threatening people's socioeconomic and legal rights.

THE MEANING OF CYBER SECURITY

The term "cyber security" refers to a set of tools that can be employed to secure an institution's digital content and the personal information of its users (ITU 2009). To prevent damaging your brand, commercial losses, and even financial losses, you can deceive your customers regarding the safety of your products; our definition of

"cyber security" includes protection for all network or internet users. As an outcome, cyber security is vital to advancing technology and the adoption of digital solutions (UNODA 2011). In a wide range of situations, it can be employed. It is impossible to stress the importance of a continuous approach to data protection over a one-time procedure. To keep financial losses to a minimum, business owners must keep all their equipment up to date. Today, hacking poses a real risk to the information and resources of most organizations. The significance of cyber development has increased in recent times, and this trend is likely to continue (Cavelty 2012). The military, education, police departments, intelligence institutions, and the private sector must all be included in the national cyber security strategy. Therefore, cyber security has become a national policy concern. Throughout history, worries about independence have become more critical than before (OECD 2012). If a country has a robust cyber security presence, it's always a good idea to have one. As a result of today's current shortage of offensively and defensively cyber security skills, the Stuxnet and Flame attacks were made all the more challenging (Kaushik 2014). Every member of an organization is affected by information and system security risks. For instance, cloud-hijacking liability is causing a lot of concern. When preparing for the unexpected, risk analysis and cost estimation is vital. Users must set their own cyber security goals to keep their sensitive data safe. Hacking into computers or networks is one method of gaining access to or erasing information in computer and network security. Both personal networks and networks as a whole must be secured from cyber-attacks. New opportunities and difficulties occur as technology progresses. It's only a matter of time before the Internet of Things and the development of information make cyber-security a reality in the 21st-century era.

HOW TO ESCAPE FROM CYBERCRIMES

- **Knowing Where to Look for Phishing and How to Spot:** Because it has already been done, your bank will not send you an email telling you that your account has been hacked and asking for a sensitive account and personal information such as your password PIN, and so on. These are phishing attempts.
- **Recognize that your smartphone** is a pocket-sized computer that may be hacked like a laptop or desktop computer. You should update your operating system and select a strong password as a security precaution.
- **Protect the privacy of your personal information.** For instance, don't post your complete birth date, particularly the year, on Facebook. Consider the types of network questions your bank or other secure locations might ask you: "name of a favourite pet," "first school you studied," etc.
- **Be aware of the risks associated with using public Wi-Fi.** "Avoid public wireless Web access unless you have bulked strong security," Credit Cards.com recommends.
- **Avoiding the use of public computers is also a brilliant idea.** "Don't use public hotel computers to access your accounts or personal information," Kiplinger advises, "because they could include software that tracks keystrokes and remembers your passwords and account numbers."
- **Use credit cards rather than debit cards when making online purchases.** In the event of fraud, you'll have significantly more liability protection with a credit card.
- **Only purchase from reputable online stores** (check for "HTTPS" in the Web address). "It's elementary to set up a fake online firm or a website that sells things," says Dan DeFelippi, a former identity thief.
- **Check your accounts and credit reports regularly.** Per some experts, checking your bank account and credit card activities periodically is a good idea. AnnualCreditReport.com offers a free credit report every four months to check that no fake accounts have been opened in your name.
- **Unwanted emails should be avoided at all costs.** Do not click on links in strange emails, even if the communication looks to be from a friend. Viruses and malware delivered over email are the most common cyber threat to identity theft. Consider how many emails you've received in the last year from people pretending to be friends but whose personal emails have been compromised (Choudhury, R. R., Basak, S., & Guha, D, 2013).

CONCLUSION

Cybercrime has a lot of potential. Therefore it might have a significant influence if it occurs. It's simple to commit without being present, but because it's so common, it's become a source of concern and risk for the legal system and vice versa. Today's security measures are insufficient to protect the internet's systems and infrastructure. To defend cyberspace against cybercrimes that can never be broken or take years to break, new cost-effective security procedures are needed to protect against all types of cybercrime. Governments, armed forces, enterprises, financial institutions, hospitals, and other institutions acquire, process, and store massive

amounts of private data on computers, which they ultimately exchange over networks with other computers. On the other hand, cyber-attacks are becoming more and more effective every day. Cybercrime is a serious problem that can cause significant financial losses for both people and enterprises. Basic online regulations must be followed to keep oneself and the firm safe. Despite being a broad topic, cyber security is one of the most important to discuss in today's world. Many important transactions are now conducted over the internet and internet networks. The internet transfers enormous amounts of data. The system has a large amount of information to store. Cyber security is a vital component of any firm in today's world. People must understand the need to adhere to correct cyber regulations to prevent invasions in the 21st-century digital era.

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DATA MINING FOR INVASION DISCOVERY**Prof. Muskaan Kursija****ABSTRACT**

Invasion Discovery techniques using data mining have attracted more and more interests in recent years. This paper explores how to make data mining useful for intrusion detection. Data mining techniques to consider and types of expertise and infrastructure needed are suggested. This paper has two intended audiences: network security professionals with little background in data mining, and data mining experts with little background in network invasion discovery.

INTRODUCTION

Database mining can be defined as the process of mining for implicit, previously unknown, and potentially useful information from very large databases by efficient knowledge discovery techniques. Naturally such a process may open up new inference channels, detect new intrusion patterns, and raises new security problems.

To defend against various cyber attacks and computer viruses, lots of computer security techniques have been intensively studied in the last decade, namely cryptography, firewalls, anomaly and intrusion detection. Among them, network intrusion detection (NID) has been considered to be one of the most promising methods for defending complex and dynamic intrusion behaviors.

As an important application area of data mining, they aim to meliorate the great burden of analyzing huge volumes of audit data and realizing performance optimization of detection rules.

INVASIONS

Any set of actions that threatens the integrity, availability, or confidentiality of a network resource.

EXAMPLES

- **Denial of service (DoS):** Attempts to starve a host of resources needed to function correctly
- **Scan:** Reconnaissance on the network or a particular host
- **Worms and viruses:** replicating on other hosts
- **Compromises:** obtain privileged access to a host by known vulnerabilities

INVASION DISCOVERY

Invasion Discovery (ID) is a type of security management system for computers and networks. An ID system gathers and analyzes information from various areas within a computer or a network to identify possible security breaches, which include both intrusions (attacks from outside the organization) and misuse (attacks from within the organization).

Invasion Discovery Functions Include:

- Monitoring and analyzing both user and system activities
- Analyzing system configurations and vulnerabilities
- Assessing system and file integrity
- Ability to recognize patterns typical of attacks
- Analysis of abnormal activity patterns
- Tracking user policy violations
- Assessing severity and raising alarm

WORKING – INVASION DISCOVERY

Invasion Discovery starts with instrumentation of a computer network for data collection.

Pattern-based software ‘sensors’ monitor the network traffic and raise ‘alarms’ when the traffic matches a saved pattern. A response might be to shut down a part of the network, to phone the internet service provider associated with suspicious traffic, or to simply make note of unusual traffic for future reference.

If the network is small and signatures are kept up to date, the human analyst solution to intrusion detection works well. But when organizations have a large, complex network the human analysts quickly become overwhelmed by the number of alarms they need to review.

Commercial tools typically do not provide an enterprise level view of alarms generated by multiple sensor vendors. Commercial intrusion detection software packages tend to be signature-oriented with little or no state information maintained. These limitations led us to investigate the application of data mining to this problem.

DATA MINING- What is it?

Data mining (DM) is an attempt to answer the long-standing question "what does all this data mean?" Data mining is, at its core, pattern finding. Data miners are experts at using specialized software to find regularities and irregularities in large data sets. Here are a few specific things that data mining might contribute to an intrusion detection project:

- Remove normal activity from alarm data to allow analysts to focus on real attacks
- Identify false alarm generators and "bad" sensor signatures
- Find anomalous activity that uncovers a real attack
- Identify long, ongoing patterns (different IP address, same activity)

To accomplish these tasks, data miners use one or more of the following techniques:

- Data summarization with statistics, including finding outliers
- Frequent Pattern Mining: Patterns (set of items, sequence, etc.) that occur frequently in a database
- Visualization: presenting a graphical summary of the data
- Clustering of the data into natural categories
- Association rule discovery: defining normal activity and enabling the discovery of anomalies
- Classification: predicting the category to which a particular record belongs

PROJECT STAFF

Your staff will need skills in three areas: network security, data mining, and database application development.

- The security staff needs a solid grounding in networking and invasion detection, but they also need to be able to tackle big, abstract problems.
- The data miners should have a good grounding in statistics and machine learning, but they will also need to learn detailed concepts involved in computer networking.
- The database developers will need good skills in efficient database design, performance tuning, and data warehousing.

This team will have to do a lot of cross orientation to begin working effectively. Initially, security and networking concepts must be introduced and defined. This is made more difficult by the lack of precisely predefined terminology in this field, so there will be many questions. (What is an attack? What is normal? What is an IDS "alarm"? What constitutes an incident? What is a false alarm, and why?)

INFRASTRUCTURE

Significant infrastructure is required to do this sort of work. In addition to the normal processing of the data from the intrusion detection system, you will need:

- **A Database:** You will need to store a great deal of data, update this data regularly, and obtain rapid responses to complex queries, select a high-end production-quality database management system.
- **Storage Space:** In addition to the handling of normal IDS data, you will need data and working space associated with data mining.
- **Compute capability:** Data mining tools are very CPU and memory intensive. Naturally, the more memory and CPU power the better.
- **Software:** In addition to what is required for the basic system (production quality database, Perl, database middleware, database administration and tuning aids), plan for acquisition of specialized tools.

DESIGN, STORE AND COMPUTE APPROPRIATE ATTRIBUTES

Data records consist of many attributes. When doing data mining for intrusion detection one could use data at the level of TCPDUMP or at the alarm level. In both types of data you will find fields for source IP address, destination IP address, source port number, destination port number, date/time, transfer protocol (TCP, UDP, ICMP, etc.), and traffic duration (or equivalently, both start and end times).

These ‘base’ attributes give a good description of the individual connection or alarm, but they often are insufficient to identify anomalous or malicious activity because they do not take into account the larger context. The individual connection records in a denial of service attack are not, by themselves, malicious, but they come in such numbers that they overwhelm your network. A single connection between an outside machine and a single port on a machine inside your network is also not malicious—unless it is part of a series of connections that attempted to map all the active ports on that machine. For this reason you will want to add additional fields containing values derived from the base fields. For example, you could distinguish traffic originating from outside your network from traffic originating inside your network.

Another type of derived data, called an aggregation, is a summary count of traffic matching some particular pattern. For example, we might want to know, for a particular source IP address X, and a particular IP address Y, how many unique destination IP addresses were contacted in a specific time window Z. A high value of this measure could give an indication of IP mapping, which is a pre-attack reconnaissance of the network. Aggregations are generally more expensive to compute than other kinds of derived data that are based upon only a single record.

A third type of derived data is a flag indicating whether a particular alarm satisfies a heuristic rule. Because data mining methods handle many attributes well, and because we don’t know for sure which one will be useful, our approach is to compute a large number of attributes (over one hundred) and store them in the database with the base alarm fields.

INSTALL DATA FILTERS

A single source IP may attempt a connection to hundreds or even thousands of destination IPs. Before security specialists can start providing input to the data mining effort, this traffic must be filtered. It is a straightforward task to create a filter that can find these patterns within a data table of traffic.

The heuristic filter operates on aggregations by source IP, destination port, and protocol and then check to see if a certain threshold of destination IPs were hit within a time window. If the threshold is crossed, an incident is generated and logged to the database.

REFINE OVERALL ARCHITECTURE

The architecture for intrusion detection is shown in Figure 1. Network traffic is analyzed by a variety of available sensors. This sensor data is pulled periodically to a central server for conditioning and input to a relational database. The Filters events from the sensor data before they are passed on to the classifier and clustering analyses. Data mining tools filter false alarms and identify anomalous behavior in the large amounts of remaining data. A web server is available as a front end to the database if needed, and analysts can launch a number of predefined queries as well as free form SQL queries from this interface. The goal of this operational model is to have all alarms reviewed by human analysts.

Without automated support, this task is increasingly difficult due to the volume of alarms. Attacks and probes can be frequent and noisy, generating thousands of alarms in a day. This can create a burden on the network security analyst, who must perform a triage on the enormous flood of alarms.

BUILD CLASSIFICATION RULES

Classification is used to assign examples to pre-defined categories. Machine learning software performs this task by extracting or learning discrimination rules from examples of correctly classified data. Classification models can be built using a wide variety of algorithms:

- Extensions to linear discrimination (e.g., multi-layer perceptron, logistic discrimination),
- Decision tree and rule-based methods (e.g. C4.5, AQ, CART), and
- Density estimators (Naïve Bayes, k-nearest neighbor, LVQ).

Good Examples. The ‘quality’ of the training data is one of the most important factors in achieving good classifier performance. Training data quality is a function of the number of examples, how representative the examples are, and the attributes used to describe them.

Labeled Data Supervised classification uses labeled training examples to build a model.

The labels usually come from a human expert (or experts) who manually review cases. In our application of classification to intrusion detection we obtained labeled examples by building a web-based interface that required a label to be assigned to a new incident each time it was constructed by an analyst.

Another factor in getting good examples is to have a well-defined set of classes. It is important to maintain consistency in assigned labels over time, both for a single person and across multiple people. Label inconsistency can make classification very difficult especially if identical examples are labeled ambiguously.

PERFORM ANOMALY DETECTION

Anomaly detection: Any significant deviations from the expected behavior are reported as possible attacks. Both intruder techniques and local network configurations will change. In spite of efforts to update defenses, new attacks may slip through defenses and be labeled as either normal network traffic, or else filtered as a known but benign probe. Anomaly detection techniques can help humans prioritize potentially anomalous records for review. Catching new attacks can not depend on the current set of classification rules. Since classification assumes that incoming data will match that seen in the past, classification may be an inappropriate approach to finding new attacks. Much of the work in outlier detection has been approached from a statistical point of view and is primarily concerned with one or very few attributes. However, because the network data has many dimensions, we have investigated use of clustering for anomaly detection.

Figure 1. How sensors feed into overall intrusion detection system

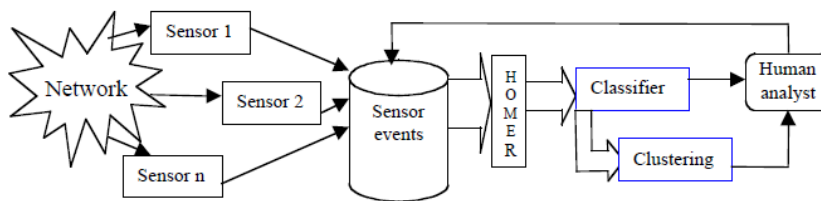


Figure 1. How sensors feed into overall intrusion detection system

Clustering is an unsupervised machine learning technique for finding patterns in unlabeled data with many dimensions (number of attributes). We use k-means clustering to find natural groupings of similar alarm records. Records that are far from any of these clusters indicate unusual activity that may be part of a new attack.

The network data available for intrusion detection is primarily categorical (i.e., Attributes have a small number of unordered values). Clustering approaches for categorical data, such as in are not generally available commercially. Unsupervised approaches for detecting outliers in large data sets for the purposes of fraud or intrusion detection are starting to appear in the literature, but these approaches are primarily based on ordered data.

Anomaly Detection Algorithms

To detect anomalies early (also known as abnormalities, deviations, or outliers), anomaly detection algorithms are a type of security data mining algorithm which originate from network intrusion detection research . They profile normal behavior (also known as norm or baseline) by outputting suspicion scores (or rules). Anomaly detection algorithms can be used on data for various security environments, in different stages, at different levels of granularity (such as at the global, account, or individual levels), or for groups of similar things (such as dates, geography, or social groups).

The common anomaly detection algorithms monitor for changes in links, volume, and entropy.

MAKE YOUR SYSTEM EFFICIENT

There are a number of practical considerations in building an effective intrusion detection system. Some of these derive from the use of data mining, but many of them would be present in any intrusion detection system:

- A central repository must be designed and enabled. The repository must allow for inputs from a potentially large number of diverse network sensors, preferably within a single data table. Any derived data, such as data mining attributes, should also be stored in this central location. It must also support the creation and tracking of security incidents.
- Efficient querying is essential to feed the daily operations of security analysts. A bottleneck in querying the data will affect everything else in the system. Some steps that can be taken to improve query efficiency include the inclusion of a database performance guru on the project team, statistical/ trend analysis of query performance over time, elimination of time-consuming queries, or the retirement of old data from the database.
- Efficiency can also be improved by selecting appropriate aggregations of attributes and statistics. A manual analysis of network activity will reveal that a large volume of atomic network activity breaks down into a much smaller set of meaningful aggregates.

- While most attributes and aggregates are used to feed an automated process, don't forget the analysts. Analysts must have efficient tools to spot check the automatically generated security incidents, and to manually comb through the raw sensor data for new or complex patterns of malicious activity.

CONCLUSION

Integrating data mining into a network invasion discovery capability is discussed. When starting such a project you should:

- Choose your requirements carefully and be realistic.
- Assemble a team with broad, relevant capabilities.
- Invest in adequate infrastructure to support data collection and data mining.
- Design, compute, and store appropriate attributes with your data.
- Reduce data volume with filtering rules.
- Refine the overall architecture for your system, taking into account both automated processing and human analysis.
- Use data mining techniques such as classification, clustering, and anomaly detection, to suggest new filter rules.
- Make sure that automated data processing can be done efficiently.

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IMPACT OF DIGITAL MARKETING STRATEGIES ON THE MARKETING EFFECTIVENESS AND CUSTOMER SATISFACTION: A STUDY WITH SPECIAL REFERENCE TO MYNTRA**¹Dr. P. Jayarani and ²Mrs. Sonti Sushila Kishor**¹Associate Professor, Commerce, Government Arts College for Men, Nandanam, Chennai²M.Phil Research Scholar, Department of Commerce, Government Arts College for Men, Nandanam, Chennai**ABSTRACT**

Online advertising is a hard and fast of effective equipment and methodologies used for selling merchandise and carrier thru the net. Online advertising consists of a much broader variety of advertising factors than conventional enterprise advertising because of greater channels and advertising mechanism to be had at the net. Online advertising is marketing and marketing and advertising the goods or offerings of a enterprise over Internet. Online advertising is based upon web sites or emails to attain to the customers and it's miles mixed with e-trade to facilitate the enterprise transactions. In on line advertising, you could sell the goods and offerings through web sites, blogs, email, social media, forums, and cellular Apps. Online advertising approach is crucial for agency running in markets with excessive net penetration. Online stores delivered the bodily analogy of products and offerings at a regular bricks and mortar purchasing centres or retail Centre and lots of kinds of on line purchasing. Business-to- customer (B2C), on line purchasing and enterprise-to-enterprise (B2B) on line purchasing. Online shops in enterprise to shop for from different enterprise.

Online shops allow the patron to test the firms product and offerings to view the pix or pix of the goods and informing the product records and specifications, charge etc. Online advertising approach is a crucial for agency operated with very excessive net penetration. Online advertising techniques are: Social media advertising, Email advertising and Content advertising.

1.1 INTRODUCTION

Online marketing is a set of powerful tools and methodologies used for promoting products and service through the internet. Online marketing includes a wider range of marketing elements than traditional business marketing due to extra channels and marketing mechanism available on the internet. Online marketing is advertising and marketing the products or services of a business over Internet. Online marketing relies upon websites or emails to reach to the users and it is combined with e-commerce to facilitate the business transactions. In online marketing, you can promote the products and services via websites, blogs, email, social media, forums, and mobile Apps. Online marketing strategy is critical for organization operating in markets with high internet penetration. Online shops introduced the physical analogy of goods and services at a regular “bricks and mortar” shopping centres or retail Centre and many types of online shopping. Business-to- consumer (B2C), online shopping and business-to-business (B2B) online shopping. Online stores in business to buy from other business. Online stores enable the customer to check the firm’s product and services to view the images or photos of the products and informing the product information’s and specifications, price etc... Online marketing strategy is a critical for organization operated with very high internet penetration. Online marketing strategies are: Social media marketing, Email marketing and Content marketing.

1.2 STATEMENT OF THE PROBLEM

Online marketing is playing a vital role today. Marketing strategies are very important for creating awareness about the products. This is the one tool where customers can easily get to know about the product features, varieties, price, and other contents which are very essential for the customers for making buying decision. On the other hand the company will also be benefited as these strategies helps in increasing sales of products. Hence this study id undertaken to know how effective the marketing strategies are helpful in increasing the sales of products with respect to Myntra.

1.3 OBJECTIVES OF THE STUDY

- To know the online marketing strategies of the Myntra
- To analyse the promotional strategies of Myntra
- To find the level of satisfaction to the customers of Myntra
- To study the effectiveness of online marketing strategies in increasing the sale of products of Myntra

1.4 NEED OF THE STUDY

Online marketing is important, because it aligns with the way consumer market purchasing decisions. Studies by analyse such as gather indicate that increasing number of consumers use social media and research on mobile internet to carry out preliminary products and price research before making final decisions. Online marketing

enables to build relation with consumers and Prospects through regular, low cost personalized communication. Hence this study is intended to know the online marketing strategies used by Myntra to increase the sales.

1.5 RESEARCH METHODOLOGY

The research methodology used in this study is mainly designed as an empirical work based on both secondary data and primary data, obtained through pre-tested questionnaire, internet browsing, direct personal interviews of selected persons involved in this sector as well as. The study makes use of primary data. The primary data collected through the questionnaire from the 50 customers of Myntra. The Main sources of secondary data are websites, books, magazines etc. The study is conducted on the basis of 50 selected sample and findings are drawn based on their response. Simple random sampling technique has been chosen for selecting the sample for this study. Following are the main limitation of the study. Sample size is very low. Opinion is based on a particular area. Respondent’s bias might have influenced. This study is done with reference to the Myntra, Manjeri area in Chennai city. This helps to understand about implementation of online marketing strategies for increasing sales of consumable products in Myntra.

2.1 ORGANIZATION PROFILE OF MYNTRA

Myntra is an Indian fashion E-commerce market place company headquarter in Bangalore, Karnataka, India. Established by Mukesh Bansal along with Ashutosh Lawania and Vineet Saxena in February 2007. Indian Institute Of Technology graduates with a focus on personalization of gift items, and soon expanded to set up regional offices in New Delhi, Mumbai and Chennai. By 2010, Myntra shifted its focus to the online retailing of branded apparel. In May 2014, Myntra merged with Flipkart to compete against Amazon which entered the Indian market in June 2013 and other established offline retailers like Future Group, Aditya Birla Group and Reliance Retail.

3.1 DATA ANALYSIS AND RESULTS DISCUSSION

Table-1: Profile of Digital platform users and some insights

Gender	Frequency	Percentage	Frequency of purchase	Frequency	Percentage
Male	35	70%	Regularly	4	8%
Female	15	30%	Often	7	14%
Total	50	100%	Occasionally	19	38%
Age	Frequency	Percentage	Sometimes	12	24%
Below 20	12	24%	Rarely	8	16%
20-25	15	30%	Site using	Rank	%
25-30	10	20%	Flipkart	15	30%
30-35	8	16%	Amazon	16	32%
Abow 35	5	10%	Snapdeal	11	22%
Total	50	100%	Jabong	3	6%
Occupation	Frequency	Percentage	Other	5	10%
Student	23	46%	Products purchase	Frequency	Rank
Service	12	24%	Clothing	213	1
Self employed	15	30%	Hand bags	189	3
Total	50	100%	Cosmetics	109	4
Edu.qualification	Frequency	Percentage	Footwear	203	2
SSLC	4	8%	Other	107	5
Plus two	15	30%	Status of using	Frequency	Percentage
Graduate	20	40%	Yes	50	100%
Post graduate	6	12%	No	0	0
Other	5	10%	Total	50	100%
Total	50	100%			

Source: Primary data/Questionnaire

The table shows that 35 respondents are male and remaining 15 respondents are female. Similarly, 12 respondents are below 20 age, 15 respondents are 20-25 age, 10 respondents are 25-30 age, 8 respondents are 30-35 age and 5 respondents are above35 age. 4 respondents are SSLC, 15 respondents are plus two, 20 respondents are graduate, 6 respondents are post graduate, and remaining 5 respondents are other. The results shows that, shows that the all respondents are buy the products through Myntra because the availability of products, discounts, price, attractive offers etc. (Only select the Myntra customers).

The table shows that 8% of respondents are buying regularly, 14% of respondents are buying often, 38% of respondents are buying occasionally, 24% of respondents are buying sometimes and 16% of respondents are buying rarely. The majority of the respondents are buying occasionally. Majority of the respondents are occasional shoppers. Only few of them are buying regularly as there may not be the requirement. The table shows that no. of respondents in 30% respondents are preferring Flipkart, and 32% respondents are preferring Amazon and 22% respondents are preferring Snapdeal and 6% of respondents are preferring Jabong and remaining 10% respondents are preferring other online shops. The table shows that majority of respondents are preferring Amazon and Flipkart. This might be because of the quality services provided by Amazon in terms of in time delivery; price, product quality, effective promotion etc. and minority of the respondents prefer the other online shops. Today most of the customers are buying products through online only so to retain and attract the customers the online shopping stores need to promote using latest strategies in an effective and attractive manner so that customers will prefer most.

The table shows that the clothing is the most preferred product respondents buys in Myntra because the variety of cloths, brand and quality etc. And minority of respondents buys other types of products. The graph shows that the majority of the respondents buy cloths in Myntra. This is due to the varieties of cloths and attractive offers and discounts etc... And minority of respondents buys other types of products.

Table -2: Showing the motivators to go for Digital platforms and Myntra

Factors	5-SA	4-A	3-SWA	2-DA	1-SDA
Delivery time	13	24	6	3	4
Price	9	12	20	5	4
Quality	43	6	1	0	0
Availability	3	6	9	21	11
Brand	22	20	8	0	0
Size	1	5	7	16	21
Payment mechanism	11	24	13	2	0

Source: Primary data/Questionnaire.

The table shows that 75% respondents express that delivery time factor motivates them and 66% respondents are using price factor and 96% respondents are using quality factor and 47% respondents are using availability factor and 85% respondents are using brand factors and 39% of respondents are using size factor and 77% respondents are using payment mechanism factor. The respondents express that quality is the factor that motivates them to buy products through online. Quality is one of the major factors that the customers consider most while buying products compared to the other factors. And minority of respondent's size factor motivates to buy product through online.

Table-3: Factors of Decision making in Digital platform Purchase

Factors	Total	Rank
Advertisement	158	3
Price	195	1
Discounts	149	4
Brand	174	2
Rating	136	5

Source: Primary data/Questionnaire

The table shows that the no. of respondents sees before making a selection of products in Myntra. 10% respondents are selection of products by rating and 40% respondents are selection of products by price and 30% respondents are selection of products by brand and remaining 20% respondents are selection of products by advertisement. The graph shows that majority of respondents make selection of products by considering the price factor because of attractive offers and discounts and minority are considering rating of products while selecting products of Myntra.

Table-4: Promotional strategies of Myntra

Promotional Strategies	5- Excellent	4-Very Good	3-Good	2-Average	1-Poor
Coupon bought	3	5	8	30	4
Festival offer	2	1	0	16	31
End of reason sale	5	14	22	7	2
Delivery charge	28	14	6	2	0

Discounts & deals	16	22	12	0	0
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Source: Primary data/Questionnaire

The above table shows 87% of respondents have rates delivery charge and 81%, 65% respondents had rates the discounts & deals, end of reason sale respectively. Whereas 49%, 30% of respondents rates only have coupon bought and festival offer.

Table-5: respondents rating towards promotional strategies of Digital platforms

Particulars	No. of respondents	Percentage
Poor	4	8%
Average	13	26%
Good	20	40%
Very good	7	14%
Excellent	6	12%
Total	50	100%

The table shows that the 8% respondents are poor rating about Myntra and 26% respondents are average rating about Myntra and 40% respondents are good rating about Myntra and 14% respondents are very good rating about Myntra and remaining 12% respondents are excellent rating about Myntra. The graph shows that the majority of respondents are good rating about the Myntra because of good quality of products and attractive offers and discounts etc...And minority of respondents is poor rating about Myntra.

Table-5: Customer satisfaction observed towards Digital platforms

Particulars	No. of respondents	Percentage
Very much satisfied	5	10%
Satisfied	10	20%
Neutral	25	50%
Dissatisfied	6	12%
Highly dissatisfied	4	8%
Total	50	100%

Source: Primary data/Questionnaire

The graph shows that the 10% of respondents are very much satisfied with the product information of Myntra and 20% of respondents are satisfied with the product information of Myntra and 50% of respondents are very neutral with the product information of Myntra and 12 %of respondents dissatisfied with the product information of Myntra and 8% of respondents are highly dissatisfied with the product information of Myntra.

Table-7: Problems faced by customers of digital platforms

Problems	No. of respondents	Percentage
Quality	8	16%
Return policy	13	26%
Hidden charges	6	12%
Security	11	22%
Delivery problems	12	24%
Toatal	50	100%

Source: Primary data/Questionnaire

The table shows the problems faced by the Myntra customers. 26% are return policy problems, 24% are delivery problems, 22% are security problems, 16% are quality problems and 12% are hidden charges while conducting online purchase through Myntra. This is done to know the problems faced by the customers of Myntra. From this we can identify that the return policy gets 1st rank. Delivery problems, security, quality and hidden charges got the 2nd, 3rd, 4th and 5th rank respectively.

Table-8: Respondents satisfaction level towards Myntra

Features	Very much satisfied	Satisfied	Neutral	Dissatisfied	Highly dissatisfied
Discounts	12	15	18	2	3
Customer service	8	12	23	5	2
Delivery time	10	30	8	2	0
Cash on delivery	6	16	19	8	1
Exchange	13	11	9	12	5

Packaging	7	19	11	9	4
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Source: Primary data/Questionnaire

The table shows that, the satisfaction level of customers in the features of Myntra. Delivery time got 1st rank, discount got 2nd rank, customer service got 3rd rank, cash on delivery got 4th rank, packaging got 5th rank and exchange got 6th rank.

4.1 SUGGESTIONS AND RECOMMENDATIONS

The following are the suggestions that appeared while analysing the study. Since few of the customers are buying products through offline, awareness need to be created for increasing online payment mode. Usage of products by the customers is required to be more as few of the customers are buying yearly also. Promotional strategies need to be improved so as to motivate the customers to make buying decision. The Company has to make ease for searching products what they are looking for. Special offer need to be provided for attracting the customers. Complete information about the product need to be advertised for better understanding of the product. Lucky draw, coupons, etc. are required to promote the customers and also to increase the sales. The company has to give inform all customers for the new products launching time. Ensure quick delivery and Lack of out of stock should consider.

5.1 SUMMARY AND CONCLUSION

Today online marketing strategies are very important for the customers to get to know about the products and also for the company to increase their sales which in turn helps to achieve their goals like profitability and survival. Marketing strategies are means for achieving the organizational goals. Social media marketing, e-mail marketing, content marketing etc. are some of the online marketing strategies that helps consumers in selecting the right products at the right time and at the right cost where customers can get a clear understanding of the products. Customer satisfaction is one of the major and significant factors that has to be met with the help of various marketing tools and techniques. Here an attempt is made to understand the implementation of online marketing strategies by Myntra in increasing the sale of products. It can be concluded that, Myntra has adopted various strategies so as to help customers and also to increase the sale of products in the highly competitive market.

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KUNDALINI SHAKTI AND TECHNOLOGICAL APPROACH FOR COMING OF AGE

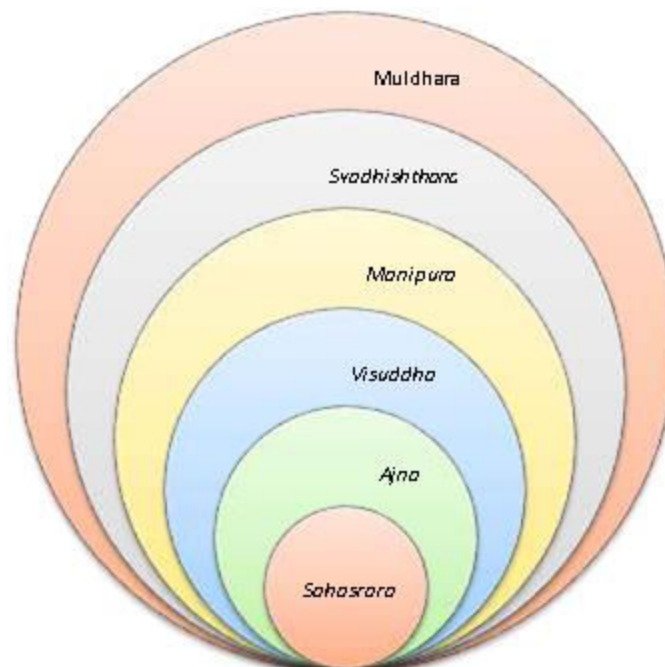
Kimaya Gupta¹, Siddhartha Sarkar², Ayushi Jhanwar³ and Rakhi Gupta^{4*}^{1,2,3}Department of Computer Science and Engineering, School of Engineering, JECRC University, Jaipur, India⁴Department of English, School of Humanities & Social Sciences, JECRC University, Jaipur, India**ABSTRACT**

The invincible power of Kundalini Shakti-Mother of Universe- is also known as Parashakti (supreme power). The Parashakti includes an in-depth study of human's- the conscious, preconscious unconscious mind assisted with an analytical study on the coming-of-age group and their confessionalism voice. The Confessional voice includes all taboo areas such as youth depressed mental status, anxieties, and personal trauma. Along with this, it also counts the youth suicidal tendency due to external and internal surrounding such as traumatized family environment, miserable impact of bullying, ideal standard of beauty, and the negative relationship between poor health and unemployment status in the family. Therefore, the concept and the process of Kundalini awakening is pivotal in today's time. It will help future generation to show the hidden strength of Transcendentalism meditation which enlightens spiritual unconscious power and transform it into self-awareness.

The aim of this study is to understand the two different approaches (Parashakti and computer aided techniques, Digital Pills, and Digital Detect Method) to bridge the gaps between spiritual and technology in transforming the suppressed voice into action. This paper provides an in-depth review on the Parashakti process of three invisible Gunas of individual nature – sattva, rajas, and tamas and their association with the atman and Brahman to understand the bildungsroman journey of intellectual, moral, and spiritual development. The detail study on the technological advancements in artificial intelligence (Tools like Chatbots, Video Game Therapy) in treating patients diagnosed with anxiety or depression and Attention Deficit Hyperactivity Disorder (ADHD), are also discussed in this paper.

Keywords: Kundalini Shakti, Transcendentalism, Chatbots, Attention Deficit Hyperactivity Disorder, Digital pills, Digital Detect Method

GRAPHICAL ABSTRACT: The entire hidden process of seven chakras- an integral part of Kundalini Shakti



GRAPH ABSTRACT: The Chronological Process of Seven Invisible Chakras in Human Body

Mother of Universe is the Parashakti (Supreme power) also known as Kundalini Shakti is a form of divine feminine energy, located at the base of the spine in muladhara. It is the divine light of that Supreme Power which is omnipresent, omnipotent and omniscient. Vedic philosophy recognizes the subtle link between the human body and the cosmic Supramental Consciousness, Which is responsible for the body's very creation. A potent force lies dormant at the base of the spinal column in every human body, Because it is coiled around the base of the spinal column in three and a half spirals, the ancient sages called it 'Kundalini' we have given it

various names such as Radha, Durga,, Parvati, Serpent Power etc. When child is inside mother's womb, Kundalini Shakti enters child's body directly through his tongue (talu) and moves down towards the base of Spinal cord and takes its place in three and a half layers. After the divine form of energy enters the body, the unborn becomes active.

AWAKENING OF KUNDALINI

The awakening of kundalini marks the initiation of seeker into siddha yoga. A supreme master who is enlightened with both forms of energies has the control over the Supreme power and is able to awaken Kundalini Shakti. In the Master-disciple (Guru-Shishya) tradition, initiation is a rule. Among all types of initiations, ‘Shaktipat’ initiation is the best.

Shaktipatinitiation is done by any of the following four ways:

- By Touch
- By a Divine Word (Mantra)
- By Sight
- By Resolve

By Touch

A Siddha (empowered) Guru flows his power into the seeker by touching at the Third Eye spot, heart centre and at the base of the spinal column at ‘Mooladhaar’ in this initiation.

By a Divine Word (Mantra)

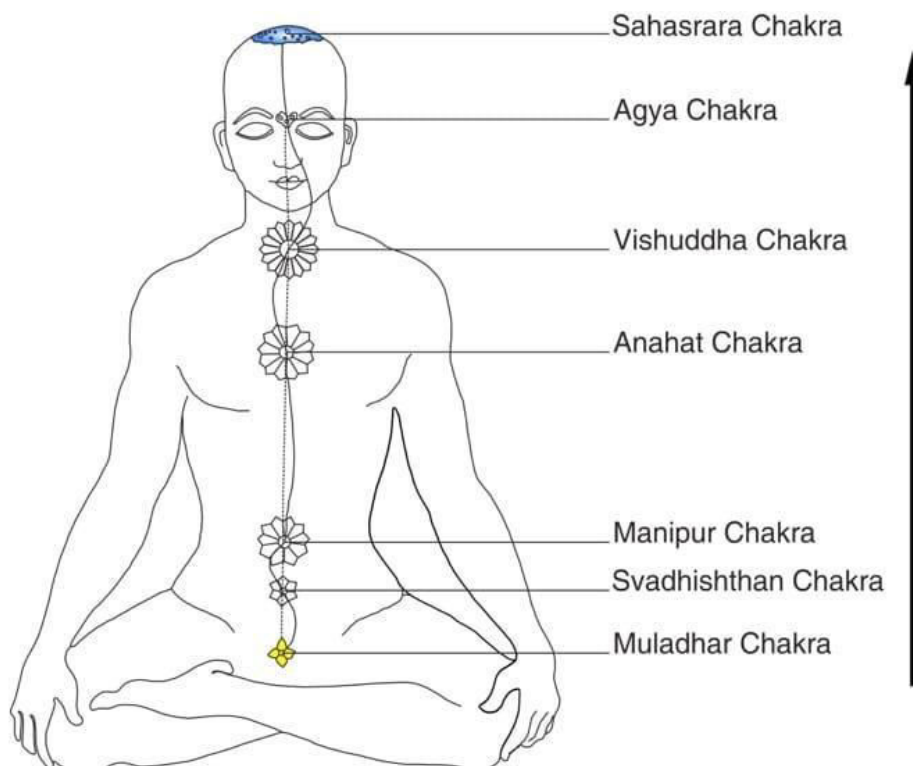
The power of the Guru flows into the seeker through a ‘Mantra’. The initiation ‘Mantra’ that is given by the Guru has already been chanted by the Guru for a long period of time. There is no difference between that Mantra and the Guru. When the Guru gives initiation by such an empowered Mantra, it gives liberation.

By Sight

Initiation given by merely looking into the eyes of the seeker to awaken the Kundalini. Indian Spiritual literature is replete with anecdotes about various Siddha gurus awakening the Kundalini of their disciples by merely looking at them.

By Resolve

This is an initiation in which just by making up the mind about getting initiated from a particular Guru, the seeker gets initiated. But such kind of disciples are very few. From this, Ekalvaya’s spiritual practice proves to be true.



Why Is Kundalini Awakening Important?

The seeker whose Kundalini gets awakened is able to directly experience and realize unlimited past, present and future events. According to our scriptures till the Kundalini of a man gets awakened and reaches 'Sahasrara' liberation is not attained. Union of the earth element (Prithvitattva) with the space element (Akashtattva) is salvation and attainment of 'Kaivalyapad'. A man's behaviour remains like an animal in the absence of an awakened Kundalini.

Kundalini awakening is important as it:

- Encourages personality development.
- Makes a person psychologically strong.
- Makes Your Voice influential.
- Gives Leadership Quality.
- Enhances decision making power.
- Enhances will power.
- Increases Concentration.
- Is self introduction.

"If done under proper guidance and supervision it gives 100% positive result." *"If we want world peace then it is important to awaken Kundalini Shakti."* (Narayananda, 29)

Technological Approach Towards Psychological Disorders: In the recent years, there is an exponential rise in the number of patients diagnosed with psychological disorders like ADHD, Depression, Anxiety, Bi-Polar disorder [BPD] etc. These disorders affect the mental health of a person adversely and might prove fatal sometimes. Since the face-to-face therapies are very costly and professional psychiatrists are scarce, there has been a search to find a replacement or an alternate way to get the treatment to every patient in need. One of the methods that are formulated and is proving effective is by the application of Artificial Intelligence to this field. Let's discuss what an Artificial Intelligence is briefly below:

What Is Artificial Intelligence?

AI, short for Artificial Intelligence is a field of computer science in which the computer learns to do things without actually programmed to do so; in layman's terms it's a mimicry of human intelligence. Computers are able to process large amount of data and predict and produce a feasible result for a given problem.

Implementation of AI in the Psychological Disorder Treatments:

After the invention of AI's in the mid 1950's, it has undergone massive improvements and is becoming intelligent near to humans, these programs can process billions of bytes of data and produce a feasible result. One of its applications is in the field of psychiatry:

Ways AI's can Be Implemented in This Field:**I. AI ASSISTED THERAPIES:**

- AI assisted therapies are becoming more prevalent as AI models improve during the course of time and as they are accessible anywhere (it could be a webpage or a whole app).
- These apps could record in the data of a patient/user. The data would roughly consist of Speech patterns, body movements, voice patterns, and Activity patterns. These models can learn about the patient's cognitive behavioural pattern and can suggest a custom-made therapeutic routine for the designated patient as a single therapeutic routine might work for a bunch of people but fail for a relatively small amount of people. As we know, mental disorders like ADHD, Clinical Depression, BPD (Bi-Polar Disorder) are really delicate to handle, these AI therapies might prove better up to a great extent. If the condition becomes critical the models would alert the Therapist of a certain patient.
- As AI is becoming more and more powerful, the current face-to-face therapeutic sessions might get less popular, as this will greatly reduce the costs and would increase the effectiveness of the therapies.

II. CHAT-BOTS:

Chat-bots are becoming extensively popular in recent times. Why? Because they are user-friendly, adaptable bots not like primitive bots. These bots are used to treat people with depression and other critical disorders. Since the name suggests- "Chat"- "Bots", these bots are able to chat or precisely communicate to the designated

patient or user. These bots while communicating can record data parameters from the user and please the user by providing them a feeling of belongingness to the patient; the parameters would be Voice Pattern Recognitions, The tone of voice and others, this would enable the AI model to adjust its own behavior towards the patient.

ROBOTICS AND AI ASSISTANTS:

Robotics as we know is a very lucrative field, which enables the system to perform manual tasks in place of human labour, thus reducing the labour done by humans.

AI + Robotic Assistants is a robust concept as these would do many physical tasks as well as performing therapeutic sessions with the patients. While the AI would work on making the Robotic assistant work better and making it more human-like, it can help diagnose and treat the patient much better. For Example:

- The assistant could play chess with the patients which would make him feel better and also sharpen his brains;
- The assistant could talk and perform housekeeping and talk to an elderly patient which would reduce the physical stress on the body and make them feel better as they wouldn't feel lonely. But at the same time they will encourage the patient to perform daily exercises.

There are a lot of ways to implement AI into this field these are some of the most successful ones and the research still goes on to implement this in a more feasible manner and obtain the targeted results- to make these treatments available to everyone in need in a low cost fashion or no cost methods.

CONCLUSION

The Sanskrit term kundalini Shakti translates as "Serpent power". Kundalini is thought to be an energy released within an individual using specific meditation techniques. It represents symbolically as a serpent coiled at the base of the spine. By activating your kundalini Shakti it is supposed to enhance your awareness and help you move past your ego. Sometimes, the practice is also called "yog of awareness". Physical science has developed a lot still we are not able to achieve peace, if we join physical science with the para science we can achieve world peace, the thought of destruction will vanish forever, and India will grow towards becoming vishwa guru. Kundalini Yog is called the yog of awareness. The technology of Kundalini is a science of the mind and body developed over thousands of years that was originally reserved for India's elite. Kundalini is thought to be an energy released within an individual using specific meditation techniques. Without awakening, man's behaviour is equivalent to that of an animal. Brain can fully alchemise its power into vital hormones. Most importantly it brings "World Peace".

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PSYCHOLOGICAL DISTRESS IN FIRST-TIME EXPECTANT FATHERS: A QUALITATIVE STUDY**¹Ms. Pooja Gahlot and ²Ms. Ashwini Shetty**¹Student, 2nd year M.Sc. Clinical and Counselling Psychology, Sri Dharmasthala Manjunatheshwara College, Ujire, Affiliated to Mangalore University, Karnataka²Assistant Professor, Department of PG Studies and Research in Psychology, Sri Dharmasthala Manjunatheshwara College, Ujire, Affiliated to Mangalore University, Karnataka**ABSTRACT**

Transition to parenthood is a pleasant life event in overall, it can also be a source of despair and worry. When a man becomes a father, his risk of mental health problems rises, just as it does for mothers, but there is little literature on the field of study. Expectant fathers face personal, interpersonal, and social changes as they prepare to become parent, all of which have a significant impact on the infant-parent interaction, and the infant's maturation. The present study was conducted to see the psychological distress in first time expectant fathers during the prenatal period. The study adopted a qualitative exploratory research design using semi structured interviews. The sample size selected for the current study was 14 men using purposive sampling method. The data was analysed using thematic analysis for the participants. 3 themes and 6 subthemes were emerged for expectant fathers. Anxiety, stress, irritability and lack of awareness were identified as common psychological discomfort in the participants, according to the findings of the study.

Keywords: [Expectant fathers, psychological distress, Prenatal]

It had long been known that paternal engagement had an impact on pregnancy and on new born outcomes. Along with women a men's psychological needs also require a lot of attention and care throughout the first pregnancy. When fathers are involved during pregnancy, unfavourable health behaviours among mothers are reduced, and the risk of preterm birth, low birth weight, and foetal growth limitation is reduced dramatically (Amina P Alio and colleagues, 2013).

Men who did not desire the pregnancy are less likely to show paternal warmth after the delivery, whereas men who did want the pregnancy are more likely to show nurturing behaviours. (2007, Jacinta Bronte et al.) Men are becoming more involved in pregnancy, birth, and parenthood as a result of a variety of circumstances. The need for fathers to take a more active role in childcare is one of the most significant of these factors. Second, expanding men's and women's role definitions allows for more work and family responsibilities to be shared. Men were seen as major sources of support for their spouses throughout pregnancy and birth in early research on men's involvement in pregnancy and birth. During the same period of transition, less attention was paid to the changes men make and the significant problems they encounter.

For men making the journey to fatherhood, pregnancy, rather than the postnatal period, may appear to be the most stressful time (Condon, John T., et al., 2004). The first few months after birth are reported to be heavily influenced by the preceding nine months of pregnancy, which are best thought of as a period of psychological preparation for parenthood (John Condon et. Al 2007).

When someone is overwhelmed, they may experience psychological distress, which is defined as unpleasant feelings or emotions. These emotions and feelings might interfere with one's daily life and influence how one reacts to others. Certain types of distress might result in serious bodily and psychological issues (Satu Viertio and colleagues, 2021). According to American Psychological Association Psychological Distress is a set of painful mental and physical symptoms that are associated with normal fluctuations of mood in most people. Pregnancy may be an extremely emotional time, and it can be difficult to tell if your feelings are normal or if they are an indication of anything more serious. Transitioning to new demands, duties, obligations, and changes in relationships, especially for first-time mothers and fathers, can be stressful. Depression in new fathers can start during pregnancy and worsen after the child is born. New fathers do not have access to the same services as new mothers. They are less likely to visit their doctor, mother and child health nurse, or midwife, which is where many women's concerns are discovered. Philip boyce et. Al (2007) conducted a study on First time Fathers Study: Psychological Distress in expectant fathers during pregnancy. Multiple regression analysis revealed that high levels of neuroticism, dissatisfaction with social support, and an excess number of additional life events were the key variables associated with psychological distress.

For some men, becoming a father carries with it unexpected and undesirable thoughts and sentiments that can detract from their enjoyment of becoming a father. During their partner's pregnancy, men from all walks of life

and cultures, even those who are normally confident and comfortable, can experience anxiety (PANDA). Men, too, endure hormonal swings as their partner's pregnancy progresses (Kathleen Doheny, 2014). Emotional instability and despair are common among males who go through emotional changes during pregnancy. These signs and symptoms could be related to their fears of losing their partner's love and affection once the baby is delivered (Lawrence Kutner, 2015).

Even though the significance of the period of gestation has been emphasized in recent years, a greater understanding of the factors that influence men's mental health may be useful in developing measures to enhance paternal health during first pregnancy.

METHODOLOGY

The purpose of the study was to investigate psychological distress in first time expectant fathers. The study adopted a Qualitative Exploratory Research Design, using Semi structured interview.

PARTICIPANTS

The study's target population were men who were expecting their first child. The researcher used a purposive sampling strategy to choose the study's sample. Purposive sampling is when a researcher seeks out people who have extensive understanding of the topic under investigation and are prepared to contribute their information. Men with a minimum HSC qualification, expecting their first child between the ages of 21 and 36, and having a verified pregnancy diagnosis from a medical examination at a hospital were eligible for the study. The participants were mostly in their journey of second and third trimesters. Men having a spouse's history of miscarriage, HIV-positive men, and who had a pregnancy through in vitro fertilisation were all excluded from the study. The final sample size was determined by taking into account the comfort and potential of the participants and comprised of 14 first-time expectant fathers.

INTERVIEW

This research study was conducted using a semi-structured interview design. Seven experts independently validated the interview questionnaire. The semi-structured interview pattern allowed participants to elaborate, resulting in greater flexibility and the ability to obtain more information from them.

PROCEDURE

Google forms were used to acquire informed consent from the participants. The study's purpose and inclusion criteria were indicated on the permission forms. All the participants were contacted, and the interviews were scheduled based on their availability. With the participants' permission, telephonic interviews were conducted and recorded. Participants were approached with open ended questions and socio demographic information was gathered. Before starting the interviews, the participants were instructed that 1. The information they provided would be kept private. 2. They have the option of asking for a break at any point during the interview. 3. They have the freedom to speak openly about their own personal experiences. The interviews lasted for approximately 25 to 30 minutes.

DATA ANALYSIS

All the interviews were recorded and transcribed verbatim. N Vivo Software was used to code the data. The most relevant patterns in the data were identified using thematic analysis. Reading and rereading the transcriptions, generating preliminary codes pertinent to intriguing elements in the data, searching for themes, analysing the themes, and linking the outcomes back to the research literature were all part of the process. Because it allows for the establishment of a few frameworks, this analysis was chosen for the inductive process.

ETHICAL CONSIDERATIONS

A research proposal was submitted to the researcher's supervisor. The supervisor authorised ethical permission prior to the start of the study. All participants were informed that their participation in the study was completely voluntary, and that they have the right to withdraw from the study at any time. All participants gave their informed consent to the study while it was being conducted. They were also told that they were not obligated to answer any questions with which they did not feel at ease. The participants were guaranteed confidentiality and anonymity. Prior to the start of each interview, participants were informed about the time length of the interview, and enough time was provided before and after the interview for the participant to ask any questions about the research issue.

FINDINGS

Participants ranged in age from 25 to 36 years old. The respondents were from Indian states of Karnataka, Maharashtra, and Kerala, respectively. The occupations of everyone are listed in Table 1 below.

Table 1. Demographics details of fathers expecting their first child

Expectant Fathers	Age	Occupation	Place of Origin
EF01	30	Physician	Karnataka
EF02	36	Supplier	Karnataka
EF03	30	Research Scholar	Maharashtra
EF04	31	Physician	Maharashtra
EF05	33	Assistant Professor	Maharashtra
EF06	27	Salaried job	Maharashtra
EF07	29	Software Job	Maharashtra
EF08	27	B. Ed Job	Karnataka
EF09	26	Salaried Job	Kerala
EF10	28	Soldier	Karnataka
EF11	29	Electronic. D	Karnataka
EF12	31	Residential. S	Karnataka
EF13	29	Banking	Karnataka
EF14	25	Railway	Karnataka

Table no 2. Themes and Subthemes from Thematic Analysis for Expectant Fathers

Themes	Subthemes
Emotional outflow towards pregnancy	Agitation linked with pregnancy
	Worry over spouse health
	Impact of partner’s mood swings
	Insufficient time
Reflections on Future	Sense of accountability
	Equal footing in baby’s nourishment
Information aid on pregnancy	-

Table 2 shows overall themes and subthemes emerged through thematic analysis. The following themes are Emotional outflow towards pregnancy, Support and Affirmation, Reflections on Future, Information aid on pregnancy. Each theme has been discussed below along with their subthemes.

1.The first theme that emerged was “emotional outflow towards pregnancy,” which refers to emotion or reaction expressed in an unstable state. During the initial prenatal phase, expectant fathers experienced a wide range of emotional outpouring.

“Agitation linked with pregnancy” was the first subtheme to emerge. Anxiety or nervousness excitation is referred to as agitation. Men’s anxiety levels were linked to pregnancy-related changes. The sensation of restlessness was seen to be connected with childbirth. Men have also reported alterations in their sleep patterns as a result of their stress.

-Yes, I feel very restless, I keep thinking about baby and I can’t concentrate on things around me... (Participant EF14)

-I have some anxiety when I think about the new born baby... (Participants EF06)

“Worry over spouse’s health” emerged as the second subtheme. Participants expressed a lot of concern about their partners’ health. Some males mentioned concerns about seeing their partner in agony and being powerless to intervene at the time. Participants also indicated concern about pregnancy-related risks.

-From past one month I feel stressed and restless when I think about my wife’s health conditions... (Participants EF12)

-By seeing my partner getting stressed I also feel stressed and down, at least once in a day I Feel stressed... (participants EF11)

-We have twins so I don’t think I’ll be able to get over this stress until my wife delivers a healthy baby... (Participants EF10)

“Impact of partner’s mood swings” emerged as the third subtheme. Men were affected by women’s mood swings caused by hormonal changes. Some men stated that their spouses were more inclined to vent their rage and irritability on them so they were more likely to experience irritability because of their partners’ outburst.

The majority of the participants also stated that they kept quiet about it because they knew it was a normal part of pregnancy.

-Sometimes I feel irritated because of my wife's mood swings but I Manage it because it's a part of the game... (Participants EF11)

-Sometimes I do feel irritable when things go up and down and when she is having her mood swings... (Participants EF05)

“Insufficient time” developed as the fourth subtheme. Because of their job schedules, participants stated that they were unable to devote enough time to their spouses throughout pregnancy. They expressed sorrow for not being able to meet their partner’s expectations in terms of timing. They thought they should spend more time with their spouses throughout late pregnancy, but due to work constraints, they were unable to do so. The fathers’ willingness to show more involvement throughout pregnancy was hampered by their work environment.

-My interest in the things is constant but I'm not getting time and I Am not able to give enough time to my wife also, so I Feel bad that I'm unable to give time to her during this pregnancy period and because of work load I'm not able to give enough time to my wife. My Working conditions are affecting us.... (Participants EF04)

-I'm giving her time but not enough up to her expectations...(Participants EF06)

2. Participants shared their perspectives on the new born baby’s future under the theme “Reflections on Future”. They had ideas in their heads about how they would bring emotional and financial security to their spouses and infant after the baby was born.

“Sense of accountability” was the first subtheme to emerge. This new fatherhood brought a slew of new duties and challenges into the lives of the participants. They shared their joy and excitement at the prospect of taking on the new role of parent, and they stated their desire to provide their infant with a nurturing atmosphere.

-It's a great feeling. When you know that you're going to be a father it feels great. It's a great feeling. It feels you've achieved everything; I feel satisfied, and I am preparing myself from the beginning financially and mentally to take the responsibility of the new born baby... (Participant EF04)

The second subtheme that emerged was “equal footing on baby’s nourishment,” which referred to a father’s equal involvement in feeding his child. Due to their work schedules, participants felt uninvolved at times, but they hoped to make an equal contribution to the child’s upbringing and instil good moral values in the child when he or she was born.

- I'll give my equal support and contribution in nourishing the child as a father...Taking care of him/her with good culture, good education, etc.... (Participant EF02)

-Financially, emotionally, mentally I'll support my child, in all possible ways I'll try to nourish my child...I'll give my everything to my child when it comes education I won't make any discriminations with respect to the gender of the baby, whether it's a boy or a girl I'll give my everything... (Participant EF 10)

3. The fourth theme that arose was “information aid on pregnancy” which referred to the need for more emphasis in delivering information to men about pregnancy, childbirth, and related difficulties. Some of the participants stated that they used the internet and social media to learn about pregnancy. Some participants stated that they were receiving adequate information from the hospital, while others stated that they were not receiving sufficient information.

-We are in medical profession so we know about pregnancy but I think for a common man it might be difficult. There is no such awareness for non-medicos but nowadays hospitals are trying to educate them as well... (Participant EF 01)

-Yaa but I've some little information and I try to collect for google, from my friends, doctors from hospitals. This helps me to adjust with her mood swings and other changes... (Participant EF02)

-I don't have enough information about pregnancy... (Participant EF05)

DISCUSSION

The overarching themes and subthemes provide a richer and more thorough knowledge of first-time expectant fathers’ psychological discomfort. Responses of the participants revealed 3 themes and 6 subthemes. During their first prenatal visit, the men experienced a ferris wheel of emotions. Expectant fathers saw changes in their

well-being that were linked to the prenatal period. Agitation in men has been connected to partner mood fluctuations, fear about spouse's health, and incapacity to devote time to spouse during pregnancy. In both men, anecdotal evidence with stressful life events is linked to distress during pregnancy (Anna. A. Divney MPH et al. ,2012). The level of anxiety in the fathers has a direct effect on the tenacity of paternal postnatal depression (Laura Vismara et al. ,2016). In males, low relationship satisfaction is frequently linked to increased depressive symptoms or depression (Yiong Wee et al. 2011). Expectant fathers felt more content because of the prenatal care and support they received, while new fatherhood brought new responsibilities, challenges, and delight to the men's life. Expectant fathers begin to reconsider their priorities and envision themselves doing activities with their offspring (Omar Kowksar, 2012). As per the study's findings, men lacked trustworthy information on pregnancy, there was a need for more credible pregnancy related information. Men were more likely to use the internet for pregnancy-related information. Technology-based teaching programmes appear to be efficient in producing men and women with concrete proof breastfeeding and pregnancy related content, according to antenatal breastfeeding education (Pitts, A., Faucher, M.A, et al. 2015). A number of risk factors have indeed been associated to fathers' distress in the current study, including neurotic tendencies to an unwanted pregnancy, consideration for their partner's wellness, being influenced by their partner's hormonal changes, and not being able to spend enough time away from work.

CONCLUSION

Expectant fathers' psychological distress was associated to several factors, including concern about their spouse's health, partner's mood swings, inability to dedicate enough time, and lack of prenatal information. First-time expectant fathers also had some future concerns, such as a sense of remorse and a willingness to contribute equivalently to the child's nourishment as father.

STRENGTHS AND LIMITATIONS

By devoting focus to expectant fathers, the study addressed an essential problem, and the trustworthiness of the study was improved. Because of the limited sample size, in-depth interviews and a better understanding of the participants' experiences were possible. Because participants' involvement in the study was voluntary, those who consented to do so may be experiencing fewer symptoms of distress.

CLINICAL IMPLICATIONS

The study's findings have therapeutic significance, and greater recognition is required to enhance the health of expectant fathers throughout pregnancy. According to the results of the study, hospitals should offer seminars and one-on-one sessions to educate men and their partners about breastfeeding and other pregnancy-related subjects. When the due date approaches, men should be granted paternal leave from their jobs so that they may dedicate ample time to their families.

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STUDY ON THE IMPACT OF JOB SATISFACTION ON PRODUCTIVITY IN TOPI VAPPA FOODS PVT. LTD. CHENNAI

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ABSTRACT

Job satisfaction is the mental feeling of favourableness which an individual has about his job. It often said that "A happy employee is a productive employee". Job satisfactions of various employees have been conducted to find out the factors which determine job satisfaction and the way it influence productivity. It determines working environment, supervisor relationship, and it assesses welfare and financial factors motivate employee's satisfaction level.

Keyword: Level of satisfaction, Employee motivation, Productivity.

INTRODUCTION

Job satisfaction results in better performance of an employee. The satisfaction gets through motivation, climate and culture of organization job satisfaction is the off to particular aspects at the work place to get satisfaction. There is number of factors influence to change the mind set of employees to get dissatisfaction. It depends on several different factors such as satisfaction with pay, promotional activities, relationship with coworkers and supervisor, etc... factors affecting the level of job satisfaction are working environment, fair policies and practices.

STATEMENT OF PROBLEM

Job satisfaction is one of the important elements of any organization which intern paves a way to increase productivity through betterment of their employees's performance. The complexity and inability of many firms to measure and determine the job satisfaction level of their employee compounds the ability of the firm to motivate their employees effectively to achieve employee job satisfaction.

OBJECTIVES OF THE STUDY

- To study the impact of job satisfaction on productivity on TOPI VAPPA FOODS PVT. LTD.,
- To find out the satisfaction level of employees on working environment.
- To identify how the quality of supervisor influence employee overall performance.
- To analyze how the factors like compensation and benefits influencing the employees job satisfaction.
- To suggest suitable measures to improve the overall satisfaction of the employees and productivity of the organization

SCOPE OF THE STUDY

- This study is useful to the management of the company to know the satisfaction levels of employees and they can take measures to increase productivity.
- To improve relationships and communication between supervisors and subordinates.
- This will focus on the employees needs and wants towards their organization.
- The study provides a base for understanding the labor problems and provides possible remedies.

LIMITATIONS OF THE STUDY

- The responses given in the questionnaire may not be accurate.
- The data have been collected from the present employees only. So, it may vary in the future
- Communication is a major problem since employees are recruited from the various corners of the country
- Company branches are located in various areas so it consumes more money for transportation

REVIEW OF LITERATURE

Maslow's (1943) and Herzberg's (1957). These theories create good combination factors. It helps in contributing to stimulating, supportive, rewarding, and challenging working environment. On combining these factors, job satisfaction is a combination of events and situations experienced by people within their jobs.

Amsaveni. C (2017), Summered that conducted with the main objective of level of satisfaction among the employee satisfaction towards their job and evaluation was conducted on the basis of questionnaire method. From this research it is observed that majority of the Employees were satisfied in their work. It is the responsibility of the Management make the employee satisfy

M. D. Pushpakumari (2008); he find out employee attitudes are important to management because they determine the behavior of workers in the organization.. A satisfied work force will create a pleasant atmosphere within the organization to perform well. Hence job satisfaction has become a major topic for research studies

Wasaf Inayat and Muhammad Jahanzeb Khan (2021); summarized the effect of job satisfaction on the performance of employees working in private sector organizations of Peshawar, Pakistan. For that purpose, one hundred and eighty employees were selected as a sample from private organizations of Peshawar.

Raja. S (2013) published in International Research Journals of Business and Management; he tries to find the job satisfaction levels in organization employees. And the satisfaction of employees to feel happy and good outcome. To provides the employees safety and security measure and other facilities to provide the employees improve the productivity and satisfactory.

RESEARCH METHODOLOGY

Research is a serious academic activity with a set of objectives to explain or analyze or understand a problem adopting a systematic approach in collecting organizing and analyzing the information relating to problem. It is an overall plan or program of research. It is a blue print for the collection, measurement, and analysis of design. It includes an outline of the work starting from selection of title, formulation of objective to the final analysis of data.

SAMPLING TECHNIQUE

Research requires volume of data to analysis and interpret the result to arrive at meaningful conclusions. To conduct the study and to analyses the problem faced by **Topi Vappa Foods Pvt. Ltd.**, Stratified random sampling has been used.

SAMPLE SIZE

The total population size is finite from that were selected 132 respondents as sample size. A sample of 132 employees is chosen for survey.

Population: Population of the study consists of 200 employees.

Sample Size: A sample of 132 employees is chosen for survey.

Sampling Unit: The sampling unit selected for the survey is the employees of Topi Vappa Foods Pvt. Ltd., Chennai.

Tools for Data Collection

The data was collected with the help of specially prepared questionnaire. The questionnaire consists of questions related to the general information about the age, educational, qualification, income, factors and satisfaction level of employees in Topi Vappa Foods Pvt. Ltd., Chennai.

Research Instrument: A structured questionnaire is used for data collection.

Questionnaire Design: Closed ended questions are used.

Statistical Tools

The data collected was analyzed with appropriate techniques. The techniques used for analysis are simple percentage method, crosstabulation, correlation and linear regression.

Percentage Method: the percentage method is used to calculate the percent of the favorable and unfavorable responses.

Percentage = Number of response / Number of respondents * 100.

Cross tabulation: the crosstabulation is used to find out the level of satisfaction of the employees across the various categories and factors analyzed.

Correlation: the correlation is used to test the relationship between variables.

$$r = \frac{N(\sum xy) - \sum x \sum y}{\sqrt{[n\sum x^2 - (\sum x)^2][n\sum y^2 - (\sum y)^2]}}$$

Where,

r = Correlation coefficient

n = Sample size

x = Value of the independent variable

y = value of the dependent variable

□ **Linear regression:** the linear regression is used to predict the value of the variable based on the value of another variable in other words it shows the effect of independent variable on dependent variable.

$$Y = a + bx$$

Where,

X = Independent variable

Y = Dependent variable

a = the intercept

b = the slope of the line

Data Analysis and Interpretation

The collected data has been technically analysed using the statistical tools like percentage analysis, cross tabulation, correlation coefficient and linear regression. This project study helps in revealing the level of satisfaction of employees with reference to the various factors provided in the organization and suggests ideas to improve in employee’s satisfaction level and also improve productivity a better prospect and result in the organizational development.

Level of Satisfaction

The respondents of topi vappa has been divided into three categories, low level satisfaction, moderate level satisfaction and high-level satisfaction.

Level of Satisfaction

Level of satisfaction	No. of respondents	Response Percentage %
Low level satisfaction	0	0.00%
Moderately level satisfaction	94	71.2
High level satisfaction	38	28.8
total	132	100%

Source: Computed data

From the above table, it is inferred that 0.0% respondents are Low satisfied, 71.2% respondents are moderately satisfied, 28.8% respondents are Highly satisfied.

Most of the respondents are moderately satisfied.



Experience

The respondents of topi vappa has been divided into five categories, 0-1 yrs, 1-3 yrs, 3-5 yrs, 5-8 yrs, Above 8 yrs.

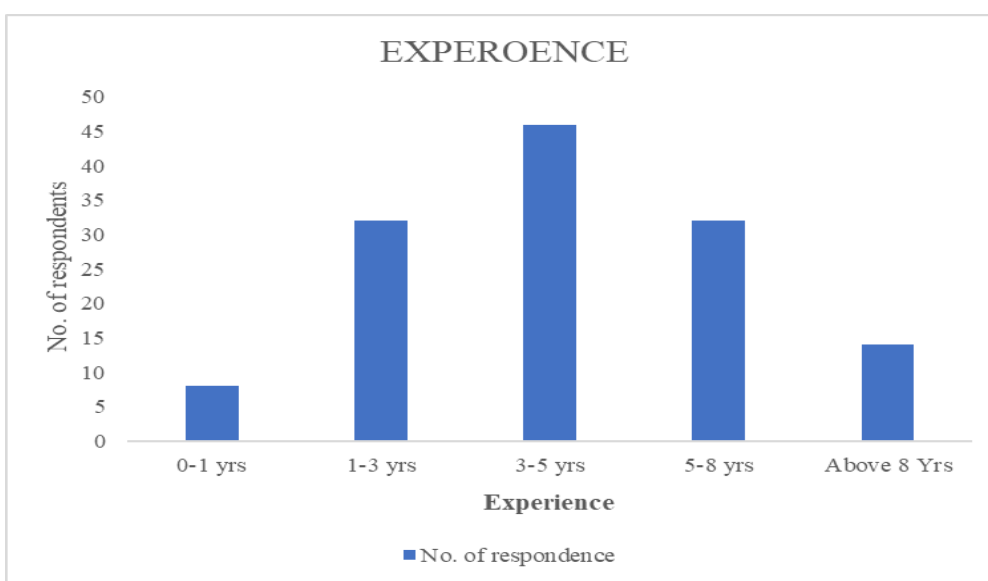
Experience

Experience	No. of respondents	Response Percentage %
0-1 yrs	8	6.1
1-3 yrs	32	24.2
3-5 yrs	46	34.8
5-8 yrs	32	24.2
Above 8 Yrs	14	10.6
Total	132	100

Source: Primary Data

From the above table, it is inferred that 6.1% respondents are belongs to the category of 0-1 yrs, 24.2% respondents are belongs to the category of 1-3 yrs, 34.8% respondents are belongs to the category of 3-5 yrs, 24.2% respondents are belongs to the category of 5-8yrs, 10.6% respondents are belongs to the category of Above 8 yrs.

Most of the respondents are belongs to the category of Above 3-5 yrs



Experience Crosstable

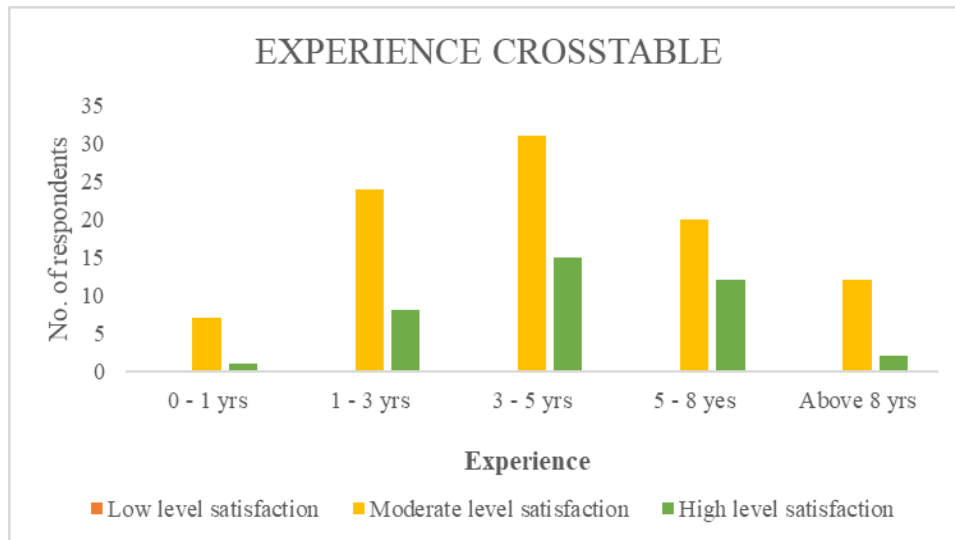
The respondenct of topi vappa has been divided into five categories, 0-1 yrs, 1-3 yrs, 3-5 yrs, 5-8 yrs, Above 8 yrs.

Table – 2.1.9 Experience crosstable

Experience	Low level satisfaction	Moderate level satisfaction	High level satisfaction	Total
0 - 1 yrs	0	7	1	8
1 - 3 yrs	0	24	8	32
3 - 5 yrs	0	31	15	46
5 - 8 yes	0	20	12	32
Above 8 yrs	0	12	2	14
Total	0	94	38	132

Source: Computed Data

From the above table it is inferred that, the Experience of the employee, there is 8 employees in 0-1 yrs among them 0 employee are Low satisfied, 7 employees are Moderately satisfied and 1 employee are highly satisfied. 32 employees in 1-3 yrs among them, 0 employee are Low satisfied, 24 employees are Moderately satisfied and 8 employees are highly satisfied. 46 employees in 3-5 among them, 0 employee are Low satisfied, 31 employees are Moderately satisfied and 15 employees are highly satisfied. 32 employees in 5-8 yrs among them, 0 employee are Low satisfied, 20 employees are Moderately satisfied and 12 employees are highly satisfied. 14 employees in Above 60 among them, 0 employee are Low satisfied, 12 employees are Moderately satisfied and 2 employee is highly satisfied.



Correlation Coefficient:

The correlation between the Experience and Level of satisfaction

Correlations			
		Experience	Level of satisfaction
Experience	Pearson Correlation	1	.052
	Sig. (2-tailed)		.556
	N	132	132
Level of satisfaction	Pearson Correlation	.052	1
	Sig. (2-tailed)	.556	
	N	132	132

Correlation is significant at the 0.01 level (2-tailed).

$r = 0.052, p = 0.556, n = 132$

RESULT

The range of the correlation coefficient is from -1 to 1. Since our result is 0.052, which means there is weak positive correlation between Experience and level of satisfaction.

Linear Regression

The regression between Experience and level of satisfaction

Variables Entered/Removed ^a			
Model	Variables Entered	Variables Removed	Method
1	Experience ^b	.	Enter
a. Dependent Variable: Level of satisfaction			
b. All requested variables entered.			

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.052 ^a	.003	-.005	8.915
a. Predictors: (Constant), Experience				

ANOVA ^a						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	27.685	1	27.685	.348	.556 ^b
	Residual	10332.944	130	79.484		
	Total	10360.629	131			
a. Dependent Variable: Level of satisfaction						
b. Predictors: (Constant), Experience						

Coefficients ^a						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	97.956	2.374		41.269	.000
	Experience	.428	.726	.052	.590	.556

a. Dependent Variable: Level of satisfaction

RESULT

We use enter regression method here, the range of the regression coefficient is from -1 to 1. Since our result is, 0.003 which means there is weak positive regression between Experience and level of satisfaction.

FINDINGS

- The research relived that most of the employees are moderately satisfied.
- Most of the respondents are belongs to the category of Above 3-5 yrs.
- From experience crosstabule, in the category of 0-1 year, 7 employees are moderately satisfied and 1 employee is highly satisfied, in 1-3 years category, 24 employees are moderately satisfied and 8 employees are highly satisfied, in 3-5 years category, 31 employees are moderately satisfied and 15 employees are highly satisfied, in 5-8 years category, 20 employees are moderately satisfied and 12 employees are highly satisfied, in Above 8 years category 12 employees are moderately satisfied and 2 employees are highly satisfied.
- There is weak positive correlation between Experience and level of satisfaction.
- There is weak positive regression between Experience and level of satisfaction.

SUGGESTION

- The company should recognize the employees problem and make it solve leads to be more satisfied with their job and better performance.
- From the research its clear that management need to improve working environment and infrastructure like proper ventilation facilities, adequate and clean toilet facilities, fire safety, etc...
- From the findings that employees are not much satisfied with the payment and incentives and bonus policies that should be improved. If the company provides increment in benefits to the employees which makes them more satisfied with their pay.

CONCLUSION

The studies entitle “A study on the impact of job satisfaction on productivity in topi vappa foods pvt. Ltd., chennai.” Was conducted with the main objective figure out level of satisfaction of the employee satisfaction towards their job and various factors like working environment, supervisor relationship, compensation, benefits and company policy through which evaluation was conducted on the basis of questionnaire method. From this research it is observed that majority of the Employees were moderately satisfied with their work. It is the responsibility of the Management make the employee satisfy. The company could satisfy the Employee in their job by adopting certain things shown in the Suggestion.

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A STUDY ON EMPLOYEE ENGAGEMENT IN AKR INDUSTRY PRIVATE LIMITED, TRICHY**Arul Arokiam Milton G and Dr. S. Chandrasekar**¹MBA Final Year, Department of Management Studies, E.G.S Pillay Engineering College Autonomous, Nagapattinam, Tamilnadu²Professor and Director Placements, E.G.S Pillay Engineering College Autonomous, Nagapattinam, Tamilnadu**ABSTRACT**

A Study on Employee Engagement mainly focuses the engagement and commitment can potentially translate into valuable business results for an organization. To help you reap the benefits of an engaged, committed workforce at your organization, this report provides guidelines for understanding and measuring employee engagement, and for designing and implementing effective engagement initiatives. As you will see, everyday human resource practices such as recruitment, training, performance management and workforce surveys can provide powerful levers for enhancing engagement. This report examines the ways in which employers define these terms today, and offers ideas for strengthening employee engagement. Though different organizations define engagement differently, some common themes emerge. These themes include employees' satisfaction with their work and pride in their employer, the extent to which people enjoy and believe in what they do for work and the perception that their employer values what they bring to the table.

Keyword: AKR INDUSTRY, Satisfaction level, Job satisfaction, Remuneration, Recognition.

INTRODUCTION**Purpose of the Study**

The purpose of the study is to assess the Employee Enhancement of the AKR INDUSTRY. It is assumed that by assessing the type of engagement the company has, the information will help in the implementation of the lean manufacturing systems and other changes that this company has in its future.

Performance involves five major things:

- Compensation
- Environment
- Growth
- Relationship
- Support
- **Compensation:**

Compensation constitutes the largest part of the employee Performance process. The employees always have high expectations regarding their compensation packages. Compensation packages vary from industry to industry. So an attractive compensation package plays a critical role in retaining the employees. Compensation includes salary and wages, bonuses, benefits, prerequisites, stock options, bonuses, vacations, etc. While setting up the packages, the following components should be kept in mind:

- **Salary and Monthly Wage:** It is the biggest component of the compensation package. It is also the most common factor of comparison among employees. It includes
 - Basic wage
 - House rent allowance
 - Dearness allowance
 - City compensatory allowance

Salary and wages represent the level of skill and experience an individual has. Time to time increase in the salaries and wages of employees should be done. And this increase should be based on the employee's performance and his contribution to the organization. Bonus: Bonuses are usually given to the employees at the end of the year or on a festival. Economic benefits: It includes paid holidays, leave travel concession, etc. Long-term incentives: Long term incentives include stock options or stock grants. These incentives help retain employees in the organization's start up stage.

- **Health Insurance:** Health insurance is a great benefit to the employees. It saves employees money as well as gives them a peace of mind that they have somebody to take care of them in bad times. It also shows the employee that the organization cares about the employee and its family.
- **After Retirement:** It includes payments that an Employee gets after he retires like EPF (Employee Provident Fund) etc.
- **Miscellaneous Compensation:** It may include employee assistance programs (like psychological counselling, legal assistance etc), discounts on company products, use of a company cars, etc.

SCOPE OF THE STUDY

- The study and its findings will very much useful to the company itself. Because company could know about their strength and weakness regarding their motivational activities. The study will help to highlight the impact of motivators on productivity.
- Availability of time is a limitation to persuade more into their various problem areas constituting their opinion.

PROBLEM STATEMENT

With the increasing need of AKR, TRICHY to implement a lean manufacturing system, an Employee Enhancing assessment will be done to determine how Employee Enhancement impacts change. Some factors that can lead to a negative work environment are **poor communication, high turnover, micromanagement, burnout, and stress**. Even highly engaged employees will lose their zest for work if these issues are allowed to persist, and eventually, they will leave your organization if improvements are not made.

OBJECTIVES

- To study the factors influencing employee enhancement
- To study the strategies employed by the company to improve on the rate of employee turnover rates.
- To study the employee alignment with company goals and values.
- To study the effects of enhancement and satisfaction at workplace.
- To suggest the various methods of motivation increases employees effectiveness in organization.

LIMITATION OF THE STUDY

- ✓ The responses given in the questionnaire may not be accurate.
- ✓ Getting responses from the business women in their busy schedule was a very difficult task.
- ✓ Period of study is limited to 60 days.

Gallup-2017

Gallup maintains that many of the decisions and actions that an employee undertakes is down to their own intrinsic Enhancement but he also argues that their environment and how they are treated can also influence their actions positively or negatively. Employee actions then have an impact on organizational performance. (Harter et al 09)

Eileen Wubbe 'The Morale Stimulus Plan -2018

Wubbe outlines how employees are a company's biggest asset. Employers are creating new ways to keep morale and Enhancement on the upswing. Wubbe outlines how employees feel that the work they do, for example a project they worked on can remain unrecognized and they are often unaware as to how extra work they undertake affects the company.

Jan Ferri-Reed 'Get Your Employees Engaged 2010

Again the importance of Employee Enhancement during a recession or during organizational change is highlighted. In a business downturn there is conflict between employees and the employer where staff can feel overwhelmed and underappreciated and employers are afraid to discuss potential career opportunities in case there are none. This can lead to losing staff to other companies when the recession has finished. Employee in the workplace. Thus he defines Enhancement as affective orientations on the part of individuals toward work roles which they are presently occupying.

(Mullins, 2005)

Enhancement is a complex and multifaceted concept which can mean different things to different people. Enhancement is usually linked with motivation, but the nature of this relationship is not clear. Satisfaction is not the same as motivation. Enhancement is more of an attitude, an internal state. It could, for example, be associated with a personal feeling of achievement, either quantitative or qualitative

(Kaliski,2007)

Enhancement is a worker's sense of achievement and success on the job. It is generally perceived to be directly linked to productivity as well as to personal well-being. Enhancement implies doing a job one enjoys, doing it well and being rewarded for one's efforts. Enhancement further implies enthusiasm and happiness with one's work. Enhancement is the key ingredient that leads to recognition, income, promotion, and the achievement of other goals that lead to a feeling of fulfillment.

RESEARCH METHODOLOGY

Research is a serious academic activity with a set of objectives to explain or analyze or understand a problem adopting a systematic approach in collecting organizing and analyzing the information relating to problem. It is an overall plan or program of research. It is a blue print for the collection, measurement, and analysis of design. It includes an outline of the work starting from selection of title, formulation of objective to the final analysis of data.

Research Design

The research design employed in nature and involves survey and fact-finding enquires including the determination of variables that are associated. The purpose of such a design is a description of the state of affairs, as it exists at present. The research has to control over the variables. He can only report what has happened or is happening. Type of research adopted was descriptive research; descriptive studies attempt to determine the frequency with something occurs or the relationship between two phenomena. This study is an attempt to obtain a complete and accurate descriptive of the situations.

Sampling Technique

Research requires volume of data to analysis and interpret the result to arrive at meaningful conclusions. To conduct the study and to analyses the **problem faced by AKR INDUSTRY TRICHY (Employee Enhancement)** stratified sampling has been used. stratum means a layer population from which samples are to be selected may contain a number of layers from each layer a few samples are selected that is why this method is called stratified sampling. A sample of 100 employees as respondent's they're chosen in factory, was contacted in order to collect the primary data from them. For the purpose of present study a related sample of population was selected on the basis of 'convenient sampling'.

Sampling Technique:

Types of Data & Variables StudiedThe analysis of data are two ways **Independent Variables**

1. Age
2. Marital Status
3. Educational Qualification
4. Income

Dependents Variables

1. Factors which influence Employee Enhancement.
2. Satisfaction at Workplace
3. Motivation to increase Employee Effectiveness.

Tool of Data Collection

- ✓ Research Instrument: A structured questionnaire is used for data collection.
- ✓ Questionnaire design: Closed ended questions are used.

Procedure of Data Collection

Data refer to information or facts. Data could be broadly classified into primary data and secondary data.

Primary data is the data collected for the first time from the employees through questionnaires.

Secondary data is the information or facts already collected. Such data is collected from journals and books.

Statistical Tools

The data collected was analyzed with appropriate techniques. The techniques used for analysis are simple percentage method & Chi Square Analysis.

Percentage Method: the percentage method is used to calculate the percent of the favorable and unfavorable responses.

Percentage = Number of response / Number of respondents * 100.

Chi Square Analysis: The Chi Square Analysis have been used for the comparison of the factors which has been used is

$$\chi^2 = \sum (O - E)^2 / E$$

Where,

O = Observed frequency

E = Expected frequency

DATA ANALYSIS AND INTERPRETATION

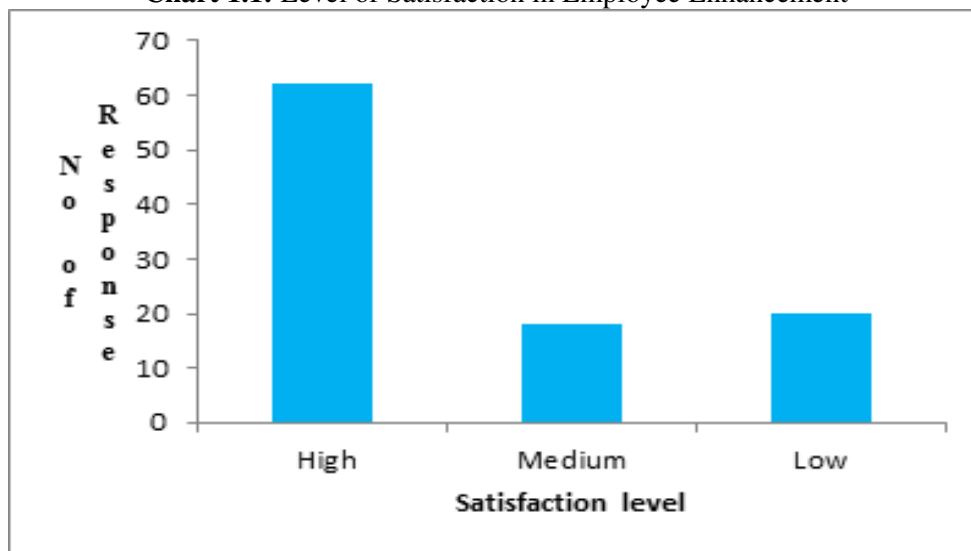
Data analysis is defined as a process of cleaning, transforming, and modelling data to discover useful information for business decision-making. The purpose of Data Analysis is to extract useful information from data and taking the decision based upon the data analysis.

Table 1.1: Level of Satisfaction in Employee Enhancement

High	93	62
Medium	27	18
Low	30	20
Total	150	100

From the above table it is observed that, 62% of respondents are between are High, 27% of respondents are Medium and 20% of respondents are Low.

Chart 1.1: Level of Satisfaction in Employee Enhancement



1.2. CORRELATION

Correlation between Age and Opportunities Wise Classification

		AGE	OPPORTUNITES WISE CLASSIFICATION
AGE	Pearson Correlation	1	.854**
	Sig. (2-tailed)		0
	N	150	150
OPPORTUNITES WISE CLASSIFICATION	Pearson Correlation	.854**	1
	Sig. (2-tailed)	0	
	N	150	150

Correlation is significant at the 0.01 level (2-tailed).

RESULT

Since there is no positive correlation between two variables hence there is no significant relationship between Age and Opportunities wise classification.

1.4 ANOVA

Gender and Supportiveness Wise Classification

Null Hypothesis (H0): There is no significant difference between experience and level of satisfaction

Alternative Hypothesis (H1): There is significant difference between Experience and level of level of satisfaction

Description

Supportiveness Wise Classification

		N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
						Lower Bound	Upper Bound		
SUPPORTIVENESS WISE CLASSIFICATION	Male	83	2.51	1.400	0.154	2.20	2.81	1	5
	Female	67	2.36	1.177	0.144	2.07	2.65	1	5
	Total	150	2.44	1.303	0.106	2.23	2.65	1	5

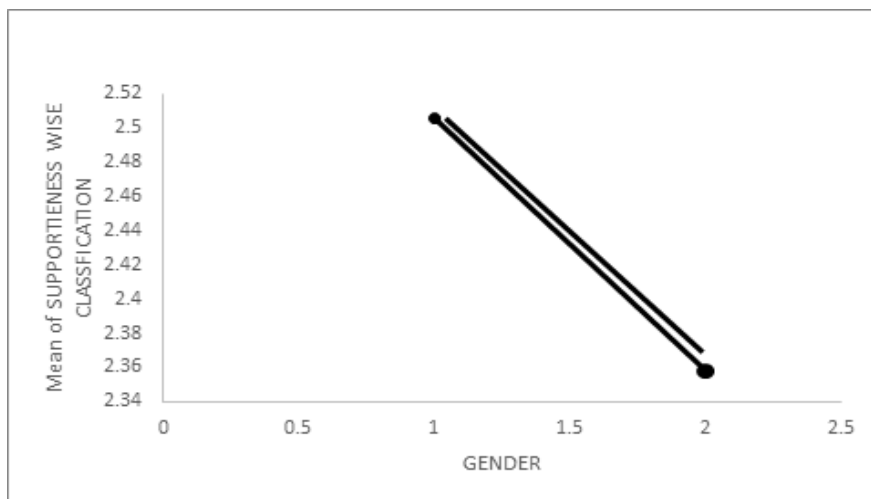
Test of Homogeneity of Variances

		Levene Statistic	df1	df2	Sig.
SUPPORTIENESS WISE CLASSIFICATION	Based on Mean	3.542	1	148	0.062
	Based on Median	0.760	1	148	0.385
	Based on Median and with adjusted df	0.760	1	139.674	0.385
	Based on trimmed mean	3.197	1	148	0.076

ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
SUPPORTIENESS WISE CLASSIFICATION	Between Groups	0.810	1	0.810	0.475	0.492
	Within Groups	252.150	148	1.704		
	Total	252.960	149			

Means Plot



INTERFERENCE

Significance level .049

RESULT

Since the calculated value is higher than 0.05. There is no significance difference between Gender and supportiveness wise classification. H0 accepted.

FINDINGS

- From the above table it is observed that, 62% of respondents are between are High, 27% of respondents are Medium and 20% of respondents are Low.

- Since there is no positive correlation between two variables hence there is no significant relationship between Age and Opportunities wise classification.
- Since the calculated value is higher than 0.05. There is no significance difference between Gender and supportiveness wise classification. H₀ accepted.

SUGGESTIONS

- Employees should be given more opportunity to express themselves in the decisionmaking process with management.
- More the fare facilities should be provided in order to improve the working condition of the employees.
- The employees should be given opportunity to attend seminars and training programs to improve their performance.
- Good administration setup can give better employee participation.

CONCLUSION

This report emphasizes the importance of increasing and sustaining employee engagement. This is of paramount importance in a company undergoing organizational change. The author carried out a review of the main literature around the subject and summarized the key themes and models from the main theorists in conjunction with supporting research. The research methodology for answering the 63 research questions including the procedure, background and design was outlined.

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A STUDY ON WORKING CAPITAL MANAGEMENT AT SRI KAMALAMBIKA CO-OPERATIVE URBAN BANK LTD, THIRUVARUR

¹Ms. Atchaya T and ²Mr. Arulprakash I¹Student and ²Assisant Professor, E.G.S Pillay Engineering College, Nagapattinam**ABSTRACT**

The two forms of capital that is fixed capital and working capital are a must for any form of an organization to function smoothly. Fixed capital is used to manage expenditures strategic in nature, whereas, working capital is necessary for demands that are for shorter terms. Fixed and working capitals ultimately shape the efficiency level of business organization. Working capital, when managed efficiently, assists considerably in elevating profitability levels and profitability is a must to be able to pay returns to the funds of suppliers – specifically, the returns to shareholders. Working capital also shapes the liquidity condition. Achieving effective working capital depends on implementing appropriate supervision on fixed assets, current assets and sale.

INTRODUCTION

Working capital is regarded as the lifeblood of a business. Its effective provision can do much to ensure the success of a business, while its inefficient management can lead not only to loss of profit but also to the ultimate downfall of what otherwise might be considered as promising concern. Much has been rightly made of the long-term planning of capital projects. But the cost to industry due to inadequate planning in the use of working capital is immeasurable.

A study of working capital is of major importance to internal and external analysis because of its close relationship with the current day-to-day operations of a business. Working capital is the leading cause of the portion of the assets of a business which are used in, or related to current operations, and represented at any one time by the operating cycle of such items as against receivables, inventories of raw materials, stores, work-in-process and finished goods, merchandise notes or bills receivables and cash. The assets of this type are relatively temporary in nature. In accounting, working capital is the difference between the inflow and outflow of funds. In other words, it is the net cash flow. It is defined as the excess of current assets over current liabilities and provisions.

SCOPE OF THE STUDY

- The project will learn about the planning and financing of working capital. It shows the various components of working capital. This enables the company to provide the right amount of working capital at the present time.
- The management of working capital helps us to maintain the working capital at a satisfactory level by managing the current assets and current liabilities.
- It also helps to maintain proper balance between profitability, risk and liquidity of the business significantly.
- By managing the working capital, current liabilities are paid in time.
- The current assets should be large enough to cover its current liabilities in order to ensure a reasonable margin of safety.

OBJECTIVES**Primary Objectives**

- To analyze and evaluate the working capital management of “Sri Kamalambika cooperative urban Bank Ltd”.

Secondary Objectives

- To analyze the various working capitals related to ratio.
- To study the working capitals components such as receivables accounts, cash, management, Inventory management
- To make suggestion based on the finding of the study
- To analyze the profitability of a bank and its impact on working capital.
- To compare the working capital position of the current and previous year.

NEED OF THE STUDY

The Working Capital (Working Capital) is regarded as the life-blood of any business as it plays a pivotal role in moving the wheels of operations. Forecasting procurement and optimum utilization of funds are considered as key activities for success or failure of a Firm. Relevance of these activities is seriously felt by Co Operative Banks, of late, due to the emerging competitive environment since the privatization of Banks. As there is no readymade, single solution for management of working capital in a firm, the responsibility of fund management has drawn greater attention for the smooth functioning of an enterprise. Therefore, the present study intends to examine whether there exists any relationship between efficient management of working capital funds and firm level profitability at “Sri Kamalambika cooperative urban Bank Ltd”.

LIMITATIONS OF STUDY

- The analysis has only been done for the past two years.
- The study depends on the information provided by the bank.
- Limited interaction with the bank due to their busy schedule.
- The period of study will be very short duration

REVIEW OF LITERATURE**Big Viqar Ali (2009)**

Aims at reporting corporative findings of a survey of working capital management practices of selected agribusiness firms from diary co-operatives, private and MNC diary firms as a part of the research the is completed in July 2008. Besides, an attempt has been made to know the effect of the ownership, government regulations, managerial empowerment and cultural factor on the working capital decision making.

Rahman Mohammad M.(2011)

Focuses on the co-relation between working capital and profitability. An effective working capital management has a positive impact on profitability of firms. From the study it is seen that in the textile industry profitability and working capital management position are found to be up to the mark.

Dr Arbab Ahmed and Dr. Matarneh Bashar (2011)

The view that the registration technique is a very useful statistical technique of working capital forecasting. In the sphere of working capital management, it helps in making projection after establishing the average relationship in the past between sales and working capital, and its various components. The analysis can be done with the help of mathematical formula.

Joseph Jisha (2014)

Closely examines the study of working capital management in Ashok Leyland and points out that the liquidity and profitability position of the company is not satisfactory, an needed to be strengthened in order to be able to meet its obligations in time.

Madhavi K. (2014)

Makes an empirical study of the co-relation between liquidity position and profitability of the paper mills in Andhra Pradesh. It has been observed that inefficient working capital management makes a negative impact on profitability and liquidity position of the paper mills.

COMPANY PROFILE

Name of the urban bank	: Sri Kamalambika co-operative urban Bank ltd.
Place	: Thiruvarur
Date of registration	: 02.06.1910
Date of starting	: 07.12.1910
Name and designation of the inspecting officer	: MR. K.C. Ravichandra B.Sc., MABL,HDCM
Joint Register of co-op societies,	
Thiruvarur.	

ABOUT SRI KAMALAMBIKA COOPERATIVE URBAN BANK LTD

Sri Kamalambika cooperative urban Bank Ltd is a bank in Thiruvarur. Sri Kamalambika cooperative urban bank ltd is a bank in India established on. It has headquarter in Chennai and address is a 2, west main street, Thiruvarur.

It provides all the financial services to its customer like saving deposit, fixed deposit, recurring deposit, loans, personal loans, net banking RTGS, NEFT, IMPS, Atal pension Yojana, pradhan mantri jandhan yojana, pradhan mantri suraksha bima yojana, pradhan mantri jeevan jyoti bima yojana and many more.

Other scheme of Sri Kamalambika cooperative urban bank ltd

Home Loan	Personal Loan
Educational loan	Business loan
Car loan	Two wheeler loan
Gold loan	FD interest rates
RD interest rates	Bank ATMs

RESEARCH METHODOLOGY

It is a way to systematically solve a research problem, research methodology is the specific procedures or techniques used to identify, select, process and analyze information about a topic. Research methodology is a way of explaining how a researcher intends to carry out their research. It’s a logical, systematic plan to resolve a research problem. A methodology details a researcher’s approach to the research to ensure reliable, valid results that address their aims and objectives. It encompasses what data they are going to collect and where from, as well as how it’s being collected and analyzed.

DATA COLLECTION

- The study is based on secondary source of data. Secondary data have been mainly obtained from annual reports, records and books of SRI KAMALAMBIKA CO-OPERATIVE URBAN BANK LTD.
- The secondary data were also collected from audited financial statements periodicals and other records maintained by SRI KAMALAMBIKA CO-OPERATIVE URBAN BANK LTD.

PROJECT DESIGN

Exploratory Design

A Research used to investigate a problem which is not clearly defined. It is conducted to have a better understanding of the existing problems but will not provide conclusive result.

TOOLS

1. Ratio analysis
2. Excel

DATA ANALYSIS AND INTERPRETATIONS

Working Capital Analysis

Working capital management is concerned with the problems which arise in attempting to manage the current assets, the current liabilities and the inter relationship that exists between them. The term current assets refers to those assets which in ordinary course of business can be, or, one year will be, turned into cash within one year without undergoing a diminution in value and without disrupting.

The operations of the firm the major current asset are cash marketable securities account receivable and inventory. Current liabilities are those liabilities which intended to be paid in ordinary course of business within a year out of the current asset or earnings of the concern. The goal of working capital management is to manage the firm’s current asset and current liabilities in such way that the satisfactory level of working capital is mentioned the current asset should be large enough to cover its current liabilities in order to ensure a reasonable margin of the safety. The consideration of the level of investment in current asset should avoid two danger point excessive and inadequate investment in current assets. The management should be promotes to initiate an action and correct imbalance.

Table No: 1 Schedule of Changes in Working Capital 2019-2020

PARTICULARS	2019 AMOUNT	2020 AMOUNT	INCREASE	DECREASE
CURRENT ASSET:				
Cash	74,986,509	48,393,461		26,593,048
Balance with other bank	2,33,486,904	2,23,166,904		10,320,000
Interest receivable	31,345,406	37,987,761	6,642,355	
TOTAL CURRENT ASSET	3,39,818,819	3,09,548,162		
CURRENT LIABILITIES				

Bills payable	58,075	58,075		
Interest payable	24,41,835	22,63,294		1,78,541
Other liabilities	95,58,787	12,157,201	25,98,414	
Net increase in working capital			27,850,820	
TOTAL CURRENT LIABILITIES	12,058,697	14,478,570		
TOTAL	3,27,760,122	2,95,069,592	37,091,589	37,091,589

Source: Secondary data to collect from Sri Kamalambika co-operative urban bank ltd

Working capital is the current assets, current liabilities and the inter relationship that exists between them. The current assets are greater than the current liabilities and the working capital 27,850,820 is increase.

Table No: 2 Schedule Of Changes in Working Capital 2020-2021

PARTICULARS	2020 AMOUNT	2021 AMOUNT	INCREASE	DECREASE
CURRENT ASSET:				
Cash	48,393,461	56,067,175	76,73,714	
Balance with other bank	2,23,166,904	1,36,060,945		87,105,959
Interest receivable	37,987,761	43,766,657	57,78,896	
TOTAL CURRENT ASSET	3,09,548,162	2,35,894,777		
CURRENT LIABILITIES				
Bills payable	58,075	58,075		
Interest payable	22,63,294	27,22,159	4,58,865	
Other liabilities	12,157,201	13,900,904	17,43,703	
Net increase in working capital			71,450,781	
TOTAL CURRENT LIABILITIES	14,478,570	16,681,138		
TOTAL	3,24,026,732	2,19,213,639	87,105,959	87,105,959

Source: Secondary data to collect from Sri Kamalambika co-operative urban bank ltd

It can be clearly informed that the bank has a fluctuating working capital. This is due to the above calculations, the current asset are greater than current liabilities and the Net working capital is 71,450,781 is increase

RATIO ANALYSIS

Currnt Ratio

Current ratio may be defined as the ratio of current assets to current liabilities. It is also known as working capital ratio. Current ratio shows the relationship between total current assets and total current liabilities expressed as a formula.

$$\text{Current Ratio} = \frac{\text{Current Asset}}{\text{Current Liabilities}}$$

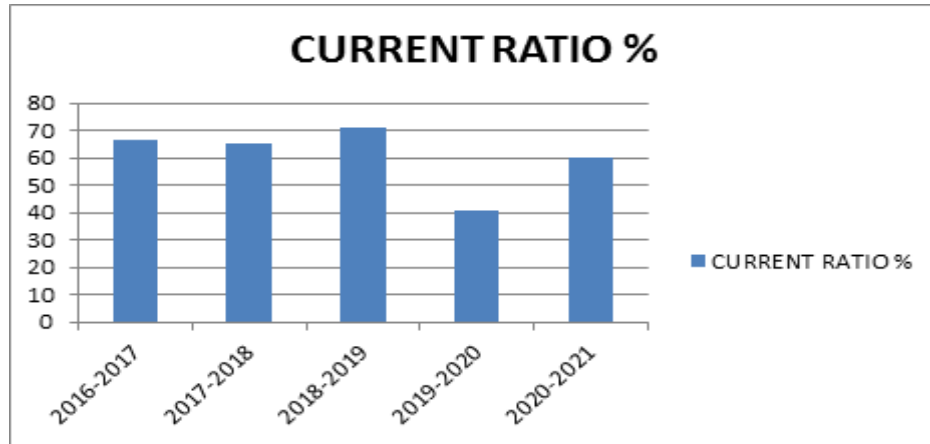
Table No: Table Shows That Classification Of Current Ratio

YEAR	CURRENT ASSETS	CURRENT LIABILITIES	RATIO %
2016-2017	805887626	12101082	66.5
2017-2018	818480890	12538661	65.2
2018-2019	857632987	12058697	71.1
2019-2020	921956155	22565551	40.8
2020-2021	1000799815	16681139	59.9

Source: Secondary data

During the year of 2016-2017 the current ratio of 66.5% the next year of 2017-2018. It was maintained to 65.2% again 2018-2019 is increase to 71.1%. But the year of 2019-2020 it was decreased the ratio IS 40.8% and the 2020-2021 in the year of increased in 59.9%.

Chart No: 1 Chart Shows That Classification of Current Ratio



QUICK RATIO

A measure of a company’s liquidity and ability to meet its obligations, quick ratio, often referred to as acid-test ratio, is obtained by subtracting inventories from current assets and then dividing by current liabilities. Quick ratio is viewed as a sign of company’s financial strength or weakness.

Liquid / Quick Assets

$$\text{Quick Ratio} = \frac{\text{Liquid / Quick Assets}}{\text{Current Liabilities}}$$

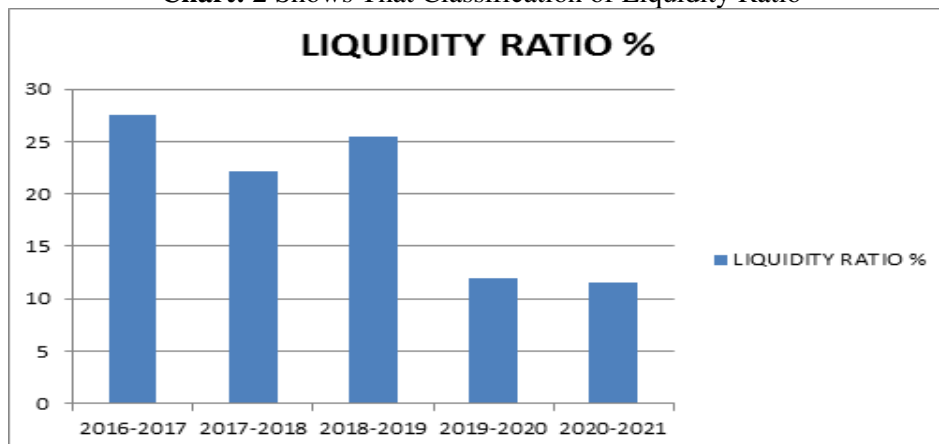
Table No: 4 Table Shows That Classification Of Liquidity Ratio

YEAR	QUICK ASSETS	CURRENT LIABILITIES	RATIO%
2016-2017	333910634	12101082	27.5
2017-2018	278679169	12538661	22.2
2018-2019	308473413	12058697	25.5
2019-2020	271560365	22565551	12.0
2020-2021	192128120	16681139	11.5

Source: Secondary data

During the year of 2016-2017 the quick or liquidity ratio was 27.5%. The next year of 2017-2018. But it was reduced to 22.2% again 2018-2019 increased to 25.5% but the year of 2019-2020 it was reduced to 12.0%, it was decreased to 2020-2021 in the year of 11.5%.

Chart: 2 Shows That Classification of Liquidity Ratio



FINIDING

- ❖ Working capital of the SRI KAMALAMBIKA CO-OPERATIVE URBAN BANK LTD was increasing and showing fluctuated in working capital change per year.
- ❖ During the year 2017-2018 there was a Net increase in working capital of Rs 1,09,668,656. During the year 2018-2019 there was a net increase in working capital of Rs 30,414,063. During The year 2019-2020 there was also Net increase in working capital by Rs 27,850,820. During the year 2020-2021 there was also Net increase in Working capital by Rs.71,450,781.

- ❖ The current ratio was fluctuated throughout the year. The bank maintains the sufficient current position. It was higher in the year 2018-2019. It was lower in the year 2019-2020.
- ❖ The liquidity ratio was fluctuated throughout the year. The bank maintains sufficient liquidity position. It was higher in the year 2016-2017. It was lower in the year 2020- 2021.

SUGGESTION

- Working capital of the bank has increasing every year. Profit also increasing every year this is good sign for the bank. It has to maintain it further, to run the business long term.
- The current and quick ratio is almost up to the standard requirement. So the working capital Sri Kamalambika co-operative Urban Bank Ltd is satisfactory and it has to maintain it further.
- The bank has sufficient working capital and has better liquidity position. By efficient utilizing this short-term capital, then it should increase the turnover.
- The bank should take precautionary measures for investing and collecting funds from receivables and to reduce the bad debts.
- The bank is a serve seeking one; it has to commit all of its resources to achieve its goal. To achieve this profitability, liquidity and solvency position a crucial elements to be monitored carefully, thereby the trade off can be reached.
- The bank has to maintain and increase further by effective utilization and control of all the assets.
- The debt ratio should be maintained at the constant level. The cash and bank balance should be is good.
- The bank is utilizing working capital effectively this is good for the bank. It has to maintain further.

CONCLUSION

- The study on working capital conducted in SRI KAMALAMBIKA CO-OPERATIVE URBAN BANK LTD to analyze the financial position of the bank. The bank's financial position is analyzed by using the tool of annual reports from 2016-2017 to 2020-2021. The financial status of Sri Kamalambika co-operative Urban Bank Ltd is good. The study reveals that the liquidity position of this bank is comparatively good as it approaches the standard norms throughout the period of study. In the last year the inventory turnover has increased, this is good sign for the bank. The bank's liquidity position is very good with regard to the investments in current assets there are adequate funds invested in it. The conclusion of all this it that the considerations of assets and financing mixes are crucial to the working capital management.

A STUDY ON EMPLOYEE WELFARE MEASURE ATAMMAIYAR MILK DALRY AT KARAIKAL**¹Ms. Divya S and ²Mr. Arulprakash I**¹Student and ²Assisant Professor, E.G.S Pillay Engineering College, Nagapattinam**ABSTRACT**

The concept of employee welfare is vibrant. Its broad viewpoint and contents are inclined to change, depending on social and economic changes that occur in society. Employee welfare includes various services, benefits, and facilities offered to employees by employers. An organization has to provide welfare facilities to their employees to keep their motivation levels high. The study throws light on impact of welfare measures on the employees' performances with respect to the construction industry. The primary data for the study was collected through a questionnaire. The sample size of the study was 80 and the sample design adopted was a systematic random sampling technique. An employee who feels appreciated will further be comfortable, satisfied and more prolific. It has leads not only towards higher productivity but also improves the quality of performance which helps to capture the market share which is profitable for the company. A satisfied employee will not look into for other job opportunities and it enables an employer to keep the best talents and record lower employee turnover. Welfare includes anything that is done for the comfort and improvement of employees and is facilitated with over and above the wages. The provision of welfare measures helps in keeping the morale and motivation of the employees high to retain the employees for a longer duration. The welfare measures need not be in monetary terms only, it can also be in any forms. Employee welfare includes monitoring of working conditions, creation of industrial harmony through infrastructure for health, industrial relations and insurance against disease, accident and unemployment for the workers and their families. Employee welfare is a comprehensive term including various services, facilities and amenities provided to employees for their betterment. Welfare measures are something that is available to employees in addition to regular wages and other economic benefits under legal provisions and collective bargaining. The perseverance of employee welfare is to improve the working class which in turn makes a worker a good employee and a happy citizen. Employee welfare is an indispensable part of social welfare. It involves a balance between an employee's work life and family life to the community or social life.

INTRODUCTION

An employee who feels appreciated will further be comfortable, satisfied and more prolific. It has leads not only towards higher productivity but also improves the quality of performance which helps to capture the market share which is profitable for the company. A satisfied employee will not look into for other job opportunities and it enables an employer to keep the best talents and record lower employee turnover. Welfare includes anything that is done for the comfort and improvement of employees and is facilitated with over and above the wages. The provision of welfare measures helps in keeping the morale and motivation of the employees high to retain the employees for a longer duration. The welfare measures need not be in monetary terms only, it can also be in any forms. Employee welfare includes monitoring of working conditions, creation of industrial harmony through infrastructure for health, industrial relations and insurance against disease, accident and unemployment for the workers and their families. Employee welfare is a comprehensive term including various services, facilities and amenities provided to employees for their betterment. Welfare measures are something that is available to employees in addition to regular wages and other economic benefits under legal provisions and collective bargaining. The perseverance of employee welfare is to improve the working class which in turn makes a worker a good employee and a happy citizen. Employee welfare is an indispensable part of social welfare. It involves a balance between an employee's work life and family life to the community or social life.

RESEARCH OBJECTIVES

- ❖ Conduct the company, study the following objectives were drafted
- ❖ To study the impact of welfare facilities on employee satisfaction
- ❖ To know the opinion and satisfactions level of employee about health measures safety measures
- ❖ To know the employee satisfactions towards welfare measures
- ❖ To find out the suggestion for the improvement in the welfare measures activities

DISSCUSSION ON THE FINDING OF THE STUDY

A Structured questionnaire is used to collect data, and the sample size is 120. the data were analyzed using percentage analysis and anova test. for research analysis, job improvement and satisfactions were dependent variable, while welfare facilities were the independent variable

LITERATURE REVIEW

- **Manasa, B. R., and C.N. Krishn Anaik. (2015)**"Employee welfare measures-A study on Cement Corporation. The analysis of their study concept of employee welfare. the study resultant that employees in auto sector are highly satisfied with the intra-mural welfare measure. welfare facilities provided to customer. By the study suggestion are made that it may be railway minimize the cost of social burden and apply for government for betterment of Employee welfare.
- **Ramana, T. Venkata, and E. Lokanadha Reddy. (2015).**"A study on employee welfare refer to they want to assess the overall satisfaction level regarding welfare program. Through their papers they want to obtain correction by the study suggestion are made that it may be railway minimize the cost of social burden and apply for government for betterment of welfare provisions between statutory and non-statutory activities at industry and to obtain relationship between employees.
- **Lalitha, K., and T. Priyanka. (2014)**" welfare facilities provided at the company (Bosch limited Bangalore). The study discusses extend of awareness among the employees with various statutory and no statutory welfare measure. It is found that most of the welfare facilities like medical canteen, working environment safety measure etc. are provide by company and most of the employees are satisfied with the welfare facilities

RESEARCH METHODOLOGY

The research design of this study is descriptive in nature. Both primary and secondary data used to investigate the study on employee’s welfare measure. the major interest, however, is in their use of primary data via the questionnaire method. The data is gathering using a structured questionnaire, and the sample size

Sampling Design

A sample design is a defined, plan obtaining a sample from a given population. It is the procedure used by the researcher in selecting items for the sample.

Sampling Technique

Simple random sampling technique is to be used in this project

Satistical Methods Use

- Percentage analysis
- SPSS

Satistical Tools Used

- Percentage analysis
- One -way anova

Data Analysis and Interpretation

A questionnaire it was the prepared for measuring effectiveness of employee welfare measure repand distributed among the employees of the ammayar milk dairy. the primary data collected by simple random sampling by using questionnaire was tabulated, converted into percentage and displayed both in table as well as by graphical representation for analysis. Based on the data interpretation were made the questionnaire used for carrying out survey.

Determination of Level Employee Welfare

The respondent of ammayar milk dairy into three categories low satisfactions, medium satisfactions and high satisfactions

Table 1

Determinants Of level of employee welfare		
Particular	No of Respondents	Percentage
High	100	100%
Medium	20	20%
Low	0	0%
Total	120	120%

Sources: primary data

This study reveals that 100% of the respondent were High satisfied 20% of the respondent were Medium satisfied and 0% low satisfied

Charts 2

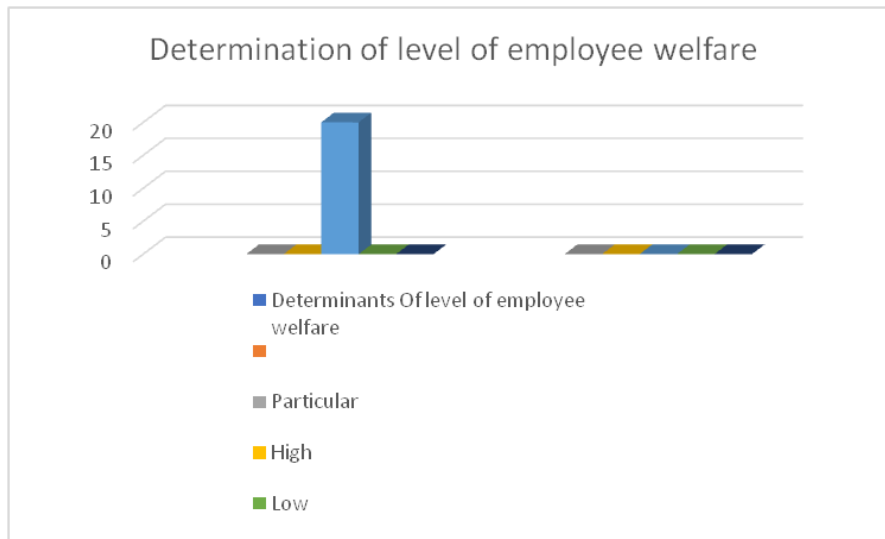


Table 2: Distribution Of Age

Distribution Age		
Particular	Responded	Percentage
20-30	16	13.3
30-40	48	40
40-50	24	20
46-60	31	25.8
Above 60	1	0.8
Total	120	100

Source: primary data

From the above table it is inferred that 16% of the respondents were 20-30 yrs. 48% of the respondents of the respondent were 30-40 yrs. 24% of 40-50 yrs. 24% of the respondents were 46-60 yrs. 31% above 60 yrs. 1% of the respondents

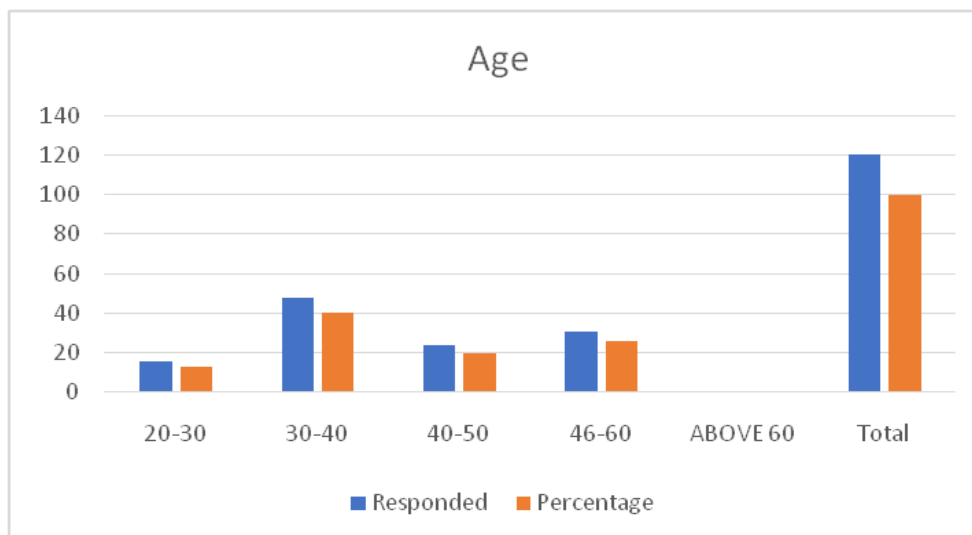
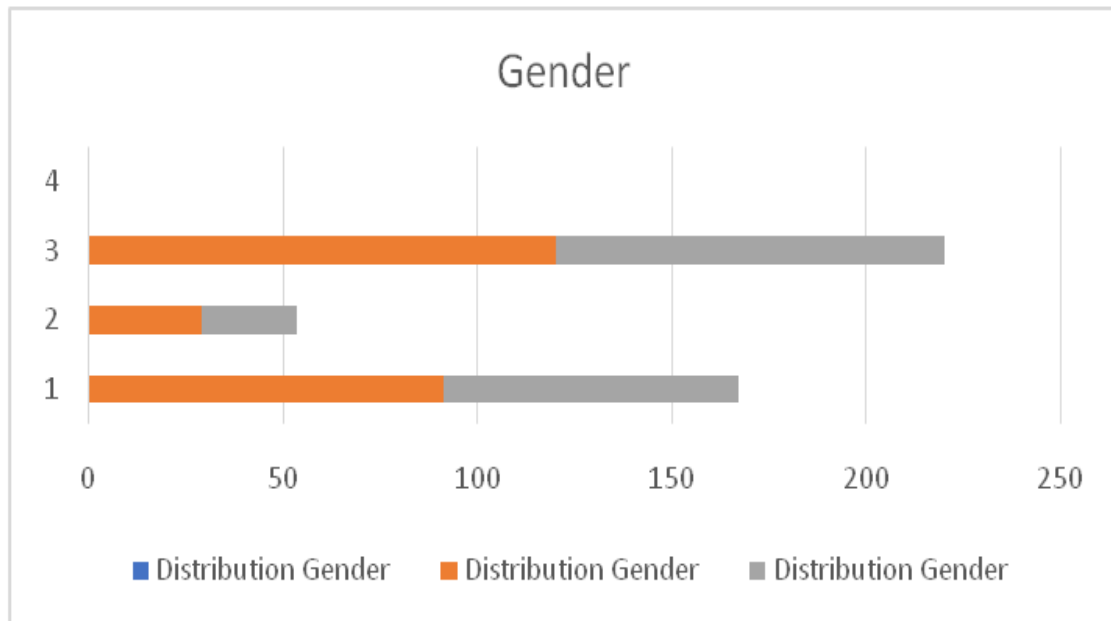


Table 3: Distribution of Gender

Distribution OF Gender		
Gender	Responds	Percentage
male	91	75.8
female	29	24.2
Total	120	100

Source: primary data

From the above table it is inferred that 91% of the respondents are male, 24.2% of the respondents are female.



Descriptive Level								
	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
20-30	16	72.8125	5.11493	1.27873	70.0869	75.5381	61.00	80.00
30-40	48	70.5625	4.14065	.59765	69.3602	71.7648	60.00	78.00
40-50	24	73.7083	3.19618	.65242	72.3587	75.0580	64.00	80.00
46-60	31	72.2581	3.37607	.60636	71.0197	73.4964	64.00	77.00
ABOVE 60	1	70.0000	70.00	70.00
Total	120	71.9250	4.05873	.37051	71.1914	72.6586	60.00	80.00

ANOVA TEST

Test of Homogeneity of Variances Level			
Levene Statistic	df1	df2	Sig.
1.459 ^a	3	115	.230

a. Groups with only one case are ignored in computing the test of homogeneity of variance for Level.

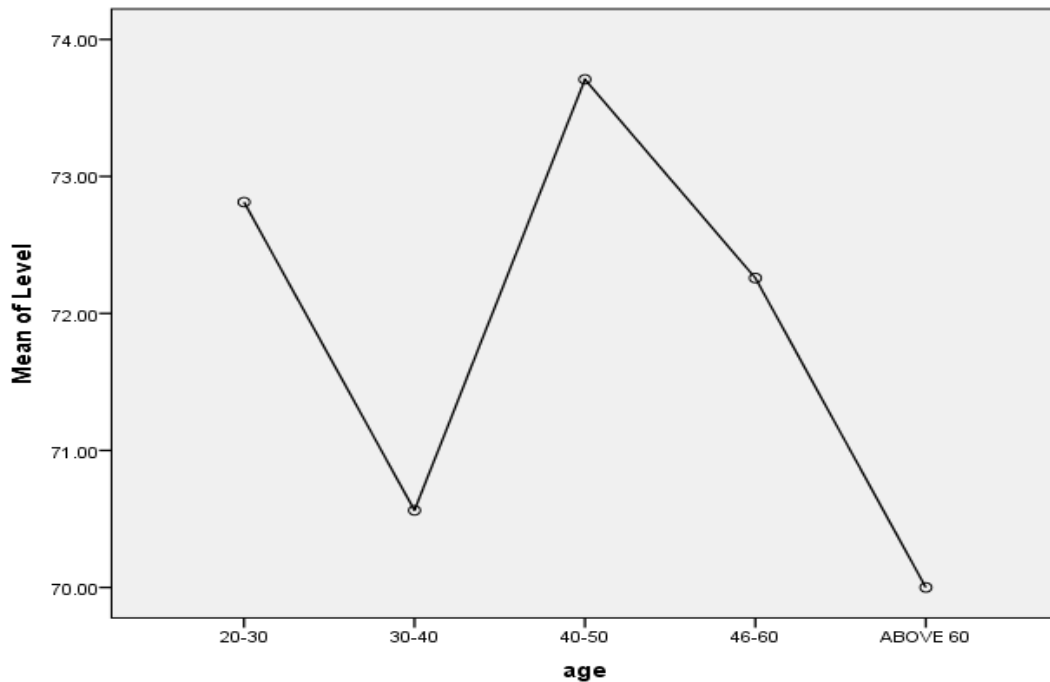
ANOVA Level					
	Sum of Squares	if	Mean Square	F	Sig.
Between Groups	185.181	4	46.295	2.999	.021
Within Groups	1775.144	115	15.436		
Total	1960.325	119			

Robust Tests of Equality of Means Level				
	Statistic ^{a1}	df1	df2	Sig.
Brown-Forsythe

a. Asymptotically F distributed.

b. Robust tests of equality of means cannot be performed for Level because at least one group has the sum of case weights less than or equal to 1.

Means Plots



RESULTS

Since the calculated value is p (value) less than value then, null hypothesis. H0 is accepted hence there is no significant relationship between age and level of satisfaction

MAJOR FINDING

Welfare facilities which are organized by the management are well known to the workers and all about the respondent are satisfied with the majority welfare facility except the few mentioned below. but the only compliant is that canteen facility which is essential for them. I have pointed out the positive and negative points of the welfare facilities as follows

CONCUSION

Human resources play a resource plays an important role in any organization, employees welfare facilities are concerns to this department, if the employee happy with welfare measures, then only the productivity of that organization can be increased

A STUDY ON EMPLOYEE STRESS MANAGEMENT IN RAMTEC CONSTRUCTION COVERS AND BLOCKS PRIVATE LIMITED AT THIRUVARUR**¹Ms. Gowri M and ²Mr. Arulprakash I**¹Student and ²Assisant Professor, E.G.S Pillay Engineering College, Nagapattinam**ABSTRACT**

Stress has been defined in different ways over the years. Originally, it was conceived of as pressure from the environment, then as strain within the person. It is the psychological and physical state that results when the resources of the individual are not sufficient to cope with the demands and pressures of the situation. Work-related stress is a growing problem around the world that affects not only the health and well-being of employees, but also the productivity of organisations. This research study was conducted to find out the factor causing stress among employees and to know how they cope up with stress. The Research design used was a descriptive research. The primary data has been collected through a questionnaire method. The sample design used in the study was simple random sampling technique with a sample size of 124. The collected data has been analysed through various tools like Percentage analysis & ANOVA & factor analysis.

Keywords: Stress, work place stress, coping stragies, employee Health

INTRODUCTION

Stress represents a situation where a person is under pressure and does not have sufficient ability to cope with it. This project is about the analysis of the work-related stress among employees in **Ramtec Construction Covers and Blocks Private Limited**, a leading innovative building materials manufacturing company. The main purpose of stress management is to manage and reduce the stress through suitable coping up techniques. This study would help the management as well as employees to identify the factors causing stress and coping stragies to be followed.

STRESS MANAGEMENT

Stress management is a variety of techniques and psychotherapies aimed at controlling a person's level of stress, especially chronic stress, usually for the purpose of and for the motive of improving everyday functioning.

NEED FOR THE STUDY

Work-related stress is a real challenge for workers and their employing organizations. From this report, the management can identify and evaluate the factors causing stress among the employees. It can also apply the useful stress management techniques for improved employees' efficiency and increased productivity of the organization, thereby balancing work and life.

REVIEW OF LITERATURE

Al-Aameri (2003) conducted a research to analyze the different sources of job stress for nurses. The author also examined the most and least perceived sources of stress along with the effect of demographic factors on nurse's perception of these sources. The author concluded that the most important stressors are: organizational structure and climate, managerial roles, nursing job itself.

A study was conducted by Stevenson A. and Harper S. (2006) to investigate the possible effects of workplace stress in academics on the student learning experience. The results showed that stress can impact both negatively and positively on the student learning experience.

Khoury and Farhad Analoui (2010) conducted a research to identify the primary and crucial stressors that Palestinian employees encounter. For this purpose a multi-stage disproportionate stratified random sampling method was employed. The researcher concluded that prevention strategies are needed to focus on the employees and improve their coping skills against the demanding conditions through initiatives such as employee assistance programs (EAPs).

COMPANY OVERVIEW

Ramtec is one of the renowned Vermiculite Manufacturers in the vicinity and is the top slot amongst the competitors. Since Concrete Cover Blocks have different uses & durability factor, they are preferred amongst the prominent brands.

Ramtec Construction Covers And Blocks Private Limited is a Private incorporated on 28 March 2019. It is classified as Non-govt company and is registered at Registrar of Companies, Chennai. Its authorized share capital is Rs. 1,000,000 and its paid up capital is Rs. 1,000,000.

Products and Services

Paver & Hollow Blocks, Concrete Cover Blocks, Waterproof Coatings, Insta Weather Tile, PP Fibre and Weathering Course from India.

OBJECTIVE OF THE STUDY

- Assess the level of stress among employees.
- Identify the factors causing stress among the employees.
- Analyze the impact of stress on employees’ health and their productivity.
- Suggest possible measures or the best practices to the management that would reduce the stress level.

RESEARCH METHODOLOGY

Research methodology is a way to systematically solve the research problems. The data is based on primary and secondary data. The primary data is collected through questionnaire method. Secondary data may either be published data or unpublished data. Usually data available in technical & trade journals, reports and publications of various associations connected with business & industry, letters, research work, labour bureaus.

SAMPLING DESIGN

This study is descriptive in nature. The area of study is confined to employees of Ramtec Construction Covers And Blocks Private Limited, Thiruvarur. The sample size chosen for this study is 124. The sampling method used to identify the representative sample was “Simple random sampling “.

Statistical Tools Used

In this study the following analysis had been used:

Simple percentage and ANOVA is used for this research study.

Simple Percentage Analysis

The collected data is analyzed by using simple percentage methods. Under this method, percentage is used to compare the data collected (or) to interpret them.

Formula: (No. of Respondents / Total Members) X 100

Anova

Analysis of Variance (ANOVA) is an analysis tool used in statistics that splits an observed aggregate variability found inside a data set into two parts: systematic factors and random factors. The systematic factors have a statistical influence on the given data set, while the random factors do not analysis use the ANOVA test to determine the influence that independent variables have on the dependent variable in a regression study.

DATA ANALYSIS

Determination Level of Stress

The respondent of Ramtec Construction Covers and Blocks Private Limited divided into three categories low level satisfaction, moderate level satisfaction and high level satisfaction.

Table 1: Determination Level Of Stress

LEVEL OF SATISFACTION		
Particulars	No. of respondent	Percentage % of the respondent
Low level satisfaction	0	0.00%
Moderate level satisfaction	123	100
High level satisfaction	0	0
Total	124	100%

Source: Primary data

This study reveals that 0% of the respondents were low satisfied, 100% of the respondents were medium satisfied and 0% of the respondents were high satisfied.

Chart 1: Determination Level Of Stress



PERCENTAGE ANALYSIS

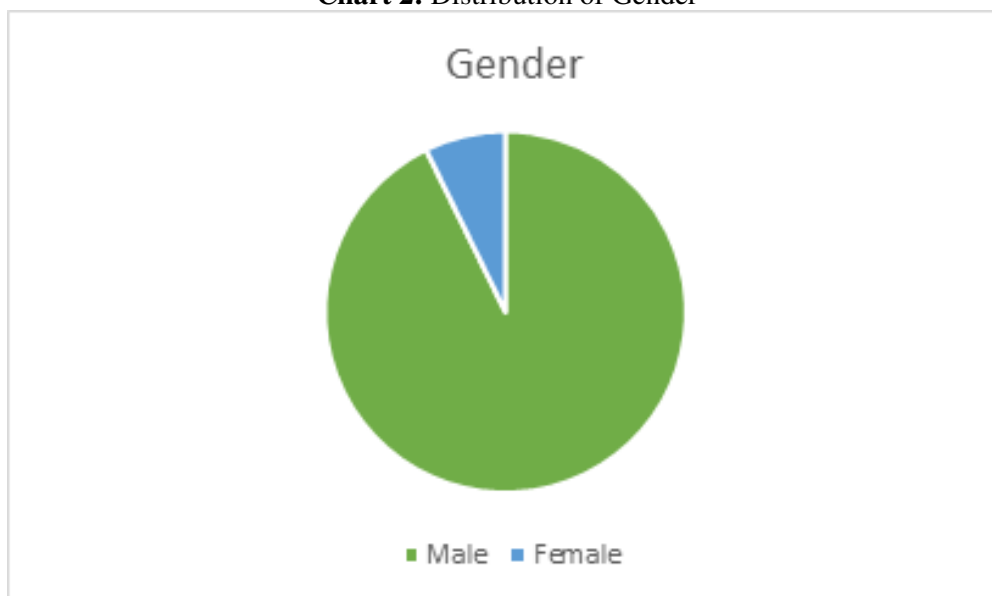
Table 2: Distribution of Gender

Gender		
Particulars	No. of respondent	Percentage % of the respondent
Male	115	92.7
Female	9	7.3
Total	124	100

Source: Primary Data

From the above table it is inferred that, 92.7% of the respondents are male and 7.3% of the respondents are female.

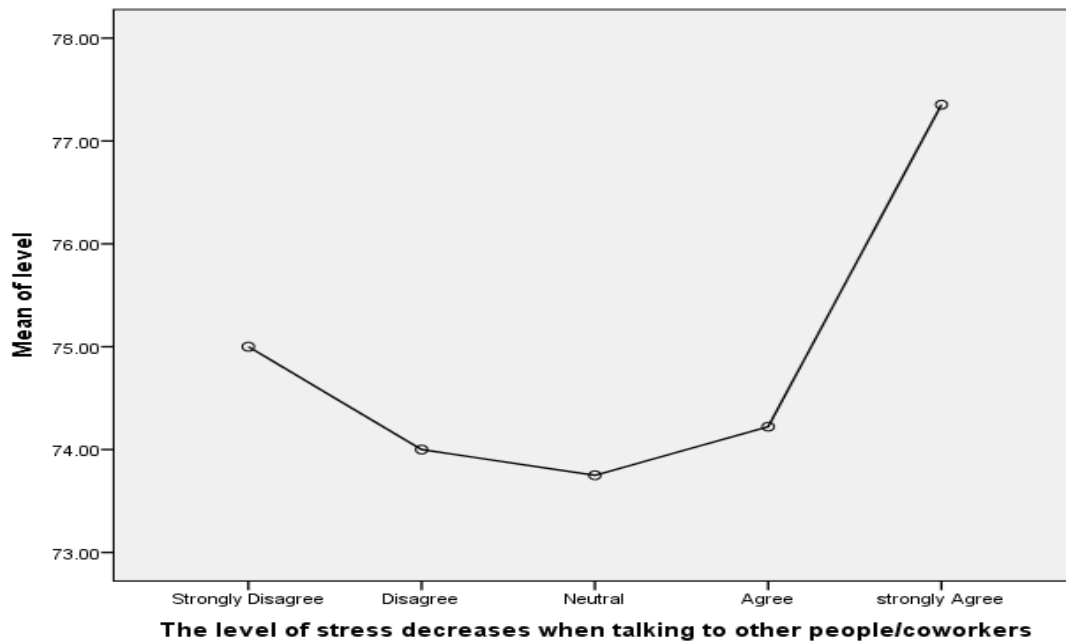
Chart 2: Distribution of Gender



ANOVA

ANOVA between the level of stress decreases when talking to other people/co-workers and level of stress

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	323.309	4	80.827	2.669	.036
Within Groups	3603.175	119	30.279		
Total	3926.484	123			



FINDINGS

- Most of the employees are moderately satisfaction with determination level of stress.
- Majority of employees are male.
- Majority of the employees are above the age of 40 years.
- More number of employees is below graduates in this company.
- Work experience reveals most of the employees working 6 years and above.
- Majority of the employees are married in this organization.

CONCLUSION

The project titled “A study on employee stress management in Ramtec company” is help to find out the stress level of employees. Much of the stress at work is caused not only by work overload and time pressure and strict deadline of work(target). From the analysis of determination of stress l;evel of the employees most of them are moderately satisfied. Through this study, satisfaction level of stress is Moderate. So the management can concentrate on conducting stress management programs to reduce the stress among the employees.

SCOPE OF THE STUDY

A study of stress management in SRF Ltd. Viralimalai comprising of 280 based on the data collected and analysis, the study would provide a platform to monitor the change that causes stress and suggest stress management techniques to overcome the stress among employees in the organization.

The study would help the organization to facilitate the employees with adequate training and techniques to tackle stress at the workplace and improve their productivity.

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www.Stress.org

www.google.com

A STUDY ON CAPITAL BUDGETING IN TASTY FOOD AT NAGAPATTINAM**¹Ms. Jashar Ahamed J and ²Mr. Arulprakash I**¹Student and ²Assisant Professor, E.G.S Pillay Engineering College, Nagapattinam**ABSTRACT**

The project entitled "A Study on Capital Budgeting in Tasty Food at Nagapattinam". The study was set out to determine the capital budgeting techniques used in investment appraisal decisions. Capital budgeting techniques are useful tools to administrators in managing resources. The details regarding the history, finance and inventory policies of the company were collected from records, reports and profile of the company. Data analysis was carried out and findings are listed. Suitable suggestion has been provided.

In this study used have calculate on traditional method and Modern Method on capital budgeting tools like Payback period, Accounting \ Average rate of return, Net present value, Internal rate of return and profitability index. In this study also gives on overall picture of financial position of the company for five years. Capital budgeting decision is crucial to a firm's success for several reasons. First, capital expenditures typically require large outlays of funds. Second, firms must ascertain the best way to raise and repay these funds. Third, most capital budgeting decisions require a long-term commitment. Finally, the timing of capital budgeting decisions is important.

INTRODUCTION

Capital budgeting involves selection projects that add value to a company. It is the planning process used to determine whether an organization's long term investment, major capital or expenditure are worth pursuing. Capital budgeting project, i.e. potential long term investment is expected to generate cash flow over several years. The decision to accept or reject a capital but getting a project depends on an analysis of the cash flow generated by the project and its cost.

Capital budgeting is an essential part of every company's financial management. Capital budgeting is a required management tool. One duty of a financial manager is to choose an investment with satisfactory cash flow with high returns. Therefore a financial manager must be able to decide whether an investment is worth undertaking and be able to choose intelligently between two or more alternatives. Capital budgeting involves the planning and control of capital expenditure.

OBJECTIVE OF THE STUDY**Primary Objectives**

- To evaluate the financial position and profitability of the company.
- To analyze the operational efficiency of the company.

Secondary Objectives

- To evaluate capital budget using traditional methods of investment appraisal and discounted cash flow methods.
- To analyze the capital budgeting techniques followed by the company.
- To evaluate the short term and long term liquidity and solvency position of a company.
- To Assess the effectiveness of long term investment decisions of the company
- To determine the type of capital investment undertaken and the methods of appraisal used.

Need of the Study

- The study enables us to have access to various facts of the organization. It helps in understanding the needs for the importance and advantage of materials in the organization
- The study also helps to expose our mind to the integrated materials management and the various procedures, methods and techniques adopted by the organization.
- Capital budgeting decisions are highly effective to change the future destiny of the company.
- To know about the company's operation of using various CapitalBudgeting techniques.
- The financial department can implement and can get positive results by maintaining proper financial reports.

Limitation of Study

- Since the procedure and policies of the company will not allow disclosing confidential financial information, the project has to be completed with the available data given to me.
- The study is carried out based on the information and documents provided by the organization and based on the interaction with the various employees of the respective department.
- The study is conducted with the available data, gathered from the annual report of the company.
- Uncertainty and risk pose the biggest limitation to the techniques of capital budgeting.

REVIEW OF LITERATURE

Pandey I M (1989) conducted a study on capital budgeting techniques of 14 medium and large sized Indian companies and found that Payback Period method was most widely used method of financial appraisal followed by IRR and NPV. All companies except one were found regular users of Payback Period. In majority of the cases payback period was within the range of 3 to 5 years. Two-thirds of the companies were found using IRR, while the proportion for NPV stood at only two-fifths of the companies.

The author observed that the executives were not duly familiar with the Discounted Cash

Flow methodology. For incorporating risk analysis the companies mostly used Sensitivity Analysis and conservative forecasts. The study reflected that the firms did not discard any profitable investment for want of fund; in some cases the investment had to be delayed for failure of finishing mobilization of fund in time.

Chandra Prasanna (1975) conducted a study on 20 Indian companies to examine the methods used in investment appraisal. The study revealed that for evaluating investments of small size the corporate houses used Payback Period method (PBP), while for evaluating large size investments the companies placed emphasis on the use of 'Accounting Rate of Return' (ARR). They used ARR as primary method and 'Payback Period' as a supplementary criterion. Use of Discounted Cash Flow (DCF) techniques was confined to evaluation of large investments only. The firms used conservative estimates of cash inflows for handling risks.

Weerakun Banda YatiwelleKoralalage (2014), the use of capital budgeting techniques in large businesses: Evidence from Sri Lanka, *International Journal of Arts & Commerce*, 3(9), pp. 77-84, this research article examines the use of capital budgeting techniques & investigates a number of variables & associations relating to capital budgeting practices in large listed companies in Sri Lanka. From the study it was found that Net present value, Average rate of return, Payback period, Internal rate of return & Profitability index are used to evaluate investment project.

Company Overview

Tasty food commences on the year 1986 and it recognized by the Tamil Nadu government, through acquiring tax payers' identification number 33513901830 date 03.01.2007 and also recognized by central government, through central sales tax number (GST) 224888 date: 19.02.2007 later the firm got the entrepreneurs memorandum number 33019110081 part on 22.01.2009 micro level-1 license under the department & industrial and commerce at the year 2008.

Tasty food started in the rental building at year 1986 with the low capital. The materials were packed manually and sold in the beginning the goods sold only in around nagai and with the help of DIC (district industrial center). Under anna marumalarchi thittam it was developed its business in the own building at the year 2008, at 23/1, papa kovil, velankanni road then the goods were packed with the help of Indian bank at nagai branch. Received best business man award of excellence from rotary club of Nagapattinam in the year 2014.

RESEARCH METHODOLOGY

The research design used in this project is analytical in nature procedure using. Which researcher has to use facts or information already available, and analyses these to make a critical evaluation of the performance. The methods of capital budgeting is classified into two types. Traditional methods and Modern methods. Traditional methods are the methods which are used is the olden days. There are sub divided into two types. There are Payback period and Accounting \ Average rate of return. The Modern method or discounted cash flow methods are the improved methods over the traditional methods. Modern methods can be classified into three types. They are, Net present value, internal rate of return and Profitability index.

Sources of Data Collection

The data is collected from Tasty Food with the secondary data gathered from previous studies through various sources.

Period of the Cover

The study covers the period of 2017-2018 to 2021-2022 in the company.

Data Analysis and Interpretation:

Capital budgeting is used by companies to evaluate major projects and investments, such as new plants or equipment. The process involves analysing a project's cash inflows and outflows to Determination whether the expected return meets a set benchmark. A secondary data is collected from Tasty food in this data have interpret from cash inflow and initial outlay. A calculate from capital budgeting techniques like Payback Period, Accounting / Average Rate of Return, Net Present Value, Internal Rate of Return and Profitability Index

1. Payback period

$$\text{Payback Period} = \frac{\text{INITIAL INVESTMENT}}{\text{ANNUAL CASH INFLOW}}$$

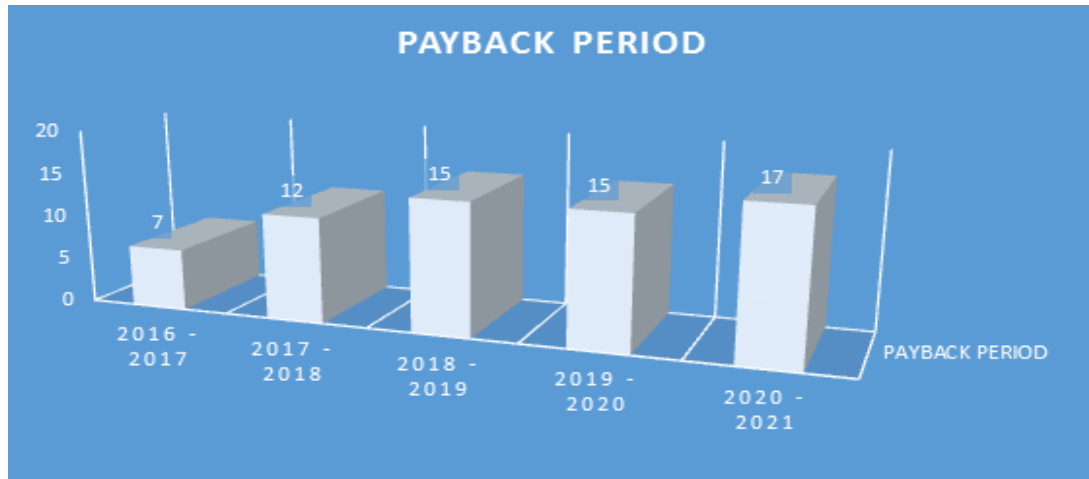
Table 1

YEAR	PROFIT AFTER TAX	DEPRECIATION	ANNUAL CASH INFLOW	INITIAL INVESTMENT	PAYBACK PERIOD
2016 – 2017	75,55,519	7,49,698	83,05,217	58,22,746	7 Months
2017 – 2018	62,29,628	6,94,460	69,24,080	71,10,729	12 Months
2018 – 2019	56,68,348	6,85,783	63,54,131	80,15,561	15 Months
2019 – 2020	67,46,454	6,93,203	74,39,657	94,93,930	15 Months
2020 – 2021	66,32,665	6,45,697	72,78,362	1,07,57,484	17 Months

Solution

The standard payback period is set by the company for considering investment is 9 months, whereas actual payback period is 2016 – 2017 in 7 months, hence we accepted payback period, in 2017 – 2018 in 12 month, hence we rejected payback period, in 2018 – 2019 in 15 month, hence we do not accepted payback period, in 2019 – 2020 in 15 month, hence we do not accepted payback period, in 2020 – 2021 is 17 month, hence we do not accepted payback period.

Charts 2



2. Accounting \ Average Rate of Return

$$ARR = \frac{\text{Average Annual Net Earning}}{\text{Average Investment}} \times 100$$

Table 2

YEAR	INCOME	INVESTMENT
2016 – 2017	83,05,217	58,22,746
2017 – 2018	69,24,080	71,10,729
2018 – 2019	63,54,131	80,15,561
2019 – 2020	74,39,657	94,93,930
2020 – 2021	72,78,362	1,07,57,484
TOTAL	3,63,01,447	4,12,00,450

Solution

In the above calculation the ARR is 35.2 % if the actual ARR rate greater than the investment. The ARR is greater than investment should be accepted, due to calculate the ARR is greater than investment

Chart 2



3. Net Present Value

Net Present Value = Cash Inflow – Cash Outflow

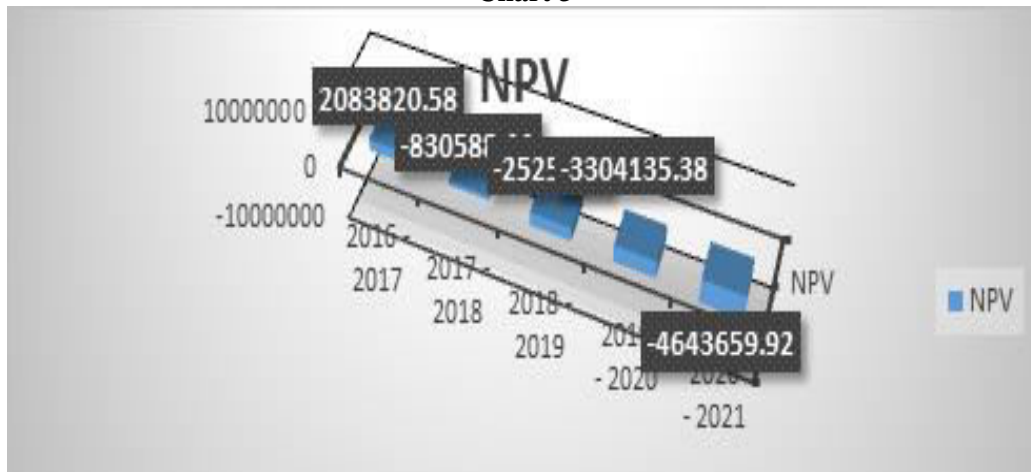
Table 3

YEAR	CASH INFLOW	DCF 5%	PRESENT VALUE	CASH OUTFLOW	NPV
2016 – 2017	83,05,217	0.952	79,06,566.584	58,22,746	20,83,820.58
2017 – 2018	69,24,080	0.907	62,80,140.56	71,10,729	-8,30,588.44
2018 – 2019	63,54,131	0.864	54,89,969.18	80,15,561	-25,25,592
2019 – 2020	74,39,657	0.832	61,89,794.62	94,93,930	-33,04,135.38
2020 – 2021	72,78,362	0.84	61,13,824.08	1,07,57,484	-46,43,659.92

Solution

The Calculated NPV 2016 – 2017 is 20,83,820.58, this value is greater than the zero. Accepted the Net Present Value. NPV 2017 – 2018 is -8,30,588.44, this value is less than the zero. Rejected the Net Present Value. NPV 2018 – 2019 is -25,25,592, this value is less than the zero. Rejected the Net Present Value. NPV 2019 -2020 is -33,04,135.38, this value is less than the zero. Rejected the Net Present Value. NPV 2020 – 2021 is -46,43,659.92, this value is less than the zero. Rejected the Net Present Value.

Chart 3



4. Internal Rate of Return

$$IRR = L + \left\{ \frac{NL}{NL-NH} (H - L) \right\}$$

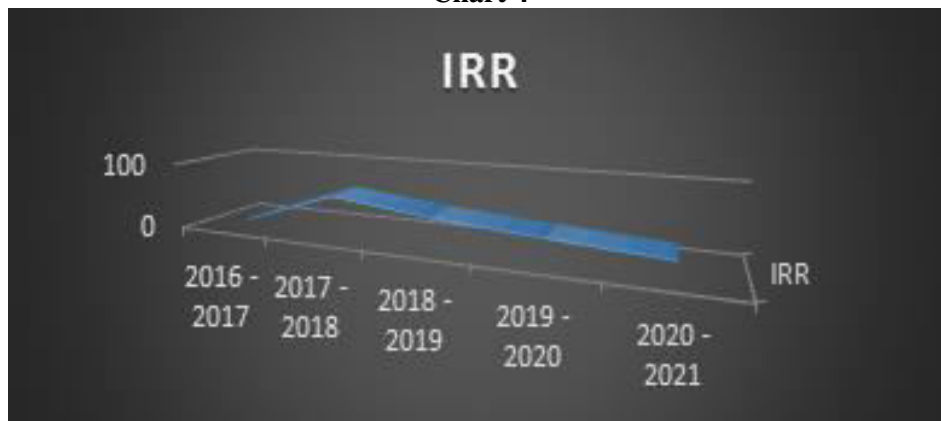
Table 4

YEAR	CASH INFLOW	DCF 5%	PRESENT VALUE	DCF 8%	PRESENT VALUE	IRR
2016 – 2017	83,05,217	0.952	79,06,566.584	0.926	76,90,630.94	8.36
2017 – 2018	69,24,080	0.907	62,80,140.56	0.857	59,33,936.56	59.42
2018 – 2019	63,54,131	0.864	54,89,969.18	0.794	50,45,180.014	42.02
2019 – 2020	74,39,657	0.832	61,89,794.62	0.735	54,68,147.90	30.74
2020 – 2021	72,78,362	0.84	61,13,824.08	0.681	49,56,564.522	20.84

Solution:

The five years IRR value is greater than cost of capital so we accept a projects.

Chart 4



5. Profitability Index

$$\text{Profitability Index} = \frac{\text{Present Value of Cash Inflow}}{\text{Present Value of Cash Outflow}} \times 100$$

TABLE 5

YEAR	CASH INFLOW	CASH OUTFLOW	PROFITABILITY INDEX
2016 – 2017	83,05,217	58,22,746	143 %
2017 – 2018	69,24,080	71,10,729	97 %
2018 – 2019	63,54,131	80,15,561	79 %
2019 – 2020	74,39,657	94,93,930	79 %
2020 – 2021	72,78,362	1,07,57,484	68 %

Solution

The profitability index 2016 – 2017 is more than one we should be accepted our 1.43 % this is more than the profitability index. The profitability index 2017 – 2018 is less than one we should be rejected our 0.97 % this is less than the profitability index. The profitability index 2018 – 2019 is less than one we should be rejected our 0.79 % this is less than the profitability index. The profitability index 2019 – 2020 is less than one we should be rejected our 0.79 % this is less than the profitability index. The profitability index 2020 – 2021 is less than one we should be rejected our 0.68 % this is less than the profitability index.

Chart 5



FINDINGS

1. The initial cash outlay to be 2016 – 2017 Rs. 58,22,746, 2017 – 2018 Rs. 71,10,729, 2018 – 2019 Rs. 80,15,561, 2019 – 2020 Rs. 94,93,930, 2020 – 2021 Rs. 1,07,57,484.
2. The cash inflow to be 2016 – 2017 Rs. 83,05,217, 2017 – 2018 Rs. 69,24,080, 2018 – 2019 Rs. 63,54,131, 2019 – 2020 Rs. 74,39,657, 2020 – 2021 Rs. 72,78,362.
3. The payback period of the investment should be 2016 – 2017 in 7 months, 2017 – 2018 in 12 months, 2018 – 2019 in 15 months, 2019 – 2020 in 15 months, 2020- 2021 in 17 months.
4. The payback period 2016 – 2017 less than the target period so the investment is accepted. The payback period 2017 – 2018 equal to the target period so the investment is accepted. The payback period 2018 – 2019 higher than the target period so the investment is rejected. The payback period 2019 – 2020 higher than the target period so the investment is rejected. The payback period 2020 – 2021 higher than the target period so the investment is rejected.
5. The Average Rate of Return in 35.2% it is greater than the cost of capital, so the investment should be accepted.
6. The Calculated NPV 2016 – 2017 is 20,83,820.58, this value is greater than the zero. Accepted the Net Present Value. NPV 2017 – 2018 is -8,30,588.44, this value is less than the zero. Rejected the Net Present Value. NPV 2018 – 2019 is -25,25,592, this value is less than the zero. Rejected the Net Present Value. NPV 2019 -2020 is -33,04,135.38, this value is less than the zero. Rejected the Net Present Value. NPV 2020 – 2021 is -46,43,659.92, this value is less than the zero. Rejected the Net Present Value.
7. The Internal Rate of Return 2016 – 2017 is 8.36% it is greater than the cost of capital. So the investment should be accepted. The Internal Rate of Return 2017 – 2018 is 59.42% it is greater than the cost of capital. So the investment should be accepted. The Internal Rate of Return 2018 – 2019 is 42.02% it is greater than the cost of capital. So the investment should be accepted. The Internal Rate of Return 2019 – 2020 is 30.74% it is greater than the cost of capital. So the investment should be accepted. The Internal Rate of Return 2020 – 2021 is 20.84% it is greater than the cost of capital. So the investment should be accepted.
8. The profitability index 2016 – 2017 is more than one we should be accepted our 1.43 % this is more than the profitability index. The profitability index 2017 – 2018 is less than one we should be rejected our 0.97 % this is less than the profitability index. The profitability index 2018 – 2019 is less than one we should be rejected our 0.79 % this is less than the profitability index. The profitability index 2019 – 2020 is less than one we should be rejected our 0.79 % this is less than the profitability index. The profitability index 2020 – 2021 is less than one we should be rejected our 0.68 % this is less than the profitability index.
9. The estimate cash flow of the interest and tax.

SUGGESTION

- The capital recovery period is good but some system may be adopted
- The pandemic situation may be avoid a higher investment in the company.
- The 2016 – 2017 periodic time the investment decision is good but after years they will be analyze a future action.
- When taking Average Rate of Return 35.2 % value show positive value. In that position of concern of when the investment should be accepted.
- The NPV 2016 – 2017 of the greater than is positive value of the capital but 2017 – 2-18, 2018 -2019, 2019 – 2020, 2020 – 2021 NPV is less than positive value of capital so the organization have to follow on capital budgeting techniques.
- The Internal Rate of Return value is shows on positive value. In that position of concern of when the investment should be accepted but the company has improve our investment decision.
- The profitability index value greater than 1 is 2016 – 2017 time rate on investment should be accepted. The after four year the profitability index value less than one, time rate onn investment do not accepted.
- The capital budgeting techniques like Payback Period, ARR, NPV, IRR and Profitability Index their result the time value of money is assumed and predicted do not proper way. Hence time value of money is not satisfied, so it can be improved these techniques.
- It is advised to minimize cost of capital of the company.

CONCLUSION

The analyze and interpretation of various techniques will help in giving better understanding of the financial condition and the performance of the organization. It is perfectly organized company having the entire department well organized to perform the activities that lead to the financial position. The company overall position is good but at a pandemic time a company should be do not analyze and calculate on capital budgeting techniques. The company follow proper way on capital budgeting techniques like Payback period, Accounting / Average Rate of Return, Net Present Value, Internal Rate of Return, and Profitability Index they will avoid on higher investment in a Covid – 19. So my point of view a tasty food (Rasi Masala) can adopt by a Capital Budgeting techniques.

A STUDY ON TRAINING AND DEVELOPMENT AT VELICHAM FINANCE PVT LTD KATTUR, THIRUVARUR**¹Ms. Kavya R. T and ²Mr. Arulprakash I**¹Student and ²Assisant Professor, E.G.S Pillay Engineering College, Nagapattinam**ABSTRACT**

Employee performance impacts the bottom line of an organization. For this reason, it is the responsibility of organizational leaders to be aware of the importance of training and development's impact on the performance and evaluation of employees. Employee training and development assists the organization and employees in attaining diverse goals, such as improving morale, sense of security, employee engagement, and overall competencies necessary to perform a particular job. In addition, organizational leaders should use systematic approaches for assessing employee performance, which outcomes are usually determined on personal, organizational, environmental, motivation, skill level, aptitudes, or role perceptions factors. With suitable training and development opportunities, as well as effective employee performance assessment approaches, employees will be capable of assisting the organization in achieving its competitive posture in today's global market.

INTRODUCTION**Training and Development**

Training is a learning experience in that it seeks a relatively permanent change in an individual that will improve the activity to perform on the job. It involves the changing of skills, knowledge, attitudes or behavior. It may mean changing what employees know, how they work their attitudes toward their work, or their with their coworkers or supervisor.

Training increases the knowledge and skills of employee for doing a particular job. The main output of training is learning offers & inculcates new habits, refined skills & useful knowledge during the training that helps him improve performance. Training is a learning experience that is planned & carried out by the organization to enable more skilled task behavior by the trainee. Training provides the ability to detect & correct error. Training provides skills & abilities that may lie called on the satisfy the organization's human resource needs.

Training and Development is Vital Part of the human resource development. It is assuming ever important role in wake of the advancement of technology which has resulted in ever increasing competition, rise in customer's expectation of quality and service and a subsequent need to lower costs. It is also become more important globally in order to prepare workers for new jobs. Before saying that technology is responsible for increased need of training inputs to employees, it is important to understand that there are other factors too that contribute to the latter. Training is also necessary for the individual development and progress of the employee, which motivates him to work for a certain organization apart from just money. We also require training update employees of the market trends, the change in the employment policies and other things.

The following are the two biggest factors that contribute to the increased need to training and development organization

OBJECTIVES OF THE STUDY**Primary Objectives**

- To study the effectiveness of training and development of employees with special reference.

Secondary Objectives

- To know whether training help employees to work independently.
- To evaluate the training and development program and its impact among employees of the company.
- To find out the level of satisfaction about the training programs.
- To analyze whether the training help to enhance productivity among employees.
- To find out the drawbacks in the training & development and to suggest ways for rectify that.

NEED FOR THE STUDY

Training is necessary for improving the quality of work of employees. There are some other factors, giving rise to the need for training.

- Effective performance

- Production of quality goods & services
- Fast changing technique
- To keep pace with the development of technology
- Change of profession.

LIMITATION OF THE STUDY

- Some of the respondents were unwilling to answer the questions.
- Some of the respondents were afraid to give true information, in some cases.
- There may be a bias on the part of employees while answering the questions.
- Limited interaction with the employee due to their busy schedule.”

REVIEW OF LITERATURE**(Michael .S. Lane, Gerald L Blakely, 1990):**

Management development programs are increasingly being studied and evaluated, regarding their efficiency and effectiveness. Presents the results of the survey of 155 directors and vice presidents of personnel and human resource management departments regarding the current status of their management development programs do not seem to differentiate between levels of management.

(Oladele Akin, 1991)

Evaluation is increasingly being regarded as a powerful tool to enhance the effectiveness of training. Three major approaches to training evaluation, quality ascription, quality and quality control are highlighted. In order to enhance the effectiveness of training evaluation should be integrated with organizational life.

(Philip C Wright, 1992):

Reports on a study of current and past training literature which suggests that to be effective and to isolate both training needs and those problems having other, non- trainable solutions, training must be preceded by a needs analysis.

Company Overview

Velicham, meaning ‘light’, is a Non-Banking Financial Company (NBFC) set alight to brighten the lives of the rural communities by providing sustainable financial services and products, with a target group of women entrepreneurs, agriculturists, artisans, self-employed laborers, and traders. We focus on reaching out to the unbanked sections of the society, leveraging their lives and growing together with them. Velicham achieves this through small and medium lending, bringing innovative financial schemes -channeled through products that are designed for subsistence living. With the mission to offer constant support through our diversified products on a commercially viable basis, we need your positive support to nurture and set our nationwide footprint towards the benefit of the poorer communities.

The genesis of Velicham was through Bharathi Women’s Development Centre (BWDC) www.bharathiwomen.org, an NGO engaged in multifarious social and development activities for the past 32 years. BWDC was established in December 1987 as a Society by Nagarajan who is the Managing Director of Velicham Finance Private Limited. BWDC MicroFinance Program (MFP) has been closely collaborating with the State and Central Government, Banks and other Foreign Funding Agencies. The organization has a strong network of over 37,000+ members with a 27 Cr. portfolio outstanding. BWDC is working at the grass-root level in various districts of Tamil Nadu & Pondicherry. It has positively impacted lives of over thousands of marginalized populations through different channels in the past 32 years.

RESEARCH METHODOLOGY**Sample Size**

A sample of 100 employees is collected from velicham finance pvt ltd

Sampling Techniques

When population elements are selected for inclusion in the sample based on the ease of access it can be called as convenience sampling.

Statistical Tools

The Statistical Tools is used to calculate the required data through the data collection process. Thus the Statistical tools are given below.

- Percentage analysis
- Correlation
- Chi-Square

Data Analysis and Intrepretation

A questionnaire was prepared for measuring effectiveness of training and development and distributed among the employees of the Velicham Finance PVT LTD. The primary data collected by simple random sampling by using questionnaires was tabulated, converted into percentage and displayed both in table as well as by graphical representation for analysis .Based on the data interpretation were made. The questionnaire used for carrying out surveys is included in the annexure.

Determination of Level Trainig Effectivness

The respondent of velicham finance PVT LTD into three categories low satisfaction, medium satisfaction and high satisfaction.

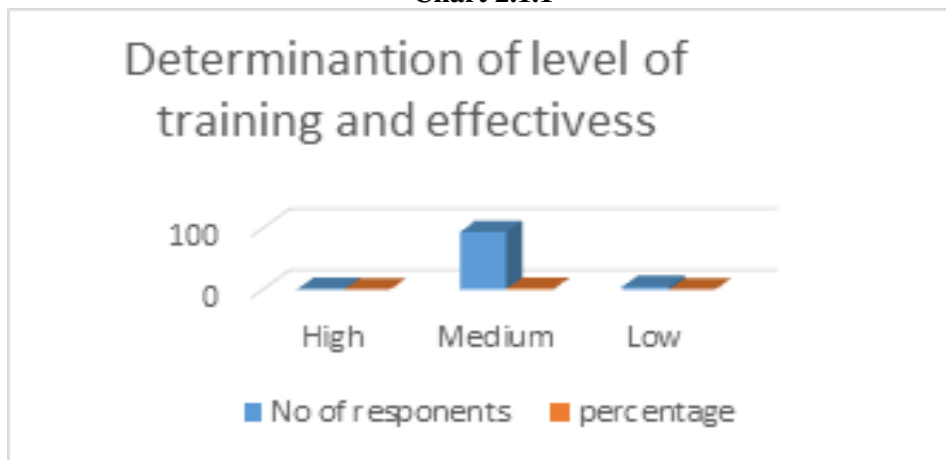
Table 1

Determinants of level of training and effectiveness		
Particular	No of respondents	percentage
High	1	1%
Medium	94	94%
Low	5	5%
Total	100	100%

Source: Primary data

This study reveals that 1% of the respondents were High satisfied 94% of the respondents were medium satisfied and 5% Low satisfied

Chart 2.1.1



FACTORS

The Level of Satisfaction with the Training Method Given in Your Organization

Table 2

Particular	Frequency	Percent
Disagree	1	1.0
Neutral	2	2.0
Agree	19	19.0
Strongly Agree	78	78.0
Total	100	100.0

From the above table, it is inferred that 78% respondents are belongs to the category of Strongly Agree, 19% respondents are belongs to the category of Agree, 2% respondents are belongs to the category of Neutral, 1% respondents are belongs to the category of Disagree. Most of the respondents are belongs to the category of Strongly Agree.

Chart 2



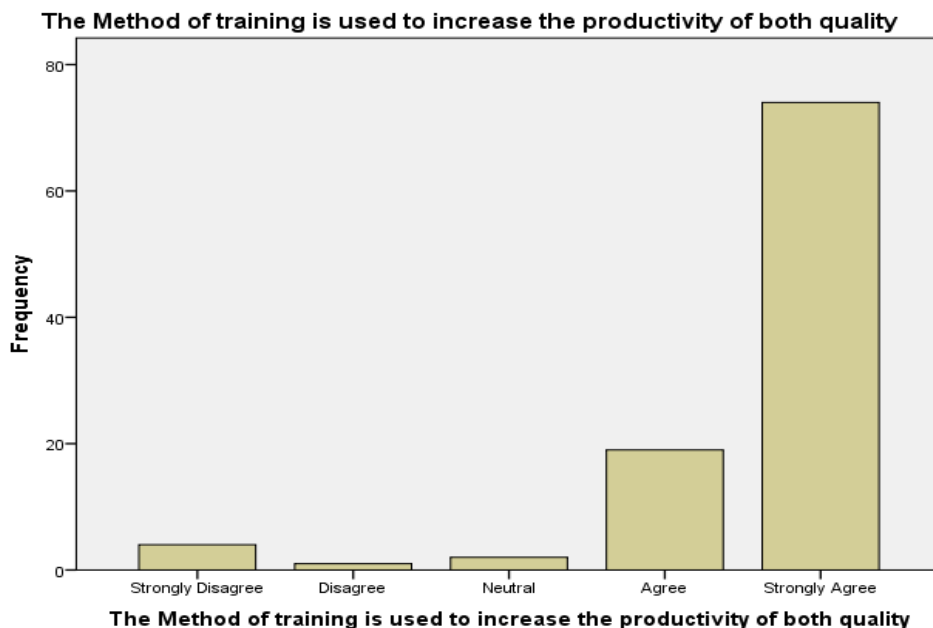
The Method of Training is used to Increase the Productivity of Both Quality

Table 3

Particular	Frequency	Percent
Strongly Disagree	4	4.0
Disagree	1	1.0
Neutral	2	2.0
Agree	19	19.0
Strongly Agree	74	74.0
Total	100	100.0

From the above table, it is inferred that 74% respondents are belongs to the category of Strongly Agree, 19% respondents are belongs to the category of Agree, 2% respondents are belongs to the category of Neutral, 1% respondents are belongs to the category of Disagree, 4% respondents are belongs to the category of Strongly Disagree. Most of the respondents are belongs to the category of Strongly Agree.

Chart 3



The Training gives you Develop your Communication Skills

Table 4

Particular	Frequency	Percent
Disagree	5	5.0
Neutral	22	22.0
Agree	47	47.0
Strongly Agree	26	26.0
Total	100	100.0

From the above table, it is inferred that 26% respondents are belongs to the category of Strongly Agree, 47% respondents are belongs to the category of Agree, 22% respondents are belongs to the category of Neutral, 5% respondents are belongs to the category of Disagree. Most of the respondents are belongs to the category of Agree.

Chart 4



HYPOTHESIS TEST

Chi Square

H0 - There is no significant relationship between level of satisfaction and the level of satisfaction with training method give inn your organization.

H1 – There is significant relationship between level of satisfaction and the level of satisfaction with training method give inn your organization.

	The level of Satisfaction with the training method given in your organization	Level
Chi-Square	158.000 ^a	48.960 ^b
df	3	27
Asymp. Sig.	.000	.006

RESULT

Since the calculated value is P (value) < 0.05 less than table value, then, Null Hypothesis.

H0 is accepted. Hence, there is no significant relationship between level of satisfaction and the level of satisfaction with training method give inn your organization.

FINDINGS

- This study reveals that 1% of the respondents were High satisfied 94% of the respondents were medium satisfied and 5% Low satisfied
- From the above table, it is inferred that 78% respondents are belongs to the category of Strongly Agree, 19% respondents are belongs to the category of Agree, 2% respondents are belongs to the category of Neutral, 1% respondents are belongs to the category of Disagree. Most of the respondents are belongs to the category of Strongly Agree.

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- From the above table, it is inferred that 74% respondents are belongs to the category of Strongly Agree, 19% respondents are belongs to the category of Agree, 2% respondents are belongs to the category of Neutral, 1% respondents are belongs to the category of Disagree, 4% respondents are belongs to the category of Strongly Disagree. Most of the respondents are belongs to the category of Strongly Agree.
 - From the above table, it is inferred that 26% respondents are belongs to the category of Strongly Agree, 47% respondents are belongs to the category of Agree, 22% respondents are belongs to the category of Neutral, 5% respondents are belongs to the category of Disagree. Most of the respondents are belongs to the category of Agree.

- **CHI SQUARE**

H₀ is accepted. Hence, there is no significant relationship between level of satisfaction and the level of satisfaction with training method give inn your organization.

SUGGESTION

1. Some advanced training is required in technology department.
2. Training given by the organization is satisfied but it will be better to improve the training programmers to equip them then with updated knowledge.
3. The provide training to the employees on the basis of their performance is helpful to improve knowledge and skill.
4. The management should take more involvement in the training programme touch all the areas of the employees are lacking.
5. The training programed conducted can be more practical.

CONCLUSION

The effectiveness of training programs is most useful to analyze the welfare facilities among employee at Velicham Finance Pvt Ltd., It gives more important to human resource development. It is concentrate about training program giving to both fresher and experienced employees.

A STUDY ON EFFECTIVENESS OF THE EMPLOYEE WELFARE MEASURES IN DECCAN PUMPS PRIVATE LIMITED AT COIMBATORE**Mohamed Azarudeen S and Dr. S. Chandrasekar**

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ABSTRACT

The study entitled “A Study on Effectiveness of the Employee Welfare in Deccan Pumps Private Limited, Coimbatore”. Welfare means improving. Faring or doing well. It is a comprehensive term and refers to the physical, mental, moral and emotional well-being of an individual. Further, the most welfare is a relative concept. The basic purpose of employee welfare is to enrich the life of employees and keep them happy and contented. Welfare facilities enable workers to have a richer and more satisfying life. It raises the standard of living of workers by indirectly reducing the burden on their pocket. Since organization exist to achieve goals. The degree of success that individual goals is important in determining organization effectiveness. This research aims at knowing welfare measures. In this research the work atmosphere and the welfare measures provided by the organization. It also aim at finding out the employee’s relationship. It is a detailed study of employer’s views towards employer’s welfare measures in Deccan pumps pvt ltd. The research includes employee satisfaction towards effectiveness of the employee welfare measures provided by the organization.

Keyword: Effectiveness of the employee welfare measures, employee satisfaction towards welfare measures, statutory welfare measures, non-statutory welfare measures.

INTRODUCTION

Employee welfare means anything done for the comfort and (intellectual or social) improvement of the employees, over and above the wages paid. In simple words, it means “the efforts to make life worth living for workmen.” It includes various services, facilities and amenities provided to employees for their betterment. These facilities may be provided voluntarily by progressive entrepreneurs, or statutory provisions may compel them to provide these amenities; or these may be undertaken by the government or trade unions, if they have the required funds.

The objectives of employee welfare are to improve the life of the working class, to bring about holistic development of the worker’s personality and so on. Employee welfare is in the interest of employee, employer and the society as a whole. It enables workers to perform their work in healthy and favorable environment.

According to ILO, “Employee welfare should be understood as such service, facilities and amenities which may be established in or in the vicinity of undertakings to enable the persons employed in them to perform their work in healthy and peaceful surroundings and to avail of facilities which improve their health and bring high morale”.

PROBLEM STATEMENT

Human resources are most important resources for any organization. Management is responsible for observing the welfare measures given to the employees. If the employees are satisfied with the welfare measures provided to them, then the production will increase. Today, employees are essential element to contribute to the growth of the organization. In case of Deccan pumps private limited, more than 100 employees employed and the company is responsible for the well-being of these employees. Hence, the purpose of this study is to determine employee satisfaction level towards welfare measures.

SCOPE OF THE STUDY

- The present study has been undertaken to study find out effectiveness of employee welfare measures in DECCAN PUMPS PRIVATE LTD.
- To find out the practical difficulties involved in welfare measures that can be evaluated through this study.
- The study can be used to bring out the solution for the problem faced by the employee availing the welfare measures.
- Through the study, company would be able to know the satisfaction level of employee on welfare measures.

OBJECTIVES OF THE STUDY

- To study the statutory welfare facilities provided In the Deccan pumps private limited.
- To study the non-statutory welfare facilities provided In the Deccan pumps private limited.

- To identify the working environment of the employees In the Deccan pumps private limited.
- To analyze the employee satisfaction towards welfare measures.
- To Offer suggestion for the improvement in the welfare measures activities.

NEED OF THE STUDY

Welfare programs are aimed at promoting the physical, psychological and general wellbeing of the working population. Welfare can be observed, experienced and enjoyed but its effectiveness may be more difficult to measure. The present study is an analysis of the effectiveness of the employee welfare programs and this serves as an effective feedback to the management..

LIMITATION OF THE STUDY

- The responses given in the questionnaire may not be accurate.
- Getting responses from the Response in their busy schedule was a very difficult task.
- Period of study is limited to 45 days.

REVIEW OF LITERATURE

Patro, Chandra Sekhar (2017) study in employee welfare Employee plays an important role in the industrial production of the company. Hence, the organization should give cooperation to the employees in order to increase the production and to earn higher profits. Employee benefit constitute a major vehicle for the provision of income and security.

Suratkumari, M., and R. S. Bindurani. (2013) "A study on employees' welfare of the organization labour welfare problems of sugar industry. The analysis was based on the first-hand data collected from the sugar factories of Eastern Uttar Pradesh. The study found that the conditions of work in sugar factories of eastern region of Uttar Pradesh were not very satisfactory particularly in respect of safety employee welfare facility.

Chaudhay, Dr Asiya, and Roohi Iqbal. (2011) "an empirical study on effect of welfare measures on employee's satisfaction in " studied that the concept of employee's welfare has been used by many organizations as a strategy of imp rousing productivity of employee. It is argued that welfare services can be used to secure the employee force by providing proper human conditions of work.

Upadhyay, Devina, and Anu Gupta. (2012) Satisfied employees are reported to have high morale. Welfare measures and work experience does not necessarily relate to satisfaction. the analysis of their study concept of employee welfare. The study resultant that employees in auto sector are highly satisfied.

Chaudhay, Dr Asiya, and Roohi Iqbal. (2011) "an empirical study on effect of welfare measures on employee's satisfaction in " studied that the concept of employee's welfare has been used by many organizations as a strategy of imp rousing productivity of employee. It is argued that welfare services can be used to secure the employee force by providing proper human conditions of work.

RESEARCH METHODOLOGY

The target population for this study is employees. The study is descriptive in nature. The study is based on employee satisfaction on welfare measures and relationship management, Stratified random sampling is used for the study as in which stratified random sampling, dividing the entire population into similar group called strata. Random samples are then selected from each stratum, the sample size used in this study is 132.

Statistical Tools for Analysis

The data collected was analyzed with appropriate techniques. The techniques used for analysis are percentage analysis, correlation, regression, anova

Percentage Method: The percentage method is used to calculate the favorable and unfavorable responses

Percentage = Number of response / Number of respondents * 100.

Correlation Co-Efficient:

A correlation coefficient is a statistical measure of the degree to which changes to the value os one variable predict change to the value of another. In positively correlated variables, the value increase or decrease in tandem in negatively correlated variables, the value of one increases as the value of the other decreases.

Regression

Formulating a regression analysis helps you to predict the effects of the independent variable on the dependent one.

One-Way Anova

An analysis of variance is used to determine whether there is any statistically significant difference between the means of two or more independent group. The one-way Anova is attest statistics and cannot tell you which specific groups were statistically significantly different from each other.

Data Analysis and Interpretation

Data interpretation refers to the implementation of processes through which data is reviewed for the purpose of arriving at an informed conclusion. The interpretation of data assign a meaning to the information analyzed and determined it’s significant and implication.

Level of Satisfaction

The respondents of Deccan pumps private limited, Coimbatore has divided into divided three categories High level satisfaction. Medium level Satisfaction, Low level satisfaction.

Level of Satisfaction

Satisfaction level	No of respondents	Percent
High Level Satisfaction	63	47.3
Medium Level satisfaction	69	52.3
Low Level Satisfaction	0	0
Total	132	100

The study reveals that 47.3% of the respondents were highly satisfied, 52.3% of the Respondents were moderately satisfied and low level satisfaction.



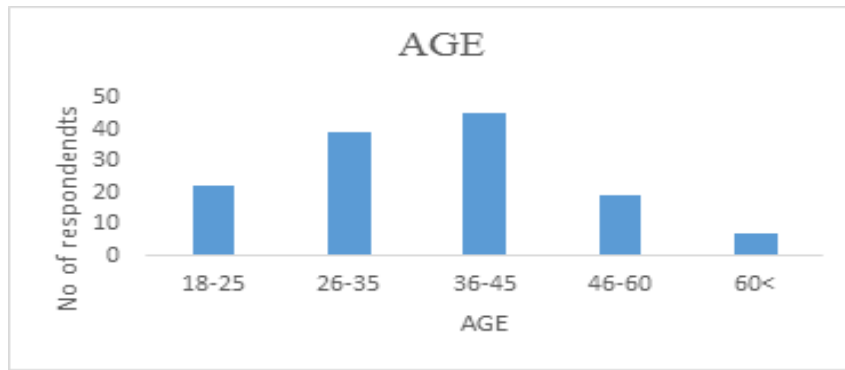
Age Wise Classification of Respondents

AGE: The respondents of Deccan pumps private limited have into divided into five groups 18-25yrs,26-35yrs,30-45yrs,46-60yrs,above60yrs

Age	No of respondents	Percent
18-25	22	16.7
26-35	39	29.5
36-45	45	34.1
46-60	19	14.4
60<	7	5.3
TOTAL	132	100

Source: primary data

From the above table it is interpreted that the majority 34.1% of the respondents are in the age group of 36-45,29.5% belongs to 26-35 age group ,18-25 of age group is 16.7% and 46-60 of age group is constitutes 14.4% only. Above 60 age group is below 5.3% only in Age wise classification of respondents.



CORRELATION

The Correlation Between age and Company Provides Adequate Medical Facility to Employees and Their Families

Correlations			
		age	The company provides adequate medical facility to employees and their families
age	Pearson Correlation	1	.065
	Sig. (2-tailed)		.459
	N	132	132
The company provides adequate medical facility to employees and their families	Pearson Correlation	.065	1
	Sig. (2-tailed)	.459	
	N	132	132

RESULT

The range of the correlation coefficient is from -1 to +1. Since our result is 0.065, which means positive relationship but weak positive correlation between age and the company provides adequate medical facility to employees and their families.

REGRESSION

The Regression between Experience and Level of Satisfaction

Variables Entered/Removed ^a			
Model	Variables Entered	Variables Removed	Method
1	Experience ^b	.	Enter
a. Dependent Variable: Level of satisfaction			
b. All requested variables entered.			

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.188 ^a	.035	.028	6.182
a. Predictors: (Constant), Experience				

ANOVA ^a						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	181.144	1	181.144	4.740	.031 ^b
	Residual	4967.583	130	38.212		
	Total	5148.727	131			
a. Dependent Variable: Level of satisfaction						
b. Predictors: (Constant), Experience						

Coefficients ^a						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	49.587	1.462		33.925	.000
	Experience	.902	.414	.188	2.177	.031
a. Dependent Variable: Level of satisfaction						

RESULT

We use enter regression method here, the range of the regression coefficient is from -1 to +1. since our result is ,0.035 which means there is weak positive effect regression between Experience and level of satisfaction.

Anova

Experience and level of satisfaction

Null Hypothesis (H0):

There is no significant difference between experience and level of satisfaction

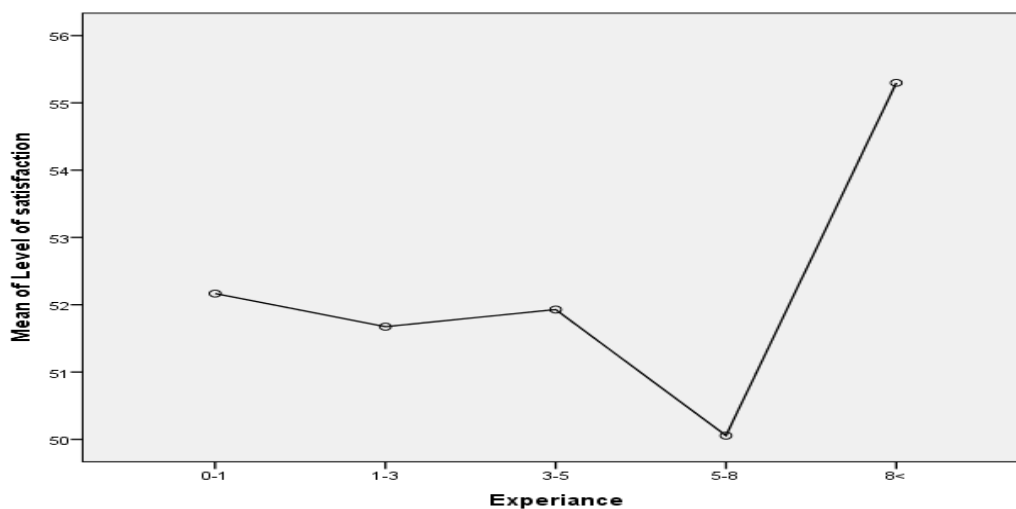
Alternative Hypothesis (H1):

There is significant difference between experience and level of level of satisfaction

Descriptives								
Level of satisfaction								
	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
0-1	6	52.17	5.492	2.242	46.40	57.93	43	59
1-3	43	51.67	5.668	.864	49.93	53.42	42	63
3-5	28	51.93	4.594	.868	50.15	53.71	40	60
5-8	18	50.06	4.659	1.098	47.74	52.37	41	57
8<	37	55.30	7.947	1.307	52.65	57.95	41	74
Total	132	52.55	6.269	.546	51.47	53.62	40	74

Test of Homogeneity of Variances			
Level of satisfaction			
Levene Statistic	df1	df2	Sig.
2.135	4	127	.080

ANOVA					
Level of satisfaction					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	435.921	4	108.980	2.937	.023
Within Groups	4712.807	127	37.109		
Total	5148.727	131			



RESULT

Since the calculated value is higher than 0.05. There is no significance difference between Experience and level of level of satisfaction. H0 accepted.

FINDINGS

Satisfaction Level

Most of the employees are moderately satisfied, few of them are highly satisfied and no one is low satisfied.

Correlation-

The range of the correlation coefficient is from -1 to +1. Since our result is 0.065, which means positive relationship but weak positive correlation between age and the company provides adequate medical facility to employees and their families.

REGRESSION-

We use enter regression method here, the range of the regression coefficient is from -1 to +1. Since our result is ,0.035 which means there is weak positive effect regression between Experience and level of satisfaction

Anova-

Since the calculated value is higher than 0.05. there is no significance difference between gender and you can freely express your feeling to your supervisor. H_0 accepted.

SUGGESTION

Working environment should be improved to attract the man power

- From the research I found that maximum accidents occur due to lack of safety equipment. So the firm provides proper safety equipment to employees to eliminate accidents.
- Company should provide sufficient medicines in the first aid box.
- Annual health checkups, employee counselling should be improved by conducting health camps at least in a month.

CONCLUSION

The researcher is benefited with the study, because the topic will help the Management to get an effective feedback from the employee about the effectiveness of the employee welfare measures prevailing in the organization. It also provides researcher an opportunity to expose with functions of the human resource department and able to well versed with statutory and non-statutory, working environment and satisfaction towards the welfare adopted in the organization. The study various suggestion to the management including effectiveness of the welfare measures to enhance level of satisfaction of employees in Deccan pumps private limited,

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A STUDY OF HR POLICY AND EFFECTIVE STRATEGY IN GAIL INDIA LIMITED AT KARAİKAL**Sivasankari K and Mr. Mohamed Naina Maraicar**

Assistant Professor, Department of Placement and Trainings, E.G.S Pillay Engineering College Nagapatinam-61100

ABSTRACT

In today's organizations human resources; their skills; knowledge and competencies as well as synergy among them become the most valuable asset; the new source of wealth and the key ingredient of competitive advantage. In other words; in a world in which all work is knowledge work and intellectual capital is very important for economic success The HR policies and strategy are the backbone of an organization. HR policies provides and consists the details regarding treatment to be given to employees in and make them recognize the culture of the organization. The research is about HR policies and its effective Strategy it is something that is more vital for any organization when there is policy being followed the whole policy structure it promotes unity action and stop duplication. This study deals with the human resource policies of an organization is considered the valuable and competitive advantage over its competitor because of its commitment to towards organization, it is used as a strategic weapon by the organization to widen its market place. Following are the objectives, the primary objective is To study the HR policy at GAIL INDIA LIMITED KARAİKAL, And the secondary objectives are To study the HR policies of the company , To study the amendments made in the HR Policies of GAIL INDIA LIMITED , since the time of incorporation. To study about the various welfare policy in the company, To determines the Harmonized relationship of the company and grooming of the staff in the company, Suggesting strategies to improve the HR Policies of Gail India limited. My main problem of the study is HR Policy Difficulty in recruiting and selecting skilled talent. As a HR Safety is one of the HR challenges in manufacturing industry that involves protecting workers from the physical dangers of processes and machines. If they implement proper working tools and machines and proper gas pipes in the floor then people will not accidentally cut themselves by improperly handling machines or tools. The problem faced while taking the survey is that language problem, unable to meet employees, time constraint for the employees because it is processing and distributing company so they need to keep working continuously they dont have much time to spend on the survey as they were working on the machines. The type of research used here is descriptive research.. It describes data and characteristics about the population The technique used here is Probability sampling and simple random sampling adopted as sampling design with a sample of 120 respondents. Appropriate statistical tools will be applied for testing the data such as, correlation and One way Anova, Pears men test. The data design that is used in this study and information collected from primary data and secondary data Primary data are those which are collected for the first time by the researcher. Secondary data is from Journals, Magazines, Books and Internet and Newspaper Articles. Questionnaire Survey. Questionnaire was designed in the method of Closed Ended Questions, Multiple choice questions , Likert Scale and Dichotomous question The questionnaire is prepared from following variables of HR Policies they are selection , Training , Recruitment and Employee motivation and welfare policy The distribution of the sample shows that from the findings the majority in education qualification is that The Maximum level of respondents in Educational qualification are 58.3% as Under Graduate and Minimum level of respondents are 5% school. Maximum level of respondents in Experience are 36.7% in 0-1 years and minimum level of respondents are 10% in above 5 years. Maximum level of respondents in Income are 26.7% as 10,000-20,000 and Minimum level of respondents are 12.5% above 40,000. Concluding the report the study says the human resources policies of the organisation will help them to retain the employees and will led to feeling of job satisfaction among the employees. Through this research paper, I have established that HR policies plays a very important in the performance of an organization. It helps in new recruitments and achieving the goals and revising old policy for effective organization as well as employees for better growth.

INTRODUCTION

Human Resource policies are guidelines for HR Professionals to manage employees in an organization. Policies are important as it helps to establish and maintain consistent practices and give structure, Control, Fairness in the workplace. HR Policies are formulated by finding solutions and taking actions against the day-to-day problems and Revising old policies. So for an organization to work fine, there should be good Policies for key HR management functions like Recruitments, Selection, Promotion, Compensation, Workplace diversity because, employee matters such as Promotions, Hike, Benefits can displease employees and can make conflicts among them, proper policies can help to avoid such issues. HR policies and procedures of a company define the process

through which an employer and employees together can achieve the company's goals. Human Resource policies are guidelines for HR Professionals to manage employees in an organization. Policies are important as it helps to establish and maintain consistent practices and give structure, Control, Fairness in the workplace. HR Policies are formulated by finding solutions and taking actions against the day-to-day problems and Revising old policies. The primary purpose of HR policies is to manage employees more productively and ensure the organisation's smooth functioning. The inclusion of HR policies creates a base or a solid foundation for companies to manage and lead their employees towards growth and prosperity. It also saves the company from any legal compliance issues in case of a lawsuit filed by any of the employees. An HR Policy can help organizations to be proactive about shaping company Culture and encourage efficiency. An HR Strategy sets out a clear people management framework, designed to ensure HR strategies are also described as the set of concepts and norms of behaviour that regulate an organization's interaction with its workers. A policy proposal of this type sets instructions for a broad range of employment connections inside the business. The aim and relevance of HR rules are self-evident. Every firm needs policies in order to promote regularity in behaviour and equality in employee relations that the strategic objectives are realized through the organization's people. HR Managers challenges emerge every year in response to changes in the Economy, Political climate, and Social context and circumstances. Recently, a renowned focus has been placed on issues such as minimum wage increases, workplace wellness and safety, violence in the workplace, and updating HR policies on substance use. It also face an issues like a lots of teamwork and meeting are required to finalize the policy and creating policy from the scratch can be expensive. the HR policies provide legal protection to your company must be transparently communicate the conditions of employment, to set employee expectations with regard to their career growth, to help you address employee grievances and disputes, to speed up the decision-making process on various HR matters and to help ensure all employees are treated equally and fairly, to help create a safe and healthy working environment. Hr policy can also be very effective at supporting and building the desired organizational culture. hr policies are important in a workplace as it helps reinforce and clarify the standards of expected of employees and help employers manger staff more effectively as it defines what is acceptable and unacceptable in workplace.

MOTIVATION

The research of Hr policies give guidance on range of employment issues for employees , managers and others with responsibility for people. It play an important roles in practically and effectively implementing an organizations strategy, Hr policy help to address complaints, Problems, and grievances o employees and outline to solve them appropriately. the HR Policy is an overall plan for managing human capital to involve in an organizations, and HR Strategy is directions for plan to improve business overall performance

RESEARCH METHODOLOGY

Research methodology is a structured way to solve a problem. It is intellectual and practical activity of learning how research is to be carried out. Importantly, the plan and procedures by which researchers tell about their work and start describing , explaining detail and predicting phenomena are called research methodology. It is also outlined as the study of techniques by which knowledge is obtained. Its purpose is to give the work plan of research. Its requires volume of data to analyses and interpret the result to arrive at meaningful conclusions, To conduct the study and analyses the Hr policy and effective strategy in GAIL India limited, at Karaikal, simple random sampling is used for the total population size as 120 as sample size ,Tool of data collections Research Instrument: A structured questionnaire is used for data collection, and questionnaire designs are closed ended questions are used,. Data Design Data is a gathered body of facts. It is the central thread of any condition or activity. Understanding the nature of data is most basic for proper and effective use of statistical skills. Data collection are two important external sources of data collection methods for research are, Primary sources of data and Secondary sources of data, **Primary data:** For this data will be collected from employees and employers in GAIL India limited at Karaikal. **Secondary data:** this is information's or facts are collected from journals and articles, and books.

DISCUSSION

The research of this study is to discuss about the Hr policy for employees , and guidelines for supervisor and mangers the communications must be proper if the hr policy have been revised or any changes, and awareness of hr policy must be clear for employees for their job Roles, the selections process must be efficient and feedback and guidance from mangers must be properly maintained. and welfare measure must be established based on need of employees, Protection of officials documentations must be protected safely and secure.

CONCLUSION

This Project *A Study of HR Policy and Effective Startegy* Was helpful to know about the HR planning and strategies to create value and focused on to reach their vision and mission of an organization to perform effectively and create a career growth for employees. The Policy of the company provides facilities for all round growth of individuals by training in-house and outside the organization, reorientation, lateral mobility and self-development through self- motivation, for both contract and permanent employees and an organizations give guidance for apprentice to create a career path. it grooms every individual to realize his potential in all facets while contributing to attain higher organizational and personal goals .The Policy builds teams and foster team- work as the primary instrument in all activities. The Female employees feel that Menstrual leave policy makes them to better rest facilities at the workplace.HR strategy is a roadmap for solving an organization's biggest challenges with people-centric solutions. This approach requires HR input during policy creation and elevates the importance of Recruitment, Talent management, Compensation, Succession Planning and Corporate culture.

EFFECTIVENESS OF E-RECRUITMENT AND SELECTION PROCESS AFTER COVID -19

T. Thirumurugan¹ and Dr. S. Chandrasekar²¹MBA Final Year and ²Professor and CEO Placements, E.G.S Pillay Engineering College Nagapattinam, Tamil Nadu**ABSTRACT**

The COVID pandemic has a major impact on the business world and workplaces. The effect is visible across all the industries, businesses, and job positions. Bringing about drastic changes in our means of communication, the way we work, transportation, and other daily activities, COVID-19 has generated changes in the basic values and practices of recruitment of the personnel. It has placed us in the position of adapting and compromising with the situation in all aspects. Whatever the situation, the world and its business have to keep running. Today companies are busy finding ingenious ways of recruitment, keeping the social distancing rules in mind, to meet the recruitment goals of their organizations and run business as usual. In this paper the E-recruitment process how helped to business to face the recruiting problems in covid 19. The E-recruitment process developing in India after covid 19, the technology development in AI and Machine learning makes the easy way to recruitment process

Index Terms: E-Recruitment, covid-19, Technology, Organization, Business

I. INTRODUCTION

E-recruitment, also known as online recruitment, refers to the use of web-based technology for the various processes of attracting, assessing, selecting, recruiting and on boarding job candidates. Through e-recruitment employers reach larger number of potential employees. Companies may build their e-recruitment platforms in-house, use e-recruitment HR software or employ recruitment agencies that utilise e-recruitment as part of their package.

E-Recruitment is also called as the online Recruitment. Using Technology, mainly the Web-based sources that help in sourcing, attracting, and screening candidates' resumes. To reach talented and potential job-seekers at a low cost, companies have started using various job portals and Online Recruitment platforms. The companies that are in the process of Recruiting and Hiring of employees make sure that their official website is updated and their current job vacancy is mentioned. The company's official website is extremely essential for attracting prospective employees through the process of E-Recruitment.

II. REVIEW OF LITERATURE:

Anna B Holm has proposed a study on 'E-recruitment: Towards a Ubiquitous Recruitment Process and Candidate Relationship Management' (2012). This research paper mainly deals with the impact of e-recruitment on recruitment as a whole. Three major case studies were taken into consideration for three large organizations in Denmark in 2008-2010. E-Recruitment is an effective method of hiring that is both time and space independent in nature. Also, an updated career website is an integral part of E-Recruitment.

Yola Malathion has proposed a study on 'The Use of Social Network Sites as an E-Recruitment Tool' (2015). This research paper mainly focuses on an initial exploratory investigation of e-recruiting mainly carried out through social media platforms. The major objective of this article is to find out the organizations which use social media as a platform to screen potential and competent candidates.

Dr. Bhupendra Singh Hade and Swati Gaviola have proposed 'Opportunities & Challenges of E-Recruitment' (2015). This research paper mainly helped in understanding the concept of E-Recruitment, challenges, scope and benefits of E-Recruitment. The fundamentals of E-Recruitment include Poaching, Social networking, online testing an Employer's website. Advantages of E-Recruitment include.

Ashutosh Kar and Siddhartha Bhattacharya have proposed 'E-Recruitment and Customer Satisfaction: An Empirical Study in and Around Kolkata'. This research paper mainly deals with businesses and organizations that deal with the use of the internet to provide services. It could be in the form of providing information, or facilitating transactions, or attending to the basic customer service function. Starting from sourcing of input material to selling it to the target customers, along with post-purchase service, total supply chain management is being done with help of a computer system via the Internet. Virtual recruitment or online recruitment is one such service

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organizations that deal with the use of the internet to provide services. It could be in the form of providing information, or facilitating transactions, or attending to the basic customer service function. Starting from sourcing of input material to selling it to the target customers. Prof. Priya Unadkat has proposed 'Need of E-Recruitment strategies in emerging scenario'. This research paper deals with effective E-Recruitment essential for hiring competent candidates. Data was collected by the combination of both primary and secondary data. It includes major kinds of E- Recruitment, advantages, findings of E-Recruitment, and also determining the future and scope of E- Recruitment.

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Avinash S. Kapse, Vishal S. Patil, Nikhil V. Patil have proposed a research paper on 'E-Recruitment'. This Research paper includes study of E-recruitment used to attract, and source candidates and aid the recruitment process. Distinguishing factors between Tradition Recruitment and E-Recruitment process, process, advantages and disadvantages, sources and factors affecting recruitment. Job Portals are extremely popular and largely used tools by companies and recruitment teams also to facilitate the smooth functioning of the recruitment process in the competitive world.

Avinashi S. Kapse, Vishal S. Patil, Nikhil V. Patil have proposed a research paper on 'E-Recruitment' (2012) - This Research paper includes study of E-recruitment used to attract, and source candidates and aid the recruitment process. Distinguishing factors between Tradition Recruitment and E-Recruitment process, process, advantages and disadvantages, sources and factors affecting recruitment. Job Portals are extremely popular and largely used tools by companies and recruitment teams also to facilitate the smooth functioning of the recruitment process in the competitive world.

Subhashree and Vasanth (2020), A research by several organizations on the impact of IT infrastructure and IT knowledge on EHRM adoption. Such E-HRM adaptation affects many industries and IT infrastructure developed in an organization. With the support of the HR department, workers chose to follow E-HRM with the company using the trend to adopt it. Finally, Subshrub concludes by mentioning that an entity would be higher in E-HRM adoption.

Malabarian (2019), A research has been performed on the efficacy of the recruitment of career portals & networking sites. In this research, he shares in an organization a real picture or real work-life balance of the employees. In other words, you can also assume that the workers who work in a recruiting team face problem. In many MNCs, they perform a telephone interview to filter the applicants via contact. But this method, on the other hand, should not be encouraged.

Jayanti Kuppusamy and Jaya Ganesan (2016), Published a paper on E-recruitment among job seekers of generation Y stating that the company should concentrate on factors such as adaptability of the recruiting period, knowledge accessibility, internet accessibility, website usability, and cost-effectiveness to ensure the effectiveness of E-recruitment. With the internet,

Nadia Sultana (2018), many countries are now launching in India for a few days, and such MNCs rely more on the Internet with the help of a human resources team. MNCs prefer online recruiting via social media, which reaches many people at a time, as the days go faster and better. Via the chosen profiles It makes it easier to attract and work to pick candidates from a larger pool.

III. OBJECTIVES OF THE STUDY

- To study the current e- recruitment activities followed in India.
- To study the Challenges, difficulties, and outcomes of Virtual Recruitment.
- To understand the Effectiveness of E-recruitment after the pandemic situation.

IV. WHAT IS E-RECRUITMENT?

According to Edwin B. Filippo, "Recruitment is the process of searching the candidates for employment and stimulating them to apply for jobs in the organization". Recruitment is the activity that links the employers and the job seekers. A few definitions of recruitment are: A process of finding and attracting capable applicants for employment. The process begins when new recruits are sought and ends when their applications are submitted Online recruitment offers recruiters one of the most powerful and cost-effective ways to recruit staff for an organization. Online recruitment, e-recruitment, or web-based recruitment is the use of online technology to

attract and source candidates and aid the recruitment process. What this usually means is the use of a company's own website, a third-party job site or job board, a CV database, search engine marketing or social media platforms to fill vacancies. Many big organizations use Internet as a source of recruitment. E- Recruitment is the use of technology to assist the recruitment process. They advertise job vacancies through worldwide web. The job seekers send their applications or curriculum vitae i.e., CV through e mail using the Internet. Alternatively, job seekers place their CV's in worldwide web, which can be drawn by prospective employees depending upon their requirements.

V. Difference between Online Recruitment Process and Traditional Recruitment Process:

There is huge difference between online recruitment process and traditional recruitment process. Some of them are discussed below: *Traditional recruitment process: In this process one of the method the organisations use is using newspapers as a medium to communicate about vacancies in their organization. The other method is using local employee office for posting vacancies which will affect the organization financially. And also, they use temporary employment agencies to find the people who are suitable for the job. Online recruitment process: In this e recruitment process the smartphone plays a vital role in communicating with people through online by providing company portals. The other thing is usage of social media through social media companies engage with people. And also, now a days event recruitment has become a trend that is companies increase their brand value through sponsor events.*

VI. E-RECRUITMENT METHODS

Job boards: These are used by the employers as well as job seekers where the employers post their vacancies and candidates search for the job vacancies. Special skills are required for the candidates to search in certain job boards. Employer websites: These are companies own website. These are owned by various employers. For example: Directemployers.com is the first website by Direct Employers Association. Professional websites: These are specified for professionals. For example: HR jobs sites can be visited like Naukri, LinkedIn, indeed, monster. The professionals have their own website.

The conventional recruitment methods used by organizations consist of contacting friends or employee referrals, engaging executive search, using newspapers classified ads, and others. (Tong & Sivananda, 2005)

According to Sills, when broken down, the term "E-recruitment" is comprised of two parts. The "E" stands for "electronic" and "recruitment". Often, E-recruitment is known as online recruiting, social recruiting or Internet recruiting, however, this thesis will refer to E-recruitment for simplicity. To add to the previously introduced definition of recruitment, E-recruitment can only be described as the process of any personnel advertising or attracting, selection and application processing via the Internet, for external candidates, or Intranet, for internal candidates. (Sills, 2014)

Laxmi identified that, the prime focus of using e-recruitment is to get a large pool of applications. It assures the organization to get a competent person for the job position from the large pool of applicants. There are two methods of recruitment followed by the organizations.

Traditional Methods

Using sources that are not technology supported, like advertisement, flyers, Spokespersons, to draw as many applicants as possible to contact the organization. (Searching Candidates)

Using paper-based test for applicants to create a manageable applicants pool. (Screening)

Contacting the sorted applicants by phones and having face to face conversations. (Interview)

Making the phone call, setting up the meeting and shaking hands. (Placement)

Modern Methods

- Using the organizations Reputation product image, online technology and other methods to draw as many as possible to the organization's websites. (Searching Candidates)
- Employing sophisticated, standardized online tests to screen candidates, and to winnow the applicant pool to a manageable number (Screening).
- Using automated hiring management system to contact the most desirable candidate very quickly, before they are snapped by another company. (Online Interview)
- Making the phone call, setting up the meeting and shaking hands (Placement Order by email)

In early-1990s, with the advancement of internet technology, many have witnessed the transformation of the conventional recruitment methods to online recruitment. (Joyce, 2002)

E-recruitment is a new technological mean for selecting one of the companies’ most crucial resources, i.e. human resource. This technological innovation improves the process of recruiting knowledge sources by using the Internet. It allows businesses to make cost savings, update job offers and status at any time, to shorten the recruitment cycle time, to identify and select the best knowledge potential out of a wider range of candidates and gives the company an opportunity to improve its image and profile. (Anand J, 2016)

According to (Anand J, 2016) the fundamentals of e-recruitment are as follows:

- **Tracking:** It is helpful in tracking the status of candidate with respect to the jobs applied by him/her.
- **Employer’s Website:** Provides details of job opportunities and data collection for same.
- **Job portals:** Like Career Age, indeed, Monster, Naukri, times jobs, etc. these carry job advertisements from employers and agencies.
- **Online Testing:** Evaluation of candidates over internet based on various job profiles to judge them on various factors.
- **Social networking:** Sites like google +, twitter, Facebook, LinkedIn, etc. helps in building strong networking and finding career opportunities.

VII. RESEARCH METHODOLOGY

Sources of Data Collection

Primary and secondary sources of data were gathered for the research. Primary source of data was collected through the use of questionnaires and survey interviews. The secondary sources of information were collected from past research work, books, journals, articles, internet search, etc.

Methods for Collecting Primary Data

In collecting data for the study, questionnaire and direct interview methods were employed. The questionnaire was used to ensure that only relevant questions were asked and also to ensure that the questions were properly structured.

Data Collection Tool

The questionnaire was the only tool used to collect data. Likert type (close ended) questionnaire was employed to generate data. The importance of the use of close ended questions was to avoid delays in responding to the questionnaire, thus enabling the respondents who had busy schedules to respond quickly. Another reason for using close ended questions was that coding of close ended questions did not take much time as compared to open ended questions/ and also for testing hypothesis.

Sampling

A sample of hundred (120) respondents were drawn from thirty (30) multinational companies located in our country. Convenience sampling technique has been used to derive data from different levels of employees.

Analysis and Interpretation

590 and P-Value is 0000 This indicate that there is a moderate uphill (positive) relationship ($r = 0.590$), and that the correlation coefficient is moderately different from zero ($P < 0.001$)

Table 1: Correlations

	Average of traditional recruitment	Average of E-recruitment	
Average of traditional recruitment	Pearson Correlation	1	.590**
	Sig. (2-tailed)	-	0
	N	110	110
Average of E-recruitment	Pearson Correlation	.590**	1
	Sig. (2-tailed)	0	-
	N	110	110
**. Correlation is significant at the 0.01 level (2-tailed).			

This means that there is a moderate relationship between your two variables and as one variable increases in value, the second variable also increases in value. This means that changes in one variable are moderately correlated with changes in the second variable. For this reason, we can conclude that there is a moderate relationship between traditional recruitment system and e-recruitment system. However, we cannot make any other conclusions about this relationship, based on this number.

Table 2: Regression Coefficients

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
a. Predictors: (Constant), E-recruitment system	.635a	0.403	0.362	0.47788

The value of Pearson correlation is .635, which that there is a moderate degree of positive relationship between the two variables. The relationship is perfect. The e-recruitment system is reducing the usage of traditional recruitment system but still the traditional recruitment is using to some extent. Correlation can tell here just how much the e-recruitment is reducing the usage of traditional recruitment system.

R-squared is a statistical measure of how close the data are to the fitted regression line. It is also known as the coefficient of determination. R square represents the proportion of variability accounted for by the independent variable. Approximately 40.3% of the variability exists in this model which indicates that the model explains a substantial proportion of the variability of the response data around its mean. In general, the higher the R-squared, the better the model fits the data.

Table 3: ANOVA

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	15.71	7	2.244	9.827	0
Residual	23.294	102	0.228		
Total	39.003	109			
Predictors: (Constant), E-recruitment system					
Dependent Variable: Average of traditional recruitment					

The hypothesis of the study was to ascertain that E-recruitment is reducing the practice of regular or traditional recruiting system. The view was further supported by the result of the Analysis of Variance (ANOVA) which yielded an F value of 9827, and P Value of 0000, significant at 0000% Hence, this implies that the e-recruitment system is reducing the practices of regular or traditional recruiting system.

VIII. Trends of E- Recruitment

There is growing evidence that organizations are using internet technology and the world wide web as a platform for recruiting and testing candidates. The IES survey of 50 organizations using e- Recruitment reported that the primary drivers behind the decisions to pursue e- Recruitment were to: • Improve corporate image and profile; • Reduce recruitment costs; • Reduce administrative burden; • Employ better tools for the recruitment team. The trends in e- Recruitment use suggest a changing landscape whereby in future the candidate is connected to the central system and there is involvement of the line manager in the process (see figure 1). In addition to the reported benefits such as cost efficiencies, the role of HR in this model viewed as more of a facilitative role, in theory allowing time for recruiters to become involved in the strategic issues within resourcing.

IX. ADVANTAGES OF E -RECRUITMENT

There are many advantages to the employers and jobseekers by using the process of e-recruitment. create vacancy information create and submit approved requisition advertise job shortlist candidate interview/reject candidate appoint candidate and also employers can reach out bigger audience in an easy way. Organizations receive a greater number of applications by online. And also due to more usage of internet today the organisations can be able to elevate their company’s brand and can attract a larger number of people to apply for the job within very less time. And also, in online recruitment process organisations have more people to choose from so by background verification an employer can identify whether he is fit for job or not according to that he will recruit the employee

X. CONCLUSION

Recruitment process is very much crucial to every organization, because it’s the people who can contribute strategically and make difference in the workplace. Today this process has become mostly digitalized because of advancement of technology. In the developed countries, e-recruitment has been used widely from a long period of time. But as we are a developing country and many people do not possess technological expertise that’s why this scenario is somehow different here. It could be concluded by the result of the analysis and interpretations that, although e-recruitment system is reducing the usage of traditional recruitment system but still the traditional recruitment is using to some extent in our context. In private organizations, banks and multinationals has been using e-recruitment but they also use the traditional process side by side. It is highly

recommended that, the managers of these companies should continue to use these two methods at a time as long as the society becomes fully digitalized. Moreover, through the data collection process, it was also identified that, there are some loopholes present in the e-recruitment system, so these loopholes could be covered by using traditional methods. As an initial step of improvement, the management also should train the recruiters adequately for building an effective system for online recruitment system in these organizations. This study will further help the human resource managers to identify the relevant factors which may be taken into consideration in the process of overall recruitment.

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THE CAUSES OF ENVIRONMENTAL DEGRADATION AND THEIR REPERCUSSIONS: AN ENVIRONMENTAL AWARENESS PERSPECTIVE

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ABSTRACT

It is no longer possible to separate the economy from the environment. Hence, environmental economics has become an essential topic of dispute in the green movement. The deterioration of the ecosystem may take various forms, and each has its own unique set of consequences. Several studies using multiple research approaches have been carried out in both emerging nations and those already established their economies to solve this issue. These investigations have been carried out in many different countries. It has been found that there are significant health benefits to be gained from minimizing one's exposure to environmental risk factors. This can be accomplished by enhancing the air quality and the availability of clean drinking and bathing water, sanitation facilities, and electricity. It may make a significant contribution to achieving the Millennium Development Goals, ensuring the continued sustainability of the environment, improving health, and promoting development. In this research, both the causes and the impacts of environmental deterioration and social inequality on a national and international scale are explored. A literature analysis on research related to decrease environmental risk is undertaken in this study, emphasizing decreasing levels of air pollution, increasing water quality, and mitigating climate change consequences.

Keywords: green movement; risk factors; Millennium Development Goals; sustainability.

INTRODUCTION

Our health might be negatively impacted in various ways by our surroundings. A significant amount of focus has recently been placed on human health and the natural environment. Environmental hazards have had a detrimental impact on human health, either directly via the ingestion of poisonous substances by humans or indirectly through the disruption of ecosystems essential to maintaining life. "Environmental degradation" is when natural resources like air, water, and soil are depleted, ecosystems are devastated, and species are wiped out. The term "environmental degradation" refers to any alteration or disturbance of the natural environment seen as detrimental or unwelcome. Eleven threats have been labeled "official hazards" by the UN High-Level Threat Panel. It's one of those things that happens over time. The International Strategy for Disaster Reduction of the United Nations defines environmental degradation as "limiting the environment's ability to satisfy social and ecological objectives and demands." The phrase "environmental deterioration" is used by the government. Human activity is the most prominent contributor to destroying the natural environment.

The effect that anything has on the environment will be different based on what caused it, where it happened, and what kinds of plants and animals dwell there. The acts of humans have a significant impact on the natural world around them. The most shocking effects that environmental degradation and socioeconomic inequality have on people's and communities' health may be seen all around the globe. They collaborate on projects together. Air and water pollution, deforestation, global warming, and unsustainable farming and fishing practices are only a few elements that contribute to overpopulation, overconsumption, wealth disparity, corporate expansion, debt troubles in Third World nations, militarism, and violence. Mining is another environmentally destructive kind of development that puts profit above the well-being of the surrounding ecosystem. Scientific mining operations, ecological repair, regeneration of mined wastelands, prudent geological resource management, and the hunt for environmentally acceptable replacements and alternatives are all required to provide a shocking reveal of mining's impact on human ecology.

Poverty, overcrowding, starvation, extreme weather, extinction of species, acute and chronic medical conditions, war and human rights abuses, and an increasingly unstable global environment are all the results. As a consequence, Malthusian catastrophe and tragedy are on the horizon. Unfortunately, most governments worldwide have responded too slowly to environmental changes, driven by self-interest (or self-preservation). Consequently, their internal stability is eroding, and their healthcare systems are in crisis. According to the study's findings, there are environmental causes for 24% of the world's illness burden (the number of healthy years lost) and 23% of all deaths, according to the study's findings (premature mortality). The environmental burden of illness is 15 times greater in developing countries than in wealthy ones because of differences in exposure to environmental risks and access to treatment.

Human activities such as urbanization, industrialization, population increase, and deforestation are the leading drivers of environmental degradation globally. Other human activities have a part, too. The destruction of the quality and quantity of the earth's natural resources is referred to as "environmental pollution." The plethora of activities carried out by people is the primary cause of the environment's deterioration. Because of these reasons, the environment has undergone many harmful changes to all types of life. The smoke generated by factories and cars increases the number of toxic gases. Most pollution is located in urban areas, with human populations overgrowing. The by-products and smoke created due to industry and transportation are the most significant contributors to pollution in the environment. Pollution of the air, water, and sound has resulted from fast industrialization and unrestrained urbanization over the previous few decades. A rise in the quantity of pollution present in the water sources is a consequence of both urbanization and industry, which add to the problem.

Similarly, pollutants such as chlorofluorocarbons, nitrogen oxide, carbon monoxide, and other dust particles are emitted from automobiles and factories, contributing to air pollution. Acid rain and global warming are two more elements that contribute to air pollution. The degradation of the ecosystem is exacerbated by several factors, one of which is noise pollution. The majority of the noise that contributes to the issue of sound pollution comes from moving vehicles, stationary loudspeaker speakers, mills, and other types of industrial activity. When natural resources are used to an excessive degree, this leads to the depletion of those resources and the formation of an environmental imbalance. As a result, the earth's natural resources are being depleted at an unsustainable pace. Deforestation, overuse of pesticides, chemical fertilizers, insecticides, overcrowding or uncontrolled urbanization, industrialization, and the production of waste, sewage, and garages are only a few of the numerous reasons contributing to the degradation of environmental quality. Other factors include chemical fertilizers, insecticides, pesticides; excessive pesticides; and insecticides. The population density in the city is very high because it is situated close to a source of air, water, and sound. As a direct consequence of cutting down trees, many different kinds of wildlife and other species are being driven to extinction. The originally wooded areas have been cleared to create room for agricultural land, new communities, and the collection of medicinal herbs. As a direct result, harm is done to the surrounding ecosystem. Earth's warming is another effect that may be traced back to harm done to the environment. The earth's average temperature is rising at a slow but steady rate. As a direct consequence of this rise, the ice caps located at the poles are beginning to melt, and the depth of the ice found in colder locations is becoming thinner than it used to be. The many activities carried out by human beings are to blame for the annihilation of an ever-increasing number of animal and plant species daily. The creature's survival will be in peril if the natural environment continues to degrade like it has been doing so far. It is estimated that the illness burden caused by environmental factors is fifteen times greater in poor nations than in wealthy ones due to variations in exposure to environmental dangers and availability of medical treatment. According to another estimate provided in the study, environmental variables are responsible for 23 percent of all fatalities and 24 percent of the global illness burden (measured in the number of healthy life years lost). Therefore, if we want to live a life full of pleasure and success, we need to conserve our environment and focus on the consequences of environmental degradation. Only then will we be able to live the kind of life we want for ourselves.

METHODOLOGY:

This theoretical study does an in-depth analysis of the currently available data. It makes several suggestions for methods in which the aim of increasing access to Indian single-use plastics might be accomplished. The abstract relies upon on-premises from previous research, applies systematic reasoning to those premises, and describes actions based on the assumptions and reasoning. In the following sections of this work, theorizing while maintaining an action orientation will be carried out.

AIR POLLUTION:

Unfortunately, air pollution is the most widespread contributor to ecosystem degradation. Several plants and animal species are harmed or even killed by pollution. The principal and secondary causes of air pollution are manufacturing and motor vehicles on the planet. Approximately two million people die prematurely each year due to air pollution. Air pollution is anticipated to reduce the global burden of respiratory illnesses, cardiovascular disease, and lung cancer. In recent years, there have been a slew of empirical studies published in the literature attempting to quantify the health advantages of improved air quality. This is because both developed and developing countries rely on good air quality. About 25 pounds of carbon dioxide, carbon monoxide, sulfur dioxide, nitrogen dioxide, and particulate matter are emitted for every gallon of gasoline used in the United States. This happens after the gasoline has been disseminated, sold, and eventually used in a vehicle. These emissions are a contributing factor to the planet's rapid warming.

In the United States, one vehicle may be found for every two people. One in every eight people in Mexico, compared to one hundred in China. During the next 25–50 years, the number of vehicles on earth is expected to double. Since 1965, the average number of miles driven in a single year in the United States has been 4,570; by 1999, that number had quadrupled to 11,400. The average fuel economy of vehicles sold in the United States has dropped. This is due mainly to the fact that fuel economy requirements have remained unaltered, oil prices have remained low, and the market for poor-efficiency pickup trucks, minivans, and sports utility vehicles (SUVs) has increased that they now outsell cars. Passenger vehicles are currently limited to 27.5 miles per gallon (MPG), whereas light trucks and SUVs are limited to 20.7 MPG. Rolling smokestacks, located in the country's 3.3 million diesel trucks and buses, are responsible for almost three-quarters of the cancer risk associated with automobile pollution. Environmental Protection Agency (EPA) standards were suggested in 1997 that diesel engine manufacturers make cleaner engines, and the oil industry provides significantly cleaner fuel. These regulations were supposed to take effect in 2008. Although the current administration opposes the planned changes, if these laws are enacted, the minimum mile-per-gallon standards for SUVs will be brought in line with those for automobiles. Based on the findings of the literature study, some types of air pollution, such as inhalable particulate matter and ambient lead, should be a significant cause for concern in developing countries because of the considerable monetary losses they cause to human health.

WATER POLLUTION:

Water pollution from sewage outfalls and agricultural runoff poses the most severe risks, as does nutrient overload in marine and coastal streams. Exposure to contaminated water, whether for drinking or bathing, may be hazardous to one's health immediately and over time. Although tap water is treated and must fulfill testing and purity requirements, it is not always free of germs that cause diarrhea. An epidemic of *Cryptosporidium*-related waterborne illness in Milwaukee in 1993, which impacted over 400,000 individuals, proved this. In addition, the presence of fecal coliforms in bottled water is not forbidden, and the Food and Drug Administration does not enforce any regulations regarding the quality of water that is bottled and sold within the same state. At this time, forty percent of the world's waterways are unsafe for fishing or swimming, and fish in forty states have detectable amounts of mercury. The Clean Water Act of 1972 mandates that states must make public a list of all bodies of water those are not in compliance with quality requirements for drinking water. Compliance is almost nonexistent, and enforcement is ineffective, making it difficult for governments to establish limits on pollution and reduce pollution in watersheds until the criteria are satisfied. In India, sewage discharge that has not been treated contributes to surface water and groundwater contamination. In India, there is a significant gap between the creation of household trash and its subsequent treatment. The difficulty is that India does not have enough treatment capacity, and the present sewage treatment facilities are not being operated or maintained.

Additionally, India does not have enough treatment capacity. According to the research findings conducted by the National Resources Defense Council on the quality of bottled water, about one-fifth of samples exceeded the requirements for microbiological purity and/or the proper amounts of arsenic or arsenic other synthetic organic compounds. It is estimated that between 25 and 40 percent of the water sold in bottles is really just municipal tap water that has been repackaged. Dwight and colleagues use a method called the cost of disease.

To assess the extent of the health burden caused by diseases linked to being exposed to contaminated recreational coastal waters, Shival performs a calculation known as the disability-adjusted life years. It is healthy knowledge that India has enormous problems with water pollution, the primary cause of which is sewage that has not been handled. Rivers such as the Ganges, Yamuna, and Mithi Rivers are contaminated since they pass through densely inhabited regions and are thus impacted by this. Effluents are yet another hazardous waste product produced as a by-product of several industrial processes. The leather and tanning industries and the petroleum and chemical production sectors create a lot of trash, which is subsequently dumped into surrounding waterways without being cleaned. This results in the pollution of rivers and endangers the aquatic life in those rivers. The majority of the sewage treatment facilities controlled by the government are still closed because they were either poorly designed or poorly maintained, there is not a consistent source of energy to run the plants, personnel seldom show up for work, and management is ineffective. According to World Health Organization statistics, only 209 of India's 3,119 towns and cities have partial sewage treatment facilities. According to a survey by the World Health Organization, only eight have complete wastewater treatment facilities. Hundreds of Indian towns pour raw sewage into the Ganges River without purifying it first. Given that India generates 29,000 million liters of sewage per day but only has a treatment capacity of 6000 million liters per day, investments are required to bridge the gap between the two numbers.

TOXIC POLLUTANTS:

Factories and mines are responsible for adding around 25 billion pounds of harmful chemicals to the environment each year. In addition, our crops are sprayed with 2.2 billion pounds of pesticides each year, which comes out to eight pounds for every resident. Since the beginning of the 20th century, the annual output of synthetic organic compounds around the globe has increased at an exponential rate. The great majority of man-made compounds have never had their poisonous potential investigated. The government's legal responsibility is to show that a product is harmful, and testing is only done when a chemical has been alleged to be unsafe. Chemical makers are not compelled to provide evidence that their products are safe. The use of certain pesticides in other nations, which is against the law in the United States, on food that is exported from different countries and brought back into the United States exposes Americans to the same health hazards as those living in those other countries. Approximately two million youngsters in the United States are at risk of developing neurological abnormalities due to high lead levels in their bloodstreams. Another deadly contaminant is dioxin, a poisonous byproduct of the manufacture of herbicides like "Agent Orange." Nowadays, the primary source of dioxin is medical polyvinyl chloride combustion in intravenous bags and tubing. Polychlorinated biphenyls, nitrates and nitrites, mercury and methyl mercury, arsenic, trichloroethylene, and vinyl are the most harmful contaminants in the environment. Agent Orange has been associated with diabetes, chloracne, porphyria, soft-tissue carcinomas, multiple myeloma, and prostate and lung cancers. There are 1193 Superfund sites in the United States, and 45 million people live within four miles of one. These locations, along with garbage dumps and incinerators, are more common in low-income areas, such as Louisiana's "Cancer Belt," which extends from Baton Rouge to New Orleans. The agricultural practices of the Pacific Northwest have resulted in the introduction of fertilizers and pesticides into the region's rivers, lakes, and groundwater. The monsoon rains in India cause widespread flooding, which washes the solid waste and polluted soils into the country's rivers and wetlands. This makes India's already severe water pollution issue much worse.

DEFORESTATION:

However, more than half of the world's plant and animal species may be found in tropical forests, which only account for seven percent of the land's total surface area. It is estimated that by the year 2010, three-quarters of the world's tropical forests will have been eradicated. In addition, between 20 and 50 percent of the world's wetland areas have been eliminated (the figure for the United States stands at 54 percent, with an additional 115,000 acres lost a year). The number of old-growth forests in the Pacific Northwest and British Columbia, known as the "Brazil of the North," has been declining in recent years. This term alludes to the damage caused by multinational firms' unsustainable and wasteful logging operations in the Amazon.

SOLID WASTE CONTAMINATION:

It is not uncommon to see trash and junk in India's urban and rural parts in India. It is a significant contributor to the problem of pollution. More than one hundred million metric tonnes of solid trash are produced annually by Indian cities. Garbage may be seen stacked on street corners. Public areas and walkways are filthy and littered, and rivers and canals have been turned into rubbish dumps. The increasing consumption rate in India contributes to the country's waste issue. Another indication that India's government is in terrible shape is the country's massive garbage issue.

In 2000, the Supreme Court of India issued a directive to all of India's cities instructing them to initiate a comprehensive waste-management programme. This programme involved the domestic collection of segregated garbage, recycling, and composting. These instructions have just been disregarded as irrelevant. No major city in the world now operates a programme that is anything as extensive as the one envisioned by the Supreme Court. In fact, disregard the trash segregation and recycling decision issued by India's Supreme Court; according to figures provided by the Organization for Economic Cooperation and Development (OECD), up to forty percent of India's municipal garbage is still not collected. Although hospitals must comply with stringent regulations that mandate the operation of incinerators, medical waste is often discarded along with ordinary municipal rubbish. According to recent research findings, India fails to dispose of around half of its medical waste properly. Waste collection is handled by workers of the many municipalities that make up Indian cities and towns.

Nonetheless, government employees are represented by a union; however, their performance on the job is neither assessed nor supervised. Due to poor management, some of India's limited landfills for solid waste in its important cities overflow with rubbish. They have developed into significant contributors to the production of greenhouse gases. Disease-carrying insects and vermin such as flies, mosquitoes, cockroaches, rodents, and other unpleasant animals have made them breeding grounds. In 2011, several Indian municipalities began work on waste-to-energy systems comparable to Germany, Switzerland, and Japan. New Delhi, for example, is

building two incinerator facilities to turn the city's trash problem into a power source. The town's persistent problems of excessive trash that has not been handled and a lack of available electric power will hopefully be alleviated by constructing these facilities. People interested in preventing water pollution and difficulties with cleanliness and getting rid of decaying rubbish that creates the potent greenhouse gas methane are also warming up to using them. Workers who collect garbage and members of local unions are opposed to the projects because they are concerned that advances in technology would cause them to lose their jobs and their traditional way of life.

Several cities and towns, such as Pune and Maharashtra, are introducing competition and privatization of solid waste collection, street cleaning activities, and bio-mining to get rid of their garbage and programmes that generate energy from the trash. According to a recent research project, public and private partnerships are the most effective solid waste management in the Indian environment. According to the findings of this research, governments and municipal corporations need to foster local control based on PPPs for collecting, transporting, sorting, and disposing of solid waste.

GLOBAL WARMING:

To establish global climate change, "the planet's warming has been the most important piece of evidence." It's a significant factor in environmental degradation and disasters of many kinds. There is evidence that the Earth is part of a multi-planet system and that its climate system is warming in ways that have never been witnessed before in human history. In a human environment that has been relatively stable at a lower temperature for some years, an increase in temperature that persists might break the delicate equilibrium. The IPCC projects that the global average surface temperature would rise by 1.8 to 4 degrees Celsius between 1990 and 2100, with a maximum increase of 6.4 degrees Celsius. A warmer climate has caused polar ice caps to melt and ocean water to expand, raising sea levels by 3.0 millimeters per year between 1993 and 2003. Rainfall patterns have shifted, with some regions experiencing more drought and others experiencing heavier rain; glaciers and snowmelt have increased river water levels at specific times; winds are becoming more assertive, cyclones are becoming more frequent, and ocean temperatures have risen. Weather patterns are likely to vary throughout time due to the "increased variability of severe weather events connected to changes in surface temperature and precipitation" predicted as a result of climate change. Natural hazards linked to climate change have been the primary cause of 90% of all-natural disasters during the previous few decades. The majority of them, according to scientists, may be linked to global warming. Due to heat and dryness in specific locations and "ecosystem services" such as clean water and good soil, agriculture's potential will be hampered. As a result of the detrimental effects of global warming on the environment, significant populations' living circumstances are harmed, resulting in mass migration.

LAND DETERIORATION, DROUGHT, AND WATER SCARCITY:

The third and fourth primary consequences of climate change, respectively, are drought and water shortages, both of which have the potential to substantially contribute to climate-related migration. It is anticipated that droughts, desertification, and water shortages will become more severe due to global warming. It is expected that around one-third of the planet's total population would be impacted by these occurrences. There is a high probability that droughts will cause millions of people all over the globe to be displaced, which will affect both food insecurity and human livelihoods. Because of rising sea levels, more regions of groundwater and estuaries will become salinized, which will reduce the amount of freshwater available to people and ecosystems living in coastal areas. In addition, shifting precipitation patterns put stress on the number of clean water sources that are readily available.

CONCLUDING REMARKS:

In a nutshell, the following elements had a significant role in the deterioration of the ecosystem. The majority of the research mentioned earlier led us to conclude that the actions of the wealthy and powerful were the key contributing elements leading to the environmental deterioration of those who lived on the outskirts of society. Degradation of the environment represents a considerable risk to people's health all over the globe. The degrading effects of this situation are already being felt, and they may become much more detrimental to human health over the next half-century. Environmental and health policy should be treated similarly because of the close relationship between the environment and human health. It is a field of study that has seen very little empirical research conducted up to this point but has the potential to see the significant effort in the years to come.

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IMPACT OF COVID 19 FOR THE MICRO-ENTREPRENEURS OF KHARGARH CITY IN NAVI MUMBAI

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ABSTRACT

The outbreak of coronavirus disease has severely affected the global and Indian economy, especially the nationwide lock down has brought social and economic life to a standstill. Major victims of the COVID-19 outbreak are micro, small, and medium-sized enterprises (MSMEs). In fact, the impact is more significant among the micro-enterprises, home based workers, street vendors than their larger counterparts. This article aims to assess the impact of COVID-19 outbreak on these businesses in the cosmopolitan city of Kharghar of Navi-Mumbai, Maharashtra and provide policy recommendations to help micro enterprises in reducing business losses and survive through the crisis. Navi-Mumbai city of Maharashtra which forever buzzed with activities have fallen silent, since the outbreak of the disease. To this end a qualitative multiple case study methodology of collecting data was conducted by administering unstructured phone interview, questionnaire. Data was collected from 10 micro-enterprises of different sectors about the severity of impact and their business control strategy in the period and later. Reviewing of available literatures, policy documents, research papers was also done to get an overall view of in general how the micro enterprises are trying to cope up with sudden outbreak throughout the world. Results indicate that most of the participating enterprises have been severely affected and they are facing several issues such as financial, supply chain disruption, decrease in demand, reduction in sales and profit, even closures of their enterprises among others. The findings of our study are consistent with previous studies. The report also provides policy recommendations to help these enterprises recover the crisis.

KeyWords: Crisis, Microenterprise, Business Control Strategies

1) INTRODUCTION

The novel Corona virus disease was first identified in December 2019 in the Wuhan city of China. Within a short time Covid-19 epidemic spread throughout the globe became a true pandemic that has severely affected almost every country. Besides having its direct impact on public health, it has got its severe economic consequences globally. The negative economic effects may vary by the stringency of the social distancing measures its length of implementation, and the degree of compliance.

Micro enterprises represent a significant portion of agriculture, manufacturing, retail, wholesale, trade, and service sectors. Due to the COVID-19 outbreak these firms are facing unprecedented adverse effects on their businesses as they are highly dependent on the cash economy. (Williams & Schaefer, 2013). Indian Government has announced the movement control order since March, 20, 2020. Which lead to further and more severe drops in capacity utilization. On the demand side, consumers experience loss of income, fear of contagion and heightened uncertainty, which in turn reduces spending and consumption. These effects are compounded because workers are laid off and firms are not able to pay salaries... The impact of the pandemic across sectors and in different scenarios of complete, extended and partial lockdown, and at different levels of capacity utilization is massive on the Indian economy for the calendar year 2020 and thereafter... Hence, a robust policy response is also essential to offset the negative effects of the current outbreak. Till to date, to the best of my knowledge no study has been conducted to examine the global outbreak's impact on micro-enterprises operating in Kharghar city of Navi-Mumbai, therefore this research contributes to the emerging economies by investigating few micro-enterprises in manufacturing and service sector.

2) LITERATURE REVIEW

The goal of this paper is to survey the emerging literature on the economic consequences of COVID-19 on the micro-enterprises in general and the strategies adopted by them to survive and to co-relate the same in the study area by synthesizing the insights emerging from a growing number of studies

Since the origin of 2020 recession is caused by a novel Coronavirus which is the first of its kind in history, the literature available is sparse. Whatever literature is available has been put to review to study the impact of COVID-19 on economies across the globe. The emergence of the pandemic is just nine months old but the health and economic impact it has created is devastating. In one of the first well-structured efforts in the study of the pandemic, Baldwin and Di Munro (eds.) in their study draw our attention to the confusion and fear the pandemic has created on almost all major nations basically the G7 nations. Evans in his study underscores the socio-

economic impacts of novel coronavirus across various continents and provides policy solutions. Arezki and Nguyen examine the effects of a pandemic on the Middle East and North Africa due to impediments in the value chain, and tourism travels and disruption in oil price. Further, due to the prevention of cross-border travel in the EU, Meninno and Wolff underline a major interruption of economic activity. Wren-Lewis in their study considers reduced workforce, reduced social consumption, higher production cost, higher temporary inflation as the major reasons for slowing economic growth. Peterson and Thankom have drawn attention to the impact of coronavirus on the global economy. Their study points how the spread of the virus has heightened uncertainties in consumers, investors and international partners.

.Kumar 'sway back home in India studies the sector-wise impact of coronavirus (COVID-19) on the Indian economy. In another study in India, scholars have given a few insights to business and the economic recession of the world economy and the Indian economy of before, during and after COVID-19. They give a few suggestions to improve the economy of India like all religious places entry fees to be collected by the government, investment in gold to be avoided, division of toll tax between states and center, etc. The impact of the virus spread is expected to lead to a huge loss as global trade is severely affected. The Indian growth model depends on the export-led-growth (Mishra, 2019), and hence can experience massive impact on growth due to lockdown amidst the virus spread. On the international trade front, it is expected to plunge in a range of 13–32 per cent under optimistic and pessimistic scenarios, respectively (WTO, 2020). Suborna Baruah highlights that COVID-19 is putting both developed and developing nations vulnerable. As such, containing the disease becomes more important than economic recovery. Innovative and aggressive policy actions coupled with massive supply-side supports can be initiated to avoid economic depression. The studies discussed above suggest that the pandemic is going to generate long-run and possibly unrelenting mayhem across economies, which could generate global economic depression. International Monetary Fund's (IMF) chief said that, 'World is faced with extraordinary uncertainty about the depth and duration of this crisis, and it was the worst economic fallout since the Great Depression'. The IMF estimated the external financing needs for emerging markets and developing economies in trillions of dollars. India too is groaning under the yoke of the pandemic and as per news reports in Economic Times published on 23 March 2020, the economists are pegging the cost of the COVID-19 lockdown at US\$120 billion or 4 per cent of the GDP (The Economist, 2020). Where does this leave the micro-enterprises that are hit by the nine months of lockdown? Most of existing studies have focused on global growth, trade and unemployment, a few are country specific especially India. In this context, the present study aims to make an assessment of COVID-19 on micro-entrepreneurs of Indian economy in general and of Kharghar city in particular and highlights key policy measures to control the possible fallout on the economy.

a. RESEARCH OBJECTIVES:

There is a class of micro-enterprises such as small shop owners, house hold businesses, and street vendors, among others, who heavily rely on their microbusiness. These businesses are usually operated by family members along with few hired labourers in different industries ranging from agriculture to education. Further, these micro-enterprises are considered a part of the informal economy, and most of their activity is undocumented. There is still a lack of study on the outbreak of pandemic and their impact on the micro enterprises, especially in relating to their survival of business and recovery strategy.

The study monitors key trends on the impact of the crisis and government-mandated lockdowns on business livelihoods, employment, and the income of nano and microbusinesses and how far they have adjusted to their changed situations.

b. RESEARCH APPROACH

The present study relies on both primary and the secondary data to make an impact assessment of COVID-19 on micro-enterprises in the locality. Primary source is ten micro entrepreneurs of Kharghar city of Navi Mumbai who were telephonically interviewed and the secondary data sources are reports of National Account Statistics, a publication of ministry of statistics and programme implementation (MOSPI); Monthly Bulletin, Reserve Bank of India, Ministry of Commerce, Government of India; and annual reports (various issues), Economic times, Google search etc. The study was conducted in September, October 2020. Ten micro enterprises from different manufacturing and services sectors were identified to participate in the study on the basis they employ at least one labor and their monthly profit is less than or equal to 30 thousand. Respondents who were operating at least for last five years were selected. Interviews were conducted over the phone or face to face which lasted for an hour. The insights and thought gathered were examined and summarized to analyze meaningful idea how the respondents deal the current COVID-19 situation. The questionnaire was comprised of a total number of 10 questions, regarding basic information about their enterprises. For data analysis simple statistical methods like, average, percentage method was used.

Following table shows profile of the respondents

Table:1

Respondents	Experience in years	Product sold by the enterprises	Whether having digital knowledge	Profit per month before the COVID-19 era
1	7	Cooked food (lunch, dinner)	Yes, but limited knowledge	30 thousand approximately
2	5	Idly, Dosa, Poha (Tiffin)	No	25 thousand (app)
3	7	Tea, Coffee cold drinks paob haji	No	20 thousand
4	9	Cooked food	No	30 thousands
5	6	Cake, Biscuits, Pao, bread (Bakery)	Yes	23 thousands (app)
6	5	Egg roll, chicken roll, sandwiches	Yes but limited knowledge	30 thousands
7	6	Travel agent	Yes .Computer savvy	30 thousands (app)
8	8	Guest house with one bedroom hall and providing food	Yes. Computer savvy	30 thousands
9	9	Event manager	No	25 thousands
10	7	Road side tiffin	No	20 thousands

SOURCE: FINDINGS FROM RESPONDENT'S WHO WERE INTERVIEWED

4. RESULTS: FINDINGS AND DISCUSSION

Most of participants in the survey belong to service sector. All the respondents are the owners of the micro enterprises. In terms of monthly profit, over 50% of the participating enterprises have below Rs 30,000 as their profit. Further, in terms of experiences in years in the same business, the survey results indicate that over 80% of enterprises have more than 5 years of experiences. As the most common mode of communicating with their customers, 90% respondents prefer to engage through a phone call rather than by email, direct message, or an in-person visit. Thinking about the long-lasting implications on work post-COVID-19, 100 percent of the respondents are ready to modify their policies related to mode of working.

While world-wide, the number of COVID-19 continues to increase at the time of writing of this report, It is found from small survey, the Covid-19 outbreak has significant impact on the micro-enterprises.. When asked about the types of issues these enterprises are facing amid of COVID-19, the top five reported problems were financial, supply chain disruption, decrease in demand, reduction in sales and profit and product expiry. A recent study conducted by Harvard Business School also reported that due to the current outbreak, many small businesses are financially fragile (Bartik et al., 2020). When particularly asked about the expected decline in sales during 2020, three-fourths of the participating enterprises reported that they expect a decrease in sales by over 80%. In terms of profit decline, due to the COVID-19 outbreak. Many of these enterprises like the guest house owner and supplier of cooked food who had three laborers working under each of them have loan obligations and monthly EMIs to pay in the bank.. Many of them might just disappear if their cash cycle is disturbed because of their almost nil demand, as tour operators in Maharashtra have also been asked to cancel international tours and

holiday packages and with fixed costs dangling over them in such a situation. The cooked food seller told that — Sale volume has decreased so much that we are now experiencing huge cash flow shortage. As a consequence normal operation of business is getting disrupted like paying the salary of the staff, covering the rent, paying bank loan, as he had employed three attendants to assist him in his daily preparation of foods for a large crowd. In addition to that, movement of perishable goods is hampered and thus, the bakery owner was worried about the expiry of his bakery product. These businesses experience a huge loss. Similarly, event managers have also been hit by the ban on social gatherings and conferences, with connected vendors of hotel and travel agencies facing the brunt as well, though he had a very flourishing business in the area with few competitors. Temporary closure of their business was the only solution. Most of the respondents mentioned post COVID-19 popularity of online sale will increase and hence there is a need to restructure their supply chain with a high focus on online mode of transactions, Thus the pandemic has triggered the uptake of digital technologies in such a situation a positive impact of the pandemic they feel. A large part of demand for cooked food was from students section who used to stay in hostels and due to lock down and closure of educational institution the demand from certain respondents fell to almost nil initially but later because of some demand coming from nearby residences as maids were not allowed inside residential complex, they could survive the challenge partially. Thus in the long-run reduction of job is apprehended if the situation remains same for few more months. The supply shock will further create demand-side effects by reducing the economy's disposable income, savings and giving rise to unwanted uncertainty. All kinds of households—whether based on primary, secondary and tertiary activity or region-wise rural as well as urban—have received a blow. This COVID-19 pandemic affected the manufacturing and the services sectors most.

Many entrepreneurs in the study began to shift to alternative approaches to continue their business operations like by selling and promoting their products via social media and mobile applications like Facebook and WhatsApp.

With the state governments allowing partial reopening, a few micro-enterprises units reopened in the first week of June, but with a major constraint of labour as the majority of migrants had returned to their hometowns. Further with supply chains broken, both backward and forward linkages, for raw material and finished goods, respectively, are a constraint (Shaikh 2020). Unavailability of manpower at their workplaces to resume their businesses mainly due to migration of unskilled workers and reluctance of people to resume the work was a challenge for the bakery firm.

As India cannot have a real and sustainable growth without having a thriving MSME sector, researcher delves deeper into the coping strategies sample enterprises have adopted to mitigate the effect of this disruption. Based on the interview extent of impact was more severe in the initial phase of lockdown when general public were more apprehensive about the disease hence experienced slow demand for their products. For continuous earning they need to be more flexible in their business operations. The roadside tiffin seller started making Amla juice, Tulsi Kadawhose demand increased because of 'immunity crash' and started selling in front of Central Park of the city where large crowd used to gather for morning walk hence had a roaring demand. As such there was no formal crisis management strategy but all of them acted instantly. One of the respondents started producing sanitary products, mask sanitizers etc which shows they could shift to new product also. Most of the firms under study apprehended that if the situation remains same they are likely to survive up to three months only. This means that in case of prolonged lockdowns, there are higher chances that many respondents could not sustain to survive and will go bankrupt or out of business. When asked about any plan or preparedness to handle such a crisis, all of the participants reported that neither they have any plan nor they are well prepared to handle such a crisis. Few micro-businesses in Khargarh city are optimistic about the future of their very small business, amidst the COVID-19 pandemic. They believe that their business will grow in the next one to two years except those three—the Tour and Travel operator, guest house owner and Event manager who were apprehending for next three years they may have a zero business as collapsing of people's confidence was a major challenge, thus where demand is perceived not to revive may face closure shortly, hence were in look-out for alternative business. This study is limited from the fact that result is focused mainly experiences from ten micro entrepreneurs of the locality. In order to understand the aspect larger group's reaction is needed.

5. RECOMMENDATIONS AND SUGGESTIONS

MSME sector in general and Micro-enterprises in particular is facing untold miseries and many of them are under the scourge of complete extinction, so simply introducing different policy measures and schemes will not help in solving the problems of MSME entrepreneurs, particularly the micro-enterprises, and thus constant attempts for assessing the ground reality & course correction in the policy are need of the hour. Micro-enterprises are vital engine to Indian economy since they drive growth, create employment

specially among youth and spearhead innovations. However, our study shows that micro-enterprises are currently highly exposed to the negative impact of Coronavirus diseases as their survival is crucial. Social distancing, public health interventions, such as mass quarantines, extensive travel bans, and transportation system disruption, has shattered the economy thus affecting the market demand in these service sectors that are critical for many micro-enterprises as they rely on visits by regular customers. But the economic activity must begin gradually after screening of the labour force. Micro-enterprises could benefit from diversifying business platforms. Online-based platforms and virtual service provisions can help them to sustain business during quarantines or travel bans. It would be helpful if policymakers could bring tax breaks and technical guidance to help micro-enterprises restructure their business operations.

... Government can enhance the national entrepreneurial culture by promoting programs that prioritize micro-enterprises as preferred suppliers, research and development needs to be encouraged as requisites for innovation and growth. Banks and financial institutions can take the initiative like suspension of loan repayment, interest and fee waivers, relief loan and pre-approved expedited loan approval etc. Micro-enterprises can pursue strategies to support their success as relating to accessing new markets, and customers, a stable supply chains, a healthy workforce, robust post-crisis strategy. They can utilize digital and new technologies to enhance their reach and efficiency at lower cost.

Our analysis suggests creation of better awareness about the various schemes, making

—Entrepreneurship a compulsory subject at school level could help the Government to achieve better result. Given the limited nature of available resources and other limitations, the policymakers in India have to carefully weigh the policy options and choose only those that have the largest payoffs in the short-run as well as long-run. The potential of Indian MSME, particularly the micro-entrepreneurs is still untapped. This all-round uncertainty needed a push by government, to boost market confidence and bring back regular cash flow in economy. India must rethink on her development paradigm and make it more inclusive.

6. CONCLUSIONS

Globally, coronavirus-hit countries, particularly European nations, have been quick in protecting small businesses. Beyond Europe, in Australia too, the government is offering a cover of 50 per cent as guarantee on small loans. Meanwhile, in India, MSMEs are caught in a bind. These MSMEs in general and micro-enterprises in particular are facing a number of problems which make them one of the most vulnerable sectors of the economy especially during the coronavirus crisis where the demand has fallen by a large margin, affecting their day-to-day business. The ongoing COVID-19 pandemic has caused the Micro Small and Medium Enterprise (MSME) sector to have the risk of permanent closure of their business. Although, the exact impact of the virus on the Indian economy is not known until the pandemic is over, it is certain that the country would have a hard time coping with the deep recession complemented with a sharp fall in the GDP and surge of the unemployment rate in the country. The long-term impact of the pandemic will be a result of how the masses and the government react to the prevailing situations and the changes made in policies and businesses. In the current scenario, there is a pressing need to work towards self-reliance of the country which would be possible by empowering the MSME sector; if this sector is made stronger, it can prove to be a boon for the Indian economy in the near future.

. As per our survey report we can conclude that the micro-enterprises surveyed in Kharghar city of Navi Mumbai proved to be resilient enough & stood tall against the challenges faced by the pandemic and has been affected to a lesser extent as majority of the participants were from service sector and were flexible enough to change their profile of services in the locality, as many have found innovative methods to cope with the crisis. Their biggest problems have been declining demand and broken supply chains, and cash constraint yet there is hope for the challenge.

The long-term impact of the pandemic will be a result of how the masses and the government react to the prevailing situations and the changes made in policies and businesses. In the current scenario, there is a pressing need to work towards self-reliance of the country which would be possible by empowering the MSME sector; if this sector is made stronger, it can prove to be a boon for the Indian economy in the near future. The recovery in economy depends on the timings and magnitude of government support. The COVID-19 pandemic has a clear message for the Indian economy to adopt sustainable developmental models, which are based on self-reliance, inclusive frameworks and are environment friendly. Make in India and Digital India will be encouraging more

While the study makes little contribution, a few limitations which is noted is that study used a case study methods by drawing on data collected via interviews only from ten micro-

enterprises hence it lacks generalizability due to the nature of research methodology. In future a large scale survey could be undertaken to verify the strategies provided in the research. Secondly the study relies on data collected from micro-enterprises only, hence, the findings may not completely reveal the situations among small and medium sized operations. Therefore a future study could explore the impact more strongly, hence needed.

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A STUDY OF RETELLINGS IN INDIAN MYTHOLOGY WITH SPECIAL REFERENCE TO RAM CHANDRA SERIES BY AMISH TRIPATHI**Ashish Agrawal**

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ABSTRACT

The current study emphasizes on the retellings in Indian mythology with special reference to the Ram Chandra series. Indian Mythology has been re-interpreted by different authors of India and other countries in different languages. Where every author had tried to interpret varies events of Indian Mythology according to their understanding and perspective.

Ancient Indian epic Ramayana has been interpreted by many authors in their own unique way. The same way in Ram Chandra series Amish Tripathi re-tells the epic using different symbols and naming the places i.e. Saptasindhu, Malayputra, Vishnu etc. The authors today have also put effort in altering the forms of conventional mythology to address the modern-day issues of the society. Even though the retellings are changing with a different face each time the crux of the story remains the same. It is expected to have regular upsurge in the mythological content till the faith and culture is integral in the society.

Through a qualitative approach, the researcher has focused on studying the different aspects involving in the increasing demand for the mythological tales in current youth. These aspects can be political, social, and cultural or may be commercial. The researcher has also tried to analyse the content varying in the tales of Ramayana with special reference to the Ram Chandra series.

Key Words: *Mythology, Ramayana, Amish Tripathi, Contemporary Literature, Culture Retellings,*

INTRODUCTION

One of the most prominent art of this era is story telling. Although it's not new at all story telling has been an integral part of ancient Indian culture. There used to be "Lok Kathaye, Dant-Kathaye" to make people aware about different events. We can still see paintings in different temples and historical places telling stories. This has always been an important source of communication. One can always relate it with the grand parents who used to tell us stories every day about different events and historical tales. However, since it is said "There is only one thing in this world which is constant that is Change" in the same way story telling has also been changed drastically over the period. Now we have Theater, Drama, Movies, Novels but essence is still same. Story telling always excites people.

According to ancient history, the initial form of storytelling that has been discovered is from the Lascaux Caves in the Pyrenees Mountains in southern France. In 700 B.C., the first printed story, the epic of Gilgamesh¹, was created and spread to other parts of Europe and Asia. The story was carved on pillars of stone. So that all can see, this spread the story around quickly. In the 200 B.C., Aesop's fables were written down as a memory to Aesop, a Greek philosopher who lived in the 500 B.C. A majority of books sold in the early age relied on solid resources for their writings; the resources been witnesses, the communication between families and communities about certain events, travellers, etc.

Afterwards there was the great revolution – Digital Communication. Where radio was being used for storytelling. Then at a later stage Television came to existence, where not only people could listen to stories but also watch along with their families. Then it came the era of social media i.e. Facebook, YouTube, WhatsApp, Instagram, Line, Hike, Twitter, Google, Yahoo, Hotmail etc. Which made it possible for common people to write on World Wide Web. Where people from across the world can read and explore.

Storytelling and Mythology:

Scriptures are the greatest bodies of transcendent myths. It is for mythic archetypes and mythic structures that writers and filmmakers have visited and re-visited them time and again. Indian Mythology has been a big fascination and inspiration for a large no. of authors as well as readers. Hence, these collections of tales popularly known as *Purans* or Epic have been widely used by different authors and film Directors. A good number of TV serial and movies have been made using these mythological tales and those have been super hit also. These inspiring mythological tales are being passed from one generation to next either through storytelling, movies, serial or books. Indian mythological tales are highly motivating and full of powerful messages. These tales leave great impact on readers' mind. Many motivational speakers use these mythological tales to motivate

their audience and to teach management and leadership lessons. These tales help individual to transform their personality. There has been remarkable response of mythological works in Indian market whether in form of books or TV serials. Therefore this genre has become very popular among Indian authors specially. A few authors have been renowned because of their writing style about Indian mythology i.e. Devdutt Patnayak, Ashwin Sanghi, Ashok Banker, Amish Tripathi etc. In the work of majority of these authors stories are presented in a very fictitious way while the essence remains same.

This is one of the most prominent reason why authors are using *Mahabharata*, *Ramayana*, *Shiv Puran* and vedas as their base stories in their fiction books. These narratives appear in numerous stories or trilogies, with the Gods and their counterparts, that is the demons, their fights, the triumph of good over evil, they appear in comic books and graphic novels, they appear in magnificence on the silver screens and in the end when all this fails we see a child somewhere watching Shiva, Bal Ganesha, Bal Hanuman and Chhota Bheem as mere cartoon heroes. So, what we learn from this is that these mythological stories may have been a museum artifact but they are not yet vanished.

These mythological stories have been read by different authors several time and re-told in their own unique style. These retelling entertain the youth of the day at the same time it ignites questions in the readers' mind to know and explore the truth behind these mythological tales. It is also notable that the audiences for cinemas, theatre-classical, folk and contemporary and even television serials are huge in numbers, if the story or concept is based on Indian mythology.

In a research done by Dr. Pradnyashailee Sawai (2015) in *The Context*, it is stated by him that pure myth can be retold in any language, any style and in any medium without losing its identity. It is his understanding that the reinterpretation of the tales is the way in which the writers tell us what they exactly feel about that particular story or the narrative.

Mythology in Ram Chandra Series:

Lord Ram is not portrayed as god in the Ram Chandra series of Amish Tripathi. He is an ordinary human being and ostracized prince. Who struggled entire life. In Amish's work the birth of Ram is celebrated as the arrival of Avatar, the re-embodiment. Amish describes Ram's birth realistically. When Ram was born, he did not move and he was not breathing at all. Nilanjana, who was the doctor patted on his back to make him cry. She placed the baby by Kaushalya's side and the queen held the motionless body of the baby to her bosom. Soon, the baby moved and gripped her hair crying out loudly. On the same day, King Dasharath was defeated by Raavna. Therefore he developed the belief that Ram's birth is inauspicious. The court astrologer had said that if the baby was born before midday, he would turn out to be the greatest person in the history but if he was born after midday, he would suffer misfortune and never have personal happiness. Nilanjana had recorded the time of Ram's birth. It was exactly midday. But King Dasharath was convinced that he was born with bad karma and his birth was inauspicious for the Raghu lineage.

Dasharath in the book of Amish Tripathi does not love and admire Kaushalya which is different from other Ramayana versions. This deviation also shows that Dasharath did not possess royal qualities that were required in a great king. His beloved wife was Kaikeyi who had saved his life in the battle of Karachapa. As a noble son, Ram never thought or voiced reproachful words about Dasharath.

Where as Valmiki Ramayana depicts Dasharatha as a wise king.

“There reigned a king of name revered,
To country and to town endeared,
Great Dasharatha, good and sage,
Well-read in scripture's holy page;
Upon the Kingdom's weal intent
Mighty and brave and provident;
The pride of old Ikshvaku's seed
For lofty thought and righteous deed.”

(Valmiki Ramayana)

The character of Sita In Amish Tripathi's second book of Ram Chandra series *Sita: Warrior of Mithila* has been depicted in a different way. She has been showcase as Prime Minister of Mithila. She has been portrayed as strict administrator, excellent warrior, a girl with muscular physique and whitish complexion. She was a great intellectual as well. Amish portrayed her character in highly poetic words. He writes: "Had the entire universe garnered all its talents into creating a perfect face -of delicate beauty and ferocious will-this would be it". Ram was fascinated by her beauty and behavior. He felt that his heart found a true partner in Sita.

She was also impressed by Ram. Deep down, she had decided to live her life with Ram. At Gupt Swayamvar, Ram strung the bow, mocked the arrow and pierced the eye of the whirling fish above.

Here it is significant to note that Amish deviated the story of Valmiki Ramayana. In Valmiki Ramayana and Tulsi's Ramcharitmans condition was only to lift and string the bow. But he add further test of Draupadi Sayamvar to hit the eye of fish.

CONCLUSION

At certain places, readers may feel that there are gaps which were left unfilled by the author. However, the way Amish has written the story is mesmerizing. He has re-told the mythology in his unique style but essence is same. The most important aspect of the book is a fine, elusive observation on various issues of the nation, life and society. The Imagination power and creativity of the author has made the series very interesting. Modern day youth also find it exciting and at the same time they can evolve their personality. The study answered the basic problem of the research: The essence of mythology remains intact even if the stories and retellings are changed. There is a constant demand for mythological and historical stories keeping in mind the cultural diversity of the country.

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INVESTIGATING THE GENDER-SPECIFIC PERCEPTION OF CULTURAL ECOSYSTEM SERVICES CONCERNING A HISTORICAL SITE IN INDIA

Kalikinkar Das¹ and Dr. Arijit Das²¹Research Scholar and ²Associate Professor, Department of Geography, University of Gour Banga, India**ABSTRACT**

In Malda, Gour is an important space that supplies cultural ecosystem services (CESs) and serves the needs of different age groups. Various studies have examined the behaviours and preferences of different age groups in parks. The results of the spatial landscape environment from a Male and Female perspective on value demand and acquisition differ between elderly, middle-aged, and young people. We selected the same number of young, middle-aged, and old age respondents as males and females for our study. In addition, this study explored the relationship between the perceived CES needs of six groups and the spatial landscape ecosystem with the help of the Social Values for Ecosystem Services model. Results showed that young male people give importance to historical architecture, roads, excavation sites and waterbody, whereas young-aged female groups give importance to parks, historical architecture and religious sites. Male in middle age mainly chose waterbody and road whereas females of the same group chose waterbody and religious spot. Both males and females of old aged people group chose religious spots, roads and mango orchards as essential sites.

Furthermore, for the delivery of therapeutic value, squares were more important for the elderly. The areas of lakes or wetlands with geographical combinations of landscape sketches and flowers were the high-value spots for supplying multiple CESs in urban parks. This study emphasizes the differences in demand and acquisition of cultural added value provided by the environment between the six groups; young male, young female, male middle age, middle-aged female, old male age and old-age female.

Keywords: Cultural ecosystem services (CES), Social Values for Ecosystem Services (SoLVES),

IMPACT OF BROMOSUBSTITUTED AROMATIC ALDEHYDE ON THE SYNTHESIS OF 3-AROYL FLAVANONES

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ABSTRACT

Flavanones or 2,3-dihydroflavones were usually prepared by condensing 1,3-propanediones and aromatic aldehydes. For the formation of 3-aryl flavanones, aromatic aldehydes were used as precursors. In terms of yield, substitution of a bromo group in the aromatic ring was investigated. The yield of the product reduces when a bromo group is introduced on the o/p position of an aromatic aldehyde because the -CHO group is deactivated for condensation with the reactive methylene group.

Keywords: 3-aryl flavanone, bromobenzaldehyde, 1,3-propanedione.

EXPLORING WETLAND TRANSFORMATION IN THE MORIBUND DELTAIC INDIA

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ABSTRACT

Wetland has been considered a curtail hydrological component with utmost environmental and ecological importance. The Ganga-Brahmaputra moribund deltaic floodplain region hosted many freshwater wetland ecosystems with rich biodiversity and socio-economic importance. Besides such importance, this unique region has experienced significant hydrological transformations. The present study explores the direction of such hydrological transformations and the rate of conversion using the image-algebra-based change detection (IACD) technique in different decadal hydrological phases from 1988 to 2017. Three key hydrological parameters, such as Water Presence Frequency (WPF), Depth, and Hydroperiod parameters, have been considered for hydrological strength mapping using two ensemble machine Learning (ML) techniques: Random Forest (RF) and XGBoost. Both models show that around 75% of the wetland area was lost during phase I to III, and the sequence of such loss speeded across weaker and even moderate hydrological strength zones. The hydrological strength map has been used to identify wetland transformation in different phases of change. It shows that more than 22% of the weak HS zones in phase II have been transformed into non-wetland or land areas, which increased to 55% in phase III. Notably, ~40% of wetland area suffered from a negative degree of transformation during phases I to III, raised to 63% during phases II to III. In contrast, the degree of positive transformation lowered from 17% to 9% during the same transitional period. Uncertain channel hydrodynamics, rainfall and groundwater fluctuation, extensive agricultural practices, and settlement encroachment toward the wetland habitat are the leading causes of such transformation. Considering the importance of floodplain wetlands, the paper provides direct, specific, and explicit information about wetland transformation for setting up the ground for better planning and management strategies.

HYDROLOGICAL ALTERATION AND ITS ECOLOGICAL IMPACT ON THE LOWER TANGON RIVER BASIN, INDIA

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ABSTRACT

The present study highlighted the multi-temporal behavior of hydrological alteration (HA) of a river mainly triggered by damming over the Tangon river of India and Bangladesh in 1989 and its impact on eco-hydrological health. For measuring hydrological alteration, hydrological variability at month scale, diurnal flow change using histogram comparison approach (HCA), degree of alteration using a heat map, periodicity analysis using wavelet transformation method were used. Apart from some conventional approach of measurement like the range of variability approach (RVA), eco-deficit/surplus, degree of impact (ImHA) using 33 indicators of HA (IHA), the present study endorsed a new approach (integrated degree of impact due to HA (IImHA)), for computing overall impact of ecological effect in a river. From the result following hydrological and eco-hydrological alterations were derived in the post-dam period: (1) monthly water level (WL) was attenuated by 1.5 to 3 m. (2) monthly variability of flow increased by 10%, (3) degree of negative HA ranged from 10-23% with high during non-monsoon months, (4) statistically significant periodicity (5% level) in flow spectrum was identified after dam, (5) HCA revealed that diurnal flow distribution turned from positive to negatively skewed pattern (6) RVA based monthly failure rate ranges from 13.95% to 25.58%, (7) ImHA of different IHA groups ranged from 0.46 to 0.56 signifying poor to moderate impact and (8) proposed IImHA value accounted (0.406) moderate degree of ecological impact. The study recommends to apply IImHA in such similar works for making the study effective and instrumental. The findings of this study would be effective for the policy makers specially for the restoration of flow and ecological health.

Keywords: Flow alteration, Flow variability, Degree of change, Histogram comparison approach, Ecological threshold, Flow failure, Eco-deficit, and Integrated degree of impact

**SETTLEMENT OF CLAIMS IN LIFE INSURANCE POLICIES: A COMPARATIVE STUDY
BETWEEN LIFE INSURANCE CORPORATION OF INDIA AND RELIANCE NIPPON LIFE
INSURANCE COMPANY****Sunil Kumar**Research Scholar, Department of HPKV, Business School, Central university of Himachal Pradesh,
Dharamshala**ABSTRACT**

Life insurance is purchased to protect against financial risk while also providing a higher return on investment. Claims are made when a person reaches maturity or if they die or become disabled. The research focuses to compare the claim settlement processes of life insurance company (LIC) of India and Reliance Nippon Life Insurance Company (RLIC). In both companies, the number of claims is rising as the market grows due to an increase in the number of policies. As a result, a simple and quick claim settlement procedure is critical.

This research study is descriptive, and it is based on primary data collected through well-structured questionnaires designed to focus on respondents from Himachal Pradesh, as well as secondary data obtained from Insurance Regulatory and Development Authority of India IRDA and research papers published in various journals. With the use of a contingency table and the Chi-Square test, the primary data is tabulated and evaluated further. According to the findings, both the LIC of India and RLIC follow legitimate claim settlement procedures. The Life Insurance Corporation of India's claim settlement system is extremely efficient, however it is not as transparent and accessible as the Reliance Nippon Life Insurance Company's claim settlement procedure.

Keywords: Claim settlement, Insurance Company, LIC of India, Life Insurance Reliance Nippon Life Insurance Company (RLIC).

WATER RICHNESS AND HABITAT SUITABILITY STATE AND THEIR SPATIAL LINKAGES IN THE WETLANDS OF INDIAN MATURE GANGES DELTA

Sandipta Debanshi¹ and Swades Pal²¹Research scholar and ² Assistant professor, Department of Geography, University of Gour Banga, India**ABSTRACT**

Present study has attempted to measure Water Richness (WR) and Wetland Habitat Suitability (WHS) in deltaic environment and assessed their spatial linkages. Both the components are very essential and should be measured to explore ecosystem service and environmental health of a region. For investigating water richness of the wetland six water availability indicating parameters have been chosen and for assessing wetland habitat suitability four additional parameters have been taken into consideration. Four widely used and recognized machine learning algorithms like Reduced Error Pruning (REP) tree, Random forest, Artificial Neural Network (ANN) and Support Vector Machine (SVM) have been employed here in order to develop suitable model at two phases. Results reveal that very high water rich zone is found over 200 to 215 km² wetland area followed by high water rich zone over 125 to 140 km² wetland area in both the phases. Wetland habitat suitability assessment shows only 100 to 150 km² of the wetland having very high suitability and 110 to 120 km² of wetland having high suitability. Field investigation and accuracy assessment support the validity and acceptability of the results. Spatial linkage between water richness and habitat suitability demonstrates that 30 to 40% very high water rich zone represents very high habitat suitability figuring out importance of both the models. Therefore, results recommend that only water richness of the wetlands of the wetlands is not enough to represent the habitat suitability in the densely populated riparian flood plain region.

Keywords: Water richness, Wetland habitat suitability, Machine learning algorithms and Spatial linkage

A SEM APPROACH TO GAUGE THE Z GENERATION INTENTIONS TOWARDS THE ENTREPRENEURIAL SPIRIT**Dr. Rachana Jaiswal**

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ABSTRACT

A preponderant trend exhibits a significant contribution of promoting entrepreneurial start-up towards generating employment and economic development. Nevertheless, the role of higher education play a crucial role in designing the instrument for developing entrepreneurial attitude among the potential and nascent entrepreneurs. Despite of tremendous studies done on entrepreneurial intention among the individuals it is still vague to generalise the factors which instigate to go for venture. Albeit, recent study emphasised on cognitive approach which play a crucial role in administering entrepreneurship but demographic profile too have influential role in individual decision for start-up. Therefore, it is necessitates to validate the factors which contribute more to shaping the mindset of an individual to start a firm. This paper is an attempt to bridge the gap by providing insights and helps to add-on the entrepreneurial education. To provide empirical based suggestion a cross sectional survey method was used with a pre-validated questionnaire which was originally developed from Ajzen's theory based on a planned behaviour model on a sample of 196 respondents comprising state and central university of India. The results were analysed through confirmatory factor analysis aligned with structural equation techniques to develop a model which validates the entrepreneurial intention among the Indian management students. The finding of study exhibits that individuals with perceived control behaviour and family background play a significant role for entrepreneurial intent among the students. This study helps to generalise the factors impacting attitude and intention to become an entrepreneur and build an institutional environment on the same by putting emphasis on those factors in the course curriculum of higher education. Moreover, entrepreneurial intent questionnaires (EIQ) can be used as instruments to validate entrepreneurial based programmes.

Keywords: Entrepreneurial orientation, SEM (Structured Equation Modelling), entrepreneurial intention, theory of planned behaviour.

APPLIED ASPECTS OF SUSHRUTA'S ETHICS IN EVALUATION OF EFFICACY OF SIRAVYADHANA (BLOOD LETTING) IN VENOUS ULCER CASE SERIES**Dr. Devyani Dasar (Jaiswal)**

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ABSTRACT

Ulceration of the foot is common, disabling and frequently leads to amputation of the leg. Mortality is high and healed ulcers often recur. Venous ulcer are wounds that are thought to occur due to improper functioning of venous valves, mechanical changes in confirmation of the bony architecture of the foot, peripheral neuropathy and atherosclerotic peripheral arterial disease. Its occurrence is 70%-90% of leg Ulcer cases. The risk of lower extremity amputation is 15 to 46 times higher.

Acharya Susrutha has given prime importance to the knowledge and management of vranas. Sushruta have mentioned visravana as 9th upakrama among the shastiupakramas. Among the various methods of raktamokshana, Siravyadhana is selected for this study. It is considered to restore and improve blood circulation to tissues and re-establishes venous drainage. It improves the quantity of oxygen in the circulating blood to optimum level. Also Ethical aspects of Sushruta samhita is focused in present case series and worthy in recent surgical era.

Case series summary– *Patients having complaint of ulcer on foot selected for present study with sample size 40. Triphala and Mamsarohini kwatham Dhavan once in a day daily along with Siravyadhana twice a week (14 days) after taking written informed consent as explained in Sushruta samhita. It is the most efficacious local application for itching and discolouration at foot. Siravyadhana found effective in healing Of Venous Ulcer.*

Conclusion- *Triphala and Mamsarohini kwatham Dhavan and Siravyadhana found effective in healing Of Venous Ulcer within short span of time with good healing, for which billion dollars is spend worldwide in vain. It is easy to prepare.*

Keywords: *Triphala and Mamsarohini kwatham Dhavan, Siravyadhana, Venous Ulcer*

SYSTEMATIC REVIEW OF HOW ECO-ENVIRONMENTAL TRANSFORMATION DUE TO URBANIZATION CAN BE INVESTIGATED IN THE SUSTAINABLE DEVELOPMENT OF INDIAN CITIES**Tirthankar Basu* and Arijit Das**

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ABSTRACT

The existing model of urban development is found responsible for growing environmental problems in the cities. This is due to the greater focus on the economic development at the cost of the environment. As a result, it led to some serious problems like air, water, soil pollution in the cities. It urged for a better ecologically based urban planning system wherein addressing the transformation from the natural landscape to the urban scape is essential for effective management. However, still in the developing countries like India, no significant attention is given on the environment management in case of urban planning. Absence of specific directions to investigate the eco-environmental transformation in urban planning is one of the major reasons behind this. This study through the systematic review of 72 existing literatures tried to identify the current theories and concepts to address the eco-environmental transformations in the urban areas. It found four different themes for investigating the said issues in the urban centres. These are land use & land cover prediction, green space, ecosystem services, and perception study. Lots of articles are available on the first three issues. But, the fourth theme contains comparatively less number of articles. In fact, most of the works on this theme was carried out in the recent past. This study tried to summarize all the facts associated with these themes through intense revision. Finally, it also tried to highlight the methods or ways that can be adopted to apply these in Indian cities.

Keywords: Literature review; Scopus; Landscape transformation; Ecosystem service; Perception study

PRELIMINARY PHYTOCHEMICAL STUDIES ON THE BARK EXTRACTS OF THE HIMALAYAN TREE: CORNUS CAPITATA

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ABSTRACT

Aim - Qualitative and quantitative analysis of phytochemicals from the bark extracts of Cornus capitata by preliminary phytochemical screening.

METHODOLOGY

Preliminary phytochemical analysis for alkaloids, flavonoids, glycosides, phenols, saponins, steroids, tannins, terpenoids and quantitative phytochemical analysis for alkaloids, total phenolics and total flavonoids were made by following standard procedures. The various bark extracts of *Cornus capitata* is subjected to thin layer chromatography and separation of spots were observed under day light.

RESULTS

The quantitative phytochemical analysis of this species exhibited the presence of alkaloids, total phenolics, total flavonoids, tannins, saponins and ascorbic acid in considerable quantity. Thin layer chromatography of methanol extract also shows the separation of some compounds as evident by presence of spots.

CONCLUSION

From this study, it can be concluded that the *C. capitata* may be a potent source for some medicinally important phytochemicals that needs further exploration.

**PRELIMINARY PHYTOCHEMICAL STUDIES AND TLC ANALYSIS ON THE RHIZOME
EXTRACT OF HEDYCHIMUM COCCINEUM**

Anjali Gusain and Nisha Singh

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ABSTRACT

Aim - Qualitative and TLC analysis of phytochemicals from the rhizome extract of H. coccineum by preliminary phytochemical screening.

METHODOLOGY

Preliminary phytochemical analysis for alkaloids, flavonoids, glycosides, phenols, saponins, steroids, tannins, terpenoids were made by following standard procedures. The various extracts (Petroleum ether, Chloroform and Methanol) of *H. coccineum* are subjected to thin layer chromatography and separations of spots were observed under UV light.

RESULTS

The quantitative phytochemical analysis of this species exhibited the presence of alkaloids, phenolics, flavonoids, tannins, saponins and ascorbic acid in considerable quantity. Thin layer chromatography of methanol extract also shows the separation of some compounds as evident by presence of spots.

CONCLUSION

From these findings, it can be concluded that the *H. coccineum* may be a potent source for some medicinally important phytochemicals that needs further exploration.

AN INVENTORY MODEL FOR CONVERTIBLE ITEMS

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ABSTRACT

An economic quantity model for sequential convertible items is developed for sequentially convertible items which deteriorate with respect to time. The initial form of item converts into another form of different nature of items. The conversion cost and times need to convert the items. The demand of items is different for different converted items also the deterioration rate are different. As an example, milk is converted into butter and butter after duration. Conversion of items needs conversion cost and conversion time.

Keywords: Inventory, Convertible item, Conversion cost, Conversion time, Deterioration, Optimal time.

Subject Classification: 90 B 05

E-SERVICE ATTRIBUTES BUNDLE: A CONJOINT ANALYSIS APPROACH**¹Ms. Pooja and ²Dr. Kshamta Chauhan**¹Research Scholar and ²Associate Professor, Amity University, Noida**ABSTRACT**

Despite the enormous proliferation of virtual mode of shopping in recent years , a sudden spurt due to pandemic situation forced every business small or big to move to online platform. Intent of this research is to identify the combination for e-shops service attributes ,leading to positive customer experience .There has been very limited research that has traverse the service attributes of online websites to generate positive effect on customer online shopping experience. Previous researches highlighted only the behavioral constructs of using a shopping website to study the Customer satisfaction. This paper outlines various attributes of e-shops and the combination of these attributes that are more expediently resulting in positive customer experience. A Focus Group approach is used to explore the important e- service attributes and further segregating it in to desired levels. This provides a tentative combination of e-service attributes by orthogonal design using SPSS software. Further analysis is conducted by using Conjoint Analysis as a useful approach for determining the underlying combination of attributes that the user enjoy and valued most. Businesses that are able to amalgamate the array of e-service attributes provided will be able to improve the website flow and as a result, provide a greater positive customer experience to gain a competitive advantage. Current research provides valuable input in designing and altering the existing websites The websites can be altered, developed based on the findings of an adequate evaluation of how customers value various components of an e-shop. Choice based Conjoint Analysis is used as a tool to quantitatively analyse the data to create an optimal value propositions for service attributes of e-shops.

Keywords: Conjoint Analysis, E-Service attributes ,Online shopping experience, Positive customer Experience

MANUSCRIPT SUBMISSION

GUIDELINES FOR CONTRIBUTORS

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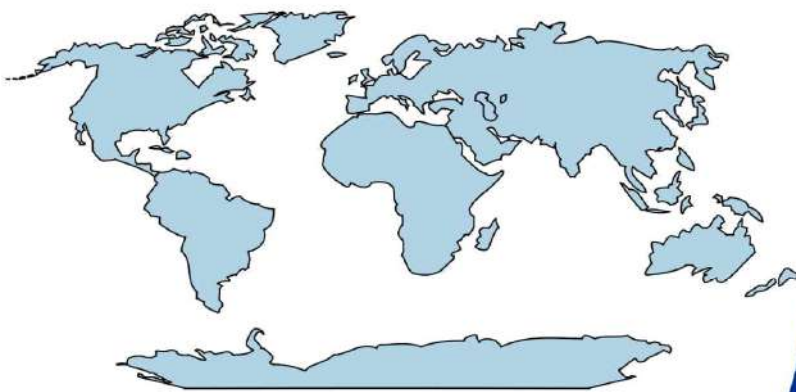
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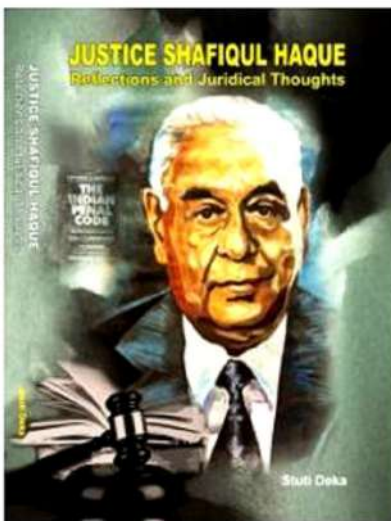


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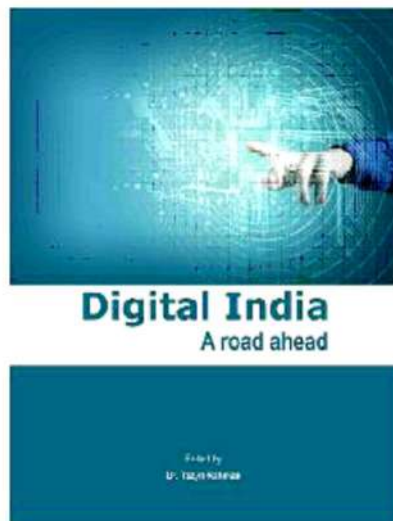
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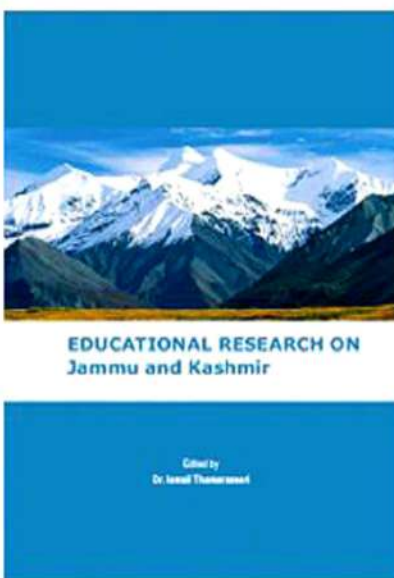
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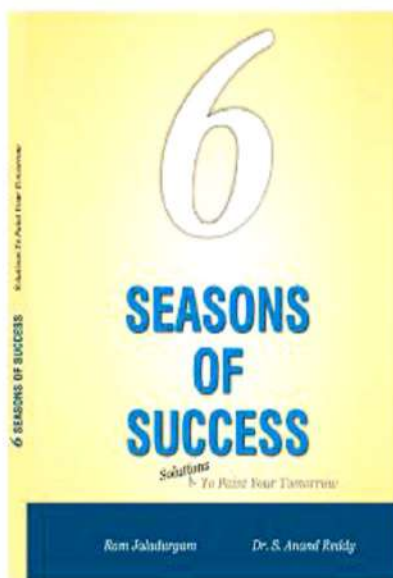
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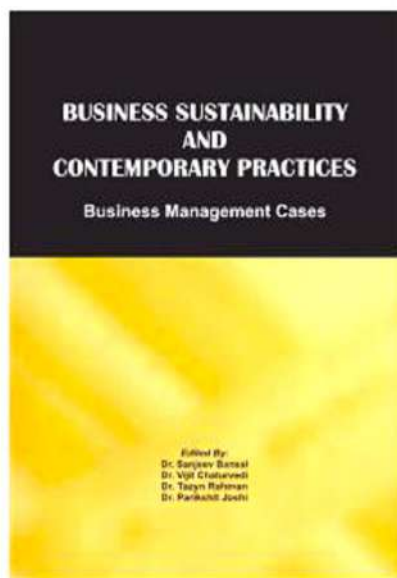
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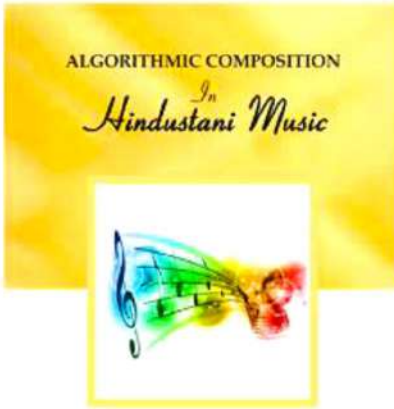
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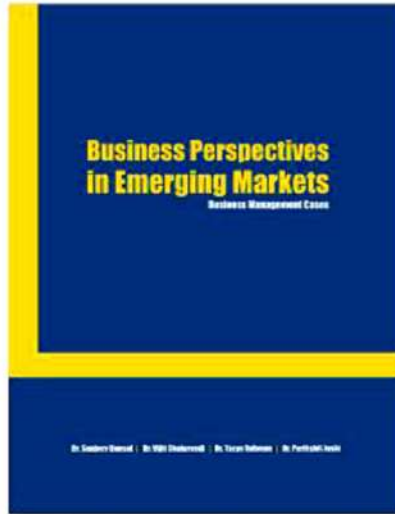
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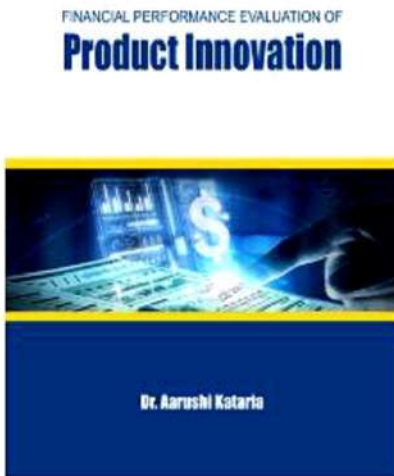


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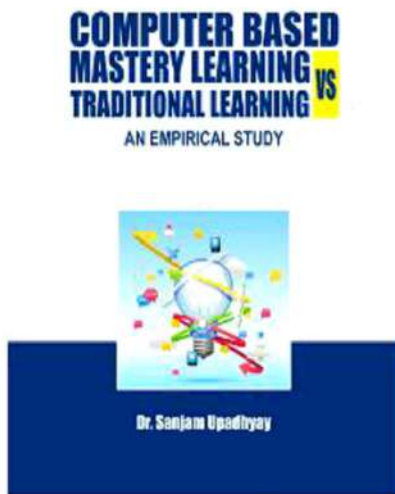
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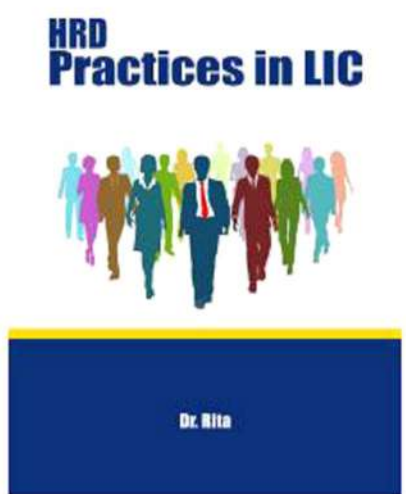
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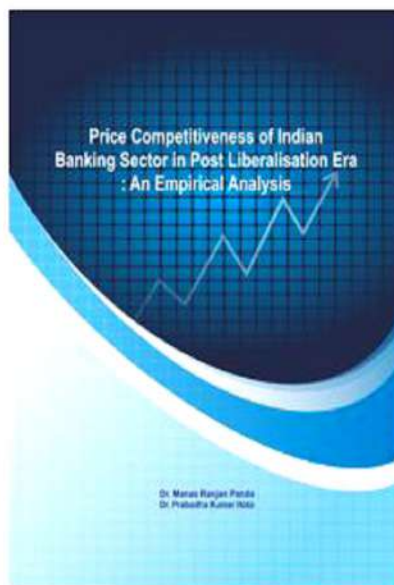
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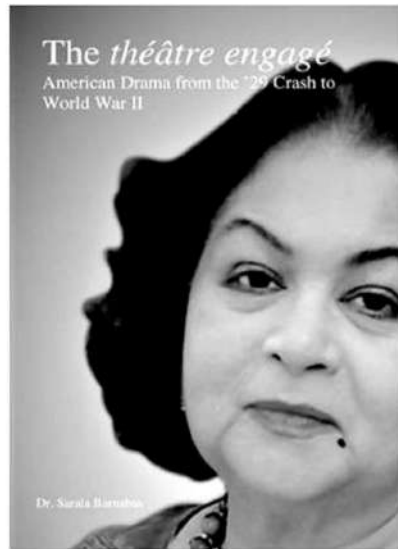
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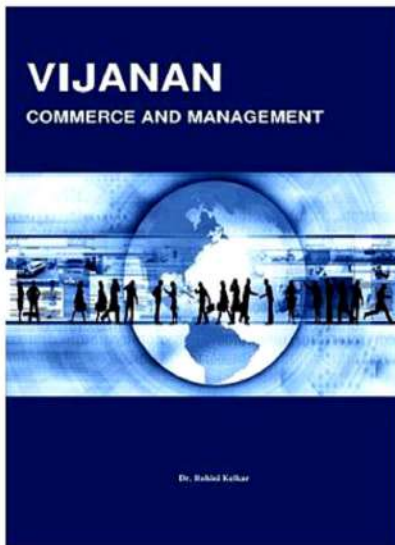
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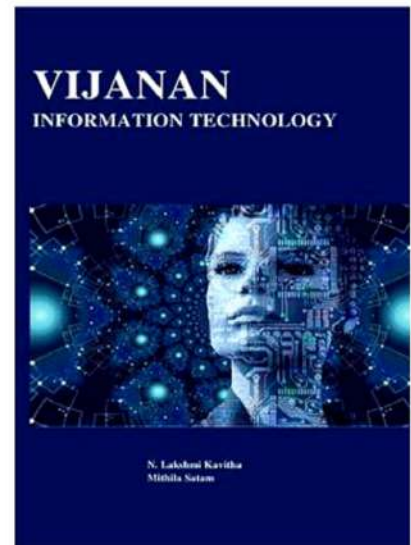
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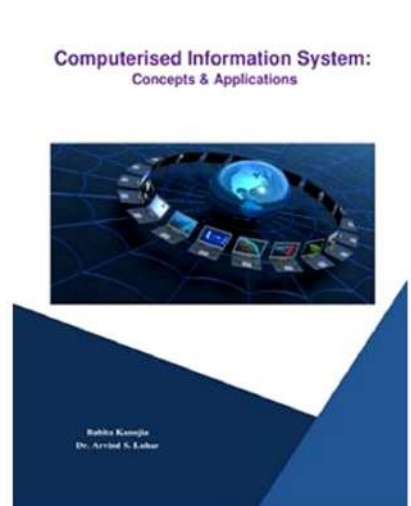
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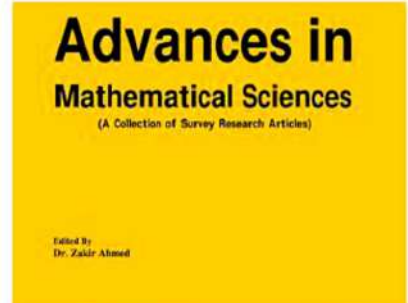
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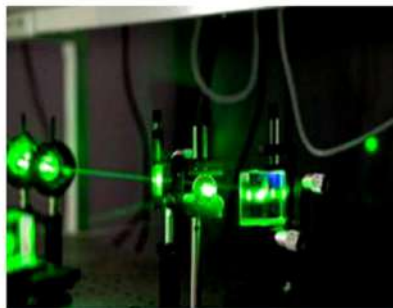


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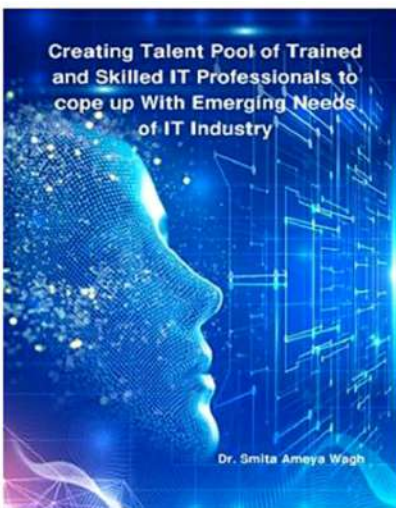
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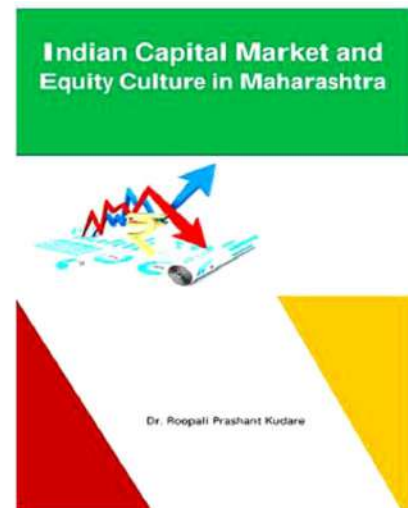
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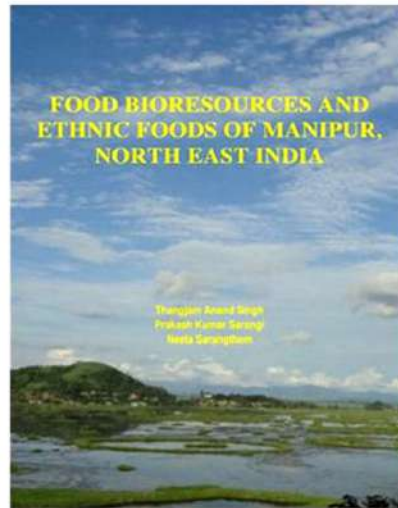
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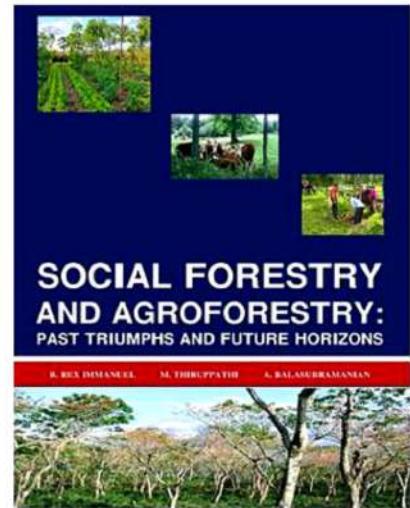
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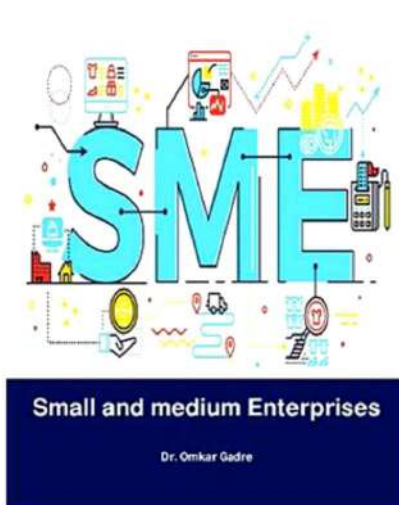
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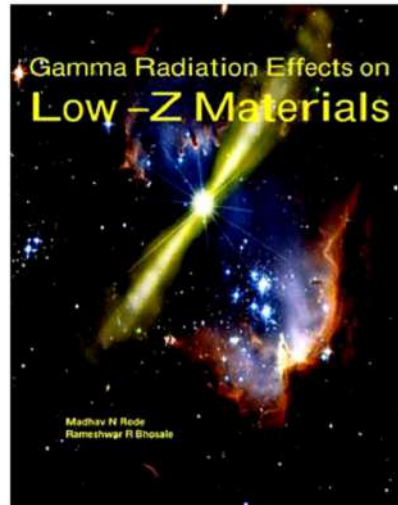
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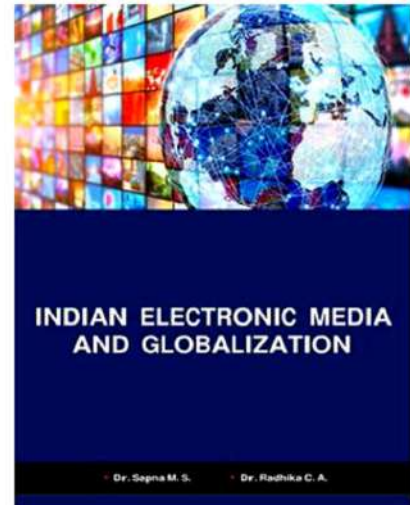
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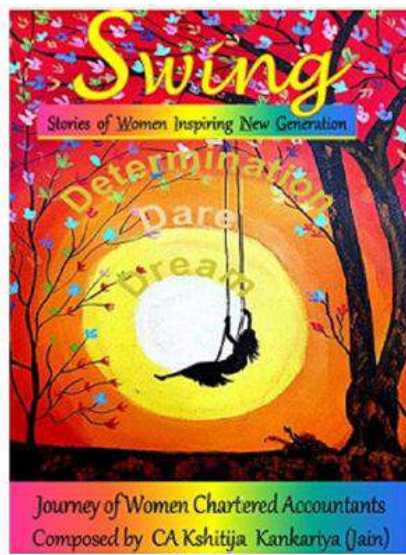
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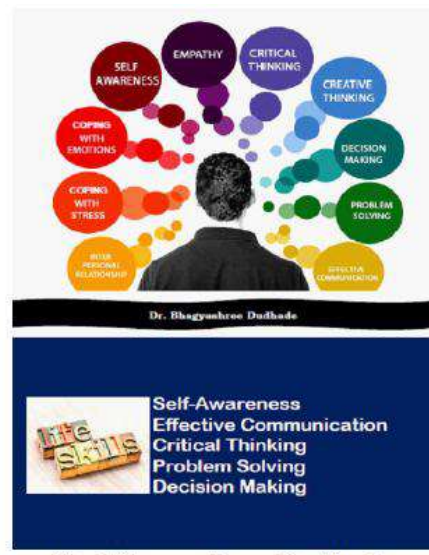
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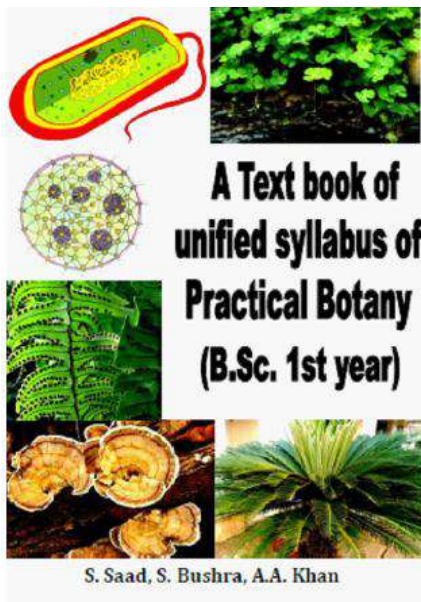
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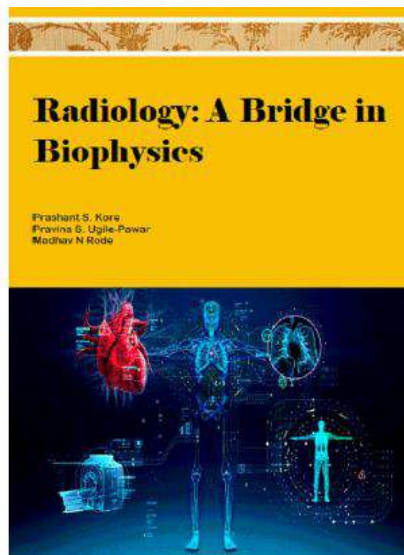
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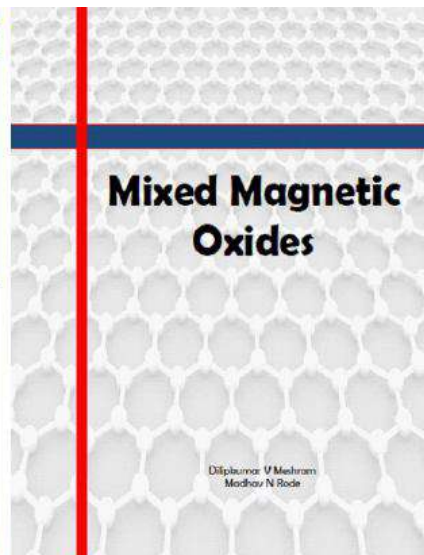
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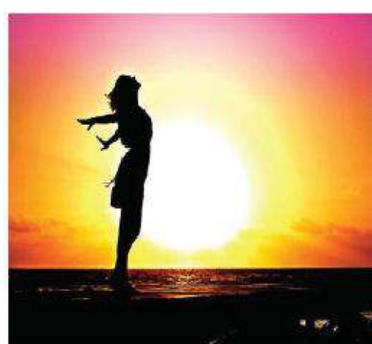
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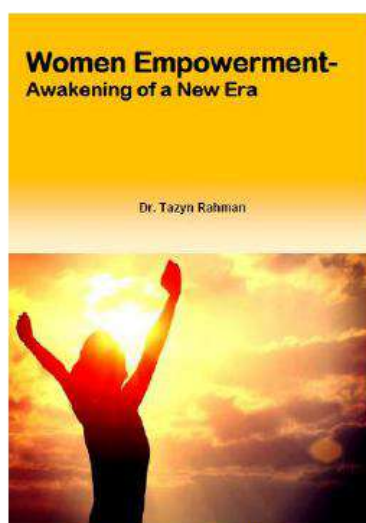
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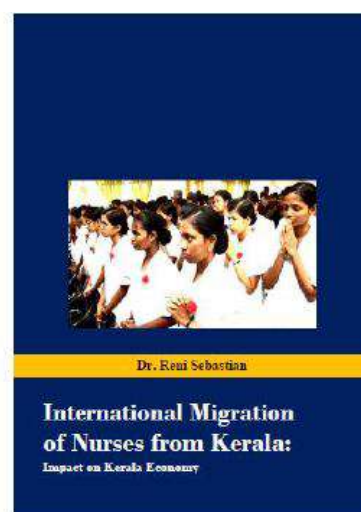
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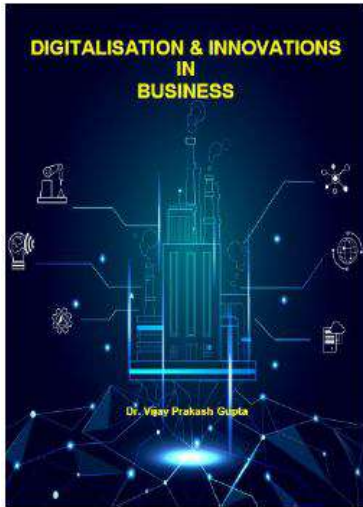
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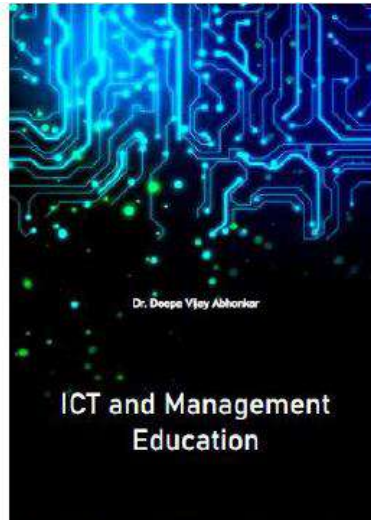
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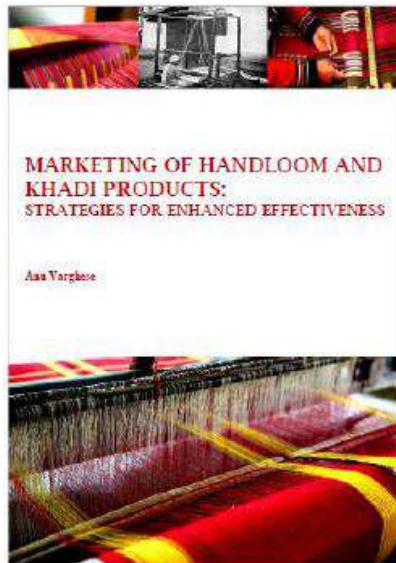
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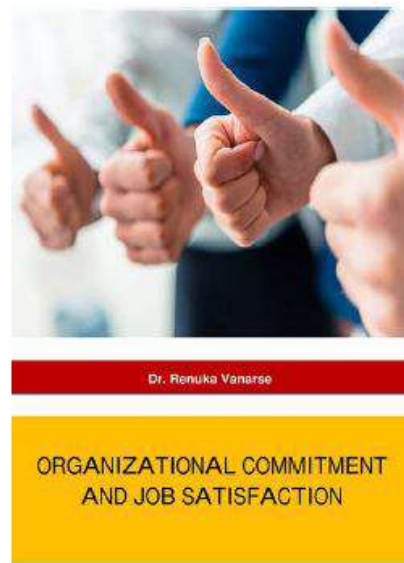
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