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CONTENTS

Research Papers

A REVIEW ON EMERGENCE OF INCLUSIVE EDUCATION AND ITS REFLECTION IN NATIONAL EDUCATION POLICY, 2020

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ABSTRACT

Article 26 of the Universal Declaration of Human Rights (1948) clearly stated that everyone has the right to education at least in the elementary and fundamental stages. More than 40 years ago, the Universal Declaration of Human Rights, asserted that "everyone has a right to education". Despite notable efforts by countries around the globe to ensure the right to education for all, some realities are persist that more than 100 million children, including at least 60 million girls, have no access to primary schooling. More than 960 million adults, two-thirds of whom are women, are illiterate, and functional illiteracy is a significant problem in all countries, industrialized and developing. In viewing this scenario, world declaration for education for all 1990 was adopted with purpose of every person child, youth and adult shall be able to benefit from educational opportunities designed to meet their basic learning needs. In India, According to the report of the National Sample Survey Office (NSSO), 32 million Indian children of age up to 13 years have never attended any school, the majority of them belonging to the socially disadvantaged class (2014). According to 2011 census,2.21% of Indian Population has one or other kind of disabilities. Out of 62.32 crore of male Indian citizen, there are 1.5 crore disabled male in India. Out of 58.76 crore female Indian citizens, there are 1.18 crore disabled female in India. In 2011, only 61% of the disabled children aged 5-19 years were attending educational institution. 12% had attended earlier and 27% never attended an education institution. The National Education Policy (NEP) 2020 adopted to envisage equitable and inclusive education for all, with special focus on children and youth, especially girls, from socially and economically disadvantaged groups.

INTRODUCTION

Universal Declaration of Human Rights (1948) proclaims that all human beings are born free and equal in dignity and rights. They are endowed with reason and conscience and should act towards one another in a spirit of brotherhood. Everyone is entitled to all the rights and freedoms set forth in this Declaration, without distinction of any kind, such as race, colour, sex, language, religion, political or other opinion, national or social origin, property, birth or other status. Furthermore, no distinction shall be made on the basis of the political, jurisdictional or international status of the country or territory to which a person belongs, whether it will be independent, trust, non-self-governing or under any other limitations of sovereignty. Every individual and every organ of society, teaching and education should be facilitated to promote respect for the rights and freedoms and by progressive measures, national and international, to secure their universal and effective recognition and observance, both among the peoples of member states themselves and among the peoples of territories under their jurisdiction. Article 26 of the Universal Declaration of Human Rights (1948) clearly stated that 1. Everyone has the right to education. Education shall be free, at least in the elementary and fundamental stages. Elementary education shall be compulsory. Technical and professional education shall be made generally available and higher education shall be equally accessible to all on the basis of merit. 2. Education shall be directed to the full development of the human personality and to the strengthening of respect for human rights and fundamental freedoms. It shall promote understanding, tolerance and friendship among all nations, racial or religious groups, and shall further the activities of the United Nations for the maintenance of peace. 3. Parents have a prior right to choose the kind of education that shall be given to their children.

OBJECTIVE OF THE STUDY

1. To ascertain world scenario regarding the movement of inclusive education.

2. To find out the emergence of inclusive education movement in India.

3. To work out the roadmap of inclusive education in India under National Education Policy, 2020.

Emergence of Inclusive Education Movement in the World

More than 40 years ago, the nations of the world, speaking through the Universal Declaration of Human Rights, asserted that "everyone has a right to education". Despite notable efforts by countries around the globe to ensure the right to education for all, some realities are persist that more than 100 million children, including at least 60 million girls, have no access to primary schooling. More than 960 million adults, two-thirds of whom are women, are illiterate, and functional illiteracy is a significant problem in all countries, industrialized and developing. More than one-third of the world's adults have no access to the printed knowledge, new skills and technologies that could improve the quality of their lives and help them shape, and adapt to, social and cultural

change. More than 100 million children and countless adults fail to complete basic education programmes; millions more satisfy the attendance requirements but do not acquire essential knowledge and skills.

At the same time, the world faces daunting problems: notably mounting debt burdens, the threat of economic stagnation and decline, rapid population growth, widening economic disparities among and within nations, war, occupation, civil strife, violent crime, the preventable deaths of millions of children and widespread environmental degradation. These problems constrain efforts to meet basic learning needs, while the lack of basic education among a significant proportion of the population prevents societies from addressing such problems with strength and purpose. These problems have led to major setbacks in basic education in the 1980s in many of the least developed countries. In some other countries, economic growth has been available to finance education expansion, but even so, many millions remain in poverty and unschooled or illiterate. In certain industrialized countries too, cutbacks in government expenditure over the 1980s have led to the deterioration of education. Yet the world is also at the threshold of a new century, with all its promise and possibilities. Today, there is genuine progress toward peaceful detente and greater cooperation among nations. Today, the essential rights and capacities of women are being realized. Today, there are many useful scientific and cultural developments. Today, the sheer quantity of information available in the world - much of it relevant to survival and basic well-being - is exponentially greater than that available only a few years ago, and the rate of its growth is accelerating. This includes information about obtaining more life-enhancing knowledge - or learning how to learn. A synergistic effect occurs when important information is coupled with another modern advance - our new capacity to communicate. These new forces, when combined with the cumulative experience of reform, innovation, research and the remarkable educational progress of many countries, make the goal of basic education for all - for the first time in history - an attainable goal. Therefore, we participants in the World Conference on Education for All, assembled in Jomtien, Thailand, from 5 to 9 March, 1990.

For the welfare of the disabled section of people, another convention was passed by the United Nation that United Nations Convention on the Rights of Persons with Disabilities 2006 comprising of 50 Articles. The Convention on the Rights of Persons with Disabilities and its Optional Protocol (A/RES/61/106) was adopted on 13 December 2006 at the United Nations Headquarters in New York, and was opened for signature on 30 March 2007. There were 82 signatories to the Convention, 44 signatories to the Optional Protocol, and one ratification of the Convention. This is the highest number of signatories in history to a UN Convention on its opening day. It is the first comprehensive human rights treaty of the 21st century and is the first human rights convention to be open for signature by regional integration organizations. The Convention entered into force on 3 May 2008. The Convention follows decades of work by the United Nations to change attitudes and approaches to persons with disabilities. It takes to a new height the movement from viewing persons with disabilities as "objects" of charity, medical treatment and social protection towards viewing persons with disabilities as "subjects" with rights, who are capable of claiming those rights and making decisions for their lives based on their free, and informed consent as well as being active members of society.

The Convention is intended as a human rights instrument with an explicit, social development dimension. It adopts a broad categorization of persons with disabilities and reaffirms that all persons with all types of disabilities must enjoy all human rights and fundamental freedoms. It clarifies and qualifies how all categories of rights apply to persons with disabilities and identifies areas where adaptations have to be made for persons with disabilities to effectively exercise their rights and areas where their rights have been violated, and where protection of rights must be reinforced. The Convention was negotiated during eight sessions of an Ad Hoc Committee of the General Assembly from 2002 to 2006, making it the fastest negotiated human rights treaty. The purpose of the Convention is to promote, protect and ensure the full and equal enjoyment of all human rights and fundamental freedoms by all persons with disabilities, and to promote respect for their inherent dignity.

Recognition of inclusion as the key to achieving the right to education has strengthened over the past 30 years, and is enshrined in the Convention on the Rights of Persons with Disabilities (herein after: the Convention), the first legally binding instrument to contain a reference to the concept of quality inclusive education. Sustainable Development Goal (SDG) 4 also affirms inclusive quality and equitable education. Inclusive education is central to achieving high quality education for all learners, including those with disabilities, and for the development of inclusive, peaceful and fair societies. Furthermore, there is a powerful educational, social, and economic case to be made. The OHCHR Thematic Study of the Rights of Persons with Disabilities to Education (2013) affirms that only inclusive education can provide both quality education and social development for persons with disabilities, and a guarantee of universality and non-discrimination in the right to education. However, despite progress achieved, the Committee on the Rights of Persons with Disabilities (herein after: the

Committee) is concerned that profound challenges persist. Many millions of persons with disabilities continue to be denied a right to education, and for many more, education is available only in settings where they are isolated from their peers and receive an inferior quality of provision. Barriers that impede access to inclusive education for persons with disabilities can be attributed to multiple factors, including:

a) the failure to understand or implement the human rights model of disability, in which barriers within the community and society, rather than personal impairments, exclude persons with disabilities;

b) persistent discrimination against persons with disabilities, compounded by the isolation of those still living in long-term residential institutions, and low expectations about those in mainstream settings, allowing prejudices and fear to escalate and remain unchallenged;

c) lack of knowledge about the nature and advantages of inclusive and quality education, and diversity, including regarding competitiveness, in learning for all; lack of outreach to all parents and lack of appropriate responses to support requirements, leading to misplaced fears, and stereotypes, that inclusion will cause a deterioration in the quality of education, or otherwise impact negatively on others;

d) lack of disaggregated data and research, necessary for accountability and program development, impeding the development of effective policies and interventions to promote inclusive and quality education;

e) lack of political will, technical knowledge, and capacity in implementing the right to inclusive education including insufficient education of all teaching staff;

f) inappropriate and inadequate funding mechanisms to provide incentives and reasonable accommodations for inclusion of students with disabilities, inter-ministerial coordination, support and sustainability;

g) Lack of legal remedies and mechanisms to claim redress for violations.

States parties must have regarded for the underlying general principles of the Convention in all measures undertaken to implement inclusive education and must ensure that both the process and outcomes of developing an inclusive education system comply with article. The General Comment is applicable to all persons with actual or perceived disabilities. The Committee recognizes that some groups are more at risk of exclusion from education than others, such as: persons with intellectual disabilities or multiple disabilities, persons who are deaf blind, persons with autism or persons with disabilities in humanitarian emergencies. Consistent with Article 4, paragraph 3, States parties must consult with and actively involve persons with disabilities, including children with disabilities, through their representative organizations (OPDs), in all aspects of planning, implementation, monitoring and evaluation of inclusive education policies. Persons with disabilities and, when appropriate, their families, must be recognized as partners and not merely recipients of education.

Prevalence of Disabled Population in India
According to census of India 2011, 2.21% of Indian population has one or the other kind of disability. This means 2.68 crore (26.8 million) people in India are disabled. Out of total 62.32 crore male Indian citizens, there are 1.5 crore (15 million) disabled males in India. Out of total 58.76 crore female Indian citizens, there are 1.18 crore (11.8 million) disabled females in India.

Disabled Population living in Rural/Urban Areas
About 69% of the overall disabled Indian population lives rural areas. This tells us that 1.86 crore (18.6 million) disabled people live in rural areas. Only about 0.81 crore (8.1 million) disabled people live in urban areas.
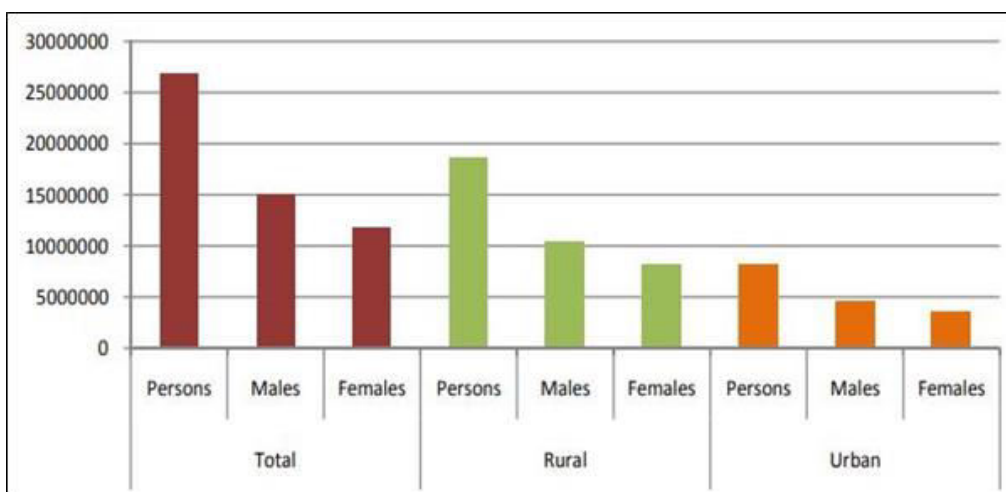
Disabled Population by Type of Disability

Following is the breakup of disabled Indian population by the type of disability. Please note that before RPWD Act 2016, only seven types of disabilities were recognized. Under RPWD Act 2016 a total of 21 types of disabilities, are recognized.

- 19% people have vision related disabilities

- Another 19% people have hearing related disabilities

- 7% people have speech impairment

- 20% people have locomotor disabilities

- 6% people are affected by mental retardation

- 3% people are suffering with mental illness

- 18% people have other types of disabilities

- 8% people have multiple disabilities

In all the above cases, males are more affected than females.
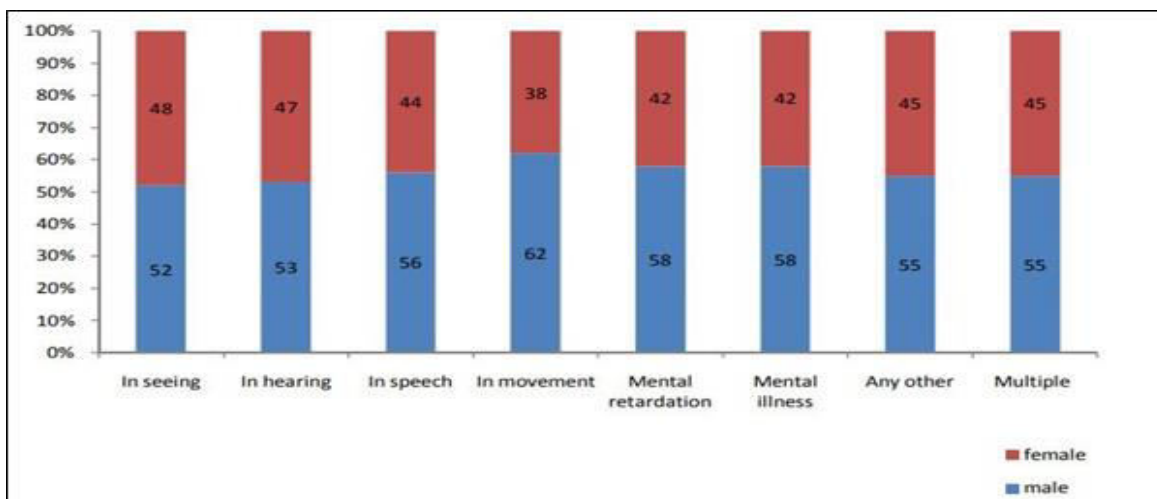
Disabled Type	Males	Females	Total
In Seeing	2639028	2394403	5033431
In Hearing	2678584	2394330	5072914
In Speech	1122987	875705	1998692
In Movement	3370501	2066325	5436826
Mental retardation	870898	635066	1505964
Mental Illness	415758	307122	722880
Multiple Disability	1162712	953986	2116698
Others	2728125	2199464	4927589

Disabled Population in India by Age Group

- 5% of all disabled people are in the age group of 0-4 years

- 7% disabled people are in the age group of 5-9 years

- 17% disabled people are in the age group of 10-19 years

- 16% disabled people are in the age group of 20-29 years

- 13% disabled people are in the age group of 30-39 years

- 12% disabled people are in the age group of 40-49 years

- 9% disabled people are in the age group of 50-59 years

- 10% disabled people are in the age group of 60-69 years

- 7% disabled people are in the age group of 70-79 years

- 3% disabled people are in the age group of 80-89 years

- 1% disabled people are in the age group of 90+ years (or age not specified)

The percentage of disabled is highest in the age group 10-19 years followed by age group 20-29 years for both the male and female disabled persons. Among the disabled males, 18% are elderly (above 60 years of age) whereas 23% of female disabled are elderly.
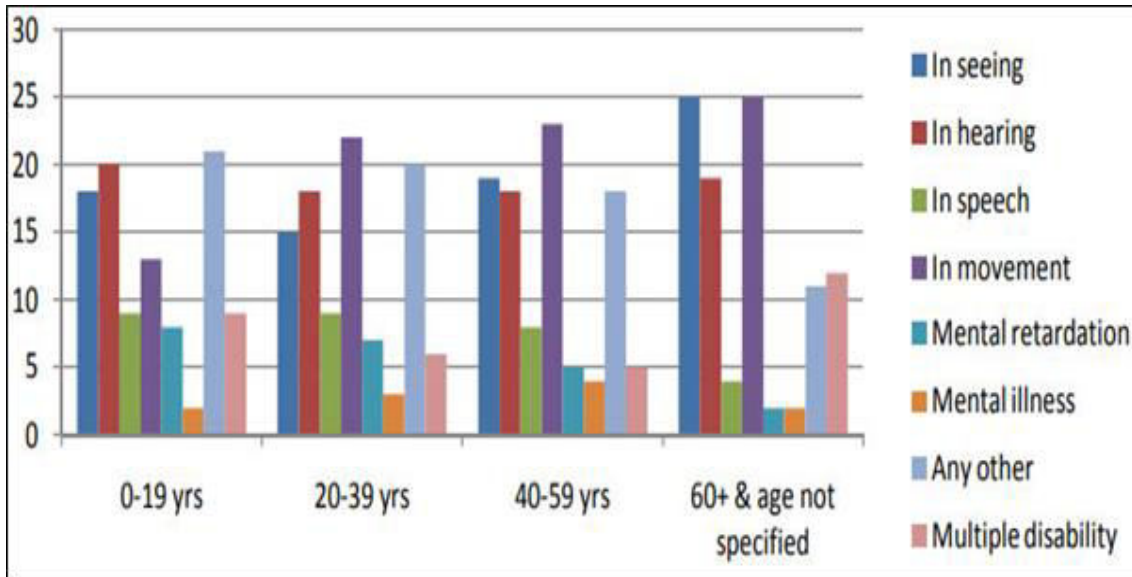
Education in Indian Disabled Population

In 2011, only 61% of the disabled children aged 5-19 years were attending educational institution. 12% had attended earlier and 27% never attended an educational institution. In the age group of 5-19 years, only 43% of girls were attending school/college. Data shows that disabled children of 5-19 years age group, more children in rural areas never attended school or left education in midway.

The following chart shows percentages of male and females who **never attended educational institution** by the type of disability:
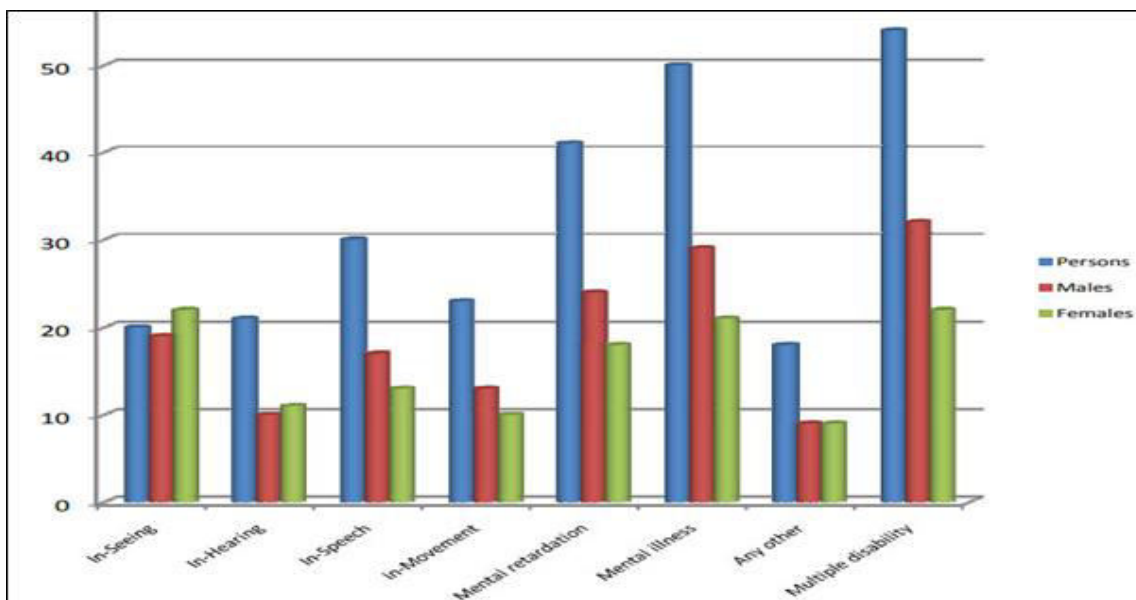
Emergence of Inclusive Education Movement in India:

The Integrated child development Scheme (ICDS) of 1974 was created by the ministry of Human Research Development, ICDS reached out to vulnerable populations of the population to provide service such as pre-five year old schooling and early intervention, including health care, nutrition and pre-school facilities. Since nothing was specified regarding the need of angalwadi workers, the social workers who implement this scheme on the ground, to specifically reach out and children with disabilities were not included in early intervention efforts, which would have then funneled them into mainstream schooling.

Integrated Education for Disabled Children (IEDC): One of the major initiative from the government of India to promote "integrated education" is the programme of Integrated Education of Disabled Children (IECD). In 1974, the Ministry of Welfare, Central Government of India, initiated the IEDC programme to promote the integration of students with mild to moderate disabilities into the regular schools. The programme was designed to promote the retention of children with disabilities in the regular school system. The children were to be provided with financial support for books, stationary, school uniforms, transportation, special equipment and aids. The state government was provided with fifty percent of the financial assistance to implement this programme in the regular schools. Through this programme did not get much success. Reasons were (i) non availability of trained and experienced teachers.(ii) Lack of orientation among regular school staff about the problems of disabled children and educational needs and (iii) Non availability of equiptment and educational materials. Another important reason for the failure of IEDC plan was the lack of coordination among the various departments to implement the scheme.

The National Policy on Education, 1986 and Programme of Action 1992: The National Policy on Education, 1986 and Programme of Action,1992 stressed the need for integrating children with special needs with other groups. According to NPE 1986, the objective to be achieved was to integrate the physically and mentally handicapped with general community as equal partners, to prepare them for normal growth and to enable them to face life with courage and confidence. The POA envisioned and expected that schools across India would accept responsibility by sharing resource e with other institutions. However, rather than including or even integrating children with disabilities into their programmes, these schools would open resource centres for the under-privileged, providing children with learning disabilities resources after typical school hour but not during the normal school day.

Project for Integrated Education for Disabled, 1987: In 1987, the Ministry of Human Resource Development, in association with UNICEF and the National Council of Educational Research and Training (NCERT) developed a project called Project Integrated Education for the Disabled (PIED). The main aim of this project was to strengthened the IEDC plan (NCERT). Instead of confronting the programme to a particular institution or school, PIED adopted a 'Composite Area Approach' that converted all regular schools within a specified area, referred to as block, into integrated schools. These schools had to share resources like specialized equipment, instructional materials and special education teachers.

Persons with Disability Act (PWD) Act 1995: In 1996 the government of India enacted the Person with Disabilities Act (Equal Opportunities, Protection of Rights and Full Participation) of India. Ministry of Social Justice and Empowerment is the concern ministry to look after for the implementation of this Act. The Act provides for both preventive and promotional aspects of rehabilitation like education, employment and vocational training, reservation, research and manpower development, creation of barrier-free environment, rehabilitation of persons with disability, unemployment and establishment of homes for persons with disabilities. The PWD (Equal Opportunities, Protection of Rights, and Full Participations) Act, 1995 was enacted to give an effect to the "Proclamation on the Full Participation and Equality of the People with Disabilities in the Asian and Pacific Region." The Proclamation was issued in a meeting of the Economic and Social Commission for Asia and the Pacific Region in December 1992 at Beijing, to launch the "Asian and Pacific Decade of Disabled Persons 1993–2002." The Act listed seven conditions of disabilities, which were blindness, low vision, leprosy cured, hearing impairment, locomotor disability, mental retardation, and mental illness. Mental retardation was defined as "a condition of arrested or incomplete development of mind of a person which is specially characterized by sub normality of intelligence." Mental illness was defined simply as "any mental disorder other than mental retardation." The Act adopted an approach of social welfare in respect of PWD and the main focus was on prevention and early detection of disabilities, education and employment of the PWD. The Act also provided 3% reservation in Government jobs and educational institutions. It stressed on making the barrier-free situations as a measure of nondiscrimination. Public building, rail compartments, buses, ships and air-crafts will be designed to give easy access to the disabled people. In all public places and in waiting rooms, the toilets shall be wheel chair accessible. Braille and sound symbols are also to be provided in all elevators (lifts). All the places of public utility shall be made barrier- free by providing the ramps.

The Rights of the Persons with Disabilities Act 2016: In the RPWD Act, 2016, the list has been expanded from 7 to 21 conditions and it now also includes cerebral palsy, dwarfism, muscular dystrophy, acid attack victims, hard of hearing, speech and language disability, specific learning disabilities, autism spectrum disorders, chronic neurological disorders such as multiple sclerosis and Parkinson's disease, blood disorders such as hemophilia, thalassemia, and sickle cell anemia, and multiple disabilities. The nomenclature mental retardation is replaced by intellectual disability which is defined as "a condition characterized by significant

limitation both in intellectual functioning (reasoning, learning, problem-solving) and in adaptive behavior which covers a range of every day social and practical skills including specific learning disabilities and autism spectrum disorders." The Act provides an elaborate definition of mental illness which is "a substantial disorder of thinking, mood, perception, orientation, or memory that grossly impairs judgment, behavior, and capacity to recognize reality or ability to meet the ordinary demands of life but does not include retardation which is a condition of arrested or incomplete development of mind of a person, especially characterized by sub normality of intelligence." Persons with benchmark disabilities are defined as those with at least 40% of any of the above disability. PWD having high support needs are those who are certified as such under section 58(2) of the Act.

The RPWD Act, 2016 provides that "the appropriate Government shall ensure that the PWD enjoy the right to equality, life with dignity, and respect for his or her own integrity equally with others." The Government is to take steps to utilize the capacity of the PWD by providing appropriate environment. It is also stipulated in the section 3 that no PWD shall be discriminated on the ground of disability, unless it is shown that the impugned act or omission is a proportionate means of achieving a legitimate aim and no person shall be deprived of his personal liberty only on the ground of disability. Living in the community for PWD is to be ensured and steps are to be taken by the Government to ensure reasonable accommodation for them. Special measures are to be taken to ensure women and children with disabilities enjoy rights equally with others. Measures are to be taken to protect the PWD from being subjected to cruelty, inhuman, and degrading treatments and from all forms of abuse, violence, and exploitation. For conducting any research, free and informed consent from the PWD as well as a prior permission from a Committee for Research on Disability to be constituted in the prescribed manner. Under section 7(2) of the Act, any person or registered organization, who or which has reason to believe that an act of abuse, violence, or exploitation has been, is being or likely to be committed against any PWD, may give information to the local Executive Magistrate who shall take immediate steps to stop or prevent its occurrence and pass appropriate order to protect the PWD. Police officers, who receive a complaint or otherwise come to know of violence, abuse, or exploitation, shall inform the aggrieved PWD of his right to approach the Executive Magistrate. The police officer shall also inform about particulars of nearest organization working for the rehabilitation of the PWD, right to free legal aid, and right to file complaint under the provisions of this Act or any other law dealing with such offence.Equal protection and safety in situations of risk, armed conflict, humanitarian emergencies, and natural disasters are to be provided to PWD. Children with disability are not to be separated from parents except on the order of a competent court and information about reproductive rights and family planning to the PWD is to be ensured. Accessibility in voting and access to justice without discrimination to the PWD are to be ensured. Public documents are to be made available in accessible formats.

It is to be ensured that all PWD enjoy legal capacity on an equal basis with others in all aspects of life and has the right to equal recognition everywhere as any other person before the law and have the right, equally with others, to own and inherit movable and immovable property as well as control their financial affairs (Sec 13). It is also provided that a PWD with benchmark disability who consider himself to be in need of high support, he/she or any other person or organization in his behalf may apply to the authority appointed by the Government for the same and the authority shall take steps to provide support accordingly (Sec 38). However, the PWD would have the right to alter, modify, or dismantle the support system and in case of conflict of interest, the supporting person would withdraw from providing the support [sec 13(4&5)]. It has been provided in the section 14 of the Act that a District Court or any designated authority, as notified by the State Government, finds that a person with disability, who had been provided adequate and appropriate support but is unable to take legally binding decisions, may be provided further support of a limited guardian to take legally binding decisions on his behalf in consultation with such person, in such manner, as may be prescribed by the State Government. It is also provided that the District Court or the designated authority, as the case may be, may grant total support to the person with disability requiring such support or where the limited guardianship is to be granted repeatedly. In these cases the decision regarding the support to be provided shall be reviewed by the Court or the designated authority, as the case may be, to determine the nature and manner of support to be provided. Limited guardianship has been explained to mean a system of joint decision which operates on mutual understanding and trust between the guardian and the person with disability, which shall be limited to a specific period and for specific decision and situation and shall operate in accordance to the will of the person with disability. It is also provided that on and from commencement of the Act, every guardian appointed under any other law for time being in force shall be deemed to function as a limited guardian.

The Bill provides for the access to inclusive education, vocational training, and self-employment of disabled persons without discrimination and buildings, campuses, and various facilities are to be made accessible to the PWD and their special needs are to be addressed. Necessary schemes and programs to safeguard and promote

the PWD for living in the community are to be launched by the Government. Appropriate healthcare measures, insurance schemes, and rehabilitation programs for the PWD are also to be undertaken by the Government. Cultural life, recreation, and sporting activities are also to be taken care of. All Government institutions of higher education and those getting aid from the Government are required to reserve at least 5% of seats for persons with benchmark disabilities. Four percent reservation for persons with benchmark disabilities is to be provided in posts of all Government establishments with differential quotas for different forms of disabilities. Incentives to employer in private sector are to be given who provide 5% reservation for persons with benchmark disability. Special employment exchanges for the PWD are to be set up. Awareness and sensitization programs are to be conducted and promoted regarding the PWD. Standards of accessibility in physical environment, different modes of transports, public building and areas are to be laid down which are to be observed mandatorily and a 5-year time limit is provided to make existing public building accessible. Access to information and communication technology is to be ensured. The Central and State Advisory Boards on disability are to be constituted to perform various functions assigned under the Act. District level Committees are also to be constituted by the State Government. Chief Commissioner and two Commissioners for PWD are to be appointed by the Central Government at the central level for the purposes of the Act. Similarly, State Commissioners for PWD are to be appointed by the State Governments. National Funds for PWD and State Funds for PWD are to be constituted at the central and state levels respectively by the appropriate Governments. Contraventions of the provisions of the Act have been made punishable by a fine of an amount up to ten thousand for first contravention and fifty thousand extendable up to five lakhs for subsequent contraventions. Atrocities on PWD have been made punishable with imprisonment of 6 months extendable to 5 years and with fine. Fraudulently availing of the benefits meant for PWD has also been made punishable.

National Education Policy 2020 and its Inclusive Policy:
The purpose of The New Education Policy (2020) is a framework to guide the development of education in the country. According to the Government, the NEP 2020 is formulated after having considered over 2 lakh suggestions from different levels of local self-bodies, 2.5 lakh gram panchayats, 6,600 blocks, 6,000 ULBs and 676 districts with the aim of holistic productivity and contributing citizens for building an equitable, inclusive, and plural society with an increased Gross Enrollment Ration (GER) of 50% by 2035. After Independence Indian Education System goes through various changes, in order to make it accessible to the masses. Numerous commissions, policies and various reservations worked out pretty well for the paradigm shift from focusing solely on the 3R to providing quality education to the masses. Education is a fundamental right of every Indian citizen. All children in the age group of 6-14 years irrespective of any diversity are ensuring to access free and compulsory education by the RTE act 2009. The definition of inclusive education is given by UNESCO's Section for Special Needs Education (UNESCO, 2000) as, "Inclusive education is concerned with removing all barriers to learning, and with the participation of all learners vulnerable to exclusion and marginalization. It is a strategic approach designed to facilitate learning success for all children. It addresses the common goals of decreasing and overcoming all exclusion from the human right to education, at least at the elementary level, and enhancing access, participation and learning success in quality basic education for all." Inclusive Education refers to an educational practice, wherein child with disabilities will be fully included in the mainstream classroom with same age peers in the local school. This also emphasized that the child with disability must exposed to all the curricular and co-curricular activities in order to ensure his full participation in the educational process. In the year 2015, India adopted the 2030 agenda for sustainable development. The goal 4 of SDG mentioned to "ensure inclusive and equitable quality education and promote lifelong learning opportunities for all" by 2030 (NEP, 2020).

Equity and Inclusion
The aim of equity and inclusion is now at the heart of new NEP. In the fields of higher or school education, inclusion involves restructuring the whole system with the aim of ensuring the wide range of educational opportunities; this includes curriculum, pedagogy and recreational opportunities, etc. The policy is designed to avoid segregation and isolation of ethnic and linguistic minorities, those with disabilities and also those who face learning difficulties due to language barriers and are at the risk of educational exclusion. We make sense of the world through language and this creates and recreates power, authority and also legitimation. NEP 2020 has set the goal for all to be authoritative with the command of different languages at different levels of education. An attempt has been made to develop conscious awareness of roles and duties and inclusion of community participation which would minimize the exclusion of students on the basis of language and disability. This will motivate students to learn more about the diverse culture of India, its knowledge system and tradition and also to sensitize them on human values, empathy, tolerance, human rights, gender equality, inclusion, and equity which will develop respect for diversity.

Beyond all, equal respect for all religions with the idea to develop or bring back creative human endeavor, required for the 21st-century education system, has been the main focus of NEP 2020.

Gender Equality and Inclusion
NEP aims to ensure equity and inclusion in and through education by addressing all forms of exclusion and marginalization, disparity, vulnerability and inequality in education access, participation, retention and completion and in learning outcomes.

Gender equality and inclusion are vital in achieving these aims and leaving no one behind. Education needs a greater focus on accessibility, equity and quality. Remarkable signs of progress have been noticed in the past few years in respect of female participation up to secondary level. Such progress could be because of Government's policies and programmes run for girl child-like "Beti Bachao Beti Padhao", "Sukanya and Balika Samridhi Yojana" and many more.

But girls' enrolment is lower than that of boys at upper secondary education. Gross Education Ratio during 2015-2016 stands only 23.4% against 25.4% for boys in higher education and the gap is visible at all the social categories.

Now, NEP's biggest effort is to bring gender sensitivity as an integral part of curriculum and gender inclusion fund to be raised upto class 12 which covers all the socio-economically disadvantaged groups and also the transgenders.

The condition of the primary education at government schools, the dropout rates of girls has put the country on the back foot in education. But the new NEP has given more focus to school learning with a new way of coping multi-disciplinary programs and focuses on the 21st-century skills in teaching, learning and assessment.

Alternative and innovative education centres will lead to multiple pathways of effective learning and widespread participation of students of different groups.

Inclusion of new Pedagogical System for Early Child Care Education
Early Child Care Education (ECCE) is not available to most young children, particularly children from economically disadvantaged families. Almost 85% of a child's cumulative brain development and growth occurs prior to the age of 6. Inclusion of this system will help children of early age to attain optimal outcomes in the domains of physical and motor development, cognitive development, socio-emotional-ethical development, cultural/artistic development, and the development of communication and early language, literacy, and numeracy. The division of Pedagogical system has been done with an intension to include the children of early education with the age group 3-5 into Formal education and also to include this stage of education into the school curriculum as per Global standard which was not done earlier. The method to include the coding system in early education is to compete with the developed countries and including mother tongue as a medium of Instruction at early stage of education will give advantage to understand them better as it is done in Europe. The flashy story books with pictures and signs, toys and activity based learning of the private nursery and LKG classes always excluded the poor family who could not afford all this but now new pedagogical and curriculum structure of schools education has been developed with flexible, multi-level, play-based, activity based and inquiry based learning for all.

CONCLUSION
As the cornerstone of all educational decisions, the ray of hope has come through the new National Education Policy, 2020, which talks about sustainable human development and universal education learning with equity and learning outcomes with research oriented mindset. India has always placed education at the centre of its development agenda and with bridging the gender, social, regional gaps with community participation it will raise the spirits towards equal opportunities to all ensuring equity in this policy. It is going to be the beautiful blend of both ancient and modern knowledge system which not only inculcate to acquire knowledge but also helps in integrating Indian culture and ethos. The National Education Policy (NEP) 2020 envisages equitable and inclusive education for all, with special focus on children and youth, especially girls, from socially and economically disadvantaged groups. It encourages and promotes "Barrier-free access to Education for all Children with Disabilities for full participation in the society without any fear.

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BIOMETRICS PAYMENT SYSTEM: A NEW WAY TO PAY

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ABSTRACT

The biometric payment system is a robust security system because it checks the authenticity of financial transactions with physical traits of a person like fingerprints, iris, or voice patterns. The study presents a conceptual framework for the Biometrics payment system. The research design of the present study is exploratory which is based on secondary data. The secondary data is collected from different research journals, Global Biometric Payment Market reports, and various websites. The purpose of the present study has studied the significance of Biometric payment systems, the working of biometric payment systems, and also study the global past and future trends of biometrics. According to the Data Bridge market research market analysis report, in 2022, the biometric system market was valued at $ 36.14 billion in 2021 and is expected to grow by $ 119.42 billion by 2029, Compounded Annual Growth Rate during (CAGR) 2022-29 will be 15.75%.

Keywords: Biometric, fingerprint, digital payment, Plastic card, and BioPay

INTRODUCTION

"Need is the mother of Invention". Before introducing "Pay with biometric, all plastic cards all secured by password. There are chances of stolen of passwords, cards or sometimes forgotten passwords. Sometimes cheaters or hackers make clones of plastic cards and withdrew the amount from the concerned person's account. The new era of technological development invented a new payment system i.e., a biometric payment system. The biometric payment system is easy to use, feasible, reliable, and secure, and also eliminates the need to carry a plastic card. Now people are not required to take various cards for shopping, paying utility bills (like water bills, electricity bills, traveling bills, etc), or education fees. People not need to remember the PIN or password of plastic cards for payment. It minimizes the chance of fraud. If a card is lost, no need to worry about it, because the card is protected by the concerned person's fingerprint. Only the person who has the card can perform financial transactions with his fingerprint, apart from this, no other person can use it. After the development of the biometric payment system, now some plastic card companies (VISA and Master card) associate plastic cards with biometric technology and they developed biometric payment cards. "Fingerprint cards and Transcorp (Indian financial services co.), said that they will collaborate to bring biometric payment cards to customers across India. Vantage Market Research suggests that the global fingerprint sensor market will grow from US$ 3.21 billion in 2021 to $ 5.92 billion in 2028". (www.biometricupdate.com)

Figure: 1 Pay with fingerprints

What is Biometric Payment System:

Biometrics is a means of verifying personal identity by measuring and analyzing physical traits of a person like fingerprints, iris, or voice patterns.

The biometric payment system is a Point-of-Purchase technology that uses biometrics (Fingerprint, face recognition, voice, palmprint, Iris, etc.,) to identify the user and authorize him to perform financial transactions from a bank account. Fingerprints gain more popularity in biometric payment systems.

In this, the customer has to place his fingers on the finger scanning device and this will identify the account which belongs to the concerned person and make payment.

Figure 2: Credit card with Biometric

The Biometric Payments Authentication Methods

The following are the biometric payment authentication methods other than fingerprint: -

• Voice recognition

• Face recognition

• Retina recognition

• Palmprint

• Iris recognition

• DNA matching

• Vein patterns

Figure 3: Biometric Payments authentication methods

(*Source:* www.techtarget.com)

REVIEW OF LITERATURE

Singh, Gurpreet, and Kaushik, Divyanshi et. al. (2021) said in their article titled "BioPay: A Secure Payment Gateway through Biometrics" that if we use biometrics, it provides a highly protected and secured way to do financial transactions there is no need to remember or providing any information like bank account details, PIN, CVV, and OTP. If this system is implemented in ATMs and other payment portals this will make every transaction quick and secure. Also, it will prevent fraud and theft.

Singh, Ashutosh, Srivastva, Ranjeet, and Singh, Yogendra Narain (2019), said that the integration of a biometric verification system with the payment card security system not only strengthens the security of card users but also it ensures the physical presence of cardholder at the point of sale. A system like Aadhaar may be successfully linked with the payment card processing system for supplementing identity verification of users and making the environment free from card frauds.

Makanyeza, Charles, and Mutambayashata, Simolini (2018), examined the unified theory of acceptance technology to find out the factors that influence the acceptance and usage of plastic money in Zimbabwe. This research paper is empirical. It is based on both primary and secondary data. Primary data was collected from 528 customers of five supermarkets in Harare, Zimbabwe, through a questionnaire. Factor Analysis and chi-Square have used the find out the factors that influence acceptance and usage of plastic money. They discovered 7 factors out of which performance expectancy, effort expectancy, hedonic motivation, and habit positively impact the usage of plastic money, and social influence, facilitating conditions and perceived financial cost negatively impact the usage of plastic.

Kumar, Dileep, and Ryu, Yeonseung (2017), studied in their article, "A Brief Introduction of Biometrics and Fingerprint Payment Technology" the basics of biometrics, how this system works, and fingerprint recognition with circular sampling. They concluded that the plastic cards-based payment system to be replaced with the fingerprints payment system because it is easier, feasible, reliable, secure and easily authorized by everyone. The biometric payment system in which no need to take dozens of cards for shopping, payment of service bills like traveling, pass in office, university or bank as a door lock.

RESEARCH METHODOLOGY

This research paper presents a conceptual framework biometric payment in India. The research design of the study is exploratory that is based on secondary data. The secondary data is collected from different research journals, the Global Biometric Payment Market report and various websites.

OBJECTIVES OF THE STUDY

The following are the objectives of the present study: -

1. To study the conceptual framework of the Biometric payment system.

2. How biometric payment system is work?

3. To examine the global past and future trends of biometric payment systems.

4. To study the advantages and challenges faced to implement this system in India.

Past and Future Trends of Using Biometric Payment Cards

Figure: 3 Global trend of using biometric payment card
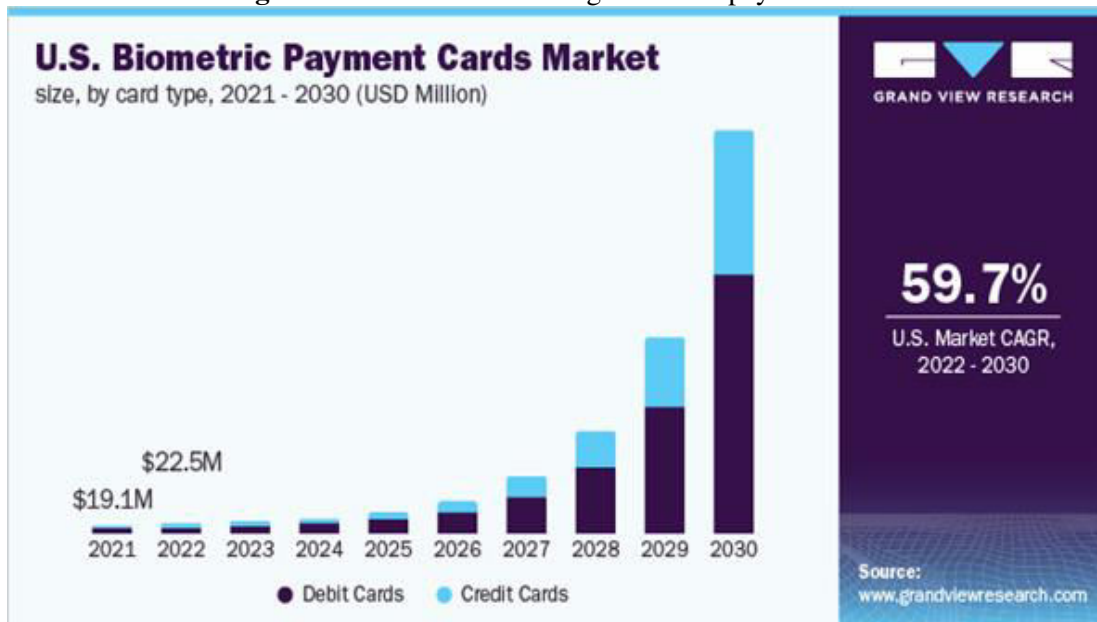
(*Source:* Global Biometric Payment Market report, 2021)

Table: 1 Shows Global Biometric Payment Market: Segmentation

Report Attribute	Details
Market Size 2020 Value	US $ 32.4 Billion
Market Forecast for 2026	US $ 63.4 Billion
Expected CAGR Growth	CAGR 9.9% from 2021-2026
Base Year	2020

Forecast Year	2021-2026
Top Market Players	Thales, Safran, NEC, ASSA ABOLY, Fujitsu, Precise Biometrics, NXP Semiconductors, Linxens, and Others
Segments Covered	Technology, Types, Deployment Mode, and Region
Geographies Covered	North America, Europe, Asia Pacific, Latin America, and Middle East & Africa
Pricing Options	Request customized purchase options to meet your research needs. Explore purchase options

(*Source:* www.globenewswire.com)

Table: 1 shows the Global Biometric Payment Market Report: 2021

According to these reports, the biometric payment market was valued at US $ 32.4 Billion in 2020 and is expected to reach US $ 63.4 Billion by 2026. The expected Compounded Annual Growth Rate (CAGR) during 2021-2026 is 9.9%.

According to a pilot survey by VISA card company on 1000 Americans about perceptions of biometric authentication, Visa found consumers are interested in using fingerprints for payment. Of all, 50% of consumers give maximum ranking to fingerprint recognition in terms of desired Payment authentication for in-store usage. (https://usa.visa.com/visa-everywhere/security/biometric-payment-card.html)

Masters piloting new technology that lets shoppers make payments with just their face or hand at the checkout point.

✦ How does it work?

The biometric payment system works as follows: -

i. Firstly, link your payment card with your biometric feature.

ii. When you go for offline shopping or online shopping, either login to your payment app or swipe your debit or credit card which is linked to your biometric data.

iii. Enter the amount to be paid, you take a picture of your face or scan your fingerprint on your face or finger reader device. This is done moreover at a payment terminal outstation or on your smartphone app.

iv. The electronic reader compares the data from the new scan to the encrypted data in the database and if the data is matched with data in the database, it approves payment authentication. If approved, the funds are electronically transferred from the person's account to the merchant. If scanned data is not matched with data in the database, it declines the transaction.

The following flow diagram shows the working of the biometric payment system: -

Figure 4: Shows Pay with biometric payment system
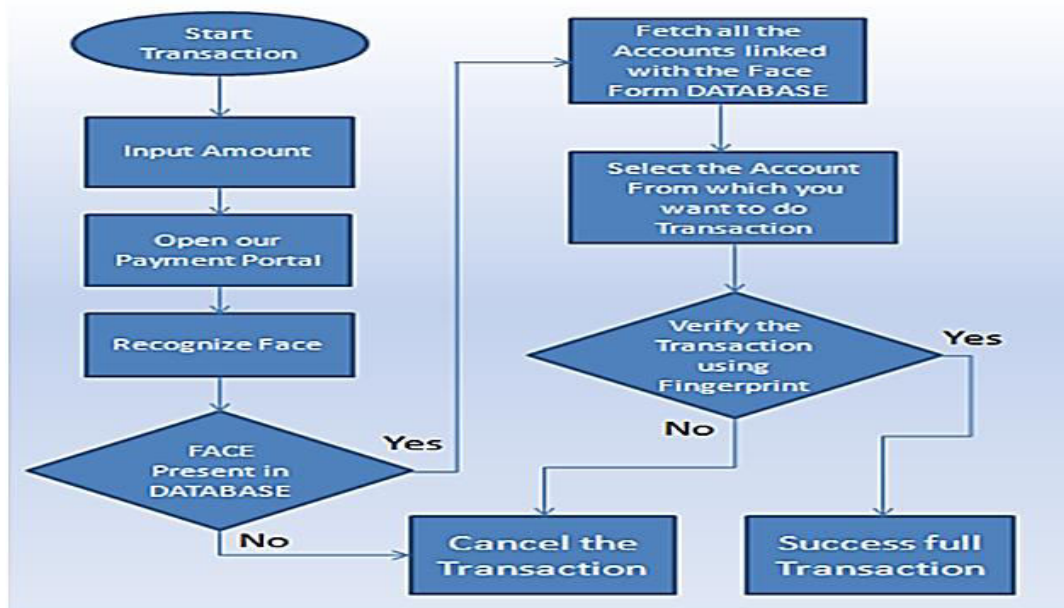
{*Source:* Singh, Gurpreet, and Kaushik, Divyanshi and et. al. (2021)}

♣ Advantages of Biometric Payment System

BioPay system makes the authentication process more secure, realizable, quick, and easy. There are some other advantages of this system, that are:

❖ **Security Level**

It provides a high level of security because of the uniqueness of human beings' unique characteristics.

❖ **User Friendly:** From the user's point of view, it is easy and quick. We can easily unlock our account by placing our finger or using another biometric authorization method as compared to typing a password, CVV, OTP, etc.,

❖ **Can't be Transferred**

In BioPay, one cannot be sharing his physical characteristics. A person has to present while making the payment.

❖ **Hand to Fake**

The biometric feature is making checks on any fraud. Because unauthorized users cannot copy of physical and behavioural traits.

❖ **Quickly**

The "Pen & Paper" method of recoding replaces by this automatic payment system. The manual system of pay was time-consuming. But with BioPay, we can do transactions within a minute.

❖ **Win-Win Situation**

Both consumer and businesses will reap their sale of benefits from contactless biometric payment cards.

❖ **Robust System:**

In this system, no battery is needed for the machines to work and it consumes very low power, so it is an environment-friendly system.

♣ The Challenges Faced to Implement a Biometric Payment System In India

There are some reasons why this system has not been successfully implemented in India so far, which are as follows: -

❖ **Costly:**

No doubt, BioPay is a more reliable and secure system. But its implementation involves huge costs. The survey report of Spiceworks in a 2018, 67 percent of IT professionals cite cost as" the biggest reason for not adopting biometric authentication." (https://www.miteksystems.com/blog/advantages-and-disadvantages-of-biometrics)

❖ **Network Problem**

This system is based on the internet. In India, there are some remote areas where internet facilities are not available which creates hurdles to implementing this system in India.

❖ **Inaccuracy:**

BioPay does not mean 100% accuracy and security. In 2018, a New York University research team created an artificial intelligence platform that was able to fraudulently crack fingerprint authentication at a success rate of 20% by matching the similarity of partial prints to complete biometric data. (https://www.miteksystems.com/blog/advantages-and-disadvantages-of-biometrics)

❖ **Misuse of Personal Data**

When we use BioPay, we use any method of biometric. Users' personal information is stored on government or businesses portal or personal computers. Organizations need to take more security and precautions with this sensitive biometric data which is difficult due to financial & technical issues. Since this data cannot be changed, hackers can use this sensitive data and perform unauthorized transactions.

❖ **Physical Disabilities**

This system only recognizes the personal traits of the users' that were stored in its database and disapproved transactions, if the user's scan data does not match with previously saved data in its database. If any users' personal traits change even slightly, it declines access. The following are the reasons for changing the physical symptoms of a person:

- Fingers burnt by Fire or injured,

- Mehndi is applied on the hands of tattooed hands,

- If the user is wearing lenses (and usually not) or vice versa,

- Have a sore throat, etc.,

In such cases, BioPay needs to be changed to provide authorized user access, which can be time-consuming and inconvenient.

❖ Shortage of Electricity

Power cut in India is one more problem to implement BioPay. There are long power cuts in India and this automatic system depends on electricity to run. No user can enter or exit in case of a power outage.

Biometric – Reliable or Not?

The biometric payment system is based on new technology which provides a platform that is secure or more reliable. Although there are some problems to implement this system successfully. But its benefits outweigh its disadvantages. If the problems are overcome, then this is a robust system.[1]

CONCLUSION

We already use biometrics in our day -to day lives to unlock our mobile phones, financial apps, social media apps, etc., Due to increasing cases of fraud and cybercrime, it needs to implement biometrics in our bank accounts, debit& credit cards, and ATMs to save public money. That's why biometric payment systems are highly being deployed globally as automated security techniques. According to the Data Bridge market research market analysis report, in 2022, the biometric system market was valued at $ 36.14 billion in 2021 and is expected to grow by $ 119.42 billion by 2029, Compounded Annual Growth Rate during (CAGR) 2022-29 will 15.75%. **(https://www.databridgemarketresearch.com/reports/global-biometric-system-market)** This system provides high protection and a secure way to do financial transactions. And there is no need to memorize bank account details, plastic card no., PIN, CVV, and OTP as well as taking plastic cards while goes to - shopping, paying utility bills, paying education fees, etc., Although there are some problems to implement this system successfully. But its benefits outweigh its disadvantages. If the problems are overcome, then this is a robust system**.**

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DIABETIC RETINOPATHY GRADING USING CONVOLUTIONAL NEURAL NETWORK

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ABSTRACT

Diabetic Retinopathy, a potentially blinding complication of diabetes, affects the retina of the eye and is a common cause of vision loss worldwide. Diabetes mellitus that is not insulin-dependent is the chronic condition that is spreading the fastest worldwide. Major morbidity and death are brought on by its long-term consequences, which include retinopathy, nephropathy, neuropathy, and accelerated macrovascular disease. Diabetic mellitus is one of the most familiar lifestyle diseases in the world. Diabetic Retinopathy is the most prevalent health concern brought on by the long prevalence of diabetes (DR).Diabetic retinopathy is a situation in which the vessels inside the retina are vandalized, leaking harmful substances and fluids in the surrounding tissue resulting in hemorrhages, micro aneurysms in the eye and further into partial or complete vision loss. When this condition is treated early on, vision loss can be avoided; however, because diagnosis takes time and there is a deficit of ophthalmologists, people experience visual loss even before a diagnosis. Consequently, DR may be lessened with early identification. An automated detection of detecting Diabetic Retinopathy as accurately as possible and classifying them into different grades of treatable DR (NPDR) namely L0, L1 DR, L2 DR, L3 DR and Proliferate DR (PDR) using Deep Learning and Image Processing techniques and also making some improvisations on the same to enhance the capability is proposed.

Keywords: Diabetic Retinopathy, Convolutional Neural Network, Image Classification, Proliferate DR (PDR), Non Proliferate DR (NPDR).

INTRODUCTION
Diabetes complications that damage the eyes are referred to as diabetic retinopathy. It is brought on by harm to the blood vessels in the retina, a light-sensitive tissue in the rear of the eye. Initially, diabetic retinopathy may not manifest any symptoms or may only result in minor vision issues. But it might result in blindness. Any person with type 1 or type 2 diabetes has the potential to acquire the illness. The likelihood of developing this ocular problem increases with the duration of diabetes and the degree of blood sugar management. Diabetes complications that damage the eyes are referred to as diabetic retinopathy. Initially, diabetic retinopathy may not manifest any symptoms or may only result in minor vision issues. But it might result in blindness. Any person with type 1 or type 2 diabetes has the potential to acquire the illness. The likelihood of developing this ocular problem increases with the duration of diabetes and the degree of blood sugar management.
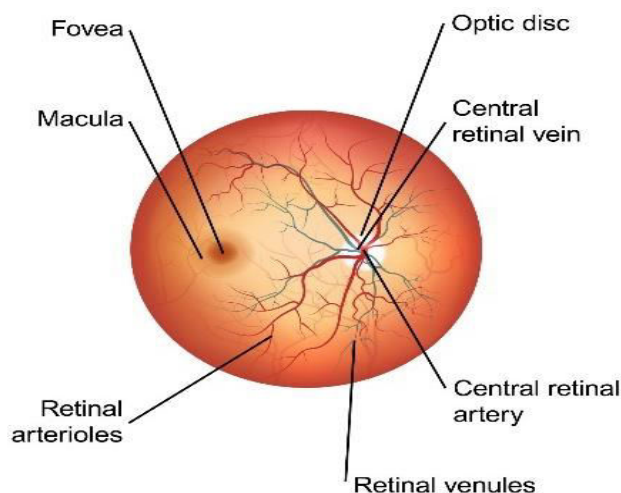
Figure 1: Fundus image of EYE

Causes of Diabetic Retinopathy
Both eyes are typically affected by diabetic retinopathy. A person is more likely to acquire diabetic retinopathy the longer they have diabetes. Throughout the body, blood arteries are harmed by diabetes. Diabetes-related elevated blood sugar results in diabetic retinopathy. The retina, the area of the eye that detects light and

transmits information to the brain via a nerve in the back of the eye, can become damaged over time if there is an excessive amount of sugar in the blood (optic nerve). The tiny blood veins that nourish the retina may get blocked as a result, cutting off the retina's supply of blood. As a result, the eye makes an effort to produce fresh blood vessels. These newly formed blood vessels don't develop properly, and they are quite likely to leak Diabetic retinopathy can result in vision loss if neglected. The macula, the region of the retina responsible for sharp central vision, can experience fluid leakage. The macula, despite its diminutive size, is the area of the retina that gives humans the ability to see color and fine detail. Ocular blurring is the effect of the fluid making the macula swell. Long durations of high blood sugar levels can cause fluid to build up in the focusing lens within the eye in diabetics. This alters the lens's curvature, which affects how you see. But, the lens normally returns to its former shape and eyesight improves once blood sugar levels are under control. People who have diabetes with improved blood sugar management skills will delay the start and severity of diabetic retinopathy.

Related Work

Doaa K. Elswah et al(2020) have proposed a deep learning framework for grading diabetic retinopathy (DR) using fundus images is presented. Three steps make up the suggested framework. The fundus image is first preprocessed utilizing augmentation and normalization of intensity. Second, a Res Net Convolutional Neural Network (CNN) model receives the pre-processed image as input in order to extract a compact feature vector for grading. The detection of DR and its severity (mild, moderate, severe, or proliferative diabetic retinopathy (PDR)) are determined by a classification phase that comes last. Using the difficult ISBI'2018 Indian Diabetic Retinopathy Image Dataset, the suggested framework is trained (IDRiD). The data is balanced to make sure that each DR grade is represented by the same amount of photos during the training phase, eliminating the training bias.

Jhonny Caicho et al(2022) have under took a study of various CNN architecture that have been used for the detection of diabetic retinopathy. An eye disorder known as diabetic retinopathy (DR) develops in people with diabetes. Early detection and timely treatment are crucial for this eye condition, which is on the rise globally and is one of the main causes of blindness. DR can be categorized into five stages based on its severity: no DR, mild DR, moderate DR, severe DR, and proliferative DR. This pathology can even take highly skilled healthcare experts a considerable amount of time to identify in its early stages. Compared to manual detection techniques, artificial intelligence has emerged as a promising answer in this situation. It provides a simple, quick, less expensive, and more effective substitute. For the study of medical visual data, convolutional neural networks (CNN) have been extensively used.

Ling Dai et al(2021) have made possible early diagnosis and prompt treatment of diabetic retinopathy through retinal screening. Deep DR, a deep learning system that can identify diabetic retinopathy in its early to late stages, to simplify the screening procedure. Using 466,247 fundus images from 121,342 diabetic patients, Deep DR was trained for real-time image quality assessment, lesion detection, and grading. A local dataset of 200,136 fundus photos from 52,004 patients and three foreign datasets with a combined total of 209,322 images are both used for evaluation. For the detection of microaneurysms, cotton-wool spots, hard exudates, and haemorrhages, respectively, the area under the receiver operating characteristic curves is 0.901, 0.941, 0.954, and 0.967. Area under the curves for the classification of diabetic retinopathy as mild, moderate, severe, and proliferative are 0.943, 0.955, 0.960, and 0.972, respectively.

Malik Bader Alazzam et al(2021) focuses on a cross-sectional analysis of patients with suspected diabetic retinopathy (DR) who underwent an ophthalmological exam and a retinal scan. OPF and RBM models were used to assess and categorise specialised retinal pictures (restricted Boltzmann machines). The presence or absence of disease-related retinopathy served as the basis for categorising retinographs (DR). The RBM and OPF models, after the system training phase for the recognition of retinopathy and normalcy patterns, extracted 500 and 1000 attributes from the images for disease categorization. There were fifteen distinct experiment series in all, with each having a repetition rate of 30 cycles. A total of 122 eyes from 73 diabetics participated in the study; 50.7% of them were male and 49.3% were female. The average age of the population, 59.7 years old, was on the older side. Of all the devices assessed, the RBM-1000 achieved the best overall diagnostic accuracy (89.47). Compared to its rivals, the RBM-500 had a better autodetection system (100% sensitivity) for DR signals in fundus images. RBM-1000 and OPF-1000 accurately recognised every image that lacked DR indications in terms of specificity. In particular, the RBM model of automatic disease detection using machine learning fared well in terms of diagnostic precision, sensitivity, and applicability in the screening for diabetic retinopathy.

Muhammad Kashif Yaqoob et al(2021) proposed a method that sends the ResNet-50 feature map to Random Forest for classification. Once the symptoms have been diagnosed, the disease's severity must be determined in

order to prescribe the appropriate medication. This work suggests a deep learning-based method for categorising and rating photos of diabetic retinopathy. The suggested method sends the ResNet-50 feature map to Random Forest for classification. Using two category Messidor-2 and five category EyePACS datasets, the suggested approach is compared against five state-of-the-art approaches. Proliferative diabetic retinopathy, severe, moderate, mild, and no diabetic retinopathy are the five classifications, respectively. The outcomes demonstrate that the suggested strategy outperforms comparable approaches and achieves, for these datasets, accuracy of 96% and 75.09%, respectively. The suggested method outperforms ResNet-50, VGG-19, Inception-v3, MobileNet, and VGG16, six current state-of-the-art designs.

Nurhakimah Abd AzizMohd et al (2021) have proposed a system in which numerous datasets were combined, including the Kaggle, DIARETDB1, and DRIMDB datasets. The findings were obtained in terms of SSIM value demonstrate unequivocally that preprocessing was able to improve the image qualityThe machine learning field of study on lesions detection in fundus images has gained popularity recently. When treating eye illnesses like diabetic retinopathy, where exudates are the primary symptom, the detection of symptoms in fundus images is frequently used. Several factors affect how symptoms can be found in fundus images. Variable contrast conditions and the huge size of the fundus image are common elements that will have an impact on the object detection training process. The colour match between the characteristics in the fundus imaging and the symptoms is another contributing element, as is the similarity between the optic disc and exudates. To enhance the quality of the fundus image and mark the optic disc, various preprocessing stages are explored.

Pratiksha Shetgaonkar et al (2021) use fundus pictures to automatically identify and classify DR according to various severity levels One of the most serious microvascular disorders that affects the retina of the eye is diabetic retinopathy (DR). If not identified and treated in a timely manner, it may cause permanent partial or complete blindness. More than 50% of persons under the age of 70 suffer from diabetes worldwide. However, because it takes so long to see an ophthalmologist who screens and examines the patient's retina, many diabetics go undiagnosed and experience vision abnormalities. The technique begins with a pre-processing stage to remove any unnecessary noise from the edges and help the focus on the area.

R. S. Rajkumar and A. Grace Selvarani(2021) have proposed a fuzzy rough c-means clustering algorithm is used to update the cluster centres during the forward pass of the deep learning based unsupervised clustering, and stochastic gradient descent is used to update the deep learning model representations during the backward run of training.Python was used to implement the suggested method, and a DGX server equipped with Tesla V100 GPU cards was used to collect the findings. An experimental finding on the Kaggle dataset made available to the general audience reveals an overall accuracy of 88.7%. When compared to existing unsupervised algorithms like k-means, FCM, auto-encoder, and FRCM with Alexnet, the suggested model increases the accuracy of DR diagnosis.

Sayan Das and Sanjoy Kumar Saha(2022) in the proposed study aims to automate the crucial in ophthalmology identification and categorization of diabetic retinopathy using retinal fundus images. The majority of currently used techniques rely on manually created features, which are then supplied into the classifier for detection and classification purposes. Convolutional neural networks (CNNs) have recently been utilised to solve this classification problem, however their architecture was manually created. This study proposes a genetic algorithm-based method for automatically determining CNN parameters, which is then used to the categorization of diabetic retinopathy. The convolution and pooling layers in the proposed CNN model are employed to extract features. Finally, classification is performed using support vector machines (SVM).

Srikanta Kumar Padhy et al(2019) in the study covered all present state of artificial intelligence utilisation in diabetic retinopathy. The application of artificial intelligence in medicine is a developing technology that has the potential to aid in accurate diagnosis and mass screening. Complex associations can be built using input data to conduct pattern recognition, which is a significant step in the development of complex computing. An expanding issue is diabetic retinopathy. Retinopathy, a condition that poses a threat to vision, can be lessened with early detection and prompt treatment. For patients and ophthalmologists alike, any instrument that may speed up the screening process for this illness and reduce the need for trained personnel in the process would likely be beneficial.

Susmita Mishra et al(2020) have proposed automated systems created with the aid of deep learning and machine learning algorithms. When left untreated, diabetic retinopathy (DR), a consequence of diabetes that affects the retinal blood vessels, can result in blurred vision or possibly blindness. NPDR (Non Proliferative Diabetic Retinopathy) and PDR are the two basic categories for DR (Proliferative Diabetic Retinopathy). Throughout the world, millions of individuals are struggling with this issue. To identify this condition, highly qualified clinical

doctors typically review the coloured fundus photographs. This manual diagnosis (by professionals) takes a lot of time and is prone to mistakes. As a result, a timely diagnosis of diabetic retinopathy can help determine the next course of treatment to avoid blindness. However, these automated systems need a lot of computational resources and are not cost-effective.

Toufique Ahmed Soomro et al(2019) in the study presented the theory and use of deep learning in retinal image analysis in-depth. In the absence of an accurate clinical diagnosis and appropriate medical care, many eye illnesses frequently result in blindness. One such illness, diabetic retinopathy (DR), damages the retinal blood vessels in the human eyes. Ophthalmologists diagnose DR using their expert knowledge, which requires a lot of work. Computer vision-based approaches have been rapidly and widely utilized in the field of medical image analysis and are developing into a better way to advance ophthalmology in practice as a result of the developments in image processing and artificial intelligence. These methods perform better than manual processes at identifying blood vessel irregularity thanks to reliable visual analysis.

METHODOLOGY

A method based on convolutional neural networks to be used to identify and categorise the grades of DR. CNN is favoured since it takes care of all picture pre-processing and normalisation on its own. The relevant features are extracted from the photos using the idea of a filter, and the DR is then classified using these features. With the aid of Keras, CNN offers more flexibility in the handling and processing of images. The CNN approach uses a 4-step procedure with processing and feature extraction at each stage to detect and categorise the levels of DR.

The input images are fundus images from the Kaggle Aptos dataset. The images are first preprocessed to set the images in the uniform size and they are guassian filtered used to reduce the noise in the images. Then the training images are used to extract the features of a train a base model(efficientnet). The extracted images implemented in a Resnet CNN deep learning model and is tested and used to classify the images into the different classes of the diabetic retinopathy.

Architecture

The following operation which occurs at each stage are:

• Convolution

• Non- Linearity

• Average Pooling

• Classification
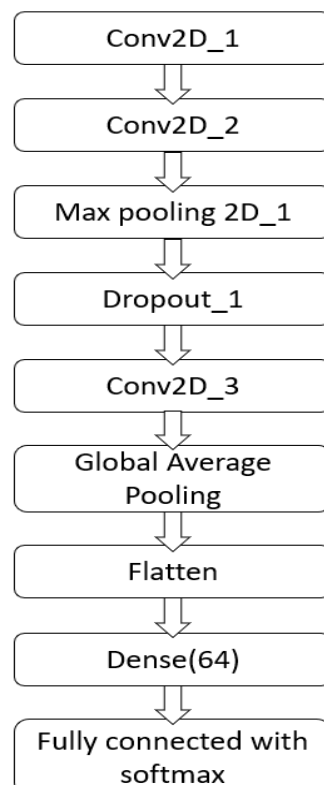
Figure 2: Network Architecture of the Proposed Model

The figure 2 shows the Network Architecture of the Proposed Resnet Model . The Flatten and Dense (64) layers are employed at last. These layers are used after the two Pooling layers and three Convolution Layers (32 filters) of size (3x3). These 64 hidden nodes are linked to the fully connected layer via the SoftMax layer, where various DR classes are classified. Global Average Pooling Layer and Max Pooling Layer are utilised to collect the minute information necessary for training the model for minute features of the high-resolution fundus pictures, increasing the accuracy of the Mild and Moderate DR prediction accuracy.

The layers of the model are as follows,

- **Convolution:** The extraction of features from an input image makes use of this component of the neural network. The convolution layer creates a convolution matrix by employing filters that slide across the image and multiply the corresponding image pixel value by values in the filter. The value that emerges as a result of adding the results together reflects the region of the image in which the filter is situated. This procedure is followed by the image throughout.

- The size of the filter is 3x3x3 (H1, W2, D3). After this filter passes over the image, it produces a reduced image matrix. The obtained matrix typically has dimensions of (h- h1+1) x (w- w1+1) x 1.

- **Non-Linearity:** To prevent the values from adding up to zero, every negative value from the resultant matrix of the previous layer is eliminated in this layer. Every value below 0 is changed to 0 by the activation function "ReLu" Layer. Only if the input is more than a certain value or quantity will the ReLu function activate the node. The output is zero if the input is less than zero. If the input exceeds a specific threshold, a linear relationship with the input variable is followed.

- **Global Average Pooling**: To prevent the values from adding up to zero, every negative value from the resultant matrix of the previous layer is eliminated in this layer. Every value below 0 is changed to 0 by the activation function "ReLu" Layer. Only if the input is more than a certain value or quantity will the ReLu function activate the node. The output is zero if the input is less than zero. If the input exceeds a specific threshold, a linear relationship with the input variable is followed.

- **Classification:** The ultimate outcomes of classification are determined by this layer. Depending on how many classes need to be predicted, it uses the Sigmoid or SoftMax activation function. It uses the Sigmoid function for binary classification and the SoftMax function for categorical classification.

B. PREPROCESSING
The fundus picture is initially preprocessed, and if an inverted image is found, the model turns the image. The dilation and erosion operations carried out by the pre-processing module add or subtract pixels from the images, respectively. Finally, all of the images are shrunk to a threshold size in order to speed up and smooth out the training. The fundus photos are transformed using a standard size of 224x224. The model is further trained using these preprocessed photos. The fundus (eye) image's noise is diminished by the colour correction.

This pre-processed fundus image allows for the clear visualisation of the afflicted blood vessels and haemorrhages. By ensuring that all photos are the same size and resolution, training time is significantly cut down and made more effective. This pre-processed fundus image is employed in our CNN model because the noise in the photos is also decreased. The accuracy of the Level 1 and Level 2 DR classification is improved by combining the Global Average Pooling Layer with the Max Pooling Layer to capture the fine details of the fundus image.

C. AVERAGE POOLING
In contrast to Max pooling, which selects the highest value from the matrix, this layer computes the average sum of all the matrix values that come after activation. Global average pooling layer is used to calculate the fine features of exudates and haemorrhages in the fundus picture. It aids in capturing those values, which in turn improves the effectiveness of detecting the L1 and L2 DR (Mild and Moderate Level DR). This is combined with the Max Pooling Layer to improve the model's overall ability to accurately detect and categorise DR into all four classes.

D. ADVANTAGES OF THE PROPOSED MODEL
When using traditional procedures, it typically takes 7 to 14 days to identify DR after an ophthalmologist consultation and eye screening. It takes between 2 and 5 minutes, depending on the resolution of the fundus image, because end-user neural networks for detection and classification were employed. To employ a neural network to detect DR, the user must first complete a pre-screening test or undergo a standard fundoscopy. The patient can also ask the ophthalmologist for advice on the outcome. This speeds up the diagnosis of diabetic retinopathy by cutting the screening and consultation time to about an hour.

Performance Metrics

A variety of measures are used to assess a categorization performance of the proposed Convolutional Neural Network model and is evaluated by measuring the following:

- **True-Positive (TP):** Images detected as DR are DR images

- **True-Negative (TN):** Images detected as No-DR are No- DR images

- **False-Positive (FP):** Images detected as No-DR are DR images

- **False-Negative (FN):** Images detected as DR are No-DR images

RESULTS AND DISCUSSION

The proposed model has successfully predicted and classified the fundus images and the desired results have been achieved successfully using the Convolutional Neural Network. After 29 epochs the model is set with the weights with the lowest loss. The model has been trained with 80% of images and have been tested with a 20% of the fundus images. The model has achieved a classification accuracy of 83%.

Predicted / Actual	Mild	Moderate	Severe	Proliferate	No DR
Mild	121	8	1	5	3
Moderate	14	110	7	13	1
Severe	1	7	144	12	0
Proliferate	6	8	11	120	0
No DR	3	3	0	0	155

Table 1: Confusion Matrix
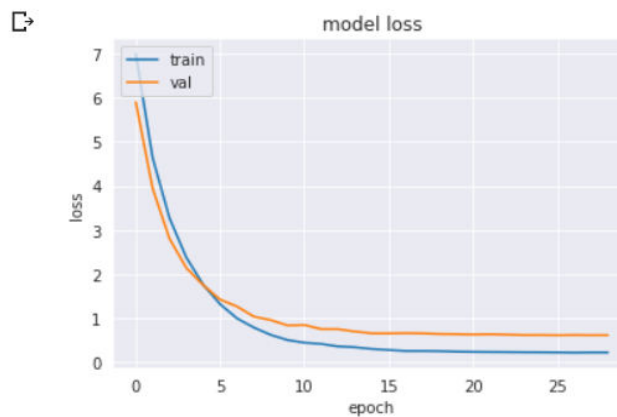
Figure 3: Model Loss

CONCLUSION

Diabetic Retinopathy is a degenerative health issue, it is preventable, and better understanding of the fundamental mechanics of the illness and its early detection could reduce vision loss. Eating a balanced diet and keeping blood pressure and glucose levels within the normal range will likely prevent the condition from developing and worsening. Most of the existing deep learning CNN models that have been developed does not detect the mild and moderate stages as accurate as the severe stages. This is one of the reasons that the automated systems are still not in practical use. One of the main goal of grading diabetic retinopathy into five classes is to increase the reliability of the automated systems by decreasing the number of Diabetic retinopathy images that were wrongly classified as No diabetic retinopathy. The proposed method of detecting the diabetic retinopathy achieves an accuracy of 83%.

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ETHNOBOTANICAL STUDY OF MEDICINAL PLANTS USED TO TREAT DIABETES IN YERCAUD HILLS, SALEM DISTRICT, TAMIL NADU, INDIA

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ABSTRACT

Ethnobotanical knowledge is crucial for the traditional inhabitants of Tamil Nadu's Eastern Ghats and Yercaud Hills to successfully treat their ailments. Herbal remedies are an essential part of all indigenous people's traditional medical practices and are frequently used in Ayurvedic, Homoeopathic, Naturopathic, and traditional Indian medical systems. The current study will concentrate on the medicinal plants utilized in Yercaud Hills, Tamil Nadu, India, to treat diabetes. A metabolic disorder called diabetes mellitus causes excessive blood sugar levels as a result of abnormalities in insulin secretion, insulin action, or both. It is a chronic ailment that impairs the body's ability to process proteins, carbs, lipids, and electrolytes, which can result in serious consequences that can be divided into acute, subacute, and chronic conditions. In this analysis, we discovered 31 plant species from 25 different families that are used to treat diabetics. The many plant parts, including leaves, bulbs, flowers, fruits, tubers, bark, stems, seeds, and sometimes the entire plant, are used to treat diabetics. Leaves are frequently employed among these components. The mode of applications are Extract, Cooked, Seed Soaked Water, Juice, Powder, Decoction, and Raw form. This would serve as a basis for future study on medicinal plants to treat diabetes and the potential creation of new medications.

Keywords: Diabetes Mellitus, Yercaud Hills, Medicinal plants, Ethno-botany.

INTRODUCTION

India is blessed with around 49,000 plant species , which are spread in various bio-geographical and agro-climatic situations and are related with indigenous as well as traditional knowledge systems [1]. The fascinating flora and fauna of Indian forests, particularly those in Tamil Nadu, are the source of research in the field of ethnobotany [4]. In order to understand the therapeutic effects of plants, ethno-medico-botanical research bridges the gap across botany as well as tribal knowledge [1]. The majority of the world's population, especially in underdeveloped nations, relies on traditional medicine to cure illnesses and wounds [2]. According to a WHO research (WHO, 2000), over 85% of the global total population directly depends on the natural diversity and its related traditional medical system for their primary healthcare needs [3]. India has a global reputation for having a diverse social, cultural, and local tradition of indigenous medical information with a millennia-long unbroken legacy [3]. The amount of reports of Indian tribal people and indigenous populations, especially those in Tamil Nadu's Eastern Ghats, using plants for traditional treatment has rising in recent years [5]. There are a huge variety of plant species in the Yercaud Hills [6].

A look at the existing literature reveals that there is little information on the extensive survey, documentation, and quantification of exotic medicinal plants by the native people in the Yercaud hills of the Eastern Ghats, and that no such comprehensive study has been done on this region specifically for hills as a whole [1]. Furthermore, because the majority of indigenous traditional culture is transferred orally to the local community members, so the indigenous and local information of medicinal plants is quickly forgotten in Yercaud [2]. This information must be made available in order to promote the continuity of the culture of local people, indigenous practices, conservation, and sustainable utilisation of the plant wealth present in the study area as a result of current deforestation trends which seriously affect the presence of medicinally significant plants [1].For the preservation of natural resource and their sustainable use, ethnobotanical research and documentation of indigenous knowledge are crucial [3].

A highly prevalent issue in our society today is the rise in diabetes incidence.India and other emerging nations face a problem in effectively combating this condition [7]. If diabetes is not treated, it can become quite dangerous [7]. Serious repercussions, including death, may result from it. Fortunately, it is a manageable illness [7].

STUDY AREA

With lush vegetation covering an area of 150 square miles, the Yercaud hill range is located to the northeast of the Eastern Ghats in the Salem district of Tamil Nadu, India . Between 11°45'56" N latitude and 78°17'55" E longitude is where it is located [6]. The temperature varies between 25°C and 40°C in the foothills and between 13°C and 29°C on the peaks [6].Alluvial and clay loam soil distinguishes the valley's bottom from the uppermost hill area, which has clay loamy soil [1]. The region experiences 1500–2000 mm of rainfall annually

[1]. The hills' highest peak is 1700 metres high [5]. The Yercaud taluk's (subdistrict's) entire length, including reserve forest, is 382.67 km. The hill tribes are distinctive in that they have long been geographically and culturally separated as from caste in the groups of the plains [1].

METHODOLOGY
The objective of the current study is to learn more about the use of medicinal plants in the Yercaud Hills in Tamil Nadu from Malayali tribes [2]. Semi-structured interviews, discussions in groups, accompanied field trips, and participant observations were used to gather ethnobotanical data [2].The plant's local name, parts utilised, botanical name, family name, and method of application for diabetes are all documented in the information gathered.

DISCUSSION
A total of 31 plants from 25 different families have been identified in this analysis as having medicinal uses against diabetes.Medicine were consumed in the form of Extract, Cooked, Seed Soaked Water, Juice, Powder, Decoction, and Raw . Botanical name, family name**,** local name, parts used and mode of application of each plant is listed in Table 1 and Table 2 lists the family name of each species.

BASED ON PARTS USED
The most often plant parts used to treat diabetes in Yercaud hills are Leafs (30.3%) and Seeds (27.3%). Different plant components, including leaves, bulbs, flowers, fruits, tubers, bark, stems, seeds, and sometimes the whole plant, can be used to make herbal medicinal preparations. Figure 1 displays the percentage of plant parts used to treat diabetes.

BASED ON MODE OF FORMULATION
The most frequent method of application of plant parts used for the treatment are Juice (27.3%) and Raw form (27.3%). Medicine is ingested as extract, cooked, seed-soaked water, juice, powder, decoction, and raw form. Figure 2 shows the percentage depending on the formulation of the medicinal plants to treat diabetes.

CONCLUSION
According to the study, medicinal plants are crucial to the basic health care provided in Yercaud hills. 31 plant species from 25 different families were uncovered in this investigation as potential diabetic treatment options. Leafs are frequently used as medicines among the species that have been identified. Other useful parts include leaves, bulbs, flowers, fruits, tubers, bark, stems, seeds, and sometimes the entire plant. Some anti-diabetic plants may work by enhancing beta-cell production or function, which would lead to an increase in insulin production. The study provides significant additions to what is already known about traditional treatments for diabetes.

Table 1: Classification of plants

Sl.no	Botanical name	Family name	Local name	Parts used	Mode of application
1.	Acacia arabica (Lam.) Willd.	Mimosaceae	Karuvaelai	Seed	Diabetes is treated with seeds raw form.
2.	Allium cepa Linn.	Alliaceae	Vengayam	Bulb	To treat diabetes, leaf juice is given with milk.
3.	Allium sativum Linn.	Alliaceae	Pundu	Bulb	Diabetes is treated with leaves in raw form.
4.	Andrographis lineate Wall. ex Nees.	Acanthaceae	Siriyanangai	Leaf	To treat diabetes, leaf powder combined with cow's milk is given orally.
5.	Azadirachta indica A. Juss.	Meliaceae	Vembu	Leaf	Diabetes is treated with leaves in raw form.
6.	Bombax ceiba	Bombacaceae	Elavampanchu	Seed	To cure diabetes, goat's milk and leaf or seed powder are mixed and ingested orally.
7.	Brassica juncea (Linn.) Czern.& Coss	Brassicaceae	Katuku	Seed	To cure diabetes, goat's milk and seed powder are mixed and ingested orally.
8.	Cajanus	Fabaceae	Adhaki	Seed	Cooked seeds can be

	cajan(Linn.) Millsp.				consumed with meals to control diabetes.
9.	Cassia auriculata Linn.	Caesalpiniaceae	Aavaarai	Flower	Tea made from flower powder is used to cure diabetes.
10.	Catharanthus roseus L. (G) Don	Apocyanaceae	Nityakalyani	Whole Plant	Diabetes is treated with a whole plant decoction.
11.	Coccinia grandis L	Cucurbitaceae	Kovakkai	Leaves, Fruit	Fruit and leaves are consumed raw or in juice form.
12.	Coccinia indica W. & A.	Cucurbitaceae	Kovai	Fruit	Diabetes is treated with fruit juice.
13.	Cuminum cyminum Linn	Apiaceae	Cheerakam	Seed	Diabetes is treated with seeds.
14.	Erythrina indica Lam.	Fabaceae	Kalyana murungai	Leaf	Diabetes is treated with leaves in raw form.
15.	Euphorbia antiquorum Linn.	Euphorbiaceae	Chzathura kalli	Fruit	Diabetes is treated with fruits in raw form.
16.	Ficus benghalensis Linn.	Moraceae	Alamaram	Seed	Seed soaked in water and the water is taken to treat diabetes.
17.	Gymnema sylvestre R.Br.	Apocyanceae	Sakarai kolli	Leaf	Diabetes can be treated with dried powder and tender fresh leaves.
18.	Hibiscus rosa-sinesis Linn.	Malvaceae	Sembaruthi	Leaf	Diabetes is treated with leaf juice.
19.	Ipomoea batatas(Linn.	Convolvulaceae	Sakaraivalli	Tubers	Diabetes can be treated with boiled tubers.
20.	Lantana camara Linn	Verbenaceae	Unni chedi	Leaf	Diabetes is treated using leaf juice.
21.	Mangifera indica L.	Anacardiaceae	Ma	Seed	Diabetes are cured by mixing dry seed powder with cow's milk.
22.	Momordica charantia L	Cucurbitaceae	Pavai	Fruit	Diabetes is treated with fruit juice.
23.	Murraya koeingii (L.)	Rutaceae	Karuvepalai	Leaf	Diabetes is treated with leaf juice..
24.	Musa parasidiaca L	Musaceae	Valai	Stem	.Diabetes is treated with stem extract.
25.	Nelumbo nucifera Gaertn.	Nymphiaceae	Alli	Flower	Juice prepared from flowers is consumed to cure diabetes.
26.	Ocimum santum L.	Lamiaceae	Thulasi	Leaf	To treat diabetes, dry leaf powder combined with honey is taken.
27.	Psidium guajava L.	Myrtaceae	Koyya	Leaves, Fruit	Fruit and leaves are consumed raw or in juice form.
28.	Pterocarpus marsupium Roxb.	Fabaceae	Vengai	Bark	To treat diabetes, bark decoction is ingested orally.
29.	Punica granatum L.	Punicaceae	Madulai	Fruit	Diabetes is treated with fruits in raw form.
30.	Syzygium cumini (L.)Skeels	Myrtaceae	Naval	Seed	To treat diabetes and lower blood sugar

				levels, seeds are powdered and used.
31.	Trigonella foenum-graecum L	Fabaceae	Vendhyem	Seed	Seed soaked in water and the water is taken to treat diabetes.

Table 2: Number of plants and families used by local people in Yercaud hills

Sl.no	Families	Number of plants
1.	Acanthaceae	1
2.	Alliaceae	2
3.	Anacardiaceae	1
4.	Apiaceae	1
5.	Apocyanaceae	2
6.	Bombacaceae	1
7.	Brassicaceae	1
9.	Caesalpiniaceae	1
11.	Convolvulaceae	1
12.	Cucurbitaceae	3
13.	Euphorbiaceae	1
14.	Fabaceae	4
15.	Lamiaceae	1
16.	Malvaceae	1
17.	Meliaceae	1
18.	Mimosaceae	1
19.	Moraceae	1
20.	Musaceae	1
21.	Myrtaceae	2
22.	Nymphiaceae	1
23.	Punicaceae	1
24.	Rutaceae	1
25.	Verbenaceae	1

Figure 1: Use of medicinal plants according to the used part

WHOLE PLANT: 3.0% BARK: 3.0%
TUBER: 3.0% BULB: 6.1%
STEM: 3.0% FLOWER: 6.1%
SEED: 27.3% FRUIT: 18.2%
LEAVES: 30.3%

BARK BULB FLOWER FRUIT LEAVES SEED STEM TUBER WHOLE PLANT
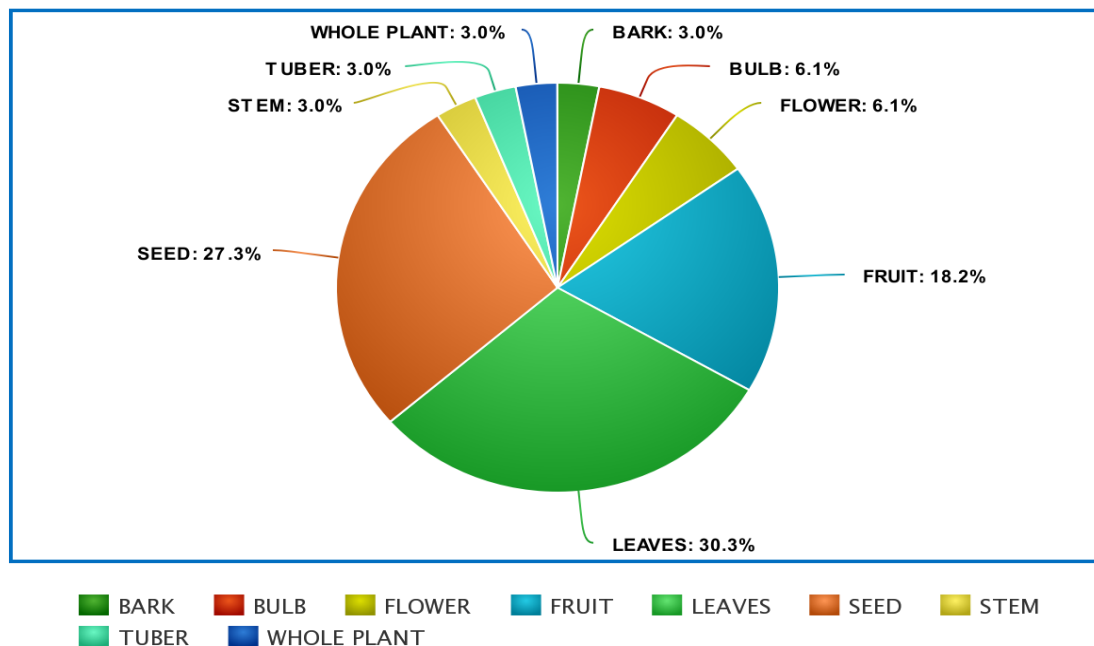
Figure 2: Use of medicinal plants according to method of preparation
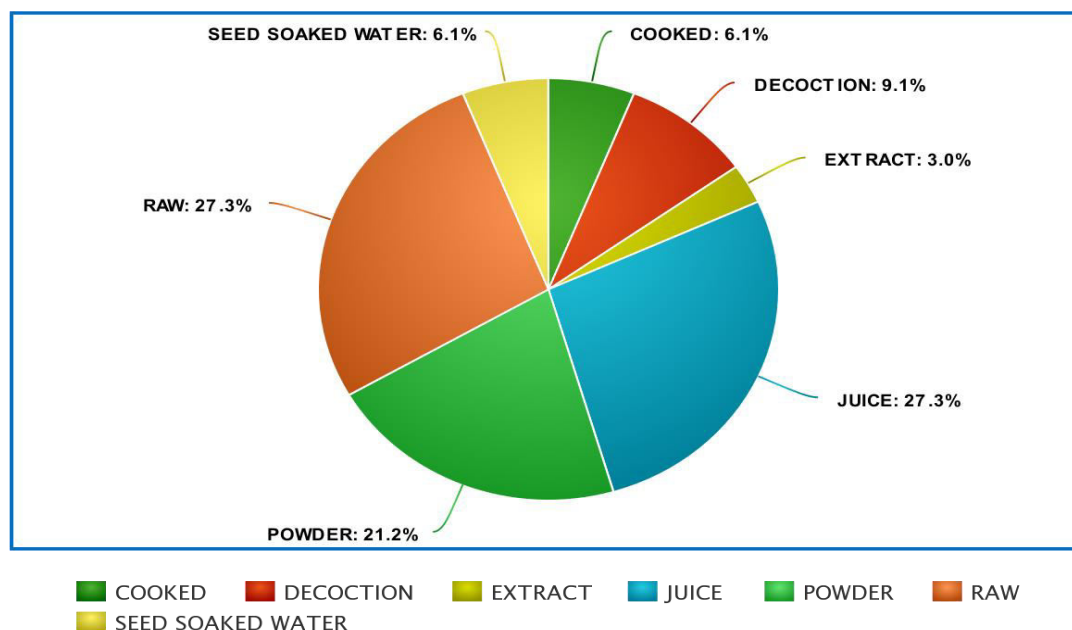
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IMPACT OF DEMOGRAPHIC VARIABLES ON EMOTIONAL INTELLIGENCE AMONG OWNERS OF SMALL-SCALE INDUSTRIES

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ABSTRACT

This research aims to study the level of emotional intelligence and also to investigate the relationship between components of emotional intelligence and demographic variables among the owners of small-scale industries in Dindigul district. The data for the study was collected from a sample of 366 small scale industries were analysed using 't' test and one-way analysis of variance. The findings of the study indicate that owners of small-scale industries with higher emotional intelligence level are making higher profits. Also, that demographic variable like occupational background, family size, family income, age, years of experience have a significant impact on the emotional intelligence level of owners of small-scale industries.

Keywords: Emotional intelligence, demographic variables, small scale industries, family size, years of experience.

INTRODUCTION

In the present dynamic, scientific and business environment, there is a corresponding rapid change in human lifestyle as it counts not only on physical dimensions but also on emotional aspects. With the compelling changes in the business environment following the economic crisis, both social and personal competencies are very significant for a healthy and productive life at work and in personal life, too.

Especially after globalization, organizations are trying to augment their performance through an increase in the productivity of their employees. Small Scale Industries in India are facing problems from various fronts (Bandyopadhyay, 2019; Das 2020; Srinivas, 2013). The survival and existence of a vibrant small scale industrial sector are vital for developing country like India (Livemint, 2016).

Realising the significance of small-scale industries governmental and non-governmental organisations are rolling out tailor-made programmes to survive and go strong. Recently Flipkart announced that it will make available for micro, small and medium entrepreneurs with the necessary support in customer data analytics and other marketing support to help them to scale up (The Hindu Business Line, 2018). The Government has numerous schemes and programmes for small industries like providing the line of credit from banks, assistance in testing, getting quality certification, skill up-gradation of the workforce, etc.

The foundation of the notion of emotional intelligence can be traced to the ground-breaking work of Edward Thorndike on "social intelligence" during the 1930s, which according to his was the capability of individuals to get along with people. Thorndike thought that like other constructs intelligence can also be measured (Thorndike, 1920). In the next decade, David Wechsler proposed that affective constituent of intelligence which may be critical to accomplishment in life and devised known as the Wechsler-Bellevue Intelligence Scales (Wechsler, 1943).

In 1975 Howard Gardner published a book titled "The Shattered Mind", in which he introduced the idea of multiple intelligences in human beings. Gardener advocated eight types of intelligence viz., linguistic, logical, spatial, musical, naturalist, bodily-kinesthetic, interpersonal and intrapersonal. Garner opined that out of these eight categories of intelligence only linguistic intelligence and logical-mathematical intelligence are considered important (Gardner, 1983). In the year 1986 Wayne Payne coined the term emotional intelligence in his doctoral dissertation "A study of emotion: developing emotional intelligence; self-integration; relating to fear, pain and desire" (Payne, 1985).

In the year 1990, the concept of emotional intelligence came to the limelight when Peter Salovey and John Mayer published their influential article on Emotional Intelligence which was published in the Journal Imagination, Cognition, and Personality (Salovey & Mayer, 1990). Five years later, in the year 1995 Emotional

intelligence was popularized when Daniel Goleman's magnum opus book "Emotional Intelligence: Why It Can Matter More Than IQ" was published (Perloff, 1997).

Emotional intelligence is prescribed as a panacea for the problems faced by business and management (Druskat & Wolff, 2001). Empirical evidence has suggested that the concept of emotional intelligence is proved as a key constituent for success for professionals like teachers (Asrar-ul-Haq et al., 2017; Thavaraj, 2015), expatriates (Bozionelos & Singh, 2017), college students, (S. RAMESH1, 2016), bank managers (Thavaraj, 2014), women bank managers (Preethy et al., 2020) nurses (Bellack et al., 2001), medical doctors (Carrothers et al., 2000) and engineers (Marshall, 2001).

REVIEW OF EARLIER STUDIES

A study was conducted in the Oyo state of Nigeria to study the relationship between demographic variables and the emotional intelligence level of workers. Data for the study was collected from a random sample of 251 workers from selected organisations located in the industrial sector of Ibadan. The demographic variables considered for the study are age, educational qualification, marital status, salary, gender and work experience. Emotional intelligence was measured using Workgroup Emotional Intelligence Profile, Version 3 (Jordan et al., 2002) Using multiple regression analysis it was found that gender, work experience and educational qualification are predictors of emotional intelligence level of workers (Adeyemo, 2008).

Cross-cultural research was conducted among 437 call centre representatives working in Dubai and the Philippines who were from Egypt, India, Iran, Iraq, Jordan, Oman, Pakistan, Palestine, Philippines, Russia, Syria and the United Arab Emirates. The objective of the research was to study the relationship between demographic variables like marital status, gender, nationality and work schedule on the emotional intelligence level and work values of call centre representatives. Emotional intelligence was measured using the Emotional Competency Inventory (Wolff, 2005). The findings of this study validated a significant relationship between gender and marital status and overall emotional competence (Sergio et al., 2015).

A research was conducted among 424 employees working in various services sector industries in India. Samples were selected using randomly drawn samples from Tourism, Information Technology/Information Technology Enabled Services, Real estate, Health, Education, Media, Retail Banking and Hospitality. The objective of the research was to study the relationship between demographic variables like gender, age, educational qualification, work experience, management level, industry and geographic location on the emotional intelligence level Emotional intelligence level of the respondents was measured using the instrument "Trait Emotional intelligence Questionnaire-Short Form (TEIQue-SF)" (Petrides et al., 2007). The results of the study indicate that all the demographic variables were significantly associated with the emotional intelligence level of service sector employees (Pooja & Kumar, 2016).

A study was conducted among 267 public sectors and 233 private sector bank employees in India. The purpose of this research was to study the association between demographic variables age, gender, educational qualification and work experience and emotional intelligence level. Emotional intelligence was measured using Genos Emotional intelligence inventory (Palmer & Stough, 2003). Results of this study reveal that there is no significant association between emotional intelligence levels of bank employees and their age, gender, educational qualification and work experience (Karthikeyan & Lalwani, n.d.).

A study was conducted among a sample of 261 public sector and private sector bank employees working in the Bhopal region of Madhya Pradesh state of India. Age, gender and educational qualifications were the demographic variables taken for the study and emotional intelligence was measured using the constructs of emotional responsiveness, emotional competency and emotional maturity. It was found in the study that demographic variables have a significant influence on the emotional intelligence of bank employees (Burki et al., 2020).

METHODOLOGY

This descriptive research is based on data collected from 4,380 owners of the small-scale industrial units registered with District Industries Centre, Dindigul District of Tamil Nadu state of India. The sample size of the study was determined using Yamane's formula (Israel, 1992) $n = \frac{N}{Ne^2 + 1}$ whereas n is the sample size, N is the size of the population, and e is the error of acceptance. Hence the sample size is $\frac{4,380}{4380\,(0.05)^2 + 1}$ = 366. Emotional intelligence was measured using the "Emotional Competencies Scale", devised by R S Dwivedi (Dwivedi, 2002).

CONCEPTUAL MODEL

Based on the review of the conceptual framework of emotional intelligence and review of earlier studies in the area of the effect of demographic variables on emotional intelligence, a conceptual model is developed and presented in the following diagram. This study explores the impact of gender, age, level of education, occupational background, nativity, marital status, nature of family, family size, number of dependents, personal income, family income and years of experience on emotional intelligence.

FIGURE 1
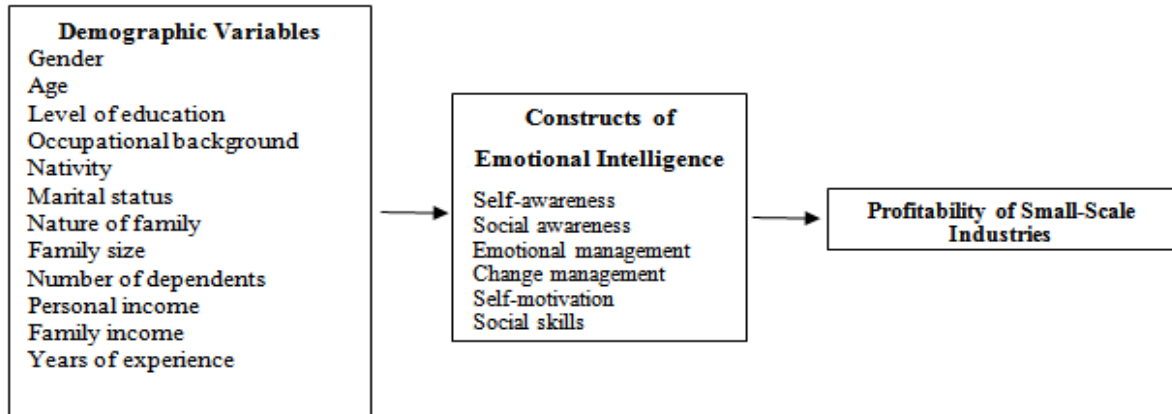
Figure 1: Conceptual model of the study

Self-awareness is the ability to precisely recognize one's own emotions at the any moment and comprehend the tendencies across circumstances (Bradberry & Greaves, 2009).

Social awareness is the skill to take the standpoint and have compassion for others. It includes the ability to recognize social and ethical norms for acceptable behaviour in specific circumstances. Socially aware individuals can effectively establish and preserve good relationship with others (Nelson et al., 2017).

Emotional management is the ability of an individual to regulate the emotions of self and others (Mayer & Salovey, 1997). Change management is a strategy employed to guarantee that major changes are implemented in a controlled and methodical manner to prevail over the ubiquitous resistance to change (Firdaus & Handriyono, 2018). Self-motivation implies the internal control of one's emotional tendencies that direct or assist in attaining goals (Goleman, 1998). Social skills are essential for healthy social life. Social skill is the ability of individual to adjust to social situations and to articulate themselves in a better manner while simultaneously understanding others (Jurevičienė et al., 2012).

RATIONALE OF THE STUDY

The lock making industry of Dindigul is 400 years old and recently the locks made here got the Geographic Indication tag (Times of India, 2019). For ages, the Dindigul locksmiths were making different speciality locks like the killer lock, from which a sharp knife would come out to hurt the fingers when wrong keys were inserted into the lock, a lock that will jam when the wrong key is inserted, a trick lock which will open only when a unique combination of keys in certain positions are used, etc (Shekar, 2019), But the survival of this industry with rich legacy is in question (Raju, 2017).

The tannery industry in Dindigul district is also in the doldrums and recently tannery workers from Dindigul made representation to District Collector seeking livelihood support for their family (The Hindu, 2019). Like Dindigul locks, vegetable-tanned leather called East India Leather produced by tanneries in Dindigul and Trichy districts of Tamil Nadu states has also received Geographical Indication (Mitra, 2016). The number of tanneries making East India leather is just 20 down from around 120 a couple of decades ago (Business Standard, 2013).

Nearly 1500 families are in the business of making cotton and silk saris in Chinnalapatti located in Dindigul district. But there is not dyeing unit nearby and the hundreds of craftsmen travel to Madurai every day for dyeing. This increases the cost of production and is a major problem for Chinnalapatti textile craftsmen (Shrikumar, 2019). Chinnalapatti is part of the Integrated Handloom Cluster Development Scheme with funding of Rs. 2 crores.

So, despite the problems and issues positive signs like Geographic Indication tag and cluster development schemes are like shot in the arm of small industries in Dindigul. Already few studies have been carried out to find the impact of emotional intelligence on the success of entrepreneurs in new venture creation (FakhrEldin,

2017), the emotional intelligence level of entrepreneurs and transformation leadership behaviour (Yitshaki, 2012) and implications of emotional intelligence on entrepreneurial performance (Oriarewo et al., 2019). Very few studies have been carried out to study the emotional intelligence level of small industries owners in a specific district dominated by few industries. Hence this result of this study can be useful in designing Entrepreneurial Development Programmes by organisations like District Industrial Centres and Micro Small and Medium Enterprises Skill Training Centres.

This study aims to identify the level of various components of emotional intelligence among the owners of small industries in Dindigul district and also to examine the association between the profile and the level of various components of emotional intelligence among the owners.

RESULTS AND DISCUSSIONS

The emotional intelligence among the owners has been examined by the level of various components of emotional intelligence. In the present study, there are six components of emotional intelligence. The score on the six components of EI has been computed by the mean score of the variables in it. The t' test has been applied to find out the significant difference among the owners in ordinary units (ORU) and highly sick units (HSU) regarding their level of various components of EI. The results are given in Table 1.

Table 1: Score on emotional intelligence among the owners

Sl. No.	Components of Emotional Intelligence	Mean score among owners in		t – statistics
		ORU	**HSU**	
1.	Self-awareness	2.9281	2.4167	2.570*
2.	Social awareness	3.1699	2.6833	2.788*
3.	Emotional management	3.0948	2.6833	2.306*
4.	Change management	3.1307	2.6500	2.604*
5.	Self-motivation	3.2418	2.7667	2.548*
6.	Social skills	3.3627	2.8167	2.782*
7.	Overall Emotional Intelligence	3.3627	2.8167	2.782*

Source: Outcome of data analysis and interpretation using SPSS *Note*: * Significant at 5 per cent level.

The highly possessed components of EI among the owners in ORU are 'social skills' and 'self-motivation since their mean scores are 3.3627 and 3.2418 respectively. Among the owners in HSU also reflects the same components, which are 'social skills' and 'self-motivation since their mean scores are 2.8167 and 2.7667 respectively. Regarding the level of emotional intelligence, the significant difference among the owners in ORU and HSU has been identified in the case of all six components of EI since their respective 'F' statistics is significant at a five per cent level. The overall score on emotional intelligence among the owners in ORU is higher than among the owners in HSU.

The profile of the owners may be associated with the level of various components of EI. Hence the present study has attempted to examine the association with the help of a one-way analysis of variance. The included profile variables are gender, age, level of education, marital status, nature of family, family size, number of dependents, family income, and years of experience. The results are given in Table 2.

Table 2: Association between the profile of Owners and their Emotional Intelligence (EI) Components

S. No.	Profile variables	F-Statistics					
		SA	*SOA*	*EM*	*CM*	*SM*	*SS*
1.	Gender	4.040*	0.011	2.461	0.965	0.274	0.542
2.	Age	6.425*	4.391*	5.332*	4.645*	0.738	3.108*
3.	Level of education	4.609*	2.946*	7.009*	3.605*	3.998*	1.772
4.	Marital status	4.944*	5.519*	2.825	6.664*	5.263*	1.607
5.	Nature of family	8.488*	11.334*	15.931*	17.277*	7.565*	6.105*
6.	Family size	2.536*	2.103	2.104	1.931	0.552	4.198*
7.	Number of dependents	9.100*	3.777*	3.141*	4.912*	6.073*	2.802*
8.	Family income	6.288*	4.254*	7.413*	4.829*	5.239*	3.918*
9.	Years of experience	16.595*	11.113*	17.593*	19.660*	15.664*	12.383*

SA-Self-awareness, **SOA**-Social awareness, **EM**-Emotional management, **CM**-Change management, **SM**-Self motivation, **SS**-Social skills.

Source: Outcome of data analysis and interpretation using SPSS. *Note:* * Significant at 5 per cent level.

Regarding the level of self-awareness, all the profile variables are significantly associating, since their respective 'f' statistics are significant at a five per cent level. The significantly associating profile variables with the level of social awareness among the owners are age, level of education, marital status, nature of family, number of dependents, family income, and years of experience.

The significantly associating profile variables with the level of emotional management among the owners are age, level of education, nature of family, number of dependents, family income, and years of experience. whereas in the case of level of change management, the significantly associating profile variables are age, level of education, marital status, nature of family, number of dependents, family income, and years of experience.

Regarding the level of self-motivation, the significantly associating profile variables are level of education, marital status, nature of family, number of dependents, family income, and years of experience. The significantly associating profile variables with the level of social skills are age, nature of family, family size, number of dependents, family income, and years of experience since their respective 'F' statistics are significant at a five per cent level.

CONCLUSION

Overall emotional intelligence level among ORU owners is higher than among HSU owners. Among the owners in ORU, the highly possessed EI components are 'social skills and self-motivation.' The result also reveals that the significantly associating profile variables with the level of all the emotional intelligence components are nature of family, number of dependents, family income and years of experience. Given that the small-scale industries operate in a vicious economic environment, it is imperious that the issue of increasing the level of emotional intelligence among the owners of SSI should be duly addressed. Globalization's effect on our economy entails many challenges for SSI unit owners in India. Just cognitive ability alone cannot guarantee the success of an enterprise. Competency, such as knowing one's emotions and knowing others' emotions, is also very important. As the owners of the SSI units are under constant pressure, there is a need for improving emotional intelligence competencies to overcome challenges. Government or the MSME Ministry can take a clue from the study and adhere to impart emotional intelligence skills among the owners of SSIs to ensure financial gain and the development of the economy.

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NLRP3 INFLAMMASOME ROLE IN TYPE 1 DIABETES

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ABSTRACT
"Diabetes mellitus type 1 is an autoimmune disease which is characterized by the destruction of the pancreatic beta cells that produce insulin by immune cells T lymphocytes and macrophages that invading the islets of Langerhans". An intricate polyprotein called NLRP3 plays a pivotal role in the body's inflammatory response. The NLRP3 inflammasome is a protein complex that is very important to the process of inflammation. It is made up of the proteins Procaspase-1, NLRP3, and ASC, and its function is to identify pathogens. When a cell is confronted with a pathogen-associated molecular pattern (PAMP) or a damage-associated molecular pattern (DAMP), the NLRP3 inflammasome is activated. Caspase-1, when activated, catalysis the conversion of inactive forms of pro-inflammatory cytokines and interleukins (IL-1 and IL-18) into their physiologically active forms, which in turn promotes inflammation. The NLRP3 inflammasome is involved in the pathophysiology of type 1 diabetes and is linked to a variety of inflammatory and autoimmune illnesses. Interleukin-1b (IL-1b) is a first-stage biomarker of diseases that is created when immune cells use Toll-like receptors (TLRs) to recognize specific pathogens or endogenous warning signals . One of the distinguishing features of type 1 diabetes is that auto-reactive T lymphocytes are responsible for the destruction of insulin-producing beta cells in the pancreas. Also, IL-1beta kills beta-cells directly and sends out an inflammatory signal during the early stages of the disease. Those who have just been diagnosed with diabetes mellitus or who have been living with the condition for a long time have increased levels of IL-1b, although treatment may bring these levels down. Moreover, the decreased expression of IL-1RA in islets from non-diabetic donors exposed to sera from type 1 diabetes patients causes beta-cells that produce insulin to become dysfunctional and eventually die. This further increases the creation of IL-1 beta, which is harmful to beta-cells.

Keywords: NLRP3, inflammasome, IL-1 β,T1DM.

INTRODUCTION
5-10% of all cases of diabetes are "Type 1 diabetes mellitus (T1DM), which is characterized by severe autoimmune destruction of insulin-producing beta-cells in the pancreas by T lymphocytes and macrophages invading the islets of Langerhans"[1]. Data suggests that T1DM start and progression are significantly influenced by innate immune system elements, which are predominantly controlled by Toll-like receptors (TLRs) [2]. An initial biomarker of the disease that may aid in the development and progression of type 1 diabetes, interleukin-1b (IL-1b, produced by the IL-1B gene), is produced as a result of immune cells' ability to identify particular pathogens or endogenous warning signals through TLRs. This results in the production of interleukin-1b. [2]. The elimination of insulin-producing pancreatic beta cells by auto reactive T lymphocytes is one of the defining characteristics of type 1 diabetes, often known as T1DM. [3]. The specific underlying mechanisms of type 1 diabetes are not completely understood, it is believed that the pathophysiological process of the disease is influenced by a combination of environmental and hereditary variables. [4-6]. The development of type 1 diabetes is influenced by both innate and adaptive immunity (7-9). As opposed to adaptive immunity, innate immunity is a generally conserved immunological response that acts as the initial line of defense against an external attack by bacteria, viruses, and fungi [10, 11]. Earlier studies have shown that the innate immune system is responsible for initiating innate inflammatory responses in response to both exogenous and endogenous trigger events, and that it subsequently goes on to stimulate the adaptive immune system through highly conserved "PRRs (pattern-recognition receptors)". When innate sensors detect distinct "PAMPs (pathogen-associated molecular patterns) or DAMPs (damage-associated molecular patterns)", innate immune cells initiate a chain reaction of inflammatory responses. [12]. The NLRP3 inflammasome is a polyprotein complex with a relative molecular mass of around 700,000 Da that is vital to the development of inflammatory responses [13]. Procaspase-1, NLRP3, and "ASC (apoptosis-associated speck-like protein with a caspase recruitment domain)" make up the NLRP3 inflammasome [14,15].

NLRP3 INFLAMMASOME COMPONENTS
Procaspase-1, ASC, and NLRP3 are all components of the protein complex known as the NLRP3 inflammasome [16]. The "NLR (Nod like-receptor)" is a family of protein, which includes the member NLRP3, is extensively expressed in dendritic cells, monocytes, and macrophages and is responsible for identifying pathogens. At its C-terminus, NLRP3 has a recognizable "LRR (leucine-rich repeat)" domain found in NLR

protein family [17]. Nucleotide-binding domain, commonly referred to as NOD or NACHT, refers to the central portion of NLRP3. The NBD is an NTPase superfamily member that hydrolyzes ATP into GTP. The PYD (pyrin domain), also known as the "CARD (caspase recruitment domain) or BIR (baculovirus IAP repeat)" domain, can engage in a variety of inflammatory reactions by attaching to molecules that have the same domain. For instance, the PYD-PYD interaction is used to bind ASC. The NLRP3 inflammasome's adaptor protein is called ASC. ASC has a PYD domain at its N-terminus that is identical to the PYD domain in NLRP3, and it has a CARD recruitment domain at its C-terminus that is identical to the CARD domain in procaspase-1. As a consequence, ACS functions as a two-domain adapter protein molecule that interacts to NLRP3 and procaspase-1 via interactions between the PYD-PYD and CARD-CARD domains. An effector protein of the inflammasome identified as caspase-1, also referred as IL-1b-converting enzyme, cleaves pro-IL-1b and pro-IL-18, which are pro-inflammatory cytokines, into activated versions, such as IL-1b and IL-18.[18,19]. These cytokines are responsible for inflammation not only because they recruit and activate more immune cells, but also because they stimulate the production of growth factors, chemokines, and other proinflammatory cytokines (Figure 1). Researchers have discovered a connection between the NLRP3 inflammasome and a number of inflammatory and autoimmune diseases [20,21].
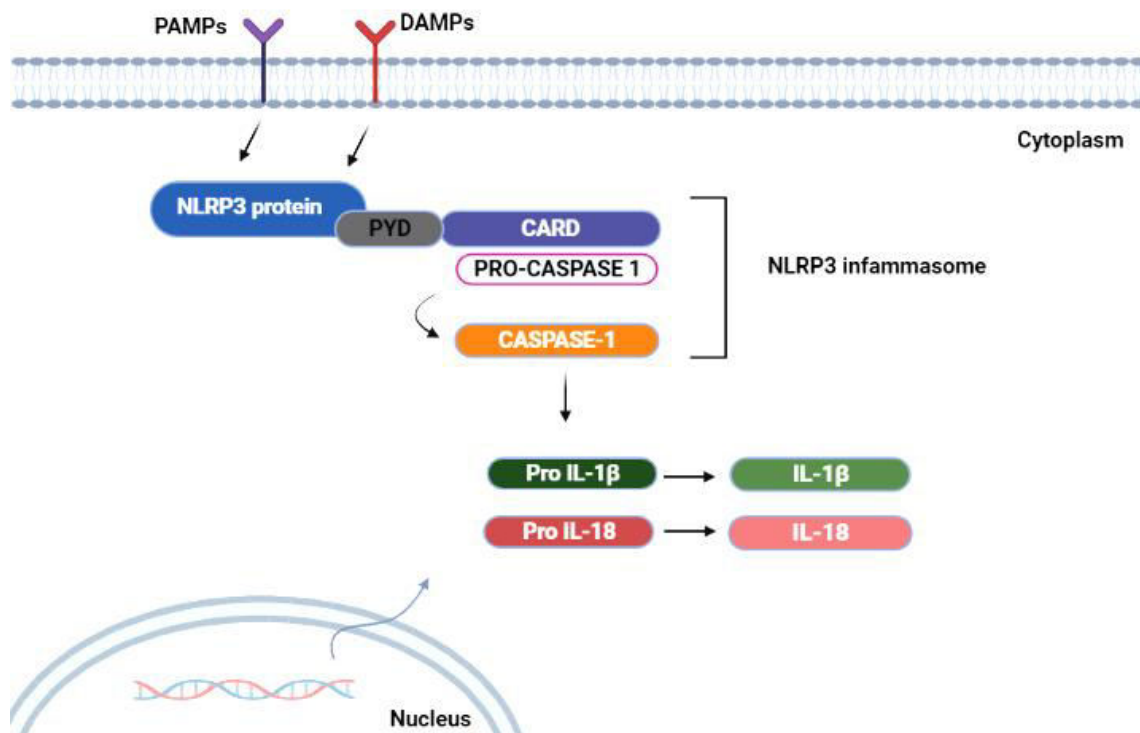
Figure 1: structure of the NLRP3 inflammasome

The NLRP3 inflammasome is composed of three main elements: the "NLRP3 sensor protein, the adaptor protein apoptosis-associated speck-like protein (ASC), and the effector protein caspase-1". NLRP3 activation happen when the cell exposure to PAMPs or DAMPs. When NLRP3 activated, it will interacts with ASC via the PYD domain, while pro-caspase-1 binds to ASC through the CARD domain, and the will lead to formation of a large cytosolic complex that ultimately leads to Cas-1 activation. The activated caspase-1 responsible for cleaving the inactive forms of the pro-inflammatory cytokines interleukins (IL-1β and IL-18) into their biologically active forms, thus promoting inflammation.

The NLRP3 inflammasome is an important player in the inflammatory response that is linked to a number of different diseases, one of which is diabetes type 1. In the initiation of NLRP3 inflammasome activation, the assembly of NLRP3 with the adaptor protein ASC and procaspase-1 facilitates the auto-cleavage and maturation of procaspase-1. The activation of caspase-1, which occurs thereafter, leads to the cleavage of pro-IL-1 to produce mature IL-1, a cytokine that attracts other inflammatory cells and exerts direct cytotoxic effects. In addition, the activation of the NLRP3 inflammasome is associated with pyroptosis, a type of programmed cell death that occurs when a cell is exposed to pathological stimuli. In particular, activation of the NLRP3 inflammasome in pancreatic beta cells can cause the release of IL-1, which can contribute to the destruction of β cells and, as a result, the development of type-1 diabetes. In addition to this, the activation of the NLRP3

inflammasome can cause pyroptosis, which can then result in the release of DAMPs, which can further contribute to the inflammatory response [22, 23].

NLRP3 Inflammasome Activation and Regulation

In the context of NLRP3 inflammasome activation, the direct binding of various stimuli is unlikely given the structural and chemical dissimilarities amongst the stimuli that are capable of inducing the inflammasome response. According to prevailing thought, the NLRP3 protein recognizes and responds to a shared cellular event that is initiated by diverse stimuli. Despite this, there is no clear consensus on the precise nature of this cellular event. Presently, a widely accepted two-signal model has been put forth in the literature, which posits that the activation of the NLRP3 inflammasome requires two distinct signals. The first signal is triggered by an endogenous or exogenous stimulus that induces the expression of the NLRP3 protein and a priming signal. The second signal is triggered by another stimulus that initiates the assembly of the NLRP3 inflammasome, resulting in the activation of caspase-1 and subsequent IL-1β and IL-18 maturation [24].

The formation of inflammasome is initiated by the activation of PRRs in response to PAMPs or DAMPs in the cytosol. The process of inflammasome activation is a two-step mechanism where the first signal, the priming signal, up regulates the expression of inflammasome components and PRRs. This priming step is essential for the inflammasome to respond to the second signal that triggers the formation of inflammasome. Upon recognition of these signals, the NLRP3 inflammasome is assembled, resulting in the oligomerization and recruitment of adaptor molecule "apoptosis-associated speck-like protein containing a CARD (ASC)" and procaspase-1. The subsequent auto cleavage and maturation of procaspase-1 lead to the activation of cas-1. Active cas-1 then cleaves the precursor form of pro-inflammatory cytokine pro-IL-1β into mature IL-1β, which is then released to recruit and activate other immune cells and exert direct cytotoxic effects. The exact mechanism of how NLRP3 senses these various stimuli and triggers the inflammasome assembly is still under investigation, but it is believed that NLRP3 recognizes a common cellular event induced by its stimuli[25-27] (**figure 2**).
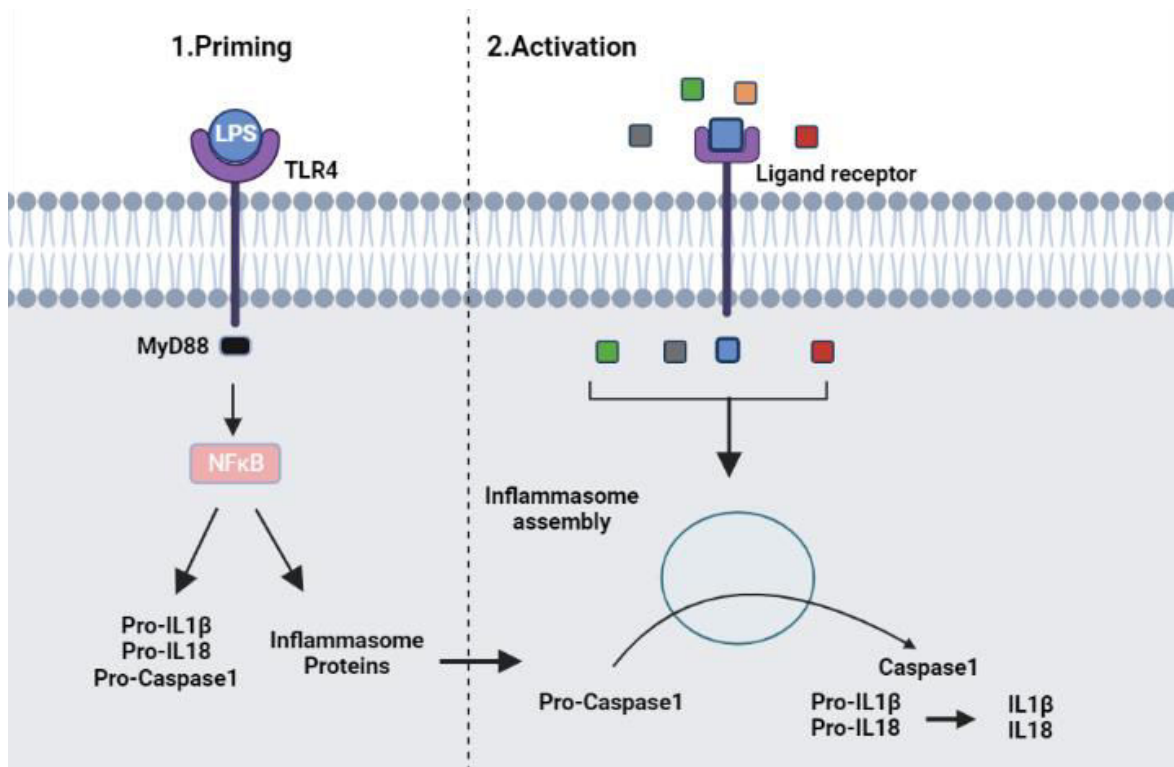
Figure 2: Inflammasome priming and activation Inflammasome.

After PAMP and DAMP ligands have been recognized by their respective receptors, such as bacterial Lipopolysaccharides (LPS) recognition by TLR4 pathogen-associated molecular patterns, inflammasome-related genes, such as NLRP3, NLRC4, are transcribed. This "priming" process warns cells about prospective threats and prepares the inflammasome machinery for translation. As further activating signals are recognized, the inflammasome proteins oligomerizes and form a wheel/disk-like shape. The development of these inflammasome complexes allows caspase 1 to be activated from its precursor form, which then activates additional cytokines such as IL-1 β and IL-18. Other caspases, including as Cas 4, 5, 8, and 11, may be activated by inflammasome-associated proteins [28, 29].

Inflammation and immunological responses are both mediated by IL-1 β, which plays an important part in the host's defense against a wide variety of pathogens. On the other hand, an excess of IL-1 production results in persistent inflammation and plays a role in the aetiology of a wide variety of inflammatory and autoimmune illnesses[30].

INFLAMMATION OF THE NLPR3 AND TYPE 1 DIABETES

T1DM is a metabolic condition characterized by a total lack of insulin and resulting hyperglycemia as a result of an autoimmune response. Autologous T lymphocytes infiltrate pancreatic islets, causing insulitis and β cell death[31]. Adaptive immune system, innate immunity has been found to play a crucial role in the pathogenesis of type 1 diabetes. A growing body of research indicates that the NLRP3 inflammasome and its downstream cytokines, specifically interleukin-1beta (IL-1b), are implicated in the development and progression of this disease. The NLRP3 inflammasome, a multi-protein complex, is one of the key components of the innate immune system that recognizes pathogen-associated molecular patterns (PAMPs) and danger-associated molecular patterns (DAMPs). Once activated, the inflammasome triggers the maturation and release of pro-inflammatory cytokines, including IL-1b, which play a critical role in the inflammatory response. [32,33].

IL-1β plays a crucial role in the pathogenesis of type 1 diabetes. It not only attracts proinflammatory cells to the pancreatic islets but also contributes to beta-cell apoptosis through the mediation of cytokines. Moreover, IL-1β exerts direct cytotoxic effects on beta-cells. Furthermore, it acts as an inflammatory signal in the initial stages of type 1 diabetes, which underscores its involvement in the development of the disease[35,36,37]. IL-1b levels are greater in individuals who have just been diagnosed with type 1 diabetes as well as people who have had the condition of chronic diabetes mellitus when compared to healthy controls. Nevertheless, IL-1b levels in newly diagnosed type 1 diabetes patients are reduced following therapy [38-40]. Additionally, it has been observed that the expression of "Interleukin-1 receptor antagonist (IL-1RA)" is diminished in islets obtained from non-diabetic donors that are exposed to sera from patients with type 1 diabetes. IL-1RA plays a crucial role in inhibiting the signaling pathway and preventing the interaction between IL-1b and its receptor. The diminished expression of IL-1RA not only leads to dysfunction and death of insulin-producing beta-cells, but it also promotes IL-1 β production, which further damages beta-cells [41].

In addition, NOD mice who were pretreated with IL-1RA had lower levels of chemically-induced hyperglycemia, but they did not show any reduction in islet inflammation[42]. On the basis of these results, new therapy techniques that attempt to make the IL-1b activity suppression and have been created to cure or alleviate autoimmune disorders. Some examples of these novel treatment tactics are synthetic IL-1RA and IL-1b traps. In point of fact, following therapy with IL-1RA, individuals with type 1 diabetes had lower insulin needs while maintaining comparable levels of hemoglobin A1c[34,43].

Despite this, there are still certain inconsistencies that need to be resolved. Animal tests using NOD caspase-1⁻/⁻ mice demonstrated lower levels of the inflammatory cytokine IL-1, but the incidence of diabetes and susceptibility to streptozotocin remained the same when compared to wild-type NOD mouse models[44]. NOD mice may not necessarily need caspase-1-mediated IL-1b production to develop diabetes. At the very least, this is not required. In vivo experiment conducted on non-obese diabetic (NOD) mice showed that CD4 C T cell-mediated beta-cell death and diabetes were not dependent on the activity of IL-1 and IL-18 [45].

In the NOD mouse model, the NLRP3 inflammasome is essential for the emergence of autoimmune diabetes. The development of T1D was postponed and reduced through genetic ablation or pharmaceutical NLRP3 suppression, and the movement of diabetogenic cells into pancreatic islets was hindered. The IRF1 signaling pathway is probably involved in the down-regulation of chemokine-related gene expression in non-hematopoietic cells caused by NLRP3/ NOD. Recent research showing milder EAE through the decrease in IFN-expressing T helper cells is consistent with NLRP3 deficiency suppressing Th1 responses. T lymphocytes enter pancreatic islets, specific chemokine expression in the islets is necessary. Pancreatic islet cells in both humans and rodents express many chemokine genes, such as CCL2, CCL3, CCL5, and CXCL10. The expression of these chemokines, as well as that of CCL5 and CXCR3, was significantly down-regulated in NOD islets that lack NLRP3, though. This suggests that chemokine gene expression is down regulated and insulitis is decreased as a result of genetic NLRP3 ablation. The lack of IL-1 production and suppressed Th1 responses are likely to be the causes of the down-regulation in NLRP3/ NOD islets[46].

CONCLUSION

Researchers have found that the NLRP3 inflammasome is associated in a number of type 1 diabetes-related processes, such as the migration of pro-inflammatory cells to the pancreatic islets, cytokine-induced β –cell cell death, direct cytotoxic effects on β –, and pyroptosis, which is a type of programmed cell death. The connection

between IL-1b and its receptor has been specifically linked to the development of type 1 diabetes. In the islets of non-diabetic donors who were exposed to the sera of type 1 diabetes patients, lower levels of the protein known as interleukin-1 receptor antagonist (IL-1RA) were discovered. IL-1RA is an inhibitor of the interaction between IL-1b and its receptor. When IL-1RA is not expressed as much, β –cells that make insulin don't work as well and don't live as long. It also makes more IL-1b, which affects beta-cells even more. In animal models, the NLRP3 inflammasome has also been linked to the development of type 1 diabetes. For instance, a study with NOD mice showed that IL-1 and IL-18 have nothing to do with the death of beta cells and diabetes caused by CD4+ T cells. Together, these results show how important the innate immune system and the NLRP3 inflammasome are in how type 1 diabetes develops.

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ROLE OF NETWORK MARKETING IN THE ASCENDANCE OF WOMEN EMPOWERMENT IN INDIA: AN EMPIRICAL STUDY IN UTTARAKHAND

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ABSTRACT

Network marketing is a business model that is employed by companies to increase their sales with the help of non-salaried persons who build 'networks' to sell the company's goods and services. These non-salaried individuals receive commission as per their sales and also increase the profits of their respective organizations as they are not paid any salary. Empowerment of women denotes encouraging their growth and development in all the aspects of personal and professional spheres. To develop a balanced society the contribution of women is uniformly significant and it should be a precedence to give them an opportunity to develop themselves. This research's main endeavor was to study various indicators of women empowerment in relation to network marketing organizations. The results concluded that out of the nine indicators, seven had significant impact whereas three did not have any significant impact on women empowerment.

Keywords: Network, Marketing, Women, Empowerment, Indicators.

INTRODUCTION

Network marketing means a corporate strategy which involves a direct communication with the buyer which is build by accumulating a network of non-salaried distributors by the company. Network marketing is a business model that is employed by manufacturers and merchants to increase their sales. In network marketing, producers deal with a huge number of non-salaried persons who build 'networks' to function at different stages and in this manner include a bigger segment of the community. They generally work as independent salespersons of the organization, which helps to decrease the costs that are incurred in the traditional business models. These non-salaried individuals receive commission as per their sales and also increase the profits of their respective organizations. This business model uses are diverse and wide-ranging and its intricate procedure is done by creating levels of distributors who employ the independent networking to sell the merchandise. Organizations that employ this business model often give authority to distributors to recruit people under them. [6] [9]

Women empowerment refers to the empowerment of women to make their personal and professional decisions as per their preferences. The main aim of women empowerment is to make the women autonomous and independent. This will help them to develop an optimistic attitude and self-belief which in turn helps them to survive and make a place in the society. This will only be possible if equivalent chances are available for them in the world. Empowerment of women denotes encouraging their growth and development in all the aspects of personal and professional spheres. The population of women is almost half across the various countries of the world but their involvement in financial and other activities is very less. This portrays that there are not equivalent chances available for women and the tasks which are given to them do not have any contribution to the national income of the nation. To develop a balanced society the contribution of women is uniformly significant and it should be a precedence to give them an opportunity to develop themselves. [8] [11]

REVIEW OF LITERATURE

Deepali Bhattacharjee [2016] states that network marketing is a comparatively new business model in the country. In less than two decades, it has given self-employment to more than 50 lakhs people in the country and 60% of them are women. This research examines the role of network marketing in generating revenue and job opportunities in the state of Assam. This research is based on primary data which has been collected from 650 participants and secondary data has been employed as per the need. The data has been collected from Amway, Oriflame, Tupperware and Max Insurance. This research makes an attempt to draw attention to the issues and future of direct marketing. The outcomes indicate that there is an optimistic association between education and distributors number; women do more sales than man, the acceptance of direct marketing has increased in the recent times and there is an increase in satisfaction level of the people working in this industry.[1]

Victoria E. Drake [2017] states that in the last few decades, there has been an increase in advertising campaigns whose main focus is female empowerment i.e. Femvertising. While these advertising campaigns are regularly analyzed in the market, there is limited research examining the efficiency of Femvertising from a promotion stance. The research design used in this research is a between-subjects experiment where women respondents were indiscriminately exposed to either a conventional T.V. advertisement or Femvertising

advertisement for the same company and then filled a questionnaire. The result revealed that Femvertising has an optimistic effect on advertisement and brand beliefs, buying motives and established an emotional relationship with brands. The outcomes of this study will motivate companies to employ femvertising based campaigns as these have an optimistic effect on main advertising gauge. [2]

S. Prema [2018] states that women empowerment is a procedure in which female get a bigger percentage of power over the resources, employees, expertise, monetary independence, decision making authority in family, neighborhood, community, country and achieve empowerment. The research main objective was to make a thoughtful examination on whether Self Help Groups has been advantageous in the empowerment of female residing in villages, as women are vastly bounded by their customs and a patriarchal culture. The author wanted to find out whether Self Help Groups efforts considerably affect perception level to the optimistic aspects for financial empowerment. The area of study was Sattur Taluk in the Virudhunager District of Tamil Nadu, which is famous for producing fountain-pens. The results revealed that a good number of respondents got job through Self Help Groups and the results of multiple regression tests concluded that S.H.G.s considerably affects women perception in relation to the optimistic attributes for financial empowerment. The conclusion was that S.H.G.s has become an influential apparatus in villages and assisted to liberate them by cooperative society development on a considerable basis. [13]

Victoria Elizabeth [2019] states that direct marketing or M.L.M. is a business model in which the compensation of the distributor is dependent upon their sales and that of their down-line. The author also talks about the frauds being committed by these companies in U.S. and in other parts of the world. While in U.S. the government has started to regulate and control this industry but in Latin America there is still no worry for the exploitations and rackets committed against helpless citizens who can lose all their funds by investing in a fake company. The author takes the help of limited research that focuses on the optimistic and pessimistic impact of these organizations, along with the statistics which demonstrate how these organizations give emphasis to women. This research advocates that lawmaking agencies should formulate laws to control these organizations, including the responsibility to compensate for vendors or their merchandises. Further, international agencies, particularly those who defend women's constitutional civil liberties should avoid doing business with these types of fake companies. [3]

Kritanjali Saikia [2020] states that the women are an essential element of every community and the position of women in the social order is straightaway associated with societal and cultural customs, phases of financial growth, educational stages and political achievements for them. In nations like our where community and life of the individuals are bounded by customary and religious bases it is very difficult to get rid of patriarchy. The two main elements of gender equality are women development and women empowerment. But the truth is that the development plans are not only ineffective but also are going against the well being of women. Previously the researches did not give importance to issues concerning empowerment of women but the decade of 1990 changed the whole perception. The author state that even in the 21st century women are not given their rightfully place in the society, hence women financial empowerment is essential to get rid of various social malevolence. This research concludes by stating that women financial empowerment can be possible by taking part in various financial and development ventures. [14]

Abdullah Ijaz, et al. [2021] rationale behind this research was to examine the social and cultural limitations that influence various aspects of women empowerment in rural areas of Punjab, Pakistan. Political involvement and self-respect were considered as leading aspects of women empowerment among others aspects that cooperatively define women empowerment. The authors employed mixed-method to study various aspects of women empowerment. The primary data was collected from 85 respondents, one in each village to know the restrictions faced by women. The results revealed that even though cultural restraints hamper women empowerment to a great extent, a husband's education along with a woman's education plays an important role in women empowerment. The outcomes also revealed that if the husband is more educated, than the women will be empowered politically and have self-respect. The authors concluded by stating that a solitary aspect in comprehensive women empowerment is very fascinating and require additional exhaustively research studies at various places and the outcomes can help in policy making for women empowerment on a bigger level. [12]

OBJECTIVES OF THE STUDY
The main objectives of this research are as follows:

✓ To analyze the notion of women entrepreneurship within the circumstances of network marketing in India

✓ To analyze how women in network marketing perceive empowerment and its determinants.

✓ To investigate the causal association between determinants of women empowerment and network marketing.

METHODOLOGY

Population of the Study: The population of the study is made up of women working in the network marketing companies in the state of Uttarakhand i.e. Modicare, Amway and Vestige.

Sample of the Study: Simple random sampling technique was employed in this study. The researcher gave a questionnaire to the women working in the network marketing companies in the state of Uttarakhand and a total of 150 responses were collected. [5]

Unit of the Sample: The sample consisted of all the women working in the network marketing companies in Modicare, Amway and Vestige.

Study Instruments: The questionnaire was made to collect data from the sample of the study after review of literature as per the objectives and hypotheses. The questionnaire was made up of two parts with each addressing the variables that were to be examined. The first part contained five demographic questions (age, marital status, educational qualifications, area of residence and family type). The second part contained questions related to women empowerment indicators (financial, social, health, family, leadership, development, culture, education and political). [4]

Study Reliability: The reliability for this study was done by employing Chronbach's Alpha test in the SPSS statistical package and its result was 0.619. [15]

Data Collection Method: Primary data was collected with the help of the questionnaire which was made up of two parts from the sample respondents to help in preparing the practical framework for this study. The secondary data was collected by reviewing previous research papers, theses, books, and internet in order to formulate the theoretical framework.

Measurements Tools: Likert five scales was employed in the questionnaire and to measure the study variables which is organized as strongly agree (1) to strongly disagree (5).

Statistical Analysis: For the purpose of this study descriptive statistics were used with the help of SPSS software statistical package in analyzing the data obtained from the sample. [10]

Tools (Demographic Data): The tools employed to analyze the demographic data were frequency (review the respondents answers), percentage (proportion of answers for a particular variant of the total answers), mean (average answers to a particular variable) and standard deviation (degree of dispersion of the answer from its mean).

Tools (Hypotheses Testing): The tools for employed to test the hypotheses were Mann-Whitney U test (whether two samples are likely to derive from the same population), Wilcoxon W test (to compare two independent samples), Z test (to compare the sample mean μ to the population mean $\mu 0$) and P Valve (to accept or reject the null hypothesis). [7]

RESULTS & INTERPRETATION

The demographic and study sample results are as follows:

Table 1: Demographic Details					
Parameter	**Variables**	**No.**	**%**	**x̄**	**σ**
Age	18-30	42	28.01	2.13	0.97
	31-50	58	38.57		
	51-60	38	25.33		
	60+	12	8.10		
Marital Status	Married	111	74.00	1.26	0.44
	Unmarried	39	26.00		
Education	Upto 12th	56	37.33	2.61	1.21
	Graduate	52	34.67		
	PG	25	16.67		
	Professional	17	11.33		
Area of Residence	Urban	108	72.00	1.28	0.45
	Rural	42	28.00		
Family Type	Joint	81	54.00	1.54	0.51
	Nuclear	69	46.00		

The hypotheses testing results are as follows:

$H_0 1$: There is no significant impact of network marketing on women empowerment in relation to financial indicator.

Table 2: Financial Indicator [A]				
Variable	**Mann-Whitney U**	**Wilcoxon W**	**Z Value**	**P Value**
Financial	947.5	2.083	-3.708	0.000
a. Grouping Variable: Network Marketing				

Interpretation: The value of Mann-Whitney U is 947.50, the value of Wilcoxon W is 2.083, Z value is -3.708 and P value is 0.000. Hence, null hypothesis is rejected which means that there is a significant impact of network marketing on women empowerment is terms of financial aspect.

$H_0 2$: There is no significant impact of network marketing on women empowerment in relation to social indicator.

Table 3: Social Indicator [A]				
Variable	**Mann-Whitney U**	**Wilcoxon W**	**Z Value**	**P Value**
Social	1.216	2.344	-2.023	0.043
a. Grouping Variable: Network Marketing				

Interpretation: The value of Mann-Whitney U is 1.216, the value of Wilcoxon W is 2.344, Z value is -2.023 and P value is 0.043. Hence, null hypothesis is rejected which means that there is a significant impact of network marketing on women empowerment is terms of social aspect.

$H_0 3$: There is no significant impact of network marketing on women empowerment in relation to health indicator.

Table 4: Health Indicator [A]				
Variable	**Mann-Whitney U**	**Wilcoxon W**	**Z Value**	**P Value**
Health	1.404	2.532	-0.759	0.448
a. Grouping Variable: Network Marketing				

Interpretation: The value of Mann-Whitney U is 1.404, the value of Wilcoxon W is 2.532, Z value is -0.759 and P value is 0.448. Hence, null hypothesis is accepted which means that there is no significant impact of network marketing on women empowerment is terms of health aspect.

$H_0 4$: There is no significant impact of network marketing on women empowerment in relation to family indicator.

Table 5: Family Indicator [A]				
Variable	**Mann-Whitney U**	**Wilcoxon W**	**Z Value**	**P Value**
Family	918.5	2.046	-3.802	0.001
a. Grouping Variable: Network Marketing				

Interpretation: The value of Mann-Whitney U is 918.5, the value of Wilcoxon W is 2.046, Z value is -3.802 and P value is 0.001. Hence, null hypothesis is rejected which means that there is a significant impact of network marketing on women empowerment is terms of family aspect.

$H_0 5$: There is no significant impact of network marketing on women empowerment in relation to leadership indicator.

Table 6: Leadership Indicator [A]				
Variable	**Mann-Whitney U**	**Wilcoxon W**	**Z Value**	**P Value**
Leadership	1.096	2.224	-2.841	0.004
a. Grouping Variable: Network Marketing				

Interpretation: The value of Mann-Whitney U is 1.096, value of Wilcoxon W is 2.224, Z value is -2.841 and P value is 0.004. Hence, null hypothesis is rejected which means that there is a significant impact of network marketing on women empowerment is terms of leadership aspect.

$H_0 6$: There is no significant impact of network marketing on women empowerment in relation to development indicator.

Table 7: Development Indicator [A]			
Variable	**Mann-Whitney U**	**Wilcoxon W**	**Z Value**	**P Value**
Development	1.062	2.190	-3.021	0.003
a. Grouping Variable: Network Marketing			

Interpretation: The value of Mann-Whitney U is 1.062, value of Wilcoxon W is 2.190, Z value is -3.021 and P value is 0.003. Hence, null hypothesis is rejected which means that there is a significant impact of network marketing on women empowerment is terms of development aspect.

$H_0 7$: There is no significant impact of network marketing on women empowerment in relation to culture indicator.

Table 8: Culture Indicator [A]			
Variable	**Mann-Whitney U**	**Wilcoxon W**	**Z Value**	**P Value**
Culture	1.376	2.504	-0.978	0.328
a. Grouping Variable: Network Marketing			

Interpretation: The value of Mann-Whitney U is 1.376, the value of Wilcoxon W is 2.504, Z value is -0.978 and P value is 0.328. Hence, null hypothesis is accepted which means that there is no significant impact of network marketing on women empowerment is terms of culture aspect.

$H_0 8$: There is no significant impact of network marketing on women empowerment in relation to education indicator.

Table 9: Education Indicator [A]			
Variable	**Mann-Whitney U**	**Wilcoxon W**	**Z Value**	**P Value**
Education	1.228	2.356	-1.902	0.013
a. Grouping Variable: Network Marketing			

Interpretation: The value of Mann-Whitney U is 1.228, the value of Wilcoxon W is 2.356, Z value is -1.902 and P value is 0.013. Hence, null hypothesis is rejected which means that there is a significant impact of network marketing on women empowerment is terms of education aspect.

$H_0 9$: There is no significant impact of network marketing on women empowerment in relation to political indicator.

Table 10: Political Indicator [A]			
Variable	**Mann-Whitney U**	**Wilcoxon W**	**Z Value**	**P Value**
Political	1.402	2.530	-0.793	0.428
a. Grouping Variable: Network Marketing			

Interpretation: The value of Mann-Whitney U is 1.402, the value of Wilcoxon W is 2.530, Z value is -0.793 and P value is 0.428. Hence, null hypothesis is accepted which means that there is no significant impact of network marketing on women empowerment is terms of political aspect.

CONCLUSION

Network marketing is a business model in which a company employs a network of non-salaried distributors to sell the products of the company to the buyers directly. This business model has been adopted by many organizations across the globe in the recent times. The population of women is almost half across the various countries of the world but their involvement in financial and other activities is very less. The main aim of women empowerment is to make the women autonomous, independent and to develop an optimistic attitude and self-belief in them. In this research, an attempt was made to study whether network marketing as a business model has any impact on various indicators related to women empowerment. Nine indicators i.e. financial, social, health, family, leadership, development, culture, education and political were taken for the study. The indicators that have a significant impact on women empowerment by working in network marketing companies are financial, social, family, leadership, development and education. Whereas, the other three indicators have no impact on women empowerment by working in network companies are health, culture and political.

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ROLLING ROAD BARRIERS- A ROAD SAFETY MEASURE IN HILLY AREAS

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ABSTRACT

As outlined in the construction industry transformation plan, the government is constantly looking at the latest technology that can ensure the safety of road users. A small Korean manufacturing company developed a new longitudinal barrier concept (The Rolling Barrier), which consisted of continuous pipes covered with urethane rings. The Rolling Barrier System is designed to minimize the number of accidents on roads and increase safety for all.

This study aims to understand the effectiveness and its suitability of the Rolling Barrier. This paper elaborates on the description and studies of Rolling Barriers. The Rolling Barrier can be used effectively in curved road sections, ramps, medians, and parking garage entrance or exit ramps

Keywords; accidents, rolling barrier, safety, maintenance, implementation

1. INTRODUCTION

Road accidents are a major contributor to global fatalities, with over 1.3 million deaths annually and an average of 3,500 daily. It is the 8th leading cause of death and accounts for 23% of all injury-related deaths worldwide. To address this issue and save lives, a company called ETI (Evolution in Traffic Innovation) has introduced the Rolling Barrier System.

Traditionally, guardrails along roadsides have been used to prevent vehicles from driving off the road. However, these barriers, often made of strong metal bars and RCC pillars, are not always effective in hilly areas and cannot guarantee the safety of vehicles and passengers. The Rolling Barrier System offers a solution.

The Rolling Barrier System is a type of road barrier that absorbs the impact energy of a collision and converts it into rotational energy. This helps propel the vehicle forward instead of potentially breaking through an immovable barrier. The rotating barrel absorbs the shock from the vehicle, while the upper and lower frames adjust to the tires of different sizes of vehicles to maintain their steering function.

1.1 Barrier

Barriers are a crucial element in road safety that aim to keep vehicles within their lanes and prevent them from colliding with obstacles or other vehicles. They are strategically placed within the medians of divided highways to keep vehicles from entering the opposing lane of traffic and reducing the risk of head-on collisions.

One type of barrier, known as a median barrier, is specifically designed for this purpose. When positioned in the middle of a road, the median barrier serves to prevent head-on collisions by limiting the movement of vehicles between opposing lanes of traffic.

Overall, barriers play a vital role in ensuring the safety of drivers and passengers on the road and reducing the number of accidents and fatalities.

1.2 Importance of Barrier

Road safety barriers play a critical role in ensuring the safety of drivers and passengers on the road. The main reasons for installing road safety barriers on roads include:

1. **Securing Out-Of-Control Vehicles:** One of the main reasons for installing road safety barriers is to prevent wild vehicles from entering the path of other vehicles. To achieve this, these barriers are placed in the middle of the road.

2. **Protecting Vehicles from Falling:** If there is a drop of at least 5 meters close to the road, road safety barriers are placed on one side of the street to prevent vehicles from falling into a ditch or a lope.

3. **Preventing Collision with Street-Side Objects:** Another important reason for installing road safety barriers is to prevent vehicles from colliding with street-side objects, such as buildings, trees, and other obstacles.

The benefits of road safety barriers include:

1. **High Containment:** Road safety barriers provide high containment, ensuring that vehicles are kept within their lanes and prevented from colliding with other vehicles or obstacles.

2. **Increased Safety:** Road safety barriers help to increase the safety of drivers and passengers on the road, reducing the number of accidents and fatalities.

3. **Low Maintenance Costs:** Road safety barriers are designed to be durable and require low maintenance, making them an economical and cost-effective solution for road safety.

4. **Reduced Traffic Jams and Congestion:** By preventing accidents and collisions, road safety barriers help reduce traffic jams and congestion on the road.

1.3 Types of Barrier Based on Category and Materials
- Roadside Barriers

- Median Barriers

- Bridge Barriers

- Work Zone Barriers

- Impact Resistant Barriers

- Concrete

- Steel

- Cable

2. Working of rolling barrier
Rolling Barriers (RB) are an innovative solution for road safety, designed to provide both flexible and semi-rigid properties to absorb impact and reduce the risk of accidents. They are different from traditional road barriers in their mechanism and are known to be highly effective in reducing the hazards associated with road accidents.

Urethane is the material of choice for RBs due to its exceptional physical and mechanical properties. These properties make urethane the ideal material for performance-driven applications, providing greater protection and durability than other materials.

Figure 1: Rolling barriers on curve)[1]

Rolling Barriers (RB) can be installed for two-way traffic by placing them in the middle of the road as dividers. They can also be installed at road turns, such as U-turns, which are more prone to accidents. By reducing fatal damage during turning, RBs can provide an additional layer of protection to drivers and passengers on the road (Figure 1).

FEATURES
✔ Made of ethylene-vinyl acetate(copolymer)

✔ Easily installed and maintained on curved road

✔ Has a lower frequency repair when compared to traditional barrier

✔ Minimum damage of vehicles with rollers and dual guardrails

✔ Highly elastic resin roller is hardly damaged on impact

✔ Consists of a steel tube with plastic cylinders that spin on impact

✔ Noticeable to drivers due to noticeable coloration and self-luminescence

3. Design

The design for the Rolling Barrier (RB) is provided by the South Korean company, KSI. The design specifications are provided in millimetres. The name of the roller is "A", and it has a total diameter of 370mm. The rounded stainless steel diameter measures 246mm. The distance between each post beneath the soil is 1400mm, while the distance between two roller centres is 700mm.

Additionally, the vertical distance from the ground level (GL) to the top of the RB is 1200mm, and the height of the upper side is 1000mm. The RB also includes several key components, including an inner post, sub post, w-rail style stainless steel, shock absorber roller, and post cap. These components work together to provide a high level of containment and safety for road users.

3.1 Test

The SB5 rolling barrier has undergone a crash test to evaluate its performance in terms of passenger safety and scatter prevention. The results of the test showed that the theoretical head impact velocity (THIV) was 32.4 km/hr, which was below the standard of 33 km/hr, and the post impact head deceleration (THD) was 9.9 m/s-2, which was below the standard of 20 m/s-2. The test also showed that there were no scatters of the fifty barriers during the
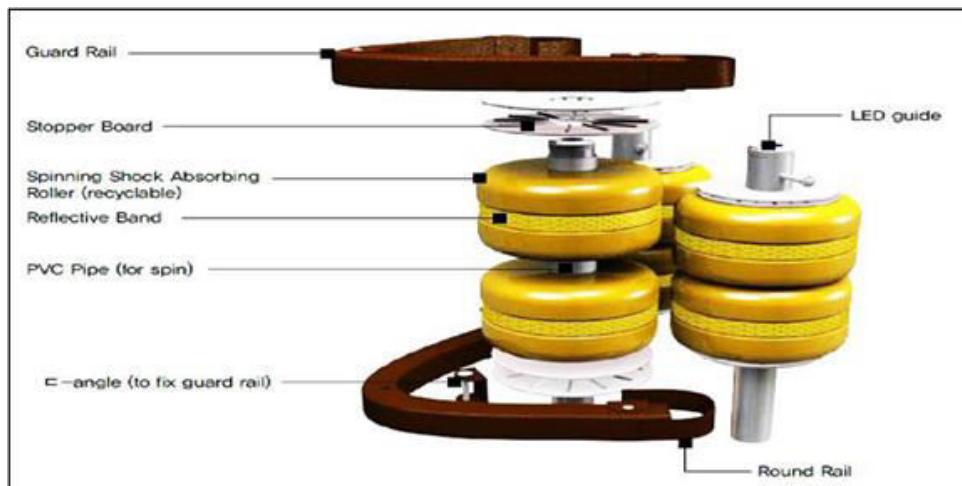
Figure 2: Rolling barriers components [2]

Collision. In terms of test vehicle behavior performance, the ETI product was found to not cause the vehicle to be overthrown or come to a sudden stop after a collision. The exit speed of the vehicle was 74.8 km/hr and the exit angle was 8.74 degrees, which satisfied the criteria.

In the evaluations involving small cars, a 900 kg car and a 200-side collision, it was observed that the ETI product redirected the accident vehicle back to the normal moving track and protected the occupants from further accidents. In the case of large cars, a 10-ton truck and a 150-side collision, it was found that the ETI product changed the collision method to rotational friction, which continued the collision for a longer time and minimized the momentary shock. Similarly, during the evaluation involving a 13-ton bus and a 200-side collision, it was observed that the ETI product changed the collision method to rotational friction, which minimized the momentary shock and protected the occupants.
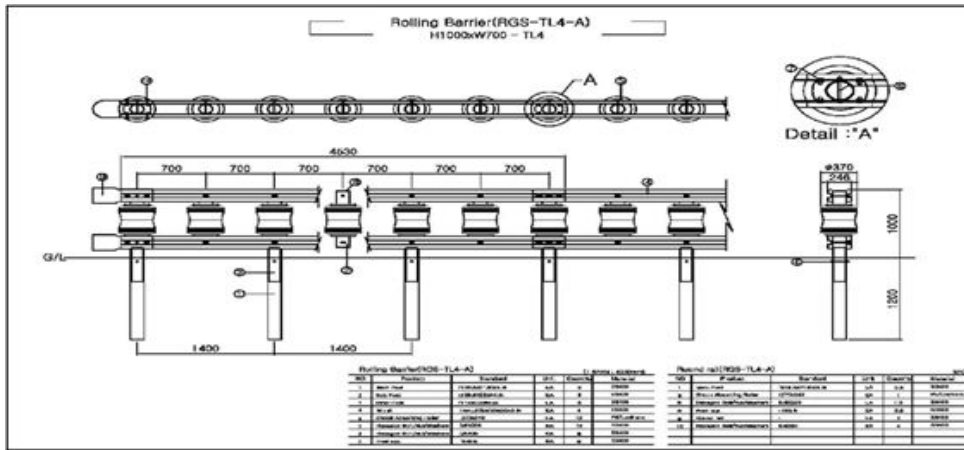
Figure 3: Rolling barriers structure [3]

4. Cost

The rolling barrier system, designed by the South Korean company "KSI," is made up of various components including a stainless steel rounded roller, inner post, sub post, w rail style stainless steel, shock absorber roller, post cap, and LED lights. The use of reflective tape, also known as radium tape, enhances the visibility of the barrier at night when hit by vehicle lights. Internationally, the cost of a rolling barrier is estimated to be between 40-45 USD.

Figure 4: Reflective tape [4]

However, one of the major challenges with rolling barriers is its higher maintenance cost compared to concrete and steel-made barriers. The rubber material used in the rolling barrier system tends to have low resistance properties, which could result in a decrease in its effectiveness in high temperatures during the summer season. This issue can be addressed through regular inspections and proper maintenance, including the application of water to cool down the system. If damaged after a crash or due to the high temperatures, the rolling barrier system requires more maintenance, which may increase labor costs but is relatively easy to manage as only damaged rollers need to be replaced.

5. Difference Between Concrete Barrier and Rolling Barrier

1. **Cost**: Rolling barriers are more cost-efficient compared to concrete barriers, but the maintenance cost is higher for rolling barriers.

2. **Repair**: If a vehicle collides with a concrete barrier, it will cause significant damage and require immediate repair, which could be costly. In contrast, if a vehicle hits a rolling barrier, only the damaged roller needs to be replaced, making the repair cost lower.

3. **Damage Factor**: The rubber material used in rolling barriers can be repaired if damaged, whereas the damaged part of concrete barriers cannot be repaired. This is another factor that contributes to the lower repair cost for rolling barriers.

5.1 Difference Between Steel Barrier and Rolling barrier

1. **Cost**: Rolling barriers are more cost efficient than concrete barriers, but the maintenance cost of rolling barriers is higher.

2. **Repair:** If a vehicle hits a concrete barrier, it will need to be repaired immediately and sometimes replaced in its entirety. The repair cost is higher than the repair cost of rolling barriers, which only require a change in the damaged roller material.

3. **Damage Factor**: In the case of rolling barriers, only the damaged roller material needs to be changed, while the damaged part of concrete barriers cannot be repaired.

4. **Strength**: Rolling barriers, made of hard rubber material with stainless steel reinforcement, offer the same strength as steel barriers but with a reduced risk of damage to vehicles.

5. **Height:** Concrete barriers have a higher height, making them more suitable for heavy trucks or large vehicles, but rolling barriers provide better safety for lives and less damage to vehicles.

5.2 Difference Between other Barriers and Rolling barrier

1. **Cost**

Cable barriers are lower cost than rolling barriers.

2. **Durability**

Durability of the rolling barrier is much better than the cable barrier.

3. **Damage Factor**

The damages of the vehicle are also much lower than the cable barrier.

6. Implementation

Implementation of Rolling Barriers:

1. On National Highways

2. At Accident-Prone Sites

3. In Hilly Regions, particularly on horizontal curves

In India, the northern and mid-regions are predominantly hilly. Installation of rolling barriers in these regions can effectively prevent road accidents, however, their implementation is only feasible on moderate slopes and not on steep slopes.

An example of a suitable location for rolling barriers is the Mumbai-Pune Expressway, where the terrain is moderate to high. Although rolling barriers can be installed in some locations, the high cost and maintenance expenses make it a challenging approach for developing countries. As a result, a zero-fatality corridor is often installed instead.

7. CONCLUSION

The rolling barrier system is a state-of-the-art technology that provides a unique blend of strength and flexibility to prevent road accidents. Unlike concrete barriers, rolling barriers are made of a hard rubber material that is environmentally friendly and absorbs the impact of a crash, reducing damage to vehicles and passengers. The eco-friendliness of rolling barriers is an added advantage compared to concrete barriers, which have been known to emit harmful carbon dioxide and contribute to global warming. Additionally, the cost-effectiveness of rolling barriers cannot be ignored, as maintenance costs are significantly lower and damaged parts can be easily replaced, compared to the expensive repairs required after a crash with concrete barriers. The rolling barrier system is the solution of choice for road safety, as it effectively balances safety, eco-friendliness, and cost-effectiveness. This cutting-edge technology has the potential to revolutionize the field of transportation engineering and is poised to become the future of road safety, with its proven effectiveness, durability, and low maintenance costs.

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SMART SAFETY MONITORING SYSTEM FOR SEWAGE WORKERS USING TWO-WAY COMMUNICATION

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ABSTRACT
A number of sanitation workers perish each year as a result of hazardous chemicals produced during sewage cleanup, insecure working conditions, and a lack of amenities. Real-time health monitoring systems for this staff will function in sewage as a safety precaution. In our project, the device will monitor the user's pulse rate using a heartbeat sensor and the ratio of ambient O2 to CH4 concentration. When parameters deviate from the permissible range, it will alert the user and an external unit. The worker will be informed right away to stay safe and recognize potentially harmful gases.

I. INTRODUCTION

Wastewater from homes and businesses is often carried through an underground pipe system called a sewer system to a treatment plant, where it is cleaned and released into lakes, streams, or any river for permanent emptying. A sewer manhole is one of the most important parts of a sewer system. Sewers are buildings that provide access to underground sewage collection systems. Despite the fact that accidents and illnesses such as hepatitis and typhoid result in personnel having to enter one periodically to carry out tasks such as cleaning, maintenance, inspections, etc., manholes are not set up for regular operation. Caused by temporary or prolonged exposure to hazardous gases such as carbon dioxide, hydrogen sulfide and methane, hundreds of sewer cleaners die each year. To avoid air poisoning, it is essential to have a good understanding of environmental hazards.

These gases need to be monitored in order to identify the significant increase in the normal level of effluents and take appropriate corrective action. On the other hand, the systems that are now offered are pricy and not very portable. The monitoring mechanism of the surveillance rover has previously picked up CO gas.

A processing component of the device takes input, processes it, and outputs the results. The base station must be close to the sensors in order for this system to function. To recognise and change the condition in order to save endangered human lives, an embedded system incorporating an ARDUINO MC and a range of gas sensors is designed in our project. For a reasonable cost, the device can be installed in an area that is being watched. In the existing system, there are several positions related to gas detection and security system assurance.

An LCD Display is part of a manhole gas monitoring system that has been created to quickly distinguish between dangerous and explosive gases. To detect the gas, some of these were tested in actual fields. When dangerous gases like CO, methane, and hydrogen sulphide are found, a heartbeat sensor will be affixed to the worker's hand watch, and an IOT message will be sent to other employees and municipal police. People may die very quickly from these fumes.

Fig 1: system design flowchart
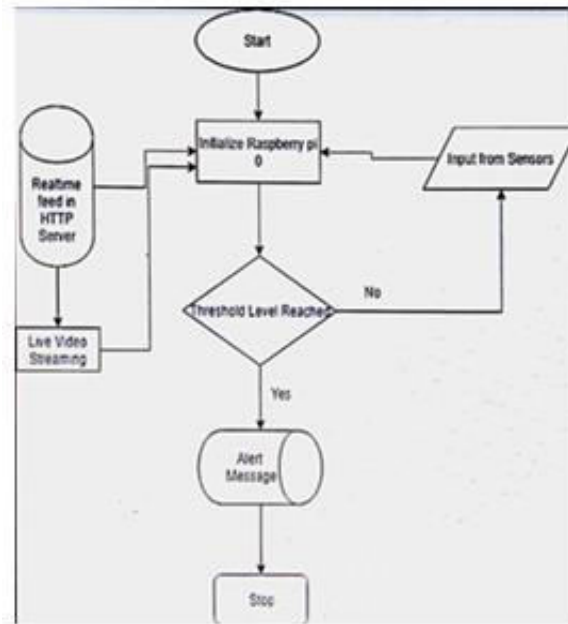
SYSTEM DESCRIPTION

1. Arduino Uno

An Arduino board is being used in this instance. It can also be used to refer to the brain, suggesting that the Endeavour values having a healthy brain. Due to its connection to GSM, the user receives messages. Additionally, "Ubidots," a converting application, is referenced. LCD monitors and WIFI chips are linked. The 8-bit ATmega328P MC serves as the foundation for the ARDUINO Uno MC board. Besides the ATmega328P, it also contains other MC components including a voltage regulator, serial port and crystal oscillator. USB connectivity, power drum jack, ICSP header, six analog input pins, fourteen digital I/O pins (six of which can be used as PWM outputs) and other features are included with the gadget.

Table I: Features of Arduino Uno

S.No	Feature	Range
1	Microcontroller	ATmega328
2	Operating Voltage	5V
3	Analog Input Pins	8
4	Flash Memory	32KB
5	Clock Speed	16 MHz
6	SRAM	2KB
7	Input Voltage	7-24 V
8	EEPROM	1KB

2. Heartbeat Sensor

When a finger is placed on the heart rate sensor, a digital output of the heart rate is generated. When the pulse indicator flashes during each heartbeat, the heart rate detector is active. This digital output may be connected directly to the microcontroller, allowing you to set the beats per minute (BPM) rate. The theory of light scaling is the basis of the heart rate sensor. Any organ in the body can monitor changes in blood volume and the corresponding change in the organ's ability to transmit light.

3. MQ-135 Gas Sensor

widely used and simple The MQ-135 Gas sensors are used in air quality management systems and are capable of detecting or measuring NH3, NOX, alcohol, benzene, smoke, and CO2. The MQ-135 sensor module's built-in Digital pin enables it to operate without a microcontroller when just one specific gas has to be detected. Analog pins must be used if you want to track gases in PPM. The analogue pin can be utilized with the majority of popular microcontrollers because it is TTL controlled and operates on 5V.

II. BLOCK DIAGRAM:
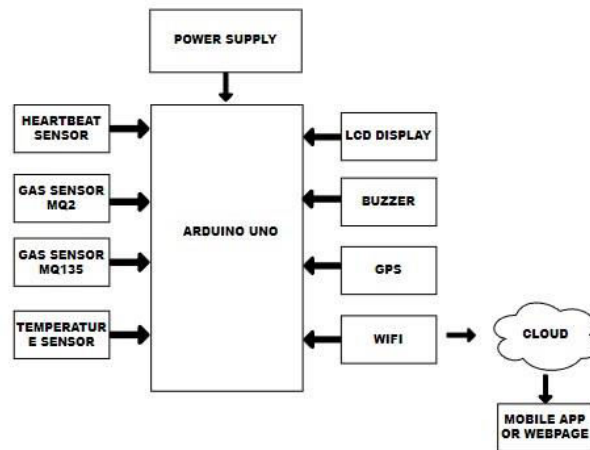
The block diagram consists of ARDUINO microcontroller and different sensors such as Temperature Sensor, Gas sensors. An algorithm is used to filter out the low frequencies of the pulse which is further processed for 5 seconds for the readings obtained, it is multiplied by 12 to get the value for 60 seconds Beats Per Minute which is displayed on the LCD Display. The Sensors are calibrated. These Sensors are exposed to atmosphere containing harmful sewage gases. The readings are updated in real-time over Thing Speak IOT platform. The readings are continuously checked to see if they exceed threshold. As soon as threshold is breached, SMS alert is sent via WiFi module. The system also consists of an alarm system in case of emergency if not detected by sensors. Based on alerts given by the system the worker can perform further actions.

LITERATURE SURVEY

[1] Arm-based Drainage Monitoring System with Smart Sensors
The project's primary processing engine is an ARM7. The ARM7 CPU is set up to identify the obstruction and volume of sewage water. Any leaks are promptly reported by a connected gas sensor through alarm messages or buzzers.

[2] IOT-based Smart Sewage alert Applications for workers
A sensor in this level measures the water level in the drainage and displays it on the screen. Sensors are used to measure the flow rate and the blockage. The WEMOS D1 keeps track of the specific circumstances and automatically delivers a GSM alert while updating it with IOT data.

[3] IOT-based Underground Drainage Monitoring System.
A PIC microcontroller is coupled to a number of sensors, including temperature, water level, and gas sensors, in this system. System monitors water and dangerous gas levels.

[4] Smart Internet of Things-based Real-Time Drainage Monitoring System
We develop an advanced real-time drainage monitoring system with a variety of sensors. The extent of the flood will depend on the water level, which can be low, medium, or high. Different dangerous gases are measured in quantity using gas sensors.

[5] IOT based Sewage Monitoring System
Workers' lives in perilous situations were saved because to the sewage inspection framework forms. When the ppm values of certain gases are reached, it sends a notification to the offices where these employees are employed.

Journal Name & Year	Author	Title	Remarks
International September 2019 issue of Journal of Innovative Technology and Exploring Engineering	Arulananth TS, Ramya Laxmi G, Renuka K, Karthik K	Arm-Based Drainage Monitoring System with Smart Sensors .	Buzzers are used to sound during gas leakage.
International Journal of Advance Research March 2019	K Shanmugapriy, R Suwath, R Surya Prakash, S Pirai Sudan, P Naveen Kumar	A Safeguarding Method for Recognizing and Eliminating Toxic Gases During Drainage	A GSM microcontroller should be used to recognise gases because if the

		Cleaning..	gas concentration level rises, an alert is triggered right away.
International Conference on Computational Technology's Most Recent Advances. 20 October 2020	Anusha Pendharkar, Jyothi Chillapali, Kanaksha Dhakate, Subhalaxmi Gogoi, Yogesg jdav	Sewage monitoring system powered by IOT	Although ARDUINO is utilised in the survey, it is ineffective since it cannot manage that many sensors at once.
IRE Journals May 2018.	Gaurang sonawane, Chetan Mahajan, Anuja Nikale, Yogita Dalvi Smart	Smart Internet of Things-based real-time drainage monitoring system.	If the used sensor is not water proof then it may fail in working.
Utilizing IOT, monitoring underground drainage April 2019	K Vishwanadh, P Projitha, SK Khadijia, S M S P C Venkataraju, p Nagamani	Real-time intelligent sewage alerts for workers utilising IOT.	The WEMOS D1 should be used to monitor the particular circumstances since it automatically sends alerts through GSM and updates them in real time via IOT.
Journal of Scientific and Technological Research International	M Lizzy Nessa Bagyam, B Raja Nithya, D Rubikumar, S Sangeetha, J Santhosh	Underground Drainage Monitoring System using IOT.	The implementation of the sensor should include checking the gas, temperature, and water level sensors that are connected to the PIC microcontroller.

METHODOLOGY
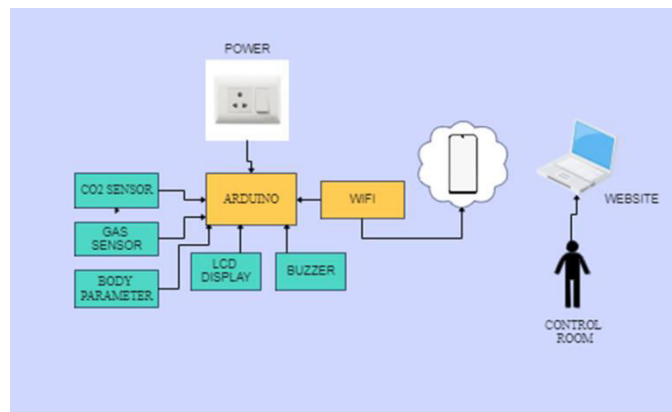
A gadget has a processing component that receives input, processes it, and outputs results. The human body is very vulnerable to harmful gases such as carbon dioxide detection, methane detection and hydrogen sulfide detection. The device can be installed at a reasonable cost in places where it is viewed a certain way.

RESULT

Owing to its wide range of applications, the popularity of Internet of Things has grown significantly in recent years, paving the way for a better, safer and simpler lifestyle for people. Disinfection of wastewater is always a big and important problem, although there are many approaches to it.

This tool is often used in home sewage systems, public sewers, deep wells, gutters and other areas. However, employees should never come into contact with harmful fumes or vapors. The smart security tool connects to the WSN and transmits data to the concerned department and emergency department more quickly and at a lower cost. Staff are assisted by prescribed equipment in the department and in the emergency room. Prescribed devices help the worker to know the gas level and his/her heart rate.

CONCLUSION

The Internet of Things has recently experienced a surge in popularity as a result of its numerous application streams, paving the way for a smoother, safer, and easier way of life for people. Despite the fact that there are several methods for doing the same thing, sewage cleanup is always a major issue. The device is primarily used in septic systems for homes, municipal manholes and sewage, sewers, deep wells, gutters, drains, and other applications. Human employees, on the other hand, should never come into direct contact with hazardous gases or vapours. The smart safety device is less expensive and quickly connects to the WSN, sending data to the appropriate department and the emergency room. At a basic level of expertise, the suggested equipment assists the worker in understanding his pulse rate and gas level.

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THE CONSUMER SATISFACTION SURVEY ON ONLINE FOOD DELIVERY – SWIGGY SURVEY REFERENCED COIMBATORE CITY A - RESEARCH STUDY

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ABSTRACT
One of the most popular services is the ability to purchase food online and have it delivered to the customer's place. This practice is being used by the majority of fast food businesses. This is made possible by using an electronic payment mechanism for delivery boys. When picking up food from a restaurant, customers can pay with cash or a debit or credit card using an application. The application notifies the customer of the food's quality and shelf life as well as how long until the food is ready for pickup. Delivery will take some time. Customers will be able to place purchases online thanks to the system created for this project. Numerous enterprises and businesses currently operate under this system.

Keywords: Electronic payment system for restaurants, Food ordering system & mechanism

INTRODUCTION
The Co-founders Sriharsha Majety and Nandan Reddy founded Bundl in 2013 to facilitate courier services and deliveries within India. Bundl was suspended and rebranded to enter the grocery delivery market. At the time, several notable startups were struggling, including Food-Panda (later acquired by Ola Cabs), Tiny-Owl (later acquired by Zomato), and Ola Cafe (later closed). In 2013, Majety and Reddy reached out to his former Myntra employee, Rahul Jaimini, who founded Swiggy and his parent company, Bundl-Technologies. Swiggy is an Indian online grocery ordering and delivery service. Founded in July 2014 and based in Bangalore, Swiggy plans to have operations in 500 Indian cities by September 2021. Swiggy also offers on-demand grocery delivery under the Instamart name, as well as a same-day parcel delivery service called Swiggy Genie.

STATEMENT OF THE PROBLEM
Using online grocery delivery services is a common practice in the world we live in today. For this reason, it's important to understand Swiggy's advanced features. This raises the question of whether Swiggy users are happy with online grocery delivery products and services and how safe they are and the services they provided during the pandemic era. There is also the question of whether there are factors that influence the choice to make.

OBJECTIVES OF THE RESEARCH STUDY
1. Identifying the respondents' socio-economic status
2. Using swiggy to determine the motivating element of a product
3. To evaluate how satisfied customers are with the swiggy service.
4. To assess the difficulties buyers had when using swiggy.com while ordering the items to be delivered.
5. To find out the quality of service offered by the swiggy delivery personnel to the customers.

RESEARCH METHODOLOGY
It is used to rate customer satisfaction when ordering online foods from Coimbatore, particularly with regard to Swiggy. A questionnaire was used to gather the information needed for the investigation. The survey asks consumers of online food delivery services about their personal characteristics, issues, and satisfaction. The goal of the study is to determine consumer satisfaction.116 responses made up the sample because the universe is big. The sample has been collected using a straight-forward random sampling procedure. Secondary data is gathered via books, the internet, journals, and magazines, while primary data is gathered using a well-structured questionnaire.

LIMITATIONS OF THE STUDY
• The Some respondents were reluctant to take the time to provide the required details.
• The study's time frame was constrained.
• The study's conclusions are predicated on the supposition that the respondents provided accurate data.
• Data is collected via an online platform without meeting the respondents in person.
• The study was only done in the city of Coimbatore.

REVIEW OF LITERATURE

The development of technology across a wide range of industries has altered company models, according to **Leong Wai Hong (2016)**. The productivity and profitability of a restaurant can be increased with the use of efficient systems. 150 customers participated in the survey, which revealed how technology will be utilized to place food orders. It is thought that using an internet food delivery service will enable restaurants to do significant online commerce as well as occasionally help their business develop.

H.S. Sethu and Bhavya Saini (2016) set out to look into how students felt about online meal ordering and delivery services by observing their behavior and perceptions. According to their research, students who use online food delivery services can better manage their time. Based on the responses of 400 respondents, data on customer behavior and satisfaction are gathered. Additionally, it has been discovered that the convenience of getting the food they want whenever they want it and the simplicity of internet access are the main drivers of use.

S. Kamakshi (2016) conducted a study on 'Consumer Perceptions and Behaviors of Fast Food', referring to Chennai, India. Her 50% of users who order online qualify for the study's Online Impact Factor. In addition, fast food customers are health conscious and lack of emotional attachment to products. The quality, health and hygiene aspects of fast foods are also factors consumers consider when deciding whether to consume them. They do this in addition to flavors, prices, offers and discounts.

Radha Kashia (2017) conducted a study on 'Consumer Perceptions of Online Shopping for Apparel via Various Websites'. In Singapore, the primary objective of this study is to understand how customers perceive and plan their purchases. Her 120 experienced respondents who participated in this survey provided data. Her research shows that people's buying habits vary by age, gender, occupation, income and marital status. Online shopping suggests that one of the biggest shortcomings of her platform is the lack of information such as product descriptions and return policies.

Gowri (2019) noted in his research how consumers feel about online marketing strategies. The researcher made an effort to comprehend the perspective underlying consumers' approaches as well as those of marketers. A suitable sampling strategy was used to obtain the data for the analysis from the Coimbatore district using a structured questionnaire. This study's author determined customer attitudes through the marketing approach used for online marketing. Online marketing often ensures affordable prices, prompt delivery of the items, etc. The clients' knowledge of online marketing is, however, rather limited.

SWIGGY BUSINESS MODEL
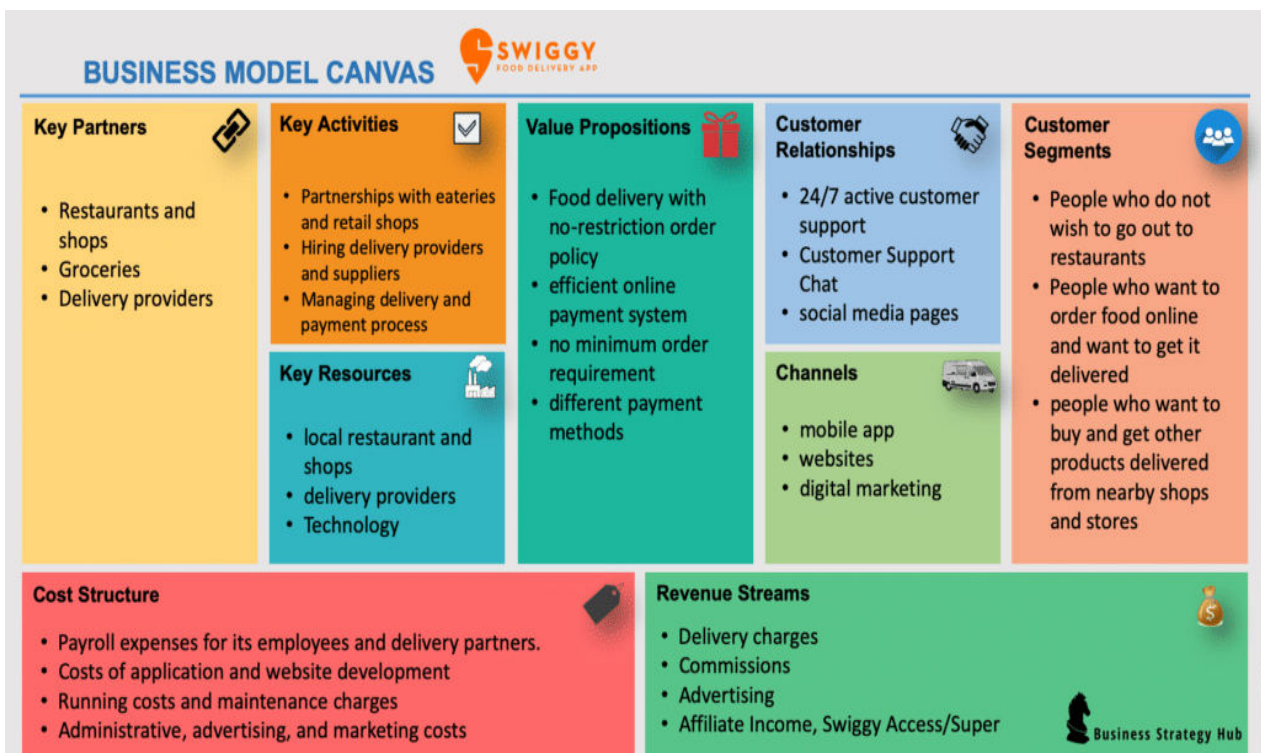
Source: Business Strategy Hub

The above chart clearly outlines the business model canvas of Swiggy, the food delivery app, and their key partners, such as restaurants, groceries, and delivery partners; key activities and their key resources; value propositions; customer relationships; and their delivery and service-providing channels, such as their mobile app. Websites and digital marketing platforms Customers who dislike eating out and prefer to order from the app and website have a cost structure that includes payroll expenses for employees and delivery partners, website development and advertising, and their respective revenue streams and generations in the form of delivery charges charged to customers, commissions, advertising, and so on.

ANALYSIS AND INTERPRETATION

Table 1: shows the socioeconomic profile of respondents.

S.No	Factors	The number of the respondents	Percentage of the respondents
1	Gender		
	Male	42	39.25%
	Female	65	60.74%
2	Age		
	Below 20	15	14%
	20-26	70	65%
	26-45	22	21%
	Above 45	-	-
3	Relationship Status		
	Married	28	26%
	Un-married	79	74%
4	Residence Zone		
	Urban	32	30%
	The semi-urban	19	18%
	Rural	56	52%
5	Occupation		
	Students and elderly people	59	55.16%
	Business	13	12.14%
	Profession	22	20.56%
	Others	13	12.14%
6	Family structure		
	Family unit	29	27%
	The nuclear family	78	73%
7	Family size		
	3-4	34	32%
	4-6	64	60%
	Above 6	9	8%
8	Earnings of family members		
	1-3	79	74%
	3-6	26	24%
	Above 6	2	2%
9	Monthly earnings		
	Not more than Rs.10000	15	14%
	Rs.10001 to Rs. 20001	36	35%
	Rs.20001 - Rs.30001	25	23%
	More than 30001	31	30%
10	How long have you used		
	Below 1.5 year	55	52%
	1-3 years	31	29%
	3-5 years	11	10%
	More than 5 Years	10	9%
11	The classification order of time		

	Daily used	8	7%
	Weekly once	21	20%
	Monthly twice	22	21%
	Occasionally	56	52%
12	Expense categorization		
	Below 3001	52	48%
	3001-4001	33	31%
	4001-5001	16	15%
	Above 5001	6	6%
13	Food preferences given		
	Morning Break fast	13	12%
	Afternoon Lunch	45	42%
	Evening Snacks	25	23.5%
	Night Dinner	24	22.5%
14	Justification for ordering food		
	There is no time for cooking.	28	26.16%
	I don't know how to cook.	12	11.21%
	Saves time	40	38%
	Ordering is simple.	27	25.23%

Source: Primary data

According to the table above, 42 (39.25%) of the 107 respondents are male and 65 (60.74%) are female. As a result of the study, the majority of the 65 respondents (60.74%) are female. 15 (14% of the population) are under the age below 20, 70 (65%) are between the ages of 20 and 26, and 22 (21% of the population) are between the ages of 26 and 45. As a result, the study reveals that the majority of respondents (65%) are between the ages of 20 and 26, 28(26%) are married, and 79 (74%) are unmarried. As a result of the study, the majority of respondents (79 (74%) are unmarried, while 28 (26%) are married. There were 32 (30%) respondents from the city. The remaining 56(52%) respondents came from rural areas.

As a result, the study reveals that the majority of the 59 respondents (55.16%) are students and elderly people. 29(27%) respondents are family unit and 78(73%) respondents are nuclear a result, the study finds that the vast majority of respondents (78%, or 73%), live in nuclear families. 34 (32%) of respondents' family members are between the ages of 3 and 4, 64 (60%) are between the ages of 4 and 6, and the remaining 9 (8%) are above the age of 6. As a result, the study finds that the majority of respondents (60%) have family members aged 4 to 6. 79 (74%) of respondents' family members earned between \$1 and \$3, 26 (24%) earned between \$3 and 6, and the remaining (2%) respondents' family members earned more than \$6. According to the study, the majority of respondents' (79, or 74% of all respondents) family members earn between \$ 1 and \$ 3. Between 1-2, 15 (14%) respondents' monthly family earnings are less than Rs 10000, 36 (35%) respondents earn between Rs 10001 and Rs 20001, 25 (23%) respondents earn between Rs 20001 and Rs 30001, and the remaining 31 (30%) respondents earn above Rs 30001.

Table-2: Influence Level Classification

Factors are classified according to their influence	Significantly Influential	Influenced	Neutral	Dis-Agree	Strongly Disagree
Delivery Time	20(24%)	56(63%)	25(22%)	22(18%)	8(6%)
Price and quality	28(16%)	57(44%)	27(26%)	12(10%)	7(4%)
Offers and Discounts	33(22%)	60(56%)	15(14%)	17(6%)	6(2%)
Availability of Restaurants	44(57%)	40(23%)	35(13%)	8(4%)	4(2%)
Customer Care	50(39%)	25(22%)	19(23%)	8(3%)	9(3%)

According to the study's findings, the majority of respondents (56%) are satisfied and highly influenced by delivery time; 57 (44% of respondents) are satisfied and influenced by price and quality; and 60 (56% of respondents) are satisfied with offers and discounts. 44 (57%) of respondents are highly influenced by restaurant availability, and 50 (39%) are highly influenced and satisfied with customer service and the services they provide to society as a whole.

Table 3: shows the level of satisfaction.

Classification Factor Based on Satisfaction	Highly Satisfied	Satisfied	Neutral	Dis Agree	Highly DisAgree
User-friendly service	30(30%)	29(29%)	28(28%)	10(10%)	3(3%
Lack of delivery order	29(29%)	26(26%)	21(21%)	16(16%)	8(8%)
Change in Orders	22(22%)	34(34%)	30(30%)	10(10%)	4(4%)
Customers are given valid promotions and offers.	30(30%)	34(34%)	15(15%)	10(10%)	11(11%)
Food Variety Available from the Service Provided to Society as a Whole	28(28%)	26(26%)	12(12%)	18(118%)	16(16%)

According to the findings of the study, the majority of respondents (30 (30%) are highly satisfied with user friendly service, 29 (29% are highly satisfied with the lack of delivery order, 34 (34% are satisfied with change in orders), 34 (34% are satisfied with the valid promotions and offers provided to customers), and 28 (28% are highly satisfied with the variety of foods available from the service rendered to society as a whole.

Method of the Weighted Average

Table 3: Issues encountered when ordering food using Swiggy

Reason rating	Timing of Delivery	Taste	Product modification	Exhausted supply
1	3	7	6	4
2	6	9	7	8
3	4	1	6	1
4	10	2	1	2
5	12	3	2	2
6	15	7	17	5
7	25	16	18	19
8	20	31	12	14
9	21	37	20	21
10	19	34	24	23
Weighted Average	135	147	113	99
Rank	III	IV	II	I

The table above makes it apparent what the problem is with buying the product on Swiggy. Being out of stock comes in first, followed by product modification, delivery time, and taste.

FINDINGS AND RECOMMENDATIONS

Socioeconomic Profile, Satisfaction and Swiggy Order Issues

✓ The survey found that 65 responders, or 60%, were female.

✓ The bulk of the 70 responders (65%), according to the survey, are between the ages of 18 and 25.

✓ Eighty-five of the respondents, or 79 percent, are single, the survey states.

✓ According to the study, the majority of respondents (66, or 62%) are students and older people.

✓ The majority of respondents' (36, or 34%) families make between Rs. 10,000 and Rs. 20,000 per month, per the research.

✓ According to this study, the vast majority of respondents (80%, or 75% of them) work in nuclear power.

✓ According to the study, the majority of respondents have 64 (60%) family members between the ages of 4 and 6.

✓ The majority of respondents' families (78, or 73%) earn between $1 and $2 each day, the report finds.

✓ According to the study, the majority of respondents (60, or 56%) are placing food orders.

✓ According to the study, the majority of respondents (52, or 49%) spend less than 500 rupees per month.

✓ According to the study, the majority of respondents (48, or 45%) prefer eating lunch at home.

✓ According to the study, the majority of respondents (39%) cite time savings as the primary reason for ordering food online.

✓ According to the study, 57 (44% of respondents) are pleased with the cost and quality of the meals delivered by Swiggy.

✓ The majority of respondents (60, or 56%) are reportedly swayed by Swiggy's deals and discounts, per the survey.

✓ The results of the study show that 44 (57%) of the respondents are significantly impacted by the availability of restaurants and that 50 (39%) of the respondents are significantly happy with the level of customer service.

✓ According to the table above, the issues with purchasing products on the Swiggy online

Platform is: out of stock, product change, delivery time, and the taste of the food supplied by the Swiggy platform via online mode.

SUGGESTIONS

- Take the advantage of technological advances to take orders and supervise delivery staff until quality products are delivered to customer locations. Amount and time. In the current situation, online ordering has become the most popular method of ordering food. Create a custom food ordering mobile app for your own restaurant or his website that integrates directly with your POS. Respondents must accept quality food and service recommendations upon delivery. This is good for business. Understand areas where service needs improvement.

- Ensure food is piping hot, packaged, and delivered on time after ordering via the mobile application.

- Package the food safely by using banana leaves without any damage until the delivery of the same to the customers.

- Give attention to add-ons and provide offers and discounts along with quality food and delivery.

- If a problem persists, solicit feedback from regular customers and address the issue.

- Add more products and online-available restaurants to the Swiggy platform.

CONCLUSION

This study was conducted to evaluate the customer service offered, the food quality supplied by Swiggy, customer contentment, and the general preference of customers for Swiggy while placing meal orders online. 250 people participated in this study, and the questionnaire used was a structured mail-in questionnaire on a Google Form. Both primary and secondary data were employed as the main sources of information for this investigation. According to this study's findings, the vast majority of respondents are quite familiar with the Swiggy name and the company's contributions to society as a whole.

Limitations of the research study were the time limit, small sample size, and reliability of customer information entered into the Google Form. In an era of ever-increasing competition, paying attention to customer preferences is critical for Swiggy to conquer untapped markets. Based on our research, we can say that Swiggy has the majority of positive consumer feedback compared to other service providers. This is mainly due to better and timely shipping and offers such as discounts and freebies. Swiggy has emerged as the number one online grocery delivery service, and if it continues to improve, it could maintain that position. The biggest difference between Swiggy and other grocery delivery startups is that they have their own delivery vehicles and ship from nearby restaurants. The boys are equipped with Smartphone's with routing algorithms that allow them to deliver food as efficiently as possible.

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www.swiggy.com

www.researchgate.net

www.slideshare.net

www.zomato.com

USE OF ICT IN TEACHER EDUCATION: NEED FOR BETTER TEACHING

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ABSTRACT
Use of ICT tools aid teacher presentation and performance. Hand-outs, Overhead Projector (OHP) slides, models, etc. can be used to capture and retain the learner's attention. The successful integration of ICT into the learning environment will depend on the ability of teachers to structure learning in new ways, to merge technology appropriately with a pedagogy, develop socially active classrooms, and encourage co-operative interaction and collaborative learning and group work. For many, this requires a different set of skills from those they currently possess. In this section you will have the chance to consider some practical examples of how to integrate ICT into classroom teaching. Using ICT in the classroom Students and student teachers often have more knowledge and experience of ICT than teachers and teacher educators. Effectively embedding ICT requires learner-centered attitudes and values. The downloadable document 'Is your teaching learner-centered?' from section 2 will be helpful to you in this section.

Keywords: ICT, Technology, Learner Centered, Computer assisted instruction, Teacher Education.

Meaning: It was not until later on in my teaching career that the term Information and Communication Technology (ICT) materialized before me and opened my eyes to what this meant in education. The term ICT simplified means any technology that has to do with information and communication. Information can come in many forms such as sound, video, text, and images, so when you think of what technology it is available that produces these aspects of information and sometimes a combination of all these, we refer to such technology as mobile phones, digital cameras, video cameras for example. Today information and communication technologies are the one thing and so the repertoire of technologies expands further to encompass computers and computer-related products, email, MMS, and other forms of communication.

Used of ICT by Teacher Education
o Teachers generally use ICT the most for administrative tasks.

o Teachers often use ICT for 'routine work' (record keeping, lesson plan development, information presentation, basic information search on the Internet).

o More knowledgeable teachers rely less on "computer assisted instruction"

o Teachers more knowledgeable in the use of ICT use computer assisted instruction less than other teachers, but use ICT more overall.

The Importance of ICT in Teacher Education
Today we do not need to go any further than our own home or even room, to see some form of ICT in our lives. Whether it be a computer, plasma TV, or mobile phone, we all have them in some part of our lives. ICT has invaded and transformed many aspects of our lives to the extent that we live in an environment that is dominated by technology which No matter how we perceive its presence, there is no denying that it is an important part of our lives and that it is here to stay..

☐ **ICT use in E-Learning or Online Learning:** The presence of ICT in education allows for new ways of learning for students and teachers. E-learning or online learning is becoming increasingly popular and with various unprecedented events taking place in our lives, this does not only open opportunities for schools to ensure that students have access to curriculum materials whilst in the classroom but also allows them to ensure students outside the classroom such as at home or even in hospitals can learn.

☐ **ICT use in Education Improves Engagement and knowledge Retention in teacher Education:** When ICT is integrated into lessons, students become more engaged in their work. This is because technology provides different opportunities to make it more fun and enjoyable in terms of teaching the same things in different ways. As a consequence of this increased engagement, it is said that they will be able to retain knowledge more effectively and efficient ICT brings inclusion in teacher education: The benefits of ICT in education are of such that students in the classroom can all learn from the curriculum material. Students with special needs are no longer at a disadvantage as they have access to essential material and special ICT tools can be used by students to make use of ICT for their own educational needs. Despite this, it opens up new issues related to the 'digital divide' and providing access to ICT tools and resources for those who are less fortunate.

- ☐ **ICT Use in Integration is a key part of the National Curriculum in Teacher Education**: The integration of digital technologies or ICT is a significant part of the Australian Curriculum for example, and this is a trend that many global governments are taking up as they begin to see the significance of ICT in education.

- ☐ **ICT use in Education Improves Engagement and knowledge Retention in teacher Education**: When in ICT is integrated into lessons, students become more engaged in their work. This is because technology provides different opportunities to make it more fun and enjoyable in terms of teaching the same things in different ways. As a consequence of this increased engagement, it is said that they will be able to retain knowledge and efficient.

Role of Teacher Education in ICT: Use of ICT tools can be used to aid teacher presentation and performance. Hand-outs, Overhead Projector (OHP) slides, models, etc. can be used to capture and retain the learner's attention**.** Teacher Training: Workshops are being organized regularly to train teachers to incorporate ICT in effective teaching. In these workshops, teachers will be provided with interactive boards/LEDs, laptops equipped with latest operating systems like Windows 8 and Linux-Ubuntu and tablets. was trained for. Training teachers to use various quality resources available on internet like Nrer, Ciet, Ncert was given

Teachers play a Central Role in the Learning Process.
Changing the role of a teacher using ICT to a facilitator does not eliminate the need for teachers to serve as leaders in the classroom; the teacher's traditional leadership skills and their use are still important (especially for those involved in lesson planning, preparation and follow-up).

ICT in Making Teaching Learning Process Better
Information, Communication and Technology (ICT) is the type of technology employed in the shape of tools, equipment and application support, that helps in the collection, storage, retrieval, use, transmission, manipulation and dissemination of information as accurately and efficiently as possible. It is for the purpose of enriching the knowledge and developing communication, decision making as well as problem solving ability of the user.

1. ICT can bring the existing educational system in alignment with the knowledge-based, information-rich society by providing services of sophisticated tools, techniques and methods at its disposal.

2. Use of ICT can bring about a paradigm shift in traditional views and methods of teaching — learning process. Some of the changes are as follows:

a. It will help in transitioning from a broadcast model of learning to interactive learning. Thus, making the students active and participate in the teaching - learning process.

b. Helps in the process of transitioning from teacher-centered instruction to learner-centered instruction. Students become self-reliant and self-directed in acquisition and application of knowledge and skills.

c. Shifts emphasis from teaching to learning thereby creating a more interactive and engaging learning environment for both teachers and students.

d. Changes the role of teachers from a mere knowledge-transmitter to that of a learning-facilitator, knowledge guide or navigator and an active co-learner along with students.

e. Enables students to become more responsible about their learning as they seek out relevant information and knowledge through their own efforts, synthesize and share their knowledge with others. It makes them realize their educational potentials.

f. ICT helps students to think critically and creatively and to reflect on their own learning process. They even set their individual goals for growth and development of their potentials.

3. ICT prepares teachers to meet challenges of the teaching-learning task of modern age. It helps teachers in proper execution of their multi-dimensional responsibilities in various areas of education.

4. ICT can be beneficial not only to teachers for their own education and training but also to use it creatively for accelerating the educational growth of their students.

5. Schools or Students that have no access to computer devices like PCs, laptops, tablets or smartphones can especially utilize ICT in the form of Radiobroadcasts and Telecast. There are specific educational programs such as Gyan Vani and Gyan darshan hosted by Akash Vani and Door darshan respectively to cater to the subjects of a school curriculum. For such students, traditional ICT tools such as pictures, charts, models,

graphs, blackboard, newspapers, educational visits, excursions or educational fairs and exhibitions can be utilized for learning and applying school subjects.

6. In schools, or students that have access to computer but no internet connection –

a) pre-recorded CDs and DVDs containing useful content may be used.

b) Various word processing programs such as MS word can be used by both teachers and students alike. Teachers can prepare their lesson plans, write Questionnaire, prepare evaluations and diagnostic test to check performance of the students. Students can make their assignments using MS Word using creative designs and templates.

CONCLUSION

The aim of this study is to develop a suitable Information and Communication Technology (ICT) training module and evaluate its effectiveness in teacher education. One of the greatest challenges facing teacher education today is preparing good quality teachers for an ever-changing world. Teacher trainees are the key components in any system of teacher education. Unless they are trained, we cannot expect any qualitative change to come out of the system of teacher education. Diagnosis and remediation are also basic needs of curriculum transaction. An attempt has been made in this paper to develop an ICT training module and test its effectiveness in teacher education. The study reveals that there is no significant difference between the theoretical and application awareness in the concept of ICT among male and female teacher trainees. The successful integration of ICT into the learning environment will depend on the ability of teachers to structure learning in new ways, to merge technology appropriately with pedagogy, develop socially active classrooms, and encourage co-operative interaction and collaborative learning and group work. For many, this requires a different set of skills from those they currently possess. In this section you will have the chance to consider some practical examples of how to integrate ICT into classroom teaching. Using ICT in the classroom Students and student teachers often have more knowledge and experience of ICT than teachers and teacher educators. Effectively embedding ICT requires learner-centered attitudes and values.

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A REVIEW ON ELECTROSPUN NANOFIBRE AND THEIR APPLICATION IN CANCER TREATMENT

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ABSTRACT

One of the most severe illnesses that has been plaguing people for a number of years is cancer. The United States is expected to see 1,958,310 new cancer cases and 609,820 cancer-related deaths in 2023. After two decades of decline, prostate cancer incidence climbed by 3% yearly from 2014 to 2019, resulting in an additional 99,000 new cases. The development of nanotechnology has given nanomedicine previously unheard-of potential. Amazing characteristics of electrospun nanofibers include their high loading capacity, enormous surface area and porosity, high encapsulation efficiency, ease of modification, ability to combine several therapies, low cost, and numerous advantages. Chemotherapy medications that are used to treat cancer generally have negative side effects. When treating cancer, a regulated and prolonged drug release is often preferred and advantageous because these medications also damage healthy cells. Chemotherapy medications that are used to treat cancer generally have negative side effects. The use of anticancer drug-loaded nanofibers, for example, has produced excellent results in the treatment of cancer. The use of anticancer drug-loaded nanofibers, for example, has produced excellent results in the treatment of cancer. In this review, the main mechanisms of electrospun nanofibers and a variety of modified electrospun nanofibers are outlined. They are also used in implantable drug delivery systems for cancer therapy and biosensors for cancer detection.

Keywords: Nanotechnology, Drug-loaded nanofibres, Chemotherapy, Electrospun nanofibres

1. INTRODUCTION

The top cause of death in the world is cancer. The number of cancer survivors has increased along with the population's expansion in both size and age.[1] Biomarkers and biological tests that can be used to examine the genetic diversity during the tumour transition from benign to malignant have been recognized as an important tool due to the rapid growth of molecular biology and genomics.[2,3,4] The current cancer treatment options, which include chemotherapy, radiation therapy, and surgery, are relatively limited and inadequate.[5,6] Additionally, the poor performance of anticancer medications, such as their comparatively low dissolvability, narrow therapeutic index, and potent toxicity for normal cells, might lead to the failure of cancer therapy.[7,8] It is necessary to develop new treatments that effectively deliver chemotherapeutic drugs to the target tumour while minimising damage to healthy cells.

Nano-biomaterials have grown to be a crucial subfield in the fields of materials and medicine thanks to the advent of nanotechnology.[9-18] Nanomaterials are widely used in a variety of biomedical and pharmaceutical disciplines, including cancer therapies, cancer detection, drug delivery systems, nano-antibacterial agents, and cell separation and staining.[19-26] For the manufacture of ultralong fibres with micro- or nano-scale diameters and variable surface morphology, electrospinning provides a quick, dependable, and flexible method.[27,28] Electrospun nanofibers used for cancer diagnostics and treatment have intriguing properties such as extremely high surface area and porosity, high loading capacity, good usability, high drug encapsulation efficiency, combination of several therapies, low cost, and significant benefits.[29]

Due to the uniqueness of the generated nanostructures, their rapid production, and their low cost, it has recently been demonstrated that electrospinning is a highly competitive technology among all types of nano-technologies established and developed for ultra-sensitive sensing systems. In the biomedical arena, electrospun nanofibers for drug carriers hold great promise, particularly for the local chemotherapy postoperative period. An overview of the evolution of electrospun nanofiber fabrication and modification, as well as their uses in cancer treatment and diagnosis, is provided in this study.

2. CAUSES OF CANCER AND AVAILABLE TREATMENTS

Cancer in humans can develop for a variety of reasons. Alcohol use, for instance, alters living cells in such a way that when the altered cells attempt to repair themselves, they produce a different DNA, which results in the development of cancer cells.[30] Tobacco use, genetic disorders in families, exposure to UV and other radiation, various environmental carcinogens (pollution, medical treatments, etc.), human papillomavirus (HPV), obesity, lack of exercise, and dioxin and bisphenol are just a few of the risk factors for cancer. Several causes of cancer include the release of polymers.[31,32] There are numerous cancer treatments available. Each form of treatment has its own restrictions and percentage of success. Surgery, radiation therapy, biological therapy (target therapy and

immunotherapy), chemotherapy, hyperthermia, photodynamic therapy, laser treatment, stem cell transplantation, blood donation or transfusion, and hormone therapy are all common methods of treating cancer.[33,34] Traditional cancer treatments have side effects. For instance, immunotherapy might cause pain, swelling, redness, soreness, rash, itching, heart palpitations, nasal congestion, low or high blood pressure, nausea, vomiting, weakness, fever, diarrhoea, and exhaustion.[35] The two main side effects of surgery are pain and infection. Radiation therapy has a number of negative side effects, including exhaustion and harm to other living, healthy cells.[35] Hair loss, mouth sores, exhaustion, nausea, and harm to other healthy cells are side effects of chemotherapy. Weakened bones, diarrhoea, lethargy, hot flashes, digestive issues, and headaches are side effects of hormone therapy.[35,36]

3. NANOFIBRES

The phrase "nanofibers" refers to fibres with one dimension in the nanometer range, as the name suggests. The increased surface area of these nanofibers as a result of their reduced size gives them a remarkable advantage. Flash-spinning, meltblowing, phase separation, bicomponent spinning, drawing, and forcespinning are just a few of the techniques that can be used to create nanofibers, but electrospinning is the approach that is most frequently employed since it is straightforward and easy to regulate the parameters.[37]

4. ELECTROSPUN NANOFIBRES

A captivating method of creating nanofibers with the aid of high electric voltage is electrospinning. This method is employed for melt-based polymers as well as solution-based polymers where various parameters have a substantial impact on the morphology of the produced fibres. Electrospun nanofibers can be used in the sectors of agriculture and as filtration membranes with antifouling properties because they have large surface area, small controlled holes, and constant size that are not possible with traditional synthetic fibre spinning techniques[38,39] , Defense-related challenges, tissue engineering[40], medication delivery[41], wound care[42], gas sensing[43], pharmaceutical business[44], catalytic applications[45], electronic devices[46], energy storage materials[47], environmental sciences, and the biomedical area are just a few of the topics covered in this article[48]. More than 100 polymers have been electrospun effectively for various purposes because of the significant benefits these nanofibers have over traditional fibres[49], William Gilbert had noticed the influence of electrostatic forces on liquid attraction in 1600 even though John Francis Cooley reported the first patent on electrospinning in 1900[50], which had been followed by John Zeleny's excellent scientific achievements; additionally, Anton Formhals had filed 22 patent applications between 1931 and 1944. Taylor's work on the cone, sometimes known as Taylor's cone, lay the groundwork for the electrospinning technique.[51] With organic or inorganic materials, electrospun nanofiber composites are now widely used in practically every area of life science, from everyday objects to medicinal applications[52]. Therefore, researchers have used computer simulation of polymeric nanocomposites to simulate and forecast the desired results of the constructed nanocomposites at a molecular level[53]. It has been demonstrated that these nanofibers are highly effective for degrading waste water dyes by photocatalysis[54], high-conductivity goods for use in sensing[55], Multiwall carbon nanotubes were attached to nanofibers to boost thermal conductivity, raising the operating temperature of the resulting sensors to 150°C[56], increase of composites' mechanical properties (flexural and interlaminar shear strength), as well as their thermal stability[57].

5. Implantable Drug Delivery of Electrospun Nanofibers For Cancer Therapy

Chemotherapy-based conventional cancer treatments have a poor prognosis and severe adverse effects because they have a systemic effect on healthy and normal tissues. In order to achieve the desired treatment outcome and reduce negative systemic side effects, targeted drug delivery systems are created to deliver the right therapeutic dosages at the target site. There are two main approaches to targeted medication delivery.

The first technique uses nanoparticles to encapsulate the medicine and direct it to a particular spot via a negative or positive targeting mechanism.[58] Drug distribution through implants is the second technique. In order to locally distribute a dose of the medicine and successfully reduce the harm by migrating from the bloodstream into the target tissue, the drug-loading mechanism is implanted at the intended tumour location[59]. Drugs have been delivered precisely and locally to malignancies. Thus, non-surgical implanted drug delivery using biodegradable polymers emerges as a new trend.

The solubility of the medicine in the aqueous solution would be accelerated and the medication's effectiveness would be increased by electrospun nanofibers with a high surface to volume ratio. Additionally, after being implanted into the target tumours, the complex diffusion pathway along specific channels inside nanofibers and polymer degradation can both influence the drug release profile.

6. Controlling Drug Release From Nanofibres

When compared to nanoparticles, diffusion is primarily responsible for the drug release from nanofibers. These nanofibers' drug release can be regulated by altering a number of variables, including;

a) Morphological dependent control

b) Polymer dependent release

c) Blend dependent release

d) Drug dependent release

e) Post-modification based release

7. Market and Advantages of Nanofibres

In comparison to traditional micro-fiber production methods, nanofibers have intriguing features. By 2020, it is anticipated that the worldwide nanofiber market would generate total revenues of $2.2 billion[60]. Nanofibers are thus one of the most recent tools, with uses ranging from straightforward filtering to more intricate tissue engineering and medical applications.

8. Applications of Nanofibers For Cancer Therapy

It is possible to explore the potential uses of these nanofibers, including the viability of treating and diagnosing cancer cells, in good review papers. Electrospun nanofibers are used in a variety of applications, including but not limited to tissue engineering (bone and skin), wound healing, and tissue regeneration[61].

The local recurrence of the tumour cells after the surgical removal of the tumour cells is a serious problem and necessitates chemotherapy as well[62]. The low specificity of cancer therapy medications is a significant barrier because they not only kill cancer cells but also normal cells. After surgery, a proper concentration of anticancer medicine should be kept in the area to reduce this toxicity to normal cells[63]. The anticancer drug-loaded nanofibers can provide local locations with prolonged drug release. As a result, nanofibers are one of the most useful methods for lowering the likelihood of a local recurrence of cancer following surgery[62] and can be used to treat solid tumour cells directly[64]. Additionally, the spleen and liver may catch the colloidal polymer carriers when they are injected into veins[65], resulting in efficiency loss. On the other hand, as was previously said, nanofibers can be implanted right into the tumour location.

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A STUDY ON THE AWARENESS OF CONSUMER RIGHTS AND RESPONSIBILITIES WITH SPECIAL REFERENCE TO THE GRADUATE STUDENTS OF THE KANNUR DISTRICT

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ABSTRACT
The market's beating heart is its customers, and right now it's a buyer's market rather than a seller's market. They are regarded as the market's king and serve as the hub of all economic activity. Since consumers are the only group that can have an impact on an organization's ability to survive and grow, every product and service is designed with them in mind. The Consumer Protection Act of 1986 gives consumers certain protections against the seller's unfair business practices and other forms of exploitation. Consumer rights include the right to safety, the right to information, the right to make decisions based on that information, the right to be heard, the right to seek redress in the event of unfair business practices and exploitations, and the right to consumer education. Every consumer needs to be aware of their rights, duties, and responsibilities, as well as any available channels for complaint. The goal of the current study is to ascertain the extent to which graduate students in the Kannur district are aware of their consumer rights and obligations. Using the convenience sampling method, 100 graduate students from various streams were chosen from the Kannur district of Kerala state.

Keywords: Consumer, Consumer Rights, Consumer Protection, Consumer Responsibilities

1. INTRODUCTION
A consumer is a product or service's ultimate user. Anyone who purchases, consumes, or expends something is a consumer. According to Mahatma Gandhi, a customer is the most significant visitor to our property because he is independent of us, he does favours for us, not that we do favours for him, so we are dependent on him. The significance of a consumer can be understood from this one quotation alone. Without consumers, an economy could not continue to operate.

Consumer protection is the practice of defending the public and those who purchase goods and services from unfair business practices. Its regulations are frequently set forth in law. The Consumer Protection Act of 1986 gives consumers a number of protections against seller's unfair business practices.

The Consumer Protection Act clearly defines these rights, and it covers organisations like the government, consumer courts, and non-profit consumer groups that work to protect consumer rights. The rights and obligations of consumers should be understood by every single consumer.

CONSUMER RIGHTS

a) Right to safety
This refers to the right to be protected from the marketing of goods and services that are harmful to one's life or property. Prior to making a purchase, customers should demand product quality as well as product and service guarantees. When possible, they ought to purchase goods with quality marks like ISI, AGMARK, and others.

b) Right to Choose
Customers have a right to know that there is a wide range of high-quality goods and services they can choose from and pay for at prices they can afford. It implies that a customer should have the option to choose the products or services they wish to buy.

c) Right to be Informed
To safeguard them against dishonest business practices, consumers have a right to information about the nature, scope, potency, purity, standard, and cost of the goods they purchase. The consumer should insist on getting all the information available about the good or service before making a decision.

d) Right to Consumer Education
This relates to the right to acquire the knowledge and abilities required to become an informed consumer at all times. The main cause of their exploitation is consumer ignorance, especially among rural customers. They ought to be able to understand and exercise their rights.

e) Right to be Heard

This implies that consumer interests will be properly taken into account in relevant forums. It also includes the right to be represented in a variety of forums established to look out for the welfare of consumers.

f) Right to Seek Redressal

This refers to the right to seek remedies for unfair trade practices or consumer exploitation. It also involves the right to a just resolution of a consumer's real grievances.

CONSUMER DUTIES AND RESPONSIBILITIES

In the same manner that the government has granted each and every customer a set of rights, it is the consumer's job to carry out the many responsibilities that have been assigned to them. The importance of consumer obligations is equal to that of consumer rights. Some of the most essential consumer responsibilities or obligations are as follows:

- Consumers must ensure that the product they are purchasing is of good quality and has been quality marked by Agmark, ISI, Hallmark, and other similar organizations.

- Consumers should always ensure that they have viewed and understood all available information about a product before making an informed decision.

- When acquiring goods, consumers should observe the rules and not engage in any illegal behaviour.

- Consumers should always insist on receipts from sellers so that if there is a problem with the purchase, it may be resolved right away.

- It is the responsibility of consumers to call out sellers that engage in exploitative behaviour or engage in unfair trade practices.

- Consumers must form non-political organizations to communicate their demands and desires.

2. REVIEW OF LITERATURE

Jamuna (2016) conducted a study on consumer awareness and attitudes towards Consumer Protection Act 1986. In the study, responses were taken from the respondents related to consumer responsibilities. The majority of respondents indicated that getting a guarantee and warranty card came first. Additionally, it was discovered that 53.21% of respondents believed that formalities are simple and 67.14% of respondents were aware of consumer forums. The argument that the Consumer Protection Act increased consumer awareness was rejected by the vast majority of respondents. Only 20% of respondents believed that the Consumer Protection Act increased consumers' awareness of quality.

Dr. S. Mohan and V. Suganthi (2015), have studied in their research work entitled Rural Consumers Awareness about Consumers Rights. The goal of the study was to determine how knowledgeable rural consumers were about their rights as consumers. The study found a strong correlation between rural consumers' awareness of consumer rights and their age, education level, marital status, and monthly income.

Deepika, D.Ratan Kumari (2014), studied awareness of the legal act of Consumer Protection among Students. The goal of the study was to determine how knowledgeable students were about various consumer protection laws. Most respondents are aware of a variety of acts. According to the study, most students learned about rights from newspapers, journals, and course syllabi.

Nair (2012) conducted a study in order to assess consumer awareness among undergraduate students of the Thane district. The primary data, which were 758 undergraduate students from six different colleges in six different talukas of Thane District, were analysed to reveal that there is a low level of consumer awareness. Despite numerous government initiatives, the study's analysis revealed a poor outcome and low consumer awareness among respondents.

3. SIGNIFICANCE OF THE STUDY

Consumer awareness refers to being aware of and knowledgeable about various consumer protection laws, redress mechanisms, and consumer rights, which include the right to health and safety protection from the goods and services that consumers purchase; the right to be informed about the quality, quantity, price, potency, purity, and standard of goods; the right to choose the best from a variety of offers; the right to consumer education; and the right to get representation if there is a grievance.

The future of any country depends upon its students. The name and fame of a country rest on the educated youths. This study will help to understand the degree of awareness of consumer rights and obligations,

especially among graduate students. Apart from understanding the level of awareness regarding consumer rights and responsibilities among graduate students, this study also helps in knowing students' attitudes towards redressal mechanisms, source of information, their level of awareness regarding grievance redressal system etc.

4. OBJECTIVES OF THE STUDY

The study is conducted with the following objectives

➢ To investigate the awareness level of graduate students towards consumer rights and obligations or responsibilities as well as grievance redressal mechanisms.

➢ To identify what they look for while purchasing a product.

➢ To offer valuable suggestions to improve the awareness level based on the findings of the study.

5. RESEARCH METHODOLOGY

a) Source of Data

Primary data: Primary data were collected by providing questionnaires to respondents.

Secondary data: Sources of secondary data for this study are books, journals, websites, etc.

b) Method of Data Collection

The information or data required for the study is collected through a structured questionnaire

c) Sample Size

The 100 students pursuing various undergraduate courses from the Kannur district constituted the sample size for the present study.

d) Sampling Techniques

A convenience sampling technique was used for collecting samples.

e) Tools of Data Analysis and Presentation

For the purpose of presentation of data, tables, graphs, etc. are used. The percentage is used to analyze the collected data.

6. ANALYSIS AND DISCUSSION

Table 1: Awareness of Consumer Rights

Consumer Rights	Fully Aware	Partly Aware	Not Aware	Total
Right to Safety	67	33	0	100
Right to be informed	58	40	2	100
Right to choose	65	34	1	100
Right to be heard	54	42	4	100
Right to seek redressal	72	28	0	100
Right to consumer education	33	54	13	100

Source: Primary data

From the above table (Table 1), it can be inferred that 67% of the respondents are fully aware of the right to safety and 33% of the respondents are partly aware of the right to safety. 58% of the respondents are fully aware of the right to informed, 40% of the respondents are partly aware and 2% of the respondents are not at all aware about the right to informed. 65% of the respondents are fully aware of the right to choose, 34% of the respondents are partly aware and 1% of the respondents are not aware of the right to choose. 54% of the respondents are fully aware of the right to be heard, 42% of the respondents are partly aware and 4% of the respondents are not aware of the right to be heard. 72% of the respondents are fully aware of the right to seek redressal and 28% of the respondents are partly aware. 33% of the respondents are fully aware of the right to consumer education, 54% of the respondents are partly aware and 13% of the respondents are not aware of the right to consumer education.

Table 2: Quality Assurance Mark Awareness

Are You Aware of Quality Assurance Marks?	
Yes	59
No	41
Total	**100**

Source: Primary data

Table 3: Awareness about Consumer Forum

Are You Fully Aware of the Grievance Redressal Mechanism of Consumer Courts?	
Yes	47
No	53
Total	**100**

Source: Primary data

Regarding the awareness of quality assurance marks, from Table 2, it is clear that most of the respondents (59%) have awareness of quality assurance marks such as ISI, AGMARK, HALLMARK, etc. The remaining 41% of the respondents are not aware of the importance of quality assurance marks. Only 47% of the students are fully aware of the grievance redressal mechanism of consumer courts and the remaining 53% are not fully aware of the grievance redressal mechanism of consumer courts (Table 3).

Table 4: Sources of Information

Source	No. of Respondents
Newspaper	5
Television	23
Radio	7
Internet	11
Friends and family members	9
Group discussion	16
Course Syllabi/Curriculum	29
Total	**100**

Source: Primary data

Table 4 deals with the source of information and it can be understood that 29% of the respondents got the information about the consumer rights and responsibilities through their course syllabi/curriculum, while 23% of the respondents got the information from television, 16% of the respondents got the information from group discussion, 11% of the respondents got the information from the internet, 9% of the respondents got the information from friends and family members, 7% of the respondents got the information from radio and 5% of the respondents got the information from the newspaper.

Table 5: Awareness About Consumer Duties

Statement	Yes	No	Total
I always check the Maximum Retail Price (MRP)	88	12	100
I always check the expiry date of the product before purchasing	78	22	100
I always insist for the bill/receipt	72	28	100
I always check the warnings mentioned on the pack	61	39	100
I always check for the ingredients	40	60	100
I always double-check the bill amount before leaving the counter	54	46	100

Source: Primary data

From Table 5, it can be inferred that 88% of the respondents are always checking the Maximum Retail Price of the products before purchasing, 78% of the respondents always check the expiry date of the product before purchasing, 72% of the respondents always insist for the bills/receipt, 61% of the respondents always check the warnings mentioned on the pack. Only 40% always check for the ingredients before purchasing, 54% of the respondents are always double-check the items and bill amount before leaving the counter.

7. CONCLUSION

Each producer's major goal in this age of capitalism and globalization is to maximize his profit. The producer is attempting to increase the sale of their products in whatever manner is feasible. As a result, in order to achieve their goal, they disregard the interests of consumers and begin abusing them, such as overcharging, underweighing, selling contaminated and low-quality items, misleading consumers through fraudulent advertising, and so on. Consumers can overcome this only when they become aware of their rights and responsibilities and there comes the importance of such awareness.

The findings of the study revealed that the majority of the students are either fully or partially aware of consumer rights. On one side, there is positive awareness regarding the quality assurance marks, while on the

other side, many students are unaware of the functioning of consumer courts and they are not fully aware of grievance redressal mechanisms or procedures. Course curriculum or syllabi and television are the two major sources of information for the students from where they get awareness regarding consumer rights and obligations. Most of the students are aware of their duties as a consumer and they regularly check MRP, expiry date, and they insist for the bills too. Even though they get theoretical knowledge from the classrooms, it is better to provide some practical aspects of consumer rights like teaching them how to file a consumer complaint or grievance, which may be beneficial for the individual students as well as for the society as whole.

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BIG DATA: CURRENT TRENDS AND FUTURE DIRECTIONS

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ABSTRACT

In recent years, "big data" has exploded in popularity due to its numerous practical uses in industries as diverse as commerce, research, and government. The rate at which data is being produced and amassed is unparalleled, and as a result, innovative approaches to data management, analysis, and interpretation are urgently required. In this abstract, we will discuss the usage of machine learning and artificial intelligence, the growth of edge computing and the Internet of Things, and the ever-increasing significance of data privacy and security as some of the current trends and prospects in big data. The possible effects of big data on different sectors and society as a whole will also be discussed.

Big data is an emerging field with the potential to profoundly alter many facets of our daily life.

Keywords: Big Data, Security, Privacy, Trends, Future Directions, Machine Learning, Data Analytics, Cloud Computing, Internet of Things (IoT)

1. INTRODUCTION

Big Data is the term used to describe the enormous and intricate data sets created by contemporary technologies such as social media, web usage, and sensors[1]. The goal of collecting, storing, and analysing this data is to gain useful insights that may be used to guide and improve decision-making[2]. In recent years, Big Data has experienced unprecedented levels of change, with the emergence of new technologies and trends.

The move towards real-time analytics is one of the most promising developments in Big Data. More and more businesses are leveraging real-time data to enhance customer service, make quick choices, and adapt to shifting market conditions [3]. As a result, new technologies like Apache Kafka and Spark Streaming have emerged to facilitate processing and analysis of data in real time.

An additional noteworthy development is the increasing prevalence of machine learning and AI in the realm of Big Data. Improve business operations and make more informed decisions with the help of machine learning algorithms' ability to scan massive data sets to detect patterns and make predictions [4]. It's also becoming increasingly common to find chatbots and virtual assistants powered by AI, which can then provide customised assistance and service to each individual user.

Concerns about privacy and security have also risen to the forefront in the Big Data space. The hazards of data breaches and misuse grow as more data is collected and analyzed[5]. The General Data Protection Regulation (GDPR) in Europe is one result of this trend towards more data privacy and security.

It is anticipated that Big Data will continue to develop and influence numerous sectors in the years to come. Integration of Big Data and IoT, growing usage of blockchain technology for data protection, and the creation of more sophisticated AI systems are all possible future directions[4]. Big data will certainly become more essential in economics and culture as the discipline develops.

2. RELATED WORKS

Analyzing large amounts of data: a review. Published in the Journal of Big Data by Tsai, CW., Lai, CF., Chao, HC., et al. [6]. This survey introduces the reader to the field of big data analytics and discusses its history, current state of development, and potential future uses. The report goes on to talk about the difficulties of big data analytics and where researchers should go from here.

Cloud-based big data security and privacy challenges and opportunities for future study by S. Riaz et al. [7]. In this paper, we take a look back at the problems and concerns around big data security and privacy, and we talk about the present solutions and future directions for study.

Sharma, R., and Kshetri, N., Digital Healthcare: A History, Applications, and Future Research Directions (2020). [8] The report summarises recent developments in healthcare big data analytics and suggests new avenues for study.

Research difficulties and future directions in big data handling. Anagnostopoulos, I., S. Zeadally, and E. Exposito. 2016.

[9] In this study, we examine the current state of big data analytics and its potential future developments. In this study, bibliometric analysis is used to look at how scholars in this field are collaborating, how often they cite each other, and how much they publish.

Luan, H., et al., 2020, Big Data and AI in Education: Challenges and Future Directions. [10] This study offers a wide-ranging analysis of where big data studies are headed and what is driving them. The writers cover new developments in the sector, including technologies and applications, and highlight the benefits and drawbacks of big data.

Emerging trends and research directions in next-generation cloud computing. By B. Varghese and R. Buyya. 2018.

[11] This literature review looks at the current state of big data and cloud computing, as well as its potential future developments. The promise of big data in several fields, the necessity for new data management and analytics approaches, and the utilisation of cloud computing to manage large data are all discussed.

By using big data analytics, authors A. Belle et al (2015) [12] This study reviews the current state and potential future of big data analytics in the healthcare industry. Healthcare research, cost management, and patient care are all areas where the authors believe big data analytics may make a difference.

An in-depth look at the intersection of big data and social media analytics, including the challenges and opportunities that lie ahead by S.B. Abkenar et al (2021) [13] The article delves into the state of big data analytics now, as well as its potential future, touching on topics such as the creation of new algorithms, the combination of big data with the Internet of Things and artificial intelligence, and the application of big data in different sectors.

Internet of Things Big Data: Applications, Architecture, Technologies, Methods, and Future Directions Aly, H., et al. 2015. [14] The opportunities and threats of big data analytics in IoT, the integration of big data with IoT, and the usage of big data for IoT across industries are all discussed, as are the present trends and future directions of big data for IoT in this article.

Internet of Things Difficulties and Future Research Directions. Hammoudi, S., et al., "Telecommunication Systems," 67, pages 367-385. (2018) [15] In this research study, we take a broad look at the state of big data and IoT, including their current state, obstacles, and potential future developments. The potential of big data and the Internet of Things to revolutionise several fields is discussed, as is the utilisation of IoT devices to generate big data, the need for new data management and analytics approaches, and the state of the field in these areas now.

Big data analysis of gait biomechanics: recent developments and potential applications written by A. Phinyomark et al. This article looks at the current state of big data and machine learning, as well as its potential future developments, such as the creation of new algorithms, the combination of big data and machine learning, and the use of these technologies in many fields.

Date: March 2011 Source: Agrawal, D., Das, S., and El Abbadi, A. The situation of big data and cloud computing now, and the potential for the future. published in 2011 by D. Agrawal et al. [17] Future directions of big data and cloud computing are discussed, as well as current trends, such as the advantages and disadvantages of cloud-based big data analytics, the advantages and disadvantages of integrating big data with cloud computing, and the use of big data and cloud computing in different sectors.

3. SOME OF BIG DATA CURRENT TRENDS AND FUTURE DIRECTIONS
The collection and analysis of large datasets by businesses and other institutions to gain insights and make well-informed decisions has made "big data" an indispensable element of modern life. There have been several developments and plans for the future of big data in recent years that are changing the face of the industry. The field of big data has attracted attention for decades, and it has advanced significantly in recent years. There are several potential ways that big data could go in based on current patterns and future projections.

A. Artificial Intelligence and Machine Learning
Today's digital world generates enormous volumes of data, and AI and ML are vital tools for working with this information. With the vast volume, variety, and velocity of big data, it is difficult to extract useful insights without the assistance of AI and ML[18].

Artificial intelligence, or AI, describes computer systems that can interpret natural language, recognise images, and make decisions normally requiring human intelligence. Machine learning (ML) is a branch of artificial intelligence (AI) that employs statistical models to analyse data and draw inferences or make decisions based on

that analysis. The combination of AI and ML allows businesses to make data-driven decisions and acquire a competitive edge from their large data stores [19].

Predictive analytics is one of the most well-known uses of AI and ML in large data. Artificial intelligence and machine learning programmes can forecast future events and spot hidden possibilities by examining historical data patterns. By evaluating transaction trends and looking for outliers, AI and ML models can aid financial institutions in the detection of fraudulent transactions, for instance [20].

Natural language processing (NLP) is another use case in which AI and ML are put to work to better understand and process spoken language. Many sectors rely on natural language processing (NLP) to glean insights from consumer comments, social media posts, and other forms of unstructured data [21].

Image and video analysis are two further areas where AI and ML can be useful. Artificial intelligence models can examine massive volumes of visual information, finding patterns and gleaning insights. One use of ML models is in the analysis of medical images to identify anomalies and assist physicians in making more precise diagnoses [22].

Last but not least, AI and ML can be employed in recommendation systems to make unique, user-specific suggestions for content and products. E-commerce and the entertainment industry utilise recommendation algorithms extensively to enhance the user experience and grow their bottom lines.

As a result, AI and ML have rapidly progressed to the point where they are now crucial tools in big data analytics, allowing businesses to gain a competitive advantage through data-driven decision-making. With the proliferation of big data, AI and ML will remain indispensable for gleaning insights and propelling innovation.

B. Cloud Computing

Both cloud computing and big data have significantly impacted the IT sector. The combination of cloud computing with big data allows businesses to store and analyse data on a massive scale while also gaining useful insights from previously inaccessible, complex information. The impact of cloud computing and big data on the IT sector is investigated here [23].

Cloud computing offers a convenient and scalable infrastructure for processing and analysing large amounts of data. The cloud provides a convenient location for companies to store data and use analytical tools. With cloud computing, businesses may more readily and efficiently share data with their partners and customers, leading to improved efficiency in teamwork [24].

Amazon Web Services, Microsoft Azure, and Google Cloud Platform are just a few examples of cloud computing companies that offer a variety of services that are ideally suited for big data analytics. Some examples of these services are Amazon S3 and Microsoft Azure Blob Storage, as well as Amazon Elastic Compute Cloud and Google Compute Engine, among others. They also offer managed big data services like Amazon Elastic MapReduce (EMR), Microsoft Azure HDInsight, and Google Cloud Dataproc [25], which offer pre-configured clusters for handling big data analytics applications.

The analysis of large amounts of data can be performed more cheaply via cloud computing. By utilising cloud computing services, businesses can save money on costly data centre infrastructure. Cloud service providers also provide a pay-as-you-go pricing scheme [26], so businesses need only pay for the resources they employ.

However, there are additional difficulties that cloud computing raises for big data analytics. The network latency between the cloud and the data source is one obstacle. Because of this, real-time processing demands in big data analytics may suffer. Data security and privacy in the cloud provide another difficulty. Data breaches and unauthorised access are serious risks that businesses must guard against [27].

In conclusion, both cloud computing and big data have drastically altered the IT landscape. Cloud computing offers a convenient and scalable infrastructure for processing and analysing large amounts of data. Companies can save money on expensive hardware and improve productivity by using cloud services for their collaboration needs. Big data analytics has new difficulties with cloud computing, especially in the areas of latency and data security. The future of the IT industry will be fascinating to observe as these technologies develop further.

C. Internet of Things (IoT)

The term "Internet of Things" (IoT) describes the networked interconnection of diverse types of physical objects and machinery. It's a system that can handle massive amounts of data and facilitates communication between real-world objects, sensors, and other devices. The Internet of Things (IoT) has emerged as an essential component in the Big Data age, where data analytics and machine learning are gaining prominence [28].

The Internet of Things (IoT) contributes greatly to Big Data since it generates a massive volume of data for analysis. Data from Internet of Things (IoT) devices is plentiful and can be mined for useful information. Real-time analysis of the data produced by IoT devices enables instantaneous response and adjustment.

When it comes to analysing large amounts of data, the Internet of Things has enormous potential. Predictive maintenance, better supply chain management, monitoring equipment performance, and enhanced customer experiences are just some of the applications for IoT data. Devices connected to the Internet of Things can monitor the operation of everything from factory machinery to automobiles to residential appliances. If we have this information, we can schedule maintenance ahead of time, which will cut down on unscheduled downtime and boost productivity [29].

Supply chain management can also benefit from IoT data by giving up-to-the-moment updates on stock levels, transit times, and expected delivery dates. Optimizing stock levels, cutting down on waste, and boosting supply chain efficiency are all possible with this data [30].

Equipment performance may be tracked in real time via the IoT, preventing any severe difficulties from ever occurring. In the long run, this can save money on repairs and prolong the life of the machinery. Also, IoT information can be put to use to enhance the customer service experience by tailoring future offerings to each individual's tastes and interests.

In conclusion, the Internet of Things is now an essential part of the Big Data ecosystem. Insights gained from IoT data can be used to enhance productivity, cut expenses, and give a better service to customers. The proliferation of Internet of Things (IoT) devices promises to flood the market with data, opening up new avenues for discovery and understanding.

D. Real-time Processing

The ability to analyse large amounts of data in near real-time is a key feature of the big data processing revolution that has radically altered the way businesses function. Data analysis, processing, and response can all take place in "real time," or as they are being created, thanks to real-time processing. In addition to allowing for quick, well-informed decision-making, this capability also helps firms spot trends and patterns that they may have otherwise missed.

In today's fast-paced world, businesses need real-time processing more than ever to keep up with the competition. The advent of big data has increased the importance of processing events as they happen in real time. Companies need to evaluate this data in real time to quickly get insights as the amount of data created by businesses and customers has expanded tremendously [31].

The advantages of real-time processing versus more conventional batch processing are numerous. It enables firms to immediately identify and react to problems and opportunities as they arise. Businesses can boost productivity, cut expenses, and satisfy customers with real-time processing [32].

The ability to perform real-time analysis of streaming data is a major advantage of real-time processing for enterprises. The term "streaming data" describes information that is constantly being produced, such as tweets, data from Internet of Things sensors, and clicks on a website. By analysing this data as it is being produced, organisations can gain immediate insights and useful suggestions [33]. This is only achievable with real-time processing.

In a wide range of fields, real-time processing has proven useful. Real-time processing is utilised in the banking sector, for instance, to detect fraudulent transactions, follow consumer activity, and keep tabs on market fluctuations. Real-time processing is used to monitor health data in real-time, spot irregularities, and ultimately improve patient outcomes [34].

In conclusion, in today's fast-paced world, real-time processing is an essential part of large data processing. It paves the way for businesses to perform real-time data analysis and processing, yielding instantaneous insights and recommendations that can be put into action. To maintain a competitive edge in today's market, firms need to adopt real-time processing techniques, which have many practical uses across a wide range of sectors.

E. Increased Focus on data Privacy and Security

Data privacy and security have received more attention in the big data arena in recent years. This shift has been fueled by several dynamics, including rising awareness among customers about the significance of protecting their personal information, more scrutiny from regulatory authorities, and rising concerns about the potential exploitation of personal data [35].

The creation of new technology and solutions to assist enterprises in better protecting sensitive data has been a primary focus in the big data field. Tools like data masking and tokenization are employed to prevent unauthorised access to sensitive data, while encryption technologies and enhanced authentication procedures are utilised to protect data both in transit and at rest [36].

Data governance and compliance have received more attention in the big data sphere, alongside technology solutions. There has been a recent uptick in the adoption of stringent policies and procedures for data governance [37] to guarantee that all data is gathered, stored, and processed lawfully.

Last but not least, there has been an uptick in the big data community's appreciation for the value of openness and responsibility. Several businesses are increasingly putting in place policies and procedures and increasing their openness about how they acquire and use personal information to give customers more say over their data.

In the context of big data, there has been a significant shift in recent years towards a greater concern for data privacy and security. Organizations must ensure that they are handling the ever-growing volumes of data they are collecting in a way that is compliant with all relevant laws and regulations and that protects the privacy and security of all individuals.

F. Predictive Analytics
As businesses strive to use data to predict future trends and make educated decisions, predictive analytics, which use machine learning algorithms to do so, has risen quickly in recent years. Data generated by connected devices can be analysed in real-time thanks to the combination of predictive analytics and the IoT. As more and more companies realise the potential of big data, we can anticipate this trend continuing.

G. Edge Computing
With the proliferation of Internet of Things (IoT) devices and other data generators, edge computing has emerged as a promising new direction in big data. This is because many companies want to process data locally rather than upload it to a remote server. Using this, we can decrease lag time and increase data processing speed, both of which are crucial for doing analytics in real-time. The importance of edge computing for the Internet of Things and near-real-time data processing is growing.

H. Blockchain
The use of blockchain technology in big data is helping to make it more secure and private. where it can be used to store and handle huge data on a secure and decentralised network, lowering the possibility of data breaches and increasing privacy. Because of its open-source design, safety protocols, and complete lack of central authority. The importance of blockchain technology is growing as companies look to prevent breaches in the security of their customers' private information [38]. Some of the major ways in which blockchain is altering big data are as follows:

❖ **Decentralization:** The decentralized nature of blockchain eliminates the need for intermediaries and centralized authorities in managing big data. This reduces the risk of data manipulation, corruption, and unauthorized access.

❖ **Data Privacy:** Blockchain can help protect sensitive data by encrypting it and storing it on a secure and tamper-proof network. This ensures that only authorized parties have access to the data.

❖ **Data Sharing**: Blockchain allows for secure and transparent sharing of data between parties, reducing the need for data silos and promoting collaboration.

❖ **Data Integrity:** Blockchain can enhance the accuracy and integrity of big data by ensuring that all transactions are recorded and validated on an immutable ledger..

I. Data Visualization
Using data visualisation technologies, companies and other organisations can show previously inaccessible data clearly and concisely. This is crucial for making informed decisions and sharing findings with relevant parties.

J. Data Governance and Management
Businesses that rely on big data analytics must have strong data governance and management in place. Policies and processes for accessing, using, and storing data are all part of what's known as "data governance," which entails the management of data assets. Accurate, up-to-date, and relevant information can only be achieved by careful management of the data that has been collected.

K. Data Ethics

Managing large amounts of data ethically is becoming a popular topic of discussion. When processing data, businesses must think about the moral consequences. This involves taking measures to guarantee honest and open data collection and utilisation. As corporations come under more scrutiny for how they use data, data ethics will become more important.

L. Quantum Computing

Quantum computers are a new breed of computers that can do calculations at the quantum level. This innovation may well usher in a new era of big data processing by facilitating more rapid and effective methods of data analysis.

M. Data Democratization

The term "data democratisation" refers to the practice of making data more widely available to employees. More and more businesses are adopting this practice to equip their staff with the tools they need to access and evaluate data.

N. Explainable AI

The goal of the field of AI known as "explainable AI" is to create machines that can justify their actions. In the coming years, this pattern will likely grow in significance as businesses try to decipher the logic behind decisions made with the help of artificial intelligence.

O. Federated Learning:

In a nutshell, federated learning is a distributed method of machine learning that allows for in-situ or cloud-based data analysis. By storing private information locally on users' devices and only disseminating model changes in place of raw data, this method successfully answers concerns over data privacy. [35]

These trends and future directions in big data have significant implications for businesses, governments, and society as a whole. As the field continues to evolve, it is important to stay up to date on the latest developments and emerging technologies.

4. CONCLUSION

As a result of its pervasive influence, big data has unquestionably become an integral element of modern life. Recent developments in big data have included the use of edge computing, the elevation of machine learning and AI, and a heightened focus on data privacy and security. Big data is expected to develop further in the future, with novel approaches to managing ever-growing data sets. The proliferation of big data raises new concerns about how to use it ethically and securely, and how to protect people's personal information. Although big data has the potential to revolutionise our daily lives and the way we conduct business, realising this promise will need constant experimentation and teamwork.

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DIETARY DIVERSITY SCORE AND NUTRITIONAL STATUS OF POST GRADUATE FEMALE STUDENTS RESIDING IN DIFFERENT LIVING ARRANGEMENTS

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ABSTRACT

Dietary diversity is generally acknowledged as an important constituent of healthy diets. Various studies have revealed the relationship between dietary diversity and nutrient adequacy. It is usually measured by simply counting the foods or food groups consumed over a given period of time. Different groups of foods consumed over different periods of time have been studied by different researchers. The aim of study was to assess the Dietary diversity score and anthropometric parameters of female day scholars and hostellers enrolled in different Universities of Kashmir. Using proportional allocation, a sample size of 525 female University students comprising of 350 hostellers and 175 day scholars were selected for the study. The food intake pattern of the respondents were recorded by 24 hours recall method and nine food groups were used for Individual Dietary Diversity Score (IDDS) information. IDDS was calculated according to Low IDDS (≤3 Food groups), Moderate IDDS (4-5 Food groups) and High IDDS (≥6 Food groups). The anthropometric parameters assessed during the study were weight, height, waist and hip circumference, Body Mass Index (BMI), Waist to Hip Ratio (WHR) and Waist Height Ratio (WhtR). Using SPSS software the data was subjected to descriptive analysis. The result revealed that most of the day scholars (63.4%) and 65.1% hostellers scored medium dietary diversity score whereas high dietary diversity score was shown by 27.5% day scholars and 26.3% hostellers. The anthropometric measurements depicted, that majority of respondents (70.3%) day scholars and 72.6% hostellers had normal body weight whereas very less respondents 14.9% day scholars and 19.1% hostellers were overweight. It was found that the anthropometric measurements with regard to BMI, were in normal range whereas the values depicted from the hostellers in terms of WHR were slightly greater than day scholars thus placing the former at more risk for developing various lifestyle disorders.

Keywords: Anthropometry, day scholars, WHR, WHtR, IDDS, FVS.

INTRODUCTION

Obesity is a medical state in which body fat gets accumulated in excess to such a great extent that it may have a negative effect on health. Both overweight and obesity are on rise in developing countries most commonly in urban settings. Obesity usually develops from the long term positive energy balance which is caused by imbalance in energy intake and energy expenditure.[1] A multiplicity of factors like faulty diet habits, lack of physical activities, genetic predisposition, physiological and psychological factors are responsible for the onset of obesity.[2] Obesity was once seen in developed countries but as of now it is seen growing in developed countries as well.[3] The risk of developing lifestyle related disorders like Diabetes Mellitus, myocardial infarction, stroke, hypertension and certain cancers increase with an increase in prevalence of overweight and obesity. Globally, overweight and obesity are the fifth leading factor for deaths across the world. At least 2 – 8 million adults die each year as a consequence of being overweight or obese.[4]

Most of the earlier research on malnutrition was determined on anthropometric failure rather than dietary diversity.[5] Dietary diversity is defined as the number of foods consumed across and between food groups over a given time. It reflects the perception that with an increase in food diversity and food groups, an intake of essential macro and micronutrients also gets ensured and thus promoted good health. It is an important indicator of diet quality.[6]

The aim of the study was to assess the association of Dietary Diversity Score and anthropometric parameters of post graduate female students residing in different living arrangements.

MATERIAL AND METHOD

The present study was a comparative one, done on female University day scholars and hostellers enrolled in different Universities of Kashmir. To draw a representative sample, four Universities were selected for the present survey. A sample size of 525 female University students in the age group of 21-24 years was selected from four Universities of Kashmir namely:

1. Sher-I-Kashmir University of Agricultural Sciences, Shalimar.

2. Islamic University of Science and Technology, Awantipora.

3. Central University, Ganderbal.

4. University of Kashmir, Hazratbal, Srinagar.

The formula used for deriving sample size is given below
n=N.X/(X+N-1)

Where,

X= $Z^2 \alpha/2$ p (100-p)/MOE^2

$Z^2 \alpha/2$ is a critical value of normal distribution at α/2 and is equal to 1.96.

For a confidence level of 95%, **α** is 0.05

MOE = Margin of error which is equal to 5%

P= Sample proportion

N= Population

Using proportional allocation, the sample size of hostellers in various Universities was 350 whereas the sample size of day scholars was calculated as 175 which was 20% of the enrolled students in different Universities. Since the population was homogenous, a random purposive sample was taken so that the power of test is 80%. The general details of the students like name, age, residence and family background were taken. For calculating IDDS, an interview method was employed to collect information regarding foods they had taken for the previous 24 hours. The parameters assessed during the study were weight, height, waist circumference, hip circumference, Body Mass Index (BMI), Waist-to-hip Ratio (WHR) and Waist Height Ratio (WHtR). Statistical analysis was done after collection of the data and it was analyzed and interpreted .

RESULTS
The general profile of the respondents is given in the table below.

Table 1

S. No.	General Information	Number N=525	Percentage
1.	**Accommodation** ➤ Day scholars ➤ Hostellers	175 350	33.3% 66.6%
2.	**Marital status** ➤ Married ➤ Unmarried	18 507	3.4% 96.6%
3.	**Name of the University** ➤ KU ➤ SKUAST ➤ IUST ➤ CU	334 84 46 61	63.6% 16.0% 8.7% 11.6%
4.	**Habitation** ➤ Rural ➤ Urban	338 187	64.4% 35.6%
5.	**Category** ➤ General ➤ Scheduled caste ➤ Scheduled tribe ➤ Other backward class	458 10 14 43	87.2% 1.9% 2.7% 8.2%
6.	**Monthly family income (Rs.)** ➤ <10,000 ➤ 10,000-20,000 ➤ 20,000-30,000 ➤ 30,000-40,000 ➤ 40,000-50,000 ➤ >50,000	8 17 81 91 130 198	1.5% 3.2% 15.4% 17.3% 24.8% 37.7%

Table 1, reveals the general information of the respondents. In terms of accommodation, 350 (66.6%) respondents were hostellers and 175 (33.3%) were day scholars. Majority of the respondents 507(96.6%) were

unmarried whereas only 18 (3.4%) were married. Out of 525 respondents, 334(63.6%) were enrolled in University of Kashmir, 84(16%) in Sher-I-Kashmir University of Agricultural Sciences, Shalimar, 61(11.6%) in Central University, Ganderbal and 46(8.7%) were enrolled in Islamic University of Science and Technology, Awantipora. As far as habitation is concerned, 338 (64.4%) of the respondents were from rural area and 187(35.6%) were from urban area. The respondents belonged to various social categories with majority 458 (87.2%) from general category, 10 (2%) from scheduled caste, 14 (2.7%) from scheduled tribe and rest of the respondents 43 (8.2%) belonged to other backward classes. In terms of economic conditions, 198 (37.7%) respondents had monthly family income of more than Rs. 50,000, 130 (24.8%) had in between Rs. 40,000 - 50,000, 91 (17.3%) between Rs. 30,000 - 40,000 , 81 (15.4%) between Rs. 20,000 – 30,000, 17 (3.2%) between Rs. 10,000 – 20,000 and 8 (1.5%) had below Rs. 10,000.

With regard to BMI, a majority (70.3%) of the day scholars were found to be having a normal body weight, followed by overweight, who formed 14.9% of the population, whereas, 72.6% hostellers were of normal weight and 19.1% were overweight. To ascertain the difference in BMI of day scholars and hostellers Z test was applied. The results reveal a significant difference in underweight day scholars and hostellers thus depicting an association in between BMI and type of living arrangement of respondents $(Z = 2.26, p = <0.05)$. (Table2).

Table 2: Distribution of respondents according to BMI and type of living arrangement

BMI (kg/m²)	Day Scholars (N=175)		Hostellers (N=350)		Z test	p value	Significance
	Frequency	Proportion	Frequency	Proportion			
Underweight (<18.5)	23	0.13	25	0.07	2.26	<0.05	Sig
Normal weight (18.5-24.9)	123	0.70	254	0.72	0.47	0.63	Non Sig
Overweight (25.0 – 29.9)	26	0.15	67	0.2	1.42	0.15	Non Sig
Obese Class 1 (30.0 - 34.9)	3	0.02	4	0.01	0.57	0.56	Non Sig

Significant at 0.05 level

The assessment of distribution of fat inside body is given by waist height ratio. The measurements revealed that according to the waist height ratio measurements, most of the day scholars (32.0%) were healthy and 25% were overweight. Moreover, 27% hostellers were very overweight and 24% were overweight. The application of Z test depicted that there was a significant difference in very overweight day scholars and hostellers $(Z = 3.35, p = <0.005)$ revealing an association in between waist height ratio and type of living arrangement. (Table 3).

Table 3: Distribution of respondents according to WHtR and type of living arrangement

WHtR	DAY SCHOLARS (N=175)		HOSTELLERS (N=350)		Z test	p value	Significance
	Frequency	Proportion	Frequency	Proportion			
Extremely slim (≤ 0.34)	3	0.01	9	0.03	1.43	0.15	Non Sig
Slim (0.35-0.41)	13	0.07	25	0.07	NA	-	NA
Healthy (0.42 – 0.48)	55	0.32	72	0.21	2.75	<0.005	Highly Sig
Overweight (0.49-0.53)	43	0.25	85	0.24	0.25	0.80	Non Sig
Very overweight (0.54-0.57)	24	0.14	96	0.27	3.35	<0.005	Highly Sig
Obese (≥ 0.58)	37	0.21	63	0.18	0.82	0.40	Non Sig

Significant at 0.05 level

Waist hip ratio assesses the abdominal obesity. The waist and hip circumference of the respondents depicted that most of the day scholars (62.9%) and 71.7% hostellers have high risk of developing metabolic disorders. The result of Z test, revealed that there was a significant difference in waist hip ratio of day scholars and hostellers in low risk group. The results were also significant in high risk day scholars and hostellers (Z = 2.08, p = <0.05) as the ratio was higher in more hostellers than day scholars. Hence, there was a close association in between the waist hip ratio and the place of living. (Table 4).

Table 4: Distribution of respondents according to WHR and type of living arrangement

WHR/Health risk	Day Scholars (N=175)		Hostellers (N=350)		Z test	p value	Significance
	Frequency	Proportion	Frequency	Proportion			
(≤ 0.80)/ Low	32	0.18	30	0.08	3.40	<0.05	Sig
(0.81- 0.85)/ Moderate	33	0.18	69	0.19	0.27	0.77	Non Sig
(≥ 0.86)/ High	110	0.62	251	0.71	2.08	<0.05	Sig

Significant at 0.05 level

Table 5 gives the distribution of respondents according to their dietary diversity scores. Majority of respondents (63.4%) day scholars and 65.1% hostellers depict medium diversity score which means that they consumed food items from 4-5 food groups. High dietary diversity score (≥6) was shown by 27.5% day scholars and 26.3% hostellers. However, the difference in diversity scores of respondents with respect to their living arrangement was not significant (p=0.92).

Table 5: Distribution of respondents according to their Dietary Diversity Score (DDS)

Dietary Diversity Score	Day Scholars (N=175)	Hostellers (N=350)	x^2	p value
Low DDS (≤3)	16 (9.1%)	30 (8.6%)	0.15	0.92
Medium DDS (4-5)	111 (63.4%)	228 (65.1%)		
High DDS (≥6)	48 (27.5%)	92 (26.3%)		

Significant at 0.05 level

Table 6 shows the distribution of respondents according to their BMI and Dietary Diversity Score. Most of respondents, (42.9%) day scholars and 44.6% hostellers with normal weight exhibit medium dietary diversity score. Moreover, 3.4% day scholars and 2.3% hostellers who as per their BMI were overweight depicted high diversity score. The difference in dietary diversity score of respondents with respect to BMI and residence was not significant, thus, validating the fact that there is no association in between dietary diversity score and BMI with respect to type of living arrangement.

Table 6: Distribution of respondents according to their BMI and Dietary Diversity Score (DDS)

BMI (kg/m²)	Day Scholars (N=175)			Hostellers (N=350)		
	Low DDS (≤3)	Medium DDS (4-5)	High DDS (≥6)	Low DDS (≤3)	Medium DDS (4-5)	High DDS (≥6)
Underweight (<18.5)	2(1.1%)	17(9.7%)	4(2.3%)	1(0.3%)	16(4.6%)	8(2.3%)
Normal weight (18.5-24.9)	11(6.3%)	75(42.9%)	37(21.1%)	23(6.5%)	156(44.6%)	75(21.4%)
Overweight (25.0 – 29.9)	2(1.1%)	18(10.3%)	6(3.4%)	5(1.4%)	54(15.4%)	8(2.3%)
Obese Class 1	1(0.6%)	1(0.6%)	1(0.6%)	1(0.3%)	2(0.6%)	1(0.3%)

(30.0 - 34.9)			
x^2	4.45		11.75
P value	0.61		0.68
Phi	0.15		0.18
Cramer's V	0.11		0.13

Significant at 0.05 level

The distribution of respondents according to their Waist height Ratio (WHtR) and Dietary Diversity Score is given in Table 7. Among day scholars, 20.6% respondents with healthy waist height ratio revealed medium dietary diversity score whereas in hostellers, the same diversity score was shown by 17.1% respondents who were very overweight. A significant difference was seen in dietary scores of hostellers with respect to their waist height ratio (p=<0.001).

Table 7: Distribution of respondents according to their Waist Height Ratio (WHtR) and Dietary Diversity Score (DDS)

WHtR	Day Scholars (N=175)			Hostellers (N=350)		
	Low DDS (≤3)	Medium DDS (4-5)	High DDS (≥6)	Low DDS (≤3)	Medium DDS (4-5)	High DDS (≥6)
Extremely slim (≤ 0.34)	1 (0.6%)	1 (0.6%)	1 (0.6%)	1 (0.3%)	3 (0.9%)	5 (1.4%)
Slim (0.35-0.41)	2 (1.1%)	7 (4%)	4 (2.3%)	1 (0.3%)	23 (6.6%)	1 (0.3%)
Healthy (0.42 – 0.48)	9 (5.1%)	36 (20.6%)	10 (5.7%)	5 (1.4%)	47 (13.4%)	20 (5.7%)
Overweight (0.49-0.53)	2 (1.1%)	31 (17.8%)	10 (5.7%)	4 (1.1%)	45 (12.8%)	36 (10.3%)
Very overweight (0.54-0.57)	1 (0.6%)	12 (6.8%)	11 (6.3%)	9 (2.6%)	60 (17.1%)	27 (7.7%)
Obese (≥ 0.58)	1 (0.6%)	24 (13.7%)	12 (6.8%)	10 (2.9%)	50 (14.3%)	3 (0.9%)
x^2	16.21			41.83		
p value	0.09			<0.001		
Phi	0.30			0.34		
Cramer's V	0.21			0.24		

Significant at 0.05 level

Table 8 depicts the distribution of respondents as per their Waist Hip Ratio and Dietary Diversity Score. Majority of the respondents, (40%) day scholars and 46% hostellers who showed medium dietary diversity score had high risk of developing metabolic disease as their waist hip ratio was ≥0.86. A significant difference was seen in dietary diversity scores and risk of developing metabolic disorders in hostellers (p=<0.001).

Table 8: Distribution of respondents according to their Waist Hip Ratio (WHR) and Dietary Diversity Score (DDS)

WHR/Health risk	DAY SCHOLARS (N=175)			HOSTELLERS (N=350)		
	Low DDS (≤3)	Medium DDS (4-5)	High DDS (≥6)	Low DDS (≤3)	Medium DDS (4-5)	High DDS (≥6)
(≤ 0.80)/ Low	Nil	25 (14.3%)	7 (4%)	1 (0.2%)	24 (6.8%)	5 (1.4%)
(0.81- 0.85)/ Moderate	4 (2.3%)	16 (9.1%)	13 (7.4%)	12 (3.4%)	43 (12.3%)	14 (4%)
(≥0.86)/High	12	70	28	17	161	74

	(6.9%)	(40%)	(16%)	(4.8%)	(46%)	(21.1%)
x^2	8.1			12.05		
p value	0.08			<0.01		
Phi	0.21			0.18		
Cramer's V	0.15			0.13		

Significant at 0.05 level

DISCUSSION

Hostellers stay away from home and are free to consume food other than what is being provided at hostel. . Students in the present times often tend to select fast foods which are nutritionally inadequate and unhealthy instead of the wholesome food cooked at home. This practice is found to be more common among those residing in hostels and rental rooms. Most of the times, food provided in hostel is non palatable and thus hostellers often skip their meals and they prefer to eat outside. As per their calculated BMI, more hostellers (19.1%) were seen to be overweight as compared to 14.9% day scholars. However, majority of day scholars (70.3%) and 72.6% hostellers were of normal weight. The finding is supported by the study (Satapathy, A., Satapathy, A., & Rout, S. 2021) in which it was found that more hostellers (40%) were overweight as compared to 21% day scholars .High consumption of fast food, junk food, high calorie and high fat food items outside hostels along with sedentary life style make hostellers more prone to development of obesity and its related disorders. Waist hip ratio and waist height ratio are the determinants of abdominal obesity and over all distribution of fat in the body. When these parameters are above normal levels, this indicates the risk of an individual to develop metabolic disorders. As per the findings of study, the waist hip ratio of hostellers was higher than day scholars. The study by Pallavi, R., Deepa, R., & Devaki, C. S. (2020) on working women residing in hostels revealed that majority (76%) of the hostellers were in high risk of developing metabolic disorders according to their waist hip ratio. Students residing in hostels are independent of making food choices. With inclusion of food outside their hostel they usually increase their dietary diversity. The study conducted by Angeliki, P. et al (2007) revealed that students living away from home develop unhealthy eating habits than students residing at their home. With regard to BMI, most of the respondents depicted medium dietary diversity score. The findings are supported by the study done by Kumar, A. et al (2020) in which it was seen that majority of the respondents (37.5%) with normal weight had medium dietary diversity score. An association seen in waist height ratio and dietary diversity score of hostellers was in contrast to the study of Goodarzi, G. et al (2020) where the findings showed no association in between the two. Nupo, S. et al (2019) found that dietary diversity scores are associated with waist hip ratio which was in support of the findings of study as an association in between waist hip ratio and dietary diversity score was seen in hostellers.

CONCLUSION

The study showed that the BMI of most of the students was normal however the other parameters of assessing obesity which includes waist hip and waist height ratio were exceeding the normal range. A strong association was seen in dietary diversity score and anthropometric parameters of students particularly in hostellers. They were found to be at more risk of developing sedentary lifestyle disorders as was evident from their dietary diversity and anthropometric indices.

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EFFECTIVENESS OF FLIPPED LEARNING: A SYSTEMATIC ANALYSIS

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"The really difficult part of teaching is not organizing and presenting the content, but rather doing something that inspires students to focus on that content to become engaged."

-Robert Leamson

ABSTRACT

In recent years, different teaching methods have emerged as a result of technological development in the education field. Flipped Learning is one of these emerged methods. A Flipped Learning approach is different from conventional learning in the sense that learners are actively engaged in problem-solving activities that require their prior knowledge to be applied. Effectiveness of Flipped Learning is the subject of this descriptive integrative literature review, which adopts a qualitative research design. The number of data obtained from online journal articles (Google Scholar, ERIC, and Research Gate), master and doctoral theses is 70. In order to analyze the data, content analysis was used. The studies examined within the scope of the research were divided into three categories according to their results: The effect of Flipped Learning on a) Student Achievement b) Students' Participation c) Students' Attitude d) Teachers Attitude. According to the results, Flipped learning positively improves student achievement and participation. It has also been found that students in Flipped Learning classrooms are highly motivated and both learners and teachers have positive attitudes toward the method.

Keywords: Flipped Learning, Effectiveness, Achievement, Attitude, and Participation.

INTRODUCTION

The global pandemic COVID-19 greatly affected the all aspects of human life and so on education system in all over the world. Now the use of technology has become an essential part of teaching and learning process.

Flipped Learning is one of the most exciting advancements in the classrooms of 21st century. It shifts the classroom learning from passive to active and focuses on higher order thinking skills evaluating, analyzing, and creating. Flipped learning hinges on understanding the difference between information and knowledge acquisition. It provides students with active learning possibilities and makes them responsible by giving opportunities for their own learning. In this approach class time is focused more on finding meanings, exploring and applying knowledge and teaching focuses more on providing significant learning opportunities and feedback through a variety of pedagogical techniques or strategies which ensures the understanding of students and empowering them with choices. In this child centered learning approach students use their class time for learning by small group activities or individually and teachers assign them materials and tasks prior to a lesson to be viewed at home which engages them individually for making them accountable for their development.

Flipped Learning

Around 2012, the term "Flipped Learning" came into use with the work of two science teachers Jonathan Bergmann and Aaron Sams. Now it is becoming popular every year. According to a survey in 2014 from the Flipped Learning Network founds that 78% of teachers had flipped a lesson, and 96 percent of those who tried it would recommend it to other educators. Thus it can be said that flipped learning inspires teachers to update the traditional teaching-learning methods.

According to Kari M. Arfstrom cofounder of the Flipped Learning Network, "Flipped learning is all about creating opportunities for active engagement."

According to The Flipped Institute "Less 'sit and listen' equals more 'do and learn' — and the flipped model is making class time more enjoyable, productive and engaging for students and teachers.

Research Questions

The research "Effectiveness of Flipped Learning: A Systematic Analysis" aims to investigate the following research questions:

1. How does Flipped Learning affect students' achievement?

2. How does Flipped Learning affect student participation?

3. What is teachers' attitude towards flipped learning?

4. What is students' attitude towards flipped learning?

Research Design
This study is a descriptive integrative review of literature that employs a qualitative research approach.

Data Collection, Analysis and Procedure
A qualitative research design uses document analysis to examine the effectiveness of Flipped Learning based on an integrative literature review of articles and theses. In this study, data was sourced from journal articles, master and doctoral theses online and offline.

The data was analyzed using content analysis, and themes and categories were developed based on the findings.

Data Source	Evaluated Studies	Number of Studies
Google Scholar	Youssef NH, Al-Shahrani NM, 2021; Sterner, Svensson, Toivonen, Bill and Adawi, 2017; Yilmaz, 2017; MohdFadzly Bin Wasriep, et.al., 2017; Birbal and Bradshaw, 2016; Nouri Jalal, 2016; Wanner and Palmer, 2016; Jenkins, 2015; Marlowe, 2012;	9
Data Source	Evaluated Studies	Number of Studies
ERIC	Abdullah Arslan, 2020; Kevser HAVA, 2020; Seitan, Wael I.; Ajlouni, Aseel O.; Al-Shra'h, Nayel D. A., 2020; Almodaires, Abdullah A.; Alayyar, Ghaida M.; Almsaud, Tareq O.; Almutairi, Faisal M., 2019; Pongpatchara Kawinkoonlasate, 2019; Sandhu S., 2019; Albalawi, A.S., 2018; Assi and Cohen, 2018; Erdogan and Akbaba, 2018; Maddox, Danyelle, 2018; Abdelshaheed, Bothina S. M., 2017; Camiling, 2017; Cheng and Weng, 2017; Mukherjee and Pillai, 2017; Papalexiou, Padakis, Manousou and Georgiadu, 2017; Schmidt and Ralph, 2016; Basal, 2015; Enfield Jacob, 2013; Strayer, 2012;	19
Research Gate	Sablan J. R.; Prudente M., 2022; Aydin, Mustafa; Okmen, Burcu; Sahin, Seyma; Kilic, Abdurrahman, 2021; Lo, Chung Kwan; Hew, Khe Foon, 2020; Clare Merlin-Knoblich et.al., 2019; Erin Stratton, 2019; N. S. Goedhart et.al., 2019; Kapil S, 2019; Srinivasan Sudha, Kumar Harish, 2019; Shereen A. Elian and Diala A. Hamaidi, 2018; Kehoe et.al., 2018; Kuldeep Singh et.al., 2018; Lundin, Rensfeldt, Hillman, Andersson and Peterson, 2018; Stohr and Adawi, 2018; Fisher, Ross, La Ferriere and Martiz, 2017; Jia Suo, Xiuying Hou, 2017; Lee, Lim and Kim, 2017; Michael C. Goates et.al., 2017; Siti Waznah Abdul Latif et.al., 2017; Utheim and Foldnes, 2017; Vasilchenko, 2017; MohdFadzly Bin Wasriep, et.al., 2017; Cha and Kim, 2016; Fezile Ozdamli et.al., 2016; Gareth, 2016; Long, Cummins and Waugh, 2016; Moore, 2016; Nwosisi, Ferreira, Rosenberg and Walsh, 2016; Xiaona Dong, 2016; Davies, Dean and Ball, 2013; Flumerfelt and Green, 2013; Morroney S. P., 2013;	31
Data Source	Evaluated Studies	Number of Studies
Master Theses	Bergeson Brett, 2022; MacDonald W. T. F., 2015; Amin S. T., 2014; Bajurny Amy, 2014;	4
Doctoral Theses	Shaikh, Ejaz Ahmed Abdul Quddus, 2019; Ligi B, 2019; R. Preethi, 2019; Zaheer Abdul Ghafoor, Y.A, 2018; Manoj, Joseph D Souza, 2018; Florence, F L Sophia, 2017; Johnsi Priya, J., 2016;	7
Total		**70**

Table 1: Number of Articles and Theses with Sources

RESULTS

Sr. No.	Research Author	Research Design	Employed Technique	Positive Effect of Flipped Learning on
1	Sablan J. R.; Prudente M., 2022;	Qualitative Research Design	Meta-Analysis	Student achievement
2	Bergeson Brett, 2022;	Quasi-Experimental Research Design	Pre- and Post-Test, Survey, Observations	Student achievement Student participation Student attitude
3	Youssef NH, Al-Shahrani NM, 2021;	Quasi-Experimental Research Design	Mathematics Achievement Test, Habits of Mind Scale	Student achievement
4	Aydin, Mustafa; Okmen, Burcu; Sahin, Seyma; Kilic, Abdurrahman, 2021;	Qualitative Research Design	Meta-Analysis	Student achievement
5	Abdullah Arslan, 2020;	Qualitative Research Design	Systematic review	Student achievement Student participation Teachers attitude Students attitude
6	Kevser HAVA, 2020;	Mixed Research Design	Pre-test Post-test, Interview	Student achievement Student participation Students attitude
7	Seitan, Wael I.; Ajlouni, Aseel O.; Al-Shra'h, Nayel D. A., 2020;	Quasi-Experimental Research Design	Achievement test, Pre-test Post-test,	Student achievement Student participation Students attitude Teachers attitude
8	Lo, Chung Kwan; Hew, Khe Foon, 2020;	Mixed Research Design	Student interviews	Student achievement Students attitude Teachers attitude
9	Almodaires, Abdullah A.; Alayyar, Ghaida M.; Almsaud, Tareq O.; Almutairi, Faisal M., 2019;	Quasi-Experimental Research Design	Questionnaires consist with closed-ended and open-ended questions	Student achievement Students attitude Teachers attitude Interviews and focus-group discussions, Questionnaires
10	Clare Merlin-Knoblich et.al., 2019;	Qualitative Research Design	Classroom Engagement Inventory	Student participation
11	Erin Stratton, 2019;	Experimental Research Design	Pre test-post test, Google Form	Student achievement Student participation Students attitude Teachers attitude
12	N. S. Goedhart et.al., 2019;	Qualitative Research Design	Interviews and focus-group discussions, Questionnaires	Student participation
13	Pongpatchara Kawinkoonlasate, 2019;	Qualitative Research Design	Systematic review	Student achievement Student participation Students attitude
14	Kapil S., 2019	Mixed Research Design	Pre- and Post-test, Achievement test, Questionnaire	Students achievement Students participation
15	Sandhu S., 2019;	Qualitative Research Design	Open-ended survey, Google Form, Microsoft Document	Students achievement Students participation
16	Srinivasan Sudha,	Qualitative	Systematic Review	Students achievement

	Kumar Harish, 2019;	Research Design		Students participation
17	Ligi B, 2019;	Experimental Design	Flip Teaching Method	Student achievement Student participation
18	R. Preethi, 2019	Experimental Design	Pre- and post- tests	Student achievement Student participation Student attitude
19	Shaikh, Ejaz Ahmed Abdul Quddus, 2019;	Mixed Research Design	Flipped Learning Program, Videos	Students achievement Students participation
20	Albalawi, A. S., 2018;	Quasi-Experimental Research Design	Pre- and post-achievement tests	Student achievement Students attitude Teachers attitude
21	Assi and Cohen, 2018;	Qualitative Research Design	Quantitative (meta-analysis) and qualitative (thematic)	Student achievement Student participation Students attitude
22	Erdogan and Akbaba, 2018;	Qualitative Research Design	Semi-structured interview	Teachers attitude
23	Shereen A. Elian and Diala A. Hamaidi , 2018;	Quasi-Experimental Research Design	Achievement tests	Student achievement Student participation Students attitude
24	Kehoe et.al., 2018;	Qualitative Research Design	Case Study	Teachers attitude Student participation
25	Kuldeep Singh et.al., 2018;	Qualitative Research Design	Systematic review	Student achievement Student participation
26	Zaheer Abdul Ghafoor, Y.A, 2018;	Mixed Research Design	MALL (Mobile Assisted Language Learning), Videos	Student achievement Student participation
27	Manoj, Joseph D Souza, 2018;	Experimental Research Design	Flipped Classroom	Student achievement Student participation
28	Lundin, Rensfeldt, Hillman, Andersson and Peterson, 2018;	Qualitative Research Design	Systematic review	Student achievement Student participation
29	Stohr and Adawi, 2018;	Mixed Research Design	Online modules	Student achievement Student participation Students attitude
30	Maddox, Danyelle, 2018;	Quasi-Experimental Research Design	Quiz and unit assessments, Achievement tests	Student achievement
31	Abdelshaheed, Bothina S. M., 2017;	Experimental Research Design	Pre- and post- tests	Student achievement Student participation Students attitude
32	Camiling, 2017;	Experimental Research Design	Pre- and post- tests	Student achievement
33	Cheng and Weng, 2017;	Mixed Research Design	Questionnaire Survey	Student achievement Teacher attitude
34	Fisher, Ross, La Ferriere and Martiz, 2017;	Mixed Research Design	Learning Management System (LMS), face-to-face workshops, Online Tutorial, modules, Online Survey, Telephonic Interview	Student achievement Student participation Student attitude
35	Jia Suo, Xiuying Hou, 2017;	Qualitative Research Design	Systematic Review	Student achievement Student participation Student attitude

36	Lee, Lim and Kim, 2017;	Experiment Research Design	Flipped Learning Model	Student achievement Student participation
37	Michael C. Goates et.al., 2017;	Mixed Research Design	Eight Life Sciences Library Sessions, Online Tutorial	Student achievement Student participation
38	Mukherjee and Pillai, 2017;	Quasi-Experimental Research Design	Pre- and post- tests	Student achievement Student participation
39	Papalexiou, Padakis, Manousou and Georgiadu, 2017;	Action Research	The Spiral Design Cycles, Action, Observation and Reflection, The Learning Activity Management System (LAMS)	Student achievement Student participation
40	Siti Waznah Abdul Latif et.al., 2017;	Action Research	Pre- and post- tests, Interview	Student achievement Student participation Students attitude
41	Sterner, Svensson, Toivonen, Bill and Adawi, 2017;	Mixed Research Design	Surveys, Observations and Interviews	Student achievement Student participation Students attitude
42	Utheim and Foldnes, 2017;	Mixed Research Design	Interviews	Student achievement Student participation Students attitude
43	Vasilchenko, 2017;	Mixed Research Design	Questionnaire, Observations, Interviews	Student achievement Teacher attitude
44	Yilmaz, 2017;	Mixed Research Design	Survey Questionnaire	Student achievement Students attitude
45	Lo and Hew, 2017;	Qualitative Research Design	Systematic Review	Student achievement Students attitude
46	Florence, F L Sophia, 2017;	Mixed Research Design	Pre-test and Post-test, Questionnaire, VCCM approach (Vocabulary, Connectives, Concord and Mechanics of Writing)	Student achievement Student participation
47	MohdFadzly Bin Wasriep, et.al., 2017;	Qualitative Research Design	Semi Structured Interview, Participant Observation, Assessment Task and Document Review on Teacher's work	Student achievement Teacher attitude
48	Birbal and Bradshaw, 2017;	Qualitative Research Design	Focus Group Interview, Open ended Questionnaire	Student achievement Students attitude
49	Cha and Kim, 2016;	Mixed Research Design	Survey Questionnaire, Lecture	Student achievement Student participation Students attitude
50	Fezile Ozdamli et.al., 2016;	Qualitative Research Design	Systematic Review	Student achievement Student participation
51	Gareth, 2016;	Qualitative Research Design	Interview, Flipped Learning Model of Teaching, Survey Questionnaire	Student achievement Student participation
52	Long, Cummins and Waugh, 2016;	Qualitative Research Design	Flipped Learning Model, Structured interviews	Student achievement Teacher attitude

53	Moore, 2016;	Qualitative Research Design	Meta Analysis	Student achievement Student participation Students attitude
54	Johnsi Priya, J., 2016;	Experiment Research Design	Video Lesson	Student achievement
55	Nouri Jalal, 2016;	Mixed Research Design	Survey Questionnaire, Videos, LMS, Moodle	Student achievement Student participation Students attitude
56	Nwosisi, Ferreira, Rosenberg and Walsh, 2016;	Mixed Research Design	Videos, Podcasts, Docs, Web Based Tools	Student achievement Student participation
57	Schmidt and Ralph, 2016;	Experimental Research Design	Videos, Interactive Challenges, Quizzes	Student achievement Student participation Teacher attitude
58	Wanner and Palmer, 2016;	Qualitative Research Design	Meta Analysis	Student achievement Student participation
59	Xiaona Dong, 2016;	Qualitative Research Design	Meta Analysis	Student achievement Student participation
60	Basal, 2015;	Qualitative Research Design	Open ended questions	Student achievement Student participation
61	Jenkins, 2015;	Qualitative Research Design	Survey	Student achievement Student attitude
62	MacDonald W. T. F., 2015;	Mixed Research Design	Lecture/Assignment, Online Quiz, Post-Unit Survey	Students achievement Students participation Students attitude
63	Amin S. T., 2014;	Qualitative Research Design	Systematic Review	Students achievement Students participation
64	Bajurny Amy, 2014;	Qualitative Research Design	Semi Structured Interviews	Students achievement Students participation Students attitude
65	Davies, Dean and Ball, 2013;	Quasi-Experimental Research Design	MyITLab videos and software simulation, Survey	Students achievement Students attitude
66	Enfield Jacob, 2013;	Mixed Research Design	Flipped Classroom Model	Students achievement
67	Flumerfelt and Green, 2013;	Qualitative Research Design	Systematic Review	Students achievement
68	Morroney S. P., 2013;	Action Research	Videos, Practice Sessions, Survey	Teacher attitude
69	Marlowe, 2012;	Mixed Research Design	Videos, Assignments, Interview	Student achievement
70	Strayer, 2012;	Mixed Research Design	(CUCEI), Field Notes, Interviews and Focus Groups	Student participation Student attitude

Table 2: Detailed Analysis of the Studies

CONCLUSION

As technology has developed in education, we have seen the emergence of more and more teaching methods. Flipped Learning is one of these emerging methods that allows students to become familiar with the concepts before the classroom, and during the lesson, they work together cooperatively with their peers to solve problems or discuss matters that require them to apply what they have previously learned. There has been a lot of research done on flipping learning. According to studies investigating the effectiveness of Flipped Learning, the exam/post-test scores of learners in flipped classrooms differ significantly from those in conventional classrooms. It is therefore deduced that Flipped Learning improves student achievement. Students' learning is

enhanced by Flipped Learning because they practice more in the classroom. As part of flipped learning research, researchers will also need to evaluate how motivated and involved students are in the program. As a result of observations, interviews, scales, and questionnaires, many studies have examined how Flipped Learning impacts student motivation and classroom participation. These studies demonstrate that learners are highly motivated in flipped classrooms and have a high level of participation in flipped classrooms. Numerous studies have examined learners' and teachers' attitudes toward Flipped Learning. Based on the results of these studies, it is found that both have positive attitude towards Flipped Learning.

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ETHANOBOTANICAL STUDY OF MEDICINAL PLANTS USED TO TREAT DYSENTERY AND DIARRHOEA IN YERCAUD HILLS, SALEM, TAMILNADU, INDIA

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ABSTRACT

Ethnobotanical studies demonstrate how people from various cultures use indigenous plants to make medicine to treat disease and illness. In India, researchers and botanists examine tribal knowledge in the yercaud-servarayan Hill region of the Eastern Ghats. Therefore, our study aimed to illustrate the medicinal plants used by tribes and local people in the yercaud hill region. About 48 plant species from 45 genera and 29 families of herbal medicinal plants were identified in the brief survey and many diseases are treated by these ethnomedicinal plants. This article discusses specific plant species that can be used to treat dysentery and diarrhoea. The primary goal is to identify and research new varieties of medicinal plants for the development of medicinal drugs without side effects.

Keywords: Yercaud hills, Dysentery, Diarrhoea, Traditional medicine.

INTRODUCTION

The term "ethnobotany" was introduced by John Harrisburg. He is an American botanist [4]. Ethnobotanical research helps us to understand the relationship between humans and plants in order to understand what we know about the medicinal benefits of plants for humans. Ethnobotany includes many fields such as botany, biochemistry, pharmacy, toxicology, medicine, nutrition, history and evolution, agriculture, archeology [4].8,000 of these plants are used as medicines, and 2,500 of the 10,000 plant genera are used in the Indian medicinal system. Rural residents all over the world use his herbal medicines (1998-Canigo and Siebert) and these medicinal plants are effective in nature [1]. In botany and tribal knowledge, human relationships serve as a bridge to ethnomedical botanical research (Bruce and Meeus 2000) [1]. Plant-based traditional knowledge serves as a new source of information for future drug development, research, and dietary supplements (Sharma and Majumdar 2003) [1]. Based on ethnic studies The tribe is one of the most unstable communities and greater traditional knowledges of medicinal plants to give therapeutic benefits to peoples [2]. These studies will strengthen traditional knowledge of plant cultivation an conservation in rural areas in order to understand the medicinal benefits of plants in the study area and to improve their sustainable use [3]. In these studies, many researchers and botanists (Reddy et al., 1997; Ravikumar and Vijaya Sankar, 2003; Udayan et al. 2006; Muralidhara Rao and Pullaiah, 2007. Kottaimuthu, 2008; Arunachalam et al., 2009 Dixit and Kadavr, 2009, Prabakaran and Amutha, 2010[1]. Measures were taken to disclose information on a comprehensive survey and documentation of wild plants in the indigenous areas of the Yercaud Hills of the Eastern Ghats, and this information is of significant scientific interest and it gives pharmacologists therapeutic value to validate[8].Researchers are analysing a specific hilly area of the Yercaud - shervarayan Hills and the hill is 1515 meters above sea level and lies between 11°C 45'56" north latitude and 78°C 17'55" east longitude. Temperatures range from 13°C to 29°C at the top and 25°C to 40°C at the bottom of the hill [6]. The traditional practise of Yercaud Hill in gynaecological diseases [6]. The forest tribals are live in biodiversity rich area in which the various plants and trees containing herbal medicines that act like ancient. There are 427 tribal communities in India [3]. This hillside medicinal plant can be used to treat various ailments such as dysentery, diarrhoea, fevers, headaches, and snakebites[2].There are 80% of product produced from medicinal plant are used over 6000-7000 years [7].Approximately 80% of people around the world trust plant-based traditional medicine reported by WHO[2]. India has a huge medical diversity and many countries wild foods as Staples are the basic food sources substantial meals [5]. India has a huge medical diversity. 85% of traditional medicines are derived from plants used by tribes in the Hill region to cure health problems and ailments without side effects [7]. This information collected as documentation of traditional knowledge has increased the research on various diseases and drug development [3]. There are different kinds of plant species in this region can be used to cure diarrhoea and dysentery based on which plant part are used as medicine

STUDY AREA

The study report and documentation was taken up in the Servarayan Hills in Yercaud , Salem District which is located in the southern Eastern Ghats of india in Tamil nadu[3]. The Altitude of this hills are 1515 meter above the sea level and located between -11°c 45'56"N latitude and 780° c 17' 55"E longitude. The Temperature of this hills are between 13°c to 29°c on peak and 25°c to 40°c at the foot hill[6]. The annual rainfall in this region

is around 1750mm[7]. This area support 1500 species of plants with 50% of medicinal benefits[4]. The Type of forest obtained in this area are Evergreen forest to moist deciduous forest[5]. The soil is deep and non-calcareous. The Top hill soil is composed of clay loamy soil and bottom of the valley is characterized by alluvial soil and clay loamy soil[8].

METHODOLOGY

The Servarayan hills have high range of plant varieties within the forest and least different community of local peoples, tribal peoples were living with culture[4]. The Ethnobotanical researchers take several measures to gather the knowledge about the standard knowledge of tribes in search of medicinal plants. The utilization of plants during this region is large for various uses. The Ethnobotanical plants was disbursed during the year 2010[1]. The botanist gain information about the standard knowledge of the plant based remedies from the experienced tribal and native folks by observing the procedure of creating the plants into medicine and taking a good deal of information from the mouth of the practitioner, experienced and rural folks[1]. The certain data were taken by the local name , using of plant parts and methods. In Addition , The direct plant observation and identification, they also take notes and data from the local healer called Vaidhyar [1].In Year 2012-March 2014,The data including of edible uses are collected from the tribal medicine men[8]. The data are discussed with 63 tribal people and they are village head , Elderly person and other local peoples and the collected information was noted on field notebooks and picked up data of plant species were identified by the assistance of flora and taxonomic revision[2]. And later to see whether in which plants species and its parts is accustomed treat. Dysentery and diarrhoea and for further research studies and drug development.

RESULTS AND DISCUSSION

Dysentery

In this studies, the report shows that there are total of 15 plant species belonging to 12 families have been noted and this plants can be used to treat Dysentery and These plant species are reported by the ethnobotanist and the medicine were prepared in the form of juice, paste, extraction of plant parts. It's botanical name, local name, parts to be used, mode of Application are shown in table 1 and the family name of this plant species are shown in table 2

Table: 1

S.no	Botanical Name	Family Name	Local Name	Parts Used	Mode of Application
1	Acacia nilotica(L)	Fabaceae	Karu vaelamaram	Leaf	Tender leaf juice
2	Mangifera xindica(L)	Anacardiaceae	Maamaram	Bark	Bark crashed and maked to treat dysentry
3	Cardiospermum halicacabon(L)	Sapindaceae	Merdakathan keerai	Leaf	Leaf juice
4	Mangifera indica (L)	Anacardiaceae	Maamaram	Seed	Bark crashed and maked
5	Adathoda varica nees	Acanthaceae	Acanthacea	Leaf	Decoction of leaves
6	Aegle marmelos (L)	Rutacceae	Vilvam	Fruit	Decoction of fruit
7	Bougainrillaea spectabilis willd	Nyctaginaceae	Kaaghithapoo	Leaf	Leaves juice
8	Calotropis gigantea(L)	Asclepiadaceae	Erukku	Whole plant	Plant powder mixed with honey
9	Crotalaria verrucosa (L)	Fabaceae	Narimiriratti	Fruit	Fruit juice
10	Erratamia coronaria steapf	Apocynacaea	Nandhiyaratai	Leaf	Two gram of honey mixed with leaf
11	Ficus benghalensis (L)	Moeaceae	Alamaram	Bark	Decoction of bark and seed
12	Euphorbia hirta (L)	Euphorbiaceae	Amman pacharisi	Leaf	Crushed leaves used to treat dysentry

13	Ixora coccinia L Flower,root	Rubiaceae	Vitchie	Flower, root	Flower and root juice
14	Senna tora L	Caesal piniaceae	Oosi thagarai	Whole plant	Plant parts
15	Ruta graveolens L	Rutacea	Aruvadh halai	Leaf	Leaves paste (tropical)

Table: 2

S.No	Family Name	No of Plants
1	Anacardiaceae	2
2	Acanthaceae	1
3	Asclepiadaceae	1
4	Apocynacaea	1
5	Caesal piniaceae	1
6	Euphorbiacea	1
7	Fabaceae	1
8	Moeacea	1
9	Nyctaginaceae	1
10	Rutacceae	2
11	Rubiacea	1
12	Sapindaceae	1

Based on the parts used to treat dysentery is classified as leaf, bark, seed, whole plant, fruit, flower, root etc. In this classification, the leaf (44%) are highly used part when compared to the other plant parts which are shown in the figure 1.
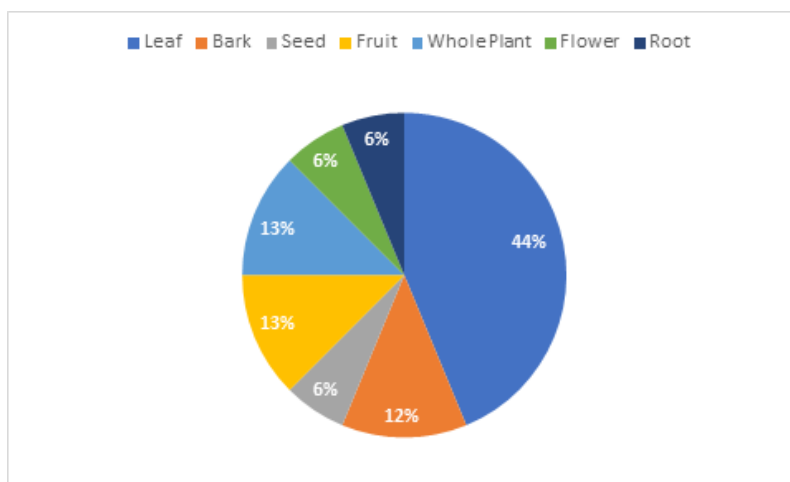
Figure: 1 Plant parts used in treatment of Dysentery

From the mode of formulation to treat dysentery are classified as extract, juice, crashed, decoction, powder, paste, mixed with honey, raw etc. According to this application, the majority of juice (31.3%) is highly used to treat dysentery when compared to other formulation which have been shown in the figure 2.
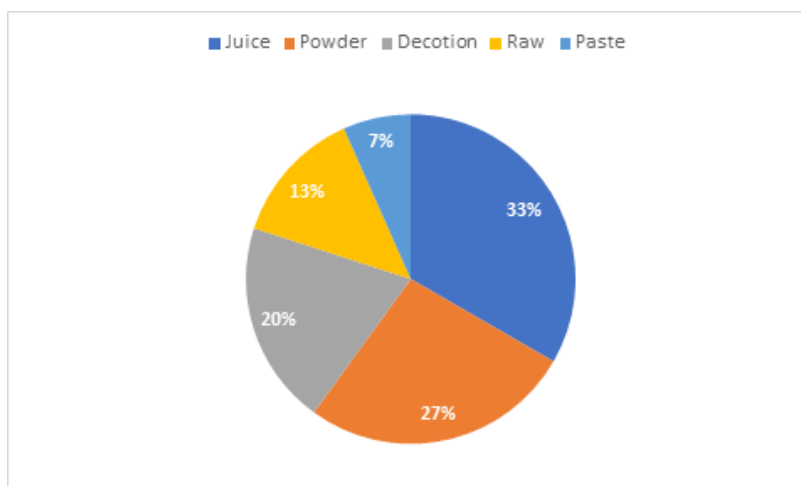
Figure: 2 Mode of formulation for treating Dysentery

Diarrhoea

There are12 plant species belonging to 12 families can be used to treat diarrhoea. The plant act as a medicine by the classification of plant extract, juice, whole plant, paste and powder. Then the botanical name, local name ,parts to be used, mode of applications of the plant species are shown in table 3 and the families are shown in table 4

S.No	Botanical Name	Family Name	Local Name	Parts Used	Mode of Application
1.	Acorus calamus L.	Aroideae	Vashambu	Rhizome	Decoction of the rhizome is taken internally to treat diarrhoea
2.	Adathoda vasica Nees	Acanthaceae	Adathoda	Leaf	The decoction of the leaves is given internally to treat dysentery and diarrhoea
3.	Bougainvillaea spectabilis Willd.	Nyctaginaceae	Kaaghithapoo	Leaf	Leaves juice is given orally to treat dysentery and diarrhoea.
4.	Calotropis gigantea (L) R.Br.	Asclepiadaceae	Erukku	Leaf, stem, root	The plant powder mixed with cow milk is used to treat Dysentery and diarrhoea
5.	Crotalaria verrucosa L	Fabaceae	Narimiratti	Fruit	The fruit is extracted to treat diarrhoea
6.	Ervatamia coronaria Steapf	Apocynaceae	Nandhiyavatai	Leaf	Two grams of leaves powder with honey is used to cure rheumatism, dysentry, and diarrhoea
7.	Euphorbia hirta L.	Euphorbiaceae	Ammanpacharisi	Leaf	Crushed leaves with goat milk are given orally to treat Dysentry and diarrhoea
8.	Ixora coccinia L.	Rubiaceae	Vitchie	Flower,root	The flowers and root juice is given to cure diarrhoea, and dysentery
9.	Mimusops elengi L.	Sapotaceae	Maghizham	Bark,fruit,seeds	The decoction of bark, fruit and seeds are used as tonic in diarrhoea
10.	Senna tora (L.) Roxb	Caesalpiniaceae	Oosi thagarai	Bark,stem,root,flower,fruit	The whole plants part is extracted to treat diarrhea, dysentery
11.	cacia pennata (L.) Willd	Mimosaceae	Kattuchikai	Stem,bark	Decoction of stem and bark is taken orally to treat diarrhoea
12.	Synedrella nodiflora (L.) Gaertn.	Asteraceae	Gamali pondu	Leaf	Decoction of leaf is taken orally to treat diarrhoea

Table:4

S No	Family Name	No of plants
1	Aroideae	1
2	Acanthaceae	1
3	Asclepiadaceae	1
4	Apocynaceae	1
5	Asteraceae	1
6	Caesalpiniaceae	1

7	Euphorbiaceae	1
8	Fabaceae	1
9	Mimosaceae	1
10	Nyctaginaceae	1
11	Rubiaceae	1
12	Sapotaceae	1

According to the plant parts which are used to treat diarrhoea are classified as rhizome, leaf, bark, seed , fruit, flower ,stem ,root etc. In this plant parts leaf (33%) is highly used to treat diarrhoea which are shown in figure 3.
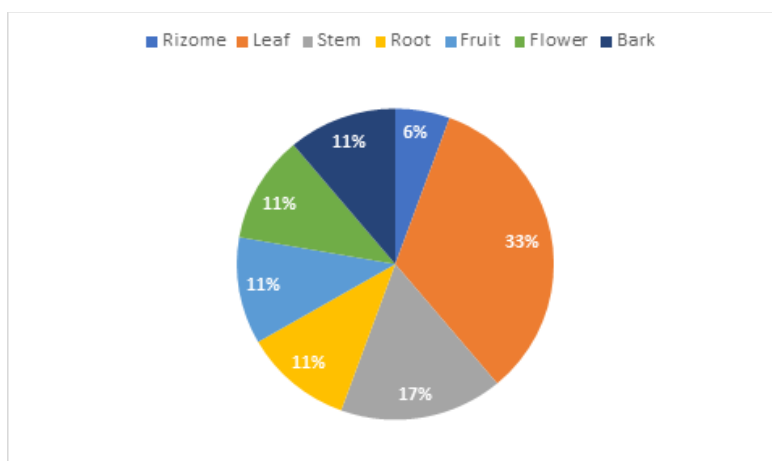
Figure 3: Plants parts used in treatment of Diarrhoea

Based on the mode of formulation of plants is classified as juice, decoction, powder, paste, mixed with honey, raw, crushed, extract etc. In majority decoction of plant (%) is mostly used for the treatment of Diarrhoea which have been shown in the figure 4.
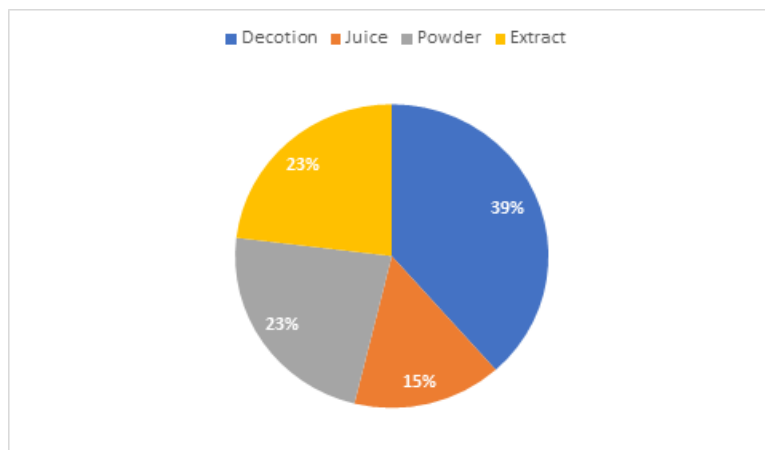
Figure 4: Mode of formulation used to treat Diarrhoea

CONCLUSION

The study report shows the medicinal plants plays an important role in the major health care in the yercaud hill region. The present studies shows that the 15 plant species belonging to 12 families can be used to treat dysentery and other 12 plant species belonging to 12 families can be used to treat diarrhoea. Amongst the record, species regularly as leaf are utilized as medicine and Other fruit, bark, seed, whole plant, root. The studies shows that the indigenous plants of traditional knowledge of tribes and local folks remedies for the treatment of diarrhoea, dysentery and development of new drugs without any side effects.

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IMPACT OF OCB ON ORGANIZATIONAL EFFECTIVENESS

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ABSTRACT
Organizational Citizenship Behaviours are immeasurable but are extremely valuable in the workplace. Creating an environment that will foster OCB and increase organizational effectiveness is significant in helping the Organization move forward. OCB attributes cannot be forced upon individuals, nor can they be duplicated. Forcing them would defeat its purpose and make these behaviors less significant. Therefore, it becomes the responsibility of the Organization to encourage such behaviours and create proper space for them. In this background, this paper will discuss the concepts, implications, organizations' role, pitfalls, outcomes, and barriers of Organizational Citizenship Behaviour and relate it to its significance in improving organizational effectiveness.

Keywords: OCB, Organizational Citizenship Behaviour, Organizational Effectiveness.

INTRODUCTION

Concept of Organizational Effectiveness
Effectiveness can be summarized as 'doing the right things or occupying oneself with the right things'. Effectiveness is essential for improving organizational results. Working effectively, and efficiently is bound to lead the Organization towards better performance. Well-performing employees are constantly looking for newer ways to contribute to the success of the Organization. They work well in teams and are unafraid to seek help.

Effective employee management is the ability of the company to encourage, motivate, communicate, and build trust with its workforce. Employee effectiveness can be measured as a qualitative characteristic that reveals the degree to which employees achieve their present goals and objectives. Achieving organizational effectiveness requires the collaboration of employees, managers, and employees.

Khurana (2013) has provided three aspects for measuring organizational effectiveness Fairness in Competition, Organizational Culture, and Job Satisfaction

1. Fairness in Competition
Human Capital is an indicator of competitive advantage and treating them fairly is necessary. When employees believe there is a strong sense of procedural justice at work, their collaborative effort increases significantly. The modern environment is very competitive and highly challenging, and in such a work culture, there is a requirement to maintain fairness in how employees are treated.

2. Organizational Culture
An organization's Culture affects how people behave and must be considered a contingency factor in any program for developing organizations and HR Policies and practices.

The organizational Culture in an organization affects how people behave inside the Organization. It lays the foundation for deciding and developing HR Policies. It is a mixture of various values, norms, beliefs, and attitudes that may not be specified but shape how people in organizations behave to accomplish things. It generates an atmosphere that counteracts the unavoidable differences in an organization. It plays an active role in strengthening the basis for communication and mutual understanding.

Culture is learned and acquired over a period. According to Schien (1984), this learning happens in the Organization in two ways. He describes the first as the trauma model in which organizations approach threats by adopting specific defense mechanisms. He describes the second as the positive reinforcement model, where organizations accept their resolves as permanent answers. It is seen as people adapting and coping with external pressures through these mechanisms. Once Culture gets firmly embedded, it may be difficult to change quickly.

3. Job Satisfaction
Job satisfaction is the level of contentment employees feel with their job. It covers satisfaction with the employee experiences with managers, colleagues, peers, organizational policies, and the Organization. Employees who are satisfied with their jobs are more likely to be productive and motivated. Additionally, job satisfaction can lead to higher employee engagement, which can translate into better customer service and organizational success.

Concept of Organizational Citizenship Behavior

Organizational Citizenship Behaviour (OCB) is a term used to describe employees' actions and approaches that are not a part of what was specified as their job description. The concept of Organizational Citizen Ship Behaviour (OCB) was first coined by Organ and his Colleagues(Smith et al.1983). Even before the term OCB was coined, Barnard (1938) defined OCB as 'the willingness of individuals to contribute cooperative efforts to the organization which is indispensable to the effective attainment of organizational goals.' Van Dyne et al. (1995) proposed a broader term. According to him, OCB is a behavior that intends to benefit the Organization and goes beyond the current role expectations. It is something that the employee voluntarily undertakes to perform to help in the progress of the Organization. There are various types of Organizational Citizenship Behaviors, and the five most common are:

Altruism is when an employee helps or assists another employee in their work without being told to assist. Altruism is a significant indicator of an employee's willingness to make every problem an opportunity.

Courtesy: It is polite behavior by the employee towards his colleagues and other employees.

Sportsmanship is about learning to control one's emotions, even when things don't go as planned. It's the ability to overlook a situation as temporary.

Conscientiousness: An employee's willingness to walk that extra mile even though it is not as planned. It involves behavior that is willing to self-sacrifice for others' good.

Civic nature: How well the employee represents the Organization they work for. It is a behavior pattern that creates a sense of community leading to job satisfaction and increased job performance.

Thus, OCB will neither be rewarded nor compensated but will benefit the company. Organizations that thrive on efficiency and high productivity encourage OCB and acknowledge employees' contributions.

Employees who have OCB will control their behavior for the success of the Organization. Effective Organizations require workers who are willing to do more than their work requirements, and they seek to perform more than what is expected by the company.

OBJECTIVES OF THE STUDY

1. To comprehend different dimensions of OCB and its relevance to organizational effectiveness.

2. To understand implications, organizational role in implementing Organizational Behaviour in Organization.

3. To understand the Pitfalls and Barriers that foster OCB in Organizations.

Implications of OCB in Organizations

Organizations maximizing OCB enjoy a high level of Organizational Performance.

A strong relationship between OCB and Job Satisfaction results in a Positive Impact of Employee Performance and well-being.

Group Cohesiveness and Teamwork increase within and across work groups.

Appropriate use of available and scarce resources is enabled for the functioning of the Organization.

Organizations can retain talent, increasing the stability of organizations' performance.

Organizations can reduce absenteeism and turnover, leading to increased organizational effectiveness.

It positively impacts productivity, efficiency, and customer satisfaction, reducing costs.

It provides a greater sense of autonomy in the workplace. Giving employees the importance of liberty to conduct business on their terms creates a sense of ownership and accountability, which will help them complete their tasks more efficiently.

OCB helps yield positive results among new employees when implemented and introduced early on in their Careers.

OCB has been known to increase enthusiasm and create a sense of collaboration among workers at their workplace.

ORGANIZATION'S ROLE IN IMPROVING OCB AMONG EMPLOYEES

1. Creating a sense of Belongingness

Belongingness is a crucial component in organizations for employees to feel included. When employees feel included, they contribute more to the success of the Organization. Incorporating employee input into

organizational values communicates and shows the individuals that they have a meaningful role in establishing a more inclusive workplace. Providing employees with initiatives that identify their unique contribution to the company also makes them feel they belong.

2. Creation of awareness among Supervisors

Supervisors and managers play an essential role in promoting OCB in organizations. Often employees in organizations seek recognition and praise, not necessarily monetary benefits. Identifying the right attitudes and motivating employees to continue in their approach for the betterment of the Organization should be given priority by the managers.

3. Recruitment

OCB is one of the many factors influencing managers as they make selection decisions. Job applicants who display OCB during interviews are less likely to leave the Organization. Therefore, it becomes the responsibility of the recruiters to be vigilant to observe OCB behaviors that can be included in making decisions while recruiting.

4. Environment

The work environment must be conducive to promoting OCB. The organizational norms and rules must be formulated to promote a healthy environment where employees are free to express their views and create a climate that will foster OCB.

5. Performance Reports

Organizations must create an environment that actively encourages positive OCB. Employees' engagement in OCB can be monitored through Performance Reports. Employees must be rewarded for positive behavior through appropriate recognition and rewards.

6. Education and Training

Employees must be provided appropriate training and exposure to reinstate and cultivate OCB among one another. The benefits and rewards associated with this at individual and corporate levels can be highly rewarding.

OCB Pitfalls

If Organization must promote OCB in Workplace, it must be cautious of pitfalls that can crop up.

Gender Bias: The Organization should be mindful and wary of implicit gendered expectations. Past research tells us that men tend to be rewarded for OCB more than women because certain OCB Behaviours come naturally to women, and that tends to be less recognized in organizations.

Organizational Justice: In Organizations where employees are rewarded for exhibiting more OCB than others, it may be perceived as unfairness and increase unrest among certain employees. It can lead to decreased OCB among those not rewarded and may be viewed as injustice, creating counterproductive behavior that is not good for the Organization.

Conditioning: It is also seen if OCB is exercised or practiced regularly. If the Organization rewards it regularly, its employees tend to take it for granted and habituate to it. This may become an organizational norm, but once it becomes a norm, it is expected to be fulfilled by the organizations.

Unreasonable Expectations: OCB can take the form of 'Compulsory Citizenship Behaviours', when managers believe that employees should perform jobs in excess or outside their job description, they end up getting burnt out, and their quality of output gets affected.

Decreases Authenticity of Behaviors: If employees are guided by motivating factors such as promotions and favorable treatment to adopt OCB Practices, then it defeats the purpose and reduces the authenticity of behaviors. Therefore it is best not to link employee rewards and recognition to OCB.

Distraction from Day-to-Day Duties: When someone is too focused on tasks outside of their responsibilities, it can negatively impact their productivity. Perfect balance is needed to accomplish the work that needs to be done.

A Sense of Unhealthy Competition: When employees are solely focused on achieving their tasks instead of collectively aiming at completing organizational tasks, competition can enter and bring division, and relationships can adversely get affected.

OCB Outcomes

Managers must therefore involve employees in setting goals and decisions for organizations and institutions to develop organizational citizenship behavior because OCB directly impacts the Organization's performance.

Managers must also involve themselves in the development and enrichment of the jobs of their employees. They must also provide employees with meaningful feedback.

Informal meetings with employees, keeping it open for valuable suggestions from the employees, is another way to make them feel valued.

Learning to cultivate a climate where both the employees and managers have a positive attitude towards the Organization, leading to conscientiousness and loyalty, should be encouraged in the organizations.

Managers must try to create confidence in the workplace because faith leads to the improvement and development of OCB, leading to performance management.

Offering employees, the freedom to conduct their business on their terms creates a sense of freedom, agency, and ownership. This empowers them to make the right decisions and do good work. Therefore, their confidence in completing the task more efficiently increases.

When employees feel inspired by their work and associate it with purpose, this sense of purpose keeps them motivated. This will lead to higher job performance and enthusiasm in the workplace.

People can feel more united as a team with an emphasis on enthusiastic collaboration. It also fosters team spirit and brings unity.

Barriers to Organizational Citizenship Behavior

Not involving the employees in decisions of concern to the Organization and not strengthening their positive attitudes towards the Organization.

The inability of the Organization to remove excess workload on employees prevents employees from exhibiting OCB Behaviours.

Not allowing employees to express their opinions leads to dissatisfaction with their jobs, which will hinder achieving citizenship behavior in the Organization.

CONCLUSION

Organizational Citizenship Behaviour is a critical part of any successful organization. It can help organizations in increasing productivity, improving morale, it can build team spirit, build stronger relationships among employees, and also increase the retention level of employees. Research in behavioral science points towards the emergence of OCB as the key to success.

OCB comes in many dimensions and forms. Because OCB is voluntary, organizations must actively foster these behaviors in the workplace. Employee motivation and morale are essential as this can play and have a direct impact on how employees feel. Therefore, organizations must value these behaviors and appreciate and highlight the worth of these employees, so they are motivated to give their best. These behaviors occur in a group setting, which does not include formal reward systems but increases productivity and effectiveness and results in rewards that cannot be measured quantitatively.

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INTERACTION OF TEACHERS LEARNERS IN THE PROCESS OF LEARNING FOR FUTURISTIC OUTLOOK

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"The core of education is the relationship between the teacher and the student, and the extent to which that relationship nurtures the longing of the child to matter in the world, and the longing of the teacher to nurture and fulfill that desire."

–Timothy Shriver and Jennifer Buffet

ABSTRACT

Interaction is needed in the classroom activity. It helps the teaching and learning process run smoothly and it can increase learners' communication. It tells how the students have interaction among them and the teacher even with the whole class. The main aim of this paper is giving the teacher some suggestions to achieve classroom interaction with the teachers in the teaching, and learners interaction some strategies to improve the interaction in the classroom. Then it can be applied in teaching. Several previous studies about classroom interaction show that different outcomes happen. Several studies show that learners' interaction with teachers is important in the teaching learning process. Some studies show that the students' interaction happens in the classroom. By using classroom and teacher interaction, the students are more active in the learning process. The focus of the article is that learners' interaction with teachers has played an important role in the teaching and learning process.

Keywords: learner, Interaction, Teachers ,classroom

INTRODUCTION

The learner interacts with the teacher. It will help the teaching and learning process run smoothly. When the teacher and students, and students' interactions happen, the instruction will reach the target. The gap between teacher and students in the classroom will disappear. So, the teaching and learning process will be balanced between the teacher and the students. Not only the teacher will be active in communication but the students will also participate in the teaching and learning process. Learning is the process of interaction among learners, between learners and teachers and learning source in the learning environment. So because of it, classroom interaction is needed. By interacting with other learners and the teacher, learners will increase their language skill and social skill. It is an important role of the teacher and learner to make the teaching and learning process effective and successful by designing the planning of better well-being. According to Rogers' Experiential learning it feels that all human beings have a natural propensity to learn. The role of the teacher is to facilitate the learners' development of learning by interacting with learner are includes:

● Setting a positive climate for learning, to the learners.

● Clarifying the purposes of the education for learners'.

● Organizing and making available learning resources, according to the learners'.

● Balancing intellectual and emotional components of learning.

● Sharing feelings and thoughts with learners but not dominating them because friendly and open Discussions can motivate the learner to make connections with the teachers and it helps them to learn.

STRATEGIES OF PROMOTING CLASSROOM INTERACTION

Strategies of promoting classroom interaction. They are as follows

● **Improving Questioning Strategies:-** The attention of the teacher to the learners can activate the teacher-learner interaction. The teacher should ask the question that can be answered by the learners then the teacher adapts his questions to the levels or abilities of the learners.

● **Attending Learners' Adaptable Levels: -** The activities should offer different levels to different learners.

● **Implementing Cooperative Learning: -** Working cooperatively can help develop a learner's social skills. Cooperative learning means that every member of the group is included and differences among group members are resolved by the group members.

- **Building Positive Teacher-Learner Support: -** Mutual respect between teacher and learners is an essential part of education. The dynamic qualities of classroom learning need the responsibility from both the teacher and learner of the teaching and learning process.

- **Reducing Classroom Anxiety:-**The teacher helps the learners to boost their self-esteem and self-Confidence and create a comfortable and non-threatening environment.

6 E Model of Instruction to Develop the Interaction With The Teachers of Learners' in The Learning Process

6E Model of Instruction Is very helpful to develop the interaction with the teachers of learners in the learning. In the present scenario this is a requirement of the Student to interact with teachers to extend the knowledge and skills.

Engage - An 'engage' activity makes connections and interactions between the learners or teachers by past and present learning experiences, anticipates activities and focuses students' thinking on the learning outcomes of current activities. Learners become mentally engaged in the concept, process, or skill to be learned. Each and every lesson plan has an 'essential question' that is helpful to learners' interaction with teachers in the learning process.

Explore - The learner explore the topic by interact with the teachers .in the teaching learning process it is very important that the students are given the opportunity to 'free with the wing'. Learner will need some direction and the teacher can circulate, asking important questions, listening to their interactions and ensuring that they remain on task.

Explain - It helps learners to explain the concepts they have been exploring. They have opportunities to verbalize their conceptual understanding or to demonstrate new skills or behaviour. This phase also provides opportunities for teachers to interact with learners and give them an open and free environment to understand the formal terms, definitions, and explanations for concepts, processes, skills, or behaviour.

Elaborate - Through the learners' interaction with their teachers in the learning process. The learners are expected to work directly on the given assignment. By this approach learners have the opportunity to demonstrate their application of new information and to present their findings or conclusions to others. It is good for evaluation, doing presentations and completing the project or assignment to understand the level of achievement of learners in the learning process.

Evaluate: - It is expected that evaluation will continue throughout the process, this is the section where the teacher evaluates the learning that has occurred. Students normally submit their work or assignments at this point. It is very important at this stage that the students be encouraged to engage in self-evaluation, group evaluation and develop their own tools to do so.

Extend:- Some ideas for taking the students beyond the lesson are provided in this section. The goal is to find out how they can share their findings with others or apply what they know to new and unfamiliar situations. Typically, their enthusiasm for their accomplishments will spur this kind of activity. Although teachers may wish to gently suggest that students enter their work in a competition or take their displays to other locations outside of their own school, this section is largely driven by students.

Types of Interaction in teaching learning process
Learner-Teacher: - The teacher can assist the student in the following through the learner-teacher interaction: comprehend the concepts covered in the course, spot issues, and encourage critical thinking. The instructor will modify his pedagogical approach if necessary.

Learner-Learner: - The learner-learner interaction is increasingly valued as active pedagogy, also known as experiential learning, gains popularity. It has been demonstrated that students' motivation, sense of connection with peers, performance in the workplace, and general satisfaction are all improved by social interaction.

Teacher-Teacher: - The development of the profession as a whole depends on the interaction between teachers. The dialogue between the players in the field is more important than ever in the context of the digital revolution, which is changing education and the teacher's role.

Interaction factors which influenced teaching and learning process
- Know your students.

- Create a welcoming learning environment.

- Set the communication expectation.

- Encourage learners to interact positively with one another.

Responsibilities in the Process of learner Interact with the Teacher
- Ask for corrections and help.

- Use language learning.

- Cooperate with other students.

- Interact in classes.

- Create feedback to the teacher

To Improve the Student Interaction in the Process of Teaching and Learning
1. **Maximising practice time: -** Interaction through pair and group work maximizes the opportunities to practice as more learner's speak for more of the time.

2. **Collaboration:-**Collaboration learning, particularly through the use of collaborative tasks.

3. **Socialization:-** Development of social skills (e.g. Politeness, respect for others) that people need to operate successfully in any culture.

4. **Motivation:-**It is a fundamental aspect of successful learning, interaction gives learning the opportunity to measure their progress in education, which in turn should lead to an increase in motivation.

Teacher's responsibility to interaction with students in teaching and learning process
- Produce outputs.

- Create the opportunity where learners can interact.

- Adequate environment.

- Provide materials.

- Feedback on learners.

Teachers role in the Process of learner interaction
- Teachers must create a learning environment inside the classroom.

- Teachers are an observer in order to generate an innovative learning strategy for helping students.

- Use a range of methodologies and techniques for learning.

- He/She plans the class with the best source of materials.

- Motivates students in the learning process.

Teacher-learners interaction in Classroom
1. **Emotional support: -** positive relationship among teacher and student.

2. **Classroom organisation:** - well-managed classrooms that provide students with frequent, engaging learning activities.

3. **Instructional Support: -** Interactions that teach students to think provide ongoing feedback and support and facilitate learning process development.

Suggestions for development of student teacher interaction in Teaching Learning Process
1. Build interaction in the Classroom: - Students and teachers must work together to succeed. In order to accomplish this, teacher-student interaction in the classroom must be based on principles like fairness, integrity, honesty, and respect, which should serve as the foundation for everything they do.

2. Communicate with students:- The interaction must be two-way traffic, but teachers must leadand must feel confident that they will be able to succeed in establishing and maintaining a sound and producing rapport with students.

3. Bond Sound Relationship: - The teachers must comprehend the students and ascertain their requirements. For instance, getting to know each student in terms of their cultural background, intellectual profile, learning strength, academic potential, as well as their interests outside of school and what they do for fun, is an essential part of the teacher-student relationship.

4. **Give Positive Environment: -** The student should be offered interesting activities. Activities must be devised in such a way that enable the students to engage with the learning, have some fun, and develop a sense of belonging to a cohesive group. Success is more likely if the students have some element of control and choice over both what they do and how they do it.

5. Feel learner Comfortable: - Being with students should be a pleasure for the teacher. They spend a lot of time with them each week, and the relationship with their class has a better chance of succeeding if they make an effort to enjoy their time with students.

CONCLUSION

This article has discussed classroom interaction. Interaction is needed in a classroom. Students' language performance may improve as a result of classroom interactions that are effective. Not only students get the impact of the importance of good interaction but the teacher can also improve their teaching and learning process in the classroom. In the present scenario, the interaction of teachers and learners can engage the students' participation in the classroom . It can be concluded that classroom interaction is beneficial in the teaching and learning process to make the learning process effective and successful. So, we should focus on teachers-learner interaction by- Emotional support, classroom organization, and instructional support in teaching-learning process, and have to improve the interaction in the learning process through the maximize the practice time, collaboration, motivation and socialization. All the types of interaction to increase ,improve and motivate the learners.

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PROFESSIONAL DEVELOPMENT OF TEACHERS AND ITS EFFECT ON STUDENTS' ACHIEVEMENTS: A STUDY

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ABSTRACT

Instructors have always been essential to the educational process. A profession that leads all others is teaching, which is more than just a profession. So educators are the ones who prepare pupils for all other careers. The statement that teachers shape the future of the country is not hyperbole at all. Because of this, instructors must also be knowledgeable about current changes to the educational system, which is only feasible if they receive various types of professional training. This training may be in areas that are crucial for their professional development, such as technology innovation, innovative, cutting-edge delivery methods, content creation, motivational trainings, etc. These courses can aid in their professional development and help them succeed in their chosen industries. Also, these professional trainings may indirectly affect the students. As a result, after completing their initial training prior to beginning their employment, teachers must enrol in numerous more training courses in order to advance their knowledge, abilities, and effectiveness as instructors, which will ultimately lead to better student outcomes. There are many mathematical relationships, and studies have found a connection between teachers' effectiveness and their level of training. As a result, this research article examines how teachers' training affects students' performance and ability to learn. This essay's goals are to investigate how instructors' professional development affects students' learning, attitudes, and performance. This essay comes to the conclusion that students can learn more quickly and readily when they are taught by qualified instructors. They also have higher problem-solving abilities and a positive attitude towards learning. More than that, these students do well on their exams.

Keywords: ProfessionalD evelopment, Teachers Training, Instructors Training, Students Learning, Professional Training, students' achievement

INTRODUCTION

Teaching profession can be a crucial reason for any country's progress and may lead to its success on the different fronts. As the education has a key role in the development of the society, teachers are supposed to be highly efficient and with professional attitude in their respective domains knowledge. Therefore for the same concern, they need to be equipped themselves with a large knowledge base and also to be apt with teaching practices and evaluation measures so that they can fulfill the increasing needs and match the high standards of education with better quality. To make teachers with the high skills, hence is being considered as a main concern for a country. Measures to develop and improve teaching skills among instructors as well as teachers with in-depth knowledge are greatly needed on the education front, as skilled teachers are regarded as the primary support for education and learning is recognised to be a never-ending process. In many international schools and colleges, there are several programmes for professional development and training teachers that are established on a regular basis and continue to help teachers learn new things and advance their skills.

Professional development for teachers is typically seen as a vast array of specialised training, knowledge transfer sessions, or any other type of professional development provided to teachers by experts in any subject or technology in order to improve their skills, competencies, and command over the technology or subject. There are primarily three ways that instructors might advance their professional development:

- Periodic Workshops

- In class observation

- Single Session Workshop

In periodic workshops, the training sessions for the teachers are planned after a set time and are then continued frequently. This time frame could be weekly or monthly. These types of seminars are planned when there is more material to impart to teachers and when trainee teachers must participate in hands-on instruction.

Teachers can receive on-the-job training while their classes are in session by participating in in-class observations. Trainers merely watch the teacher's class and pay attention to how the lesson is delivered. and conduct in the classroom. He might or might not immediately improvise the teachers. Moreover, single-session workshops are typically shorter forms of training with less content that needs to be delivered to teachers and

sessions that may be finished in a single day. Hence, it should be the top academic priority that these crucial members of the designing board have sufficient professional hands-on training in order to gain a wealth of information and teaching abilities, as well as to be able to be determined enough for this crucial profession. Hence, it should be a top priority to not only give instructors adequate training, but also to have specialists set up, oversee, and assess these programmes. There are a few things that can help teachers improve their teaching and learning, such as providing them with high-quality training, providing them with professional development opportunities, and providing them with a good learning environment. Detailed substantial knowledge, teaching and evaluation skills, clearly defined, attainable, and focused educational objectives, a commitment to learning and to the profession, as well as motivated and inspiring attitudes towards this profession, are some of the most crucial aspects on which institutions that deal with teacher training should place a high priority. Educational hubs must make every effort to equip aspiring teachers with the necessary and appropriate knowledge as well as the skills to enhance their professionalism and positive outlook. Also, students' perspectives on learning vary. People act differently, grow or lose interest in certain topics in different ways. It has occasionally been noted that certain teachers have a deeper impact and influence on their students, whilst other teachers, despite having more knowledge and teaching experience, are unable to have the same effect. Thus, professional development programmes to support teachers' abilities and trainings to improve their positive, professional, and motivating attitude towards the profession should be made available in order to address this issue and enhance the learning and interests of the students. In this essay, we've examined the results of earlier studies on the professional development of teachers in nations other than India, its implications on student learning, and how it affects students' performance and learning. We'll also aim to discover an answer to the following research topics using the data from those studies:

RQ1: What effect does teacher training have on students' performance?

RQ2: How does teacher preparation impact students' attitudes towards learning?

RQ3: Does a qualified teacher make the biggest difference in students' performance?

This study's goal is to determine how teachers' professional development training affects pupils' capacity for learning. Also, this study's goal is to examine how well pupils perform after teachers receive professional development training. We will be able to analyse how teacher training impacts student performance and learning attitudes with the aid of analysing earlier research studies conducted by researchers and basing our analysis on their findings. not yet mentioned. The only way to improve students' learning attitudes in this technologically advanced and quickly advancing period is to provide teachers with advanced level training. Teachers should have highly advanced training so that they are equipped with knowledge of education that can support national goals, its philosophy, and a complete understanding of the national curriculum.

LITERATURE REVIEW

Many elements of teacher preparation and its effects on student learning and organisational performance have been covered in previous research. These studies also clarify how many facets of students' performance and training relate to one another. One of them is educating teachers to increase their abilities to design inclusive learning (Shaymaa et al., 2017). There is rich literature available in this regard which is discussed here under. Previously many studies about professional development of teachers, need of professional development, its impact on students learning has been done in other countries.

2.1 Studies Focused on teachers' professional Development

After calculating the value of teachers in Chicago Public Schools, earlier researchers (Aaronson, Barrow, & Sander, 2007) underlined that teacher quality is crucial, especially for pupils with weaker cognitive abilities. Also, May Britt Postholm (2017) indicated in a review research that instructors need to participate in learning processes on a regular basis in order to guide the development of their schools. His studies also indicated that an outside resource, such as a researcher or trainer, might significantly impact school development. Another study conducted by Frans Hermans, Peter Sloep, and Karel Krejins (2017) revealed that after receiving professional development, instructors are highly driven to advance their instructional strategies and classroom practises.

2.2 Studies based on the impact of teacher Training on Student Learning:

Harris & Sass (2011) conducted pertinent research in this area and examined the impact of various forms of training and education on instructors' abilities to support students' academic success. They also mentioned how on-the-job training boosts teachers' efficiency. In a different study conducted by Ali and Hamza (2017), they looked at the effects of teacher training on students' learning. They found that as more teacher training programmes are organised, students' attitudes towards learning improve and they are more eager to learn from teachers who have undergone professional training. However, the research by Jacob and Lefgren, which

assessed the effects of teacher training on the mathematical problem-solving and reading abilities of primary students, suggested that minor improvements in in-service training have no appreciable effects on either mathematical problem-solving or reading. Examining the research clarified the beneficial effects of trained teachers on students' learning (Clotfelter, Ladd, & Vigdor, 2007). N. Harris (2008) investigated how teacher training affected students' performance. To give kids improved learning opportunities, an unified structure is needed for creating teacher training programmes (Silvia Baldiris et al., 2016). The training of teachers improved their abilities to engage pupils more effectively and raise their motivation to learn (Zachary, Eleazar, & Wilfred, 2016).

2.3 Studies on the Value of Teacher Preparation

Using resources effectively in the teaching and learning process greatly improves students' comprehension. Significant research findings suggested that if teachers are not skilled in their usage, modifications to textbooks and other materials have little impact (Darling-Hammond, 1997). The report went on to say that the best way to ensure proper resource use is through ongoing teacher training. Also, Rowan (2002) outlined the critical importance of teacher preparation in regards to the usage of resources when teaching arithmetic and reading in the primary grades. In their literature review on school resources, Greenwald, Hedges, and Laine (1996) focused on the important influences of teacher preparation on the usage of school resources. The impact of teacher development on organisational performance was examined in a different study by Ali and Hamza (2017), who concluded that teacher professional development can improve organisational performance. In addition, Morgan (2010) noted that instructors learn new skills that can improve their performance in the classroom in his study on the advantages of professional development. Another component of teacher preparation is diagnostic feedback for educators. It can raise students' learning capacities and alter their attitudes towards learning, both of which can enhance the quality of education (Muralidharan & Sundararaman, 2011). Training programmes for teachers assist in modifying the teachers' attitudes towards students' learning styles (Biktimirov & Armstrong, 2015). It aids teachers in providing assistance to students in a manner that is ideal for learning and enhancing students'

2.4 Researches based on Models of Professional Development of teachers

The impact of teacher development on organisational performance was examined in a different study by Ali and Hamza (2017), who concluded that teacher professional development can improve organisational performance. In addition, Morgan (2010) noted that instructors learn new skills that can improve their performance in the classroom in his study on the advantages of professional development. Another component of teacher preparation is diagnostic feedback for educators. It can raise students' learning capacities and alter their attitudes towards learning, both of which can enhance the quality of education (Muralidharan & Sundararaman, 2011). Training programmes for teachers assist in modifying the teachers' attitudes towards students' learning styles (Biktimirov & Armstrong, 2015). It aids teachers in providing assistance to students in a manner that is ideal for learning and enhancing students'. . In this methodology, the author proposed ten phases broken down into three stages, the first of which dealt with setting goals, the second with creating lessons, and the third with creating case studies. and suggested that the instructors' ability to achieve their goal was aided by workshop-based professional development.

Many authors indicated that professional development is a crucial component of teachers' and students' educational progress after studying their prior studies. Several researchers have noted that instructors who receive professional training modify their attitudes towards their work, improve their classroom behaviour, interactions with students, and subject delivery methods, which in turn helps students feel more motivated and do better academically. The same findings lead to the following conceptual framework being proposed:
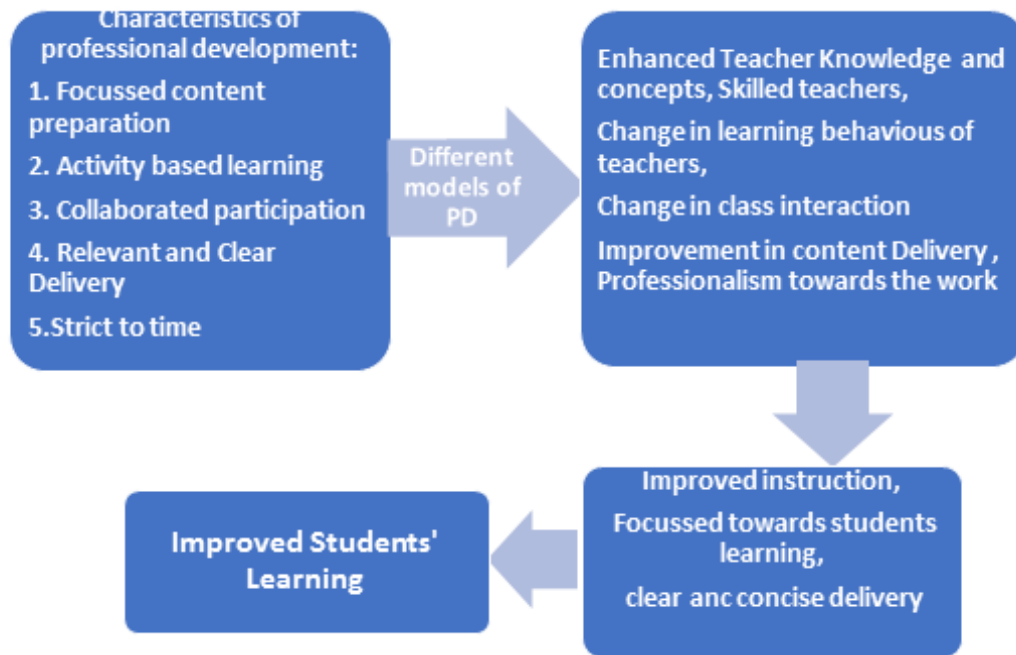
Fig 1. Represents framework of how teachers training can help students to enhance their learning.

3. DISCUSSION

Several aspects that need to be taken into consideration might be explored after examining the literature and the research conducted by earlier scholars. According to a number of earlier studies, teachers are crucial peers for stakeholders, and as students interact with them frequently and directly, their behaviour towards them is crucial. So, the quality of teachers in terms of their behaviour and knowledge of the subject matter is crucial. When employed in a procedure where the elements of professional development may be applied with previously established goals and objectives and concentrated material, a conceptual framework can be very beneficial for teachers' professional growth. If offered to teachers, this type of learning environment and training can have a favourable effect on their professional development and attitude towards their career. As a result, it can enhance students' learning attitudes and behaviours. Thus, pre-service and in-service teacher training is crucial to enhancing the standard of instruction. Following a study of the prior literature and research conducted by the authors, it is also possible to conclude that teacher training can be crucial for students who have poorer learning abilities or who have learning difficulties relative to other students.

Also, it has been discovered that teachers' professional development is crucial to recognising a substantial shift in instructional strategy and classroom practise. According to a different study that looked at several kinds of training, on-the-job training can help students achieve more and be more motivated to work hard. Teachers must continuously follow the learning processes in order to advance their professional development, which can also benefit organisational growth. Teachers that participate in professional development opportunities are strongly motivated to implement the new techniques in their lesson plans, teaching strategies, and overall classroom instruction. Many researchers confirmed that these professional development courses assist teachers enhance their potential and skills, which in turn can raise the calibre of instruction. Significant improvements in teaching quality and instructor morale have been seen. Also, it has been noted that teachers need enough time to connect with the material. Students' performance can be improved by teachers who have participated in professional development activities for an average of 50 hours. opportunities for students to receive a higher proficiency score when teachers take part in professional development programmes. In order to improve students' accomplishment, several scholars have also talked about how teachers may contribute to the construction of instructional strategies and content. Additionally, it has been asserted that professional development that focuses on particular instructional strategies aids teachers in implementing those strategies in the classroom. The most critical element for enhancing student learning and school performance is teacher training, which can also aid organisations and institutions in growing. As a result, children benefit from teachers' learning. In earlier studies, it was also mentioned that contacts and debates between teachers, schools, and learning activities on a regular basis would greatly improve professional development learning. Other earlier studies have also revealed some of the key elements of professional advancement. Important characteristics are that the content should be extremely focused and pertinent to the subject. The learners may become bored with irrelevant conversation during a professional development programme session. Nonetheless, the knowledge that is gained from any activity can aid students in remembering it for a longer period of time. Activity-based learning is thus a crucial

component of professional growth. The involvement in professional development programmes is yet another crucial component. Every class that guarantees student involvement helps keep them focused and keeps them from losing interest. Time adherence and clear content delivery are the important features which are important to be considered.

When teachers are exposed to possibilities for active learning, they can perform extremely effectively. Teachers that use active learning have better classroom interactions. They can perform even better if active learning is supplemented with chances for feedback, reflection, and cooperation. So, there is a clear need to advocate for better, more narrowly focused, scalable professional development programmes, which is, as described in one of the studies, a very difficult undertaking to carry out. There isn't a lot of solid proof about teachers learning, according to some authors. The effectiveness of instructors' learning and its impact on students' learning are contested by a lack of scientific evidence. To put what you've learned into practise is one of the authors' main points. With professional development, teachers can increase their understanding of the subject matter, as well as their teaching skills, but they rarely put these improvements into effect in the classroom. In order to assure the development of their students, it is crucial for instructors to put what they have learned during professional development to use. The length of the professional development programmes and its sessions is still another crucial factor that needs to be examined. Also, it has been noted that several professional development programmes may have a detrimental effect on student progress. Also, it has been noted that too many professional development trainings from various sources may weaken the cohesion of the education. Short development programmes, however, have a favourable impact on teaching approaches and processes.

Nonetheless, it has also been mentioned that by giving teachers professional development training, the pupils' attitude towards learning can be improved. Another study found that when instructors receive only a minimal amount of in-service training in mathematics problem solving and reading, it has little to no effect on the pupils in the primary grades. As a result, it has been noted that the effect on students may also rely on their grades. According to studies on the value of training, professional development of training is crucial to help teachers develop skills including effective resource utilisation, content delivery, appropriate classroom behaviour, student interaction, improvement of students' learning attitudes, and so on, to improve the performance of the organization. Yet, it has also been noted that several models have occasionally been offered for the professional development of teachers by various scholars. According to one concept, motivation is defined at two levels—extrinsic and intrinsic—while aspiration is defined at two levels—lateral and vertical. In a different study, an alternative model based on ten successive steps united in three stages is explored. It has been suggested that professional development models should always have a defined aim and objective to be achieved. Only then should a programme be created to enable the achievement of the goal and objective.

CONCLUSION

Teachers are essential to the implementation of NEP 2020, according to the context of New Education Policy in India 2020. Thus, a crucial part in the execution of NEP 2020 will be played by teachers. Teachers are therefore a key group of people who can assist make our educational system more effective and student-centered. In order to interact with pupils in a way that makes learning simple, effective, and quick, teachers also need to be updated with new technology advancement trainings, new approaches, and new tactics. The professional development of teachers can be a significant benchmark and can show to be a significant milestone to increase and improve the quality of education, according to the review studies of the research and the aforementioned findings and debate. The quality of pupils and their academic performance might subsequently increase when teachers improve their own learning capacities and attitudes towards their work. Consequently, it can be said that professional development training for teachers is crucial to improving their calibre, competencies, and skills. Also, there must be a continuous and ongoing check in the teacher professional development programmes to ensure that learning occurs. Some crucial elements, such as the length of the training sessions for teachers, strict adherence to the material, and relevant and concentrated content, can help the teachers to improve their teaching methods. However, any failure in these elements may cause devastation and cause teachers to lose interest in professional development programmes, which will result in the loss of the programme. Consequently, it can be stated that a professional development programme with a clear end goal, following which teacher learning can be ensured and monitored, can allow the teachers to progress significantly in their careers. Additionally, because a student's teacher is almost always their first point of contact, professionally trained teachers who have experienced the positive effects of professional development training on their attitudes can make sure to apply what they have learned in their classroom activities and interactions with students, having an even greater impact on students' learning. Hence, instructors' professional development training can contribute to improving students' performance, accomplishments, and learning attitudes.

Teachers who receive professional development training can improve student performance. Since student performance is one of the most crucial stakeholders in any educational institution, student performance always has a significant impact on the organization's performance. As a result, it is also possible to draw the conclusion that teacher professional development can enhance an organization's performance based on an analysis of prior studies. The training programmes should always be in line with the needs of teachers' and students' learning in order to ensure the effectiveness of the professional development programme. This is another conclusion that can be drawn from the professional development model. Training need analysis can help to design the program in a better and effective way and can also help to make the content concise and relevant to the training.

SCOPE AND LIMITATION

This essay is merely a study and an observation of important investigations conducted by earlier researchers. In this paper, previous researchers' work on professional development training and its models, its significance for teachers' professional development, its effects on students' learning attitudes, the development of their knowledge and skills, and its effects on organisational performance are reviewed. As a result, it is restricted to the analysis and monitoring of earlier researchers' studies. However, it offers additional perspectives for further investigation and can be linked to a variety of attributes, including student practical knowledge enhancements, student learning capabilities or skills, teacher professional attributes or attitudes, or any other factor that is crucial for enhancing the performance of students, teachers, and organisations.

As a result, this paper helps to connect and analyse the research of many scholars and offers fresh perspectives for further investigation into key areas of student and teacher performance. Also, it will offer up fresh perspectives to show how important teacher preparation is and how it affects kids' academic success. Because student knowledge growth is directly correlated with national growth. Any educational institution can only develop in tandem with the expansion of students' knowledge bases. When knowledge is taken into account, the grade is not important; rather, it can be graded based on a student's attitude towards learning, their capacity for critical thought, and their accomplishments and performance in both curricular and extracurricular activities. This essay aims to investigate the connection between teachers' training, student learning abilities, and problem-solving abilities. As a result, this study will undoubtedly assist educational institutions in enhancing the teaching abilities of their faculty members.

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RURAL MARKETING IS A BOOMING SECTOR WITH PLENTY OF JOB PROSPECTS

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ABSTRACT

Rural marketing is a type of marketing in which activities are planned according to the needs and requirements of the people living in the rural areas. Marketing is the process of identifying the needs and wants of the consumers, then prepare that particular product or service in order to satisfy them, keeping in consideration the benefits of the organization. This concept applies to every type of marketing, whereas when we talk of rural marketing the emphasis is to be given on the rural areas. The focus remains on the people who are living in the remote areas, and the marketing activities should be planned accordingly. Seeing this, now-a-days many companies are turning towards the rural market to expand their scope, and to overcome competition or to restart or give new shape to competition. A lot of focus is required to be given on the rural markets because rural markets are the "tomorrow's markets".

Keyterms: Rural market, Consumers, Productivity and sustainability

INTRODUCTION

Rural marketing is a marketing system that involves the development, planning, pricing, and distribution of goods and services so that people in rural areas can access basic products at fair prices. In fact, the growth of most sectors in rural India, which is an agriculture-based economy is determined by the rural marketing system. Rural India accounts for about 70% of the population with the existence of 162 million households (according to 2011 census). The Rural Marketing Association of India (RMAI) found that about 60% of India's income has come from rural, small-town, and semi-urban economies. Further, the Technopak study drew attention to the fact that with the increasing demand for fast-moving consumer goods, pharma products, auto parts, and others, the rural market is growing at the rate of 15%. Rural marketing has ensured a smooth flow to create an overall balance in India's social and economic development. This has been brought about by an increase in productivity in the agricultural sector.

The population, rising rural prosperity, change in demands and lifestyle, life cycle advantages, and so on are a few of the many factors that decide the scope of rural marketing. Apart from this, organisations are trying to increase their reach to underserved markets, to meet the growing need for sustainable organisational activities, and to develop a good corporate image by CSR activities. Businesses have been reinventing their business models and changing their nature from commercial motives to social motives.

Organisations are now spending time and money on extensive study of rural buyers to understand consumer behaviour, and to customise goods and services. This has led to improved rural infrastructure and income, resulting in a general improvement in their standard of living. For example, Hindustan Unilever Limited introduced Project Shakti in 2001 with to empower women in rural areas by creating employment and income-generating opportunities. Similarly, HDFC Bank Ltd. (under its CSR umbrella Parivartan) launched a wide variety of projects to decrease the stress on farm income in rural households. The Tata Group came up with TRI (Transforming Rural India), which included implementing health and nutrition-based programmes across regions of endemic poverty, facilitating engagement with teachers and students, and so on. What does all this mean for students? Marketing graduates are finding the field extremely intriguing and rewarding due to its increasing scope. Advertising agencies, organisations, market research agencies and others are on the lookout for young talented minds to come up with creative solutions incorporating working technologies, business models, and wavemakers (individuals that help organisations go forth with their social schemes and projects by developing and funding compelling solutions. Thus, rural marketing is a booming sector with plenty of job opportunities.

REVIEW OF LITERATURE

Miss Pirakatheeswari, (2008) in her article, Rural marketing- a critical review'says that rural consumers are keen on branded goods now a days, so the market size for products and services seems to have burgeoned. The rural population has shown a trend of wanting to move in to a state of gradual urbanization in terms of exposure, habits, lifestyle and lastly, consumption patterns of goods and services rural market is not an extension of the urban market. Socio cultural factors have a bearing on purchase decisions in rural areas. The rural people are brand conscious and value brand for money. within the rural market there exists wide differences and one size fits all'strategy does not simply work. Companies can co -create products for mutual good with an aim at inclusive growth.

Life insurance - Rural marketing: The Life Insurance Corporation of India identified the need of rural life insurance and the very first objectives of the LIC of India is to spread life insurance much more widely and in particular to the rural areas and to the socially and economically backward classes with a view to reaching all insurable persons in the country and providing them adequate financial cover against death at a reasonable cost. In spite of the above laudable objective, the concept of marketing entered in to life insurance industry very lately and the rural focus is still nascent.

P. Charan in his book titled —Marketing and management strategy for insurance in rural India elaborates some of the challenges in the rural market as follows:

Consumers are scattered and spread over a vast area.

1 Exposure to print media is very low.

2 Variations to life styles

3 Message comprehension poor.

4 Non conventional media more expensive and cumbersome.

OBJECTIVES OF THE STUDY

- To understand the rural market.

- To release the potential of rural market.

- To assess the paraigm shift from urban to rural market.

- To analyze the various parameters of potential of rural market.

- To offer the conclusions.

SCOPE OF RURAL MARKET IN INDIA

The various infrastructural and technological developments in rural areas have augmented the span and opportunity in these marketplaces.

The inflow and outflow of products/services have amplified up to an immense level in rural market for manufacturing and utilization.

The outcome is seen in the form of increasing standard of living, employment opportunities and demand pattern of the inhabitants in villages. In the upcoming years, more and more IT companies are going to make the Indian rural markets more accessible and open for wider business opportunities.

"Rural marketing is a two-way marketing process, where there is an inflow of products into the rural markets for production and consumption, and also an outflow of products to urban areas."

Research Tools for Data Collection and their Analysis
Primary Data: Open interview of the respondents.

Secondary Data: Books, Journals, Magazines, Newsletters and Internet

CONCLUSION

Many companies having good manufacturing facilities and marketing expertise are focusing on rural markets as there are opportunities to market consumer goods and services in rural areas and also market agricultural products in urban markets.

1. Growing Rural Market: Apart from agricultural inputs, there is a growing market for consumer goods in rural areas. According to NCAER, the rural consumers represent more than 50 per cent of India's "consuming classes" and form the target group for consumer goods and services.

2. Severe Competition in Major Urban Markets: Intensive competition in urban market has resulted in increase in costs but not high market share and profits. Many companies have taken a lead in establishing their products in rural markets.

3. To Change the Attitude of the Farmers so that they will Treat Agriculture as a Business: Traditionally, farmers have treated agriculture as a way of living and they produced just enough quantities to meet their family requirements. Many progressive farmers have increased the yields of crops by following modern agricultural practices. Even small farmers will be encouraged to increase production. When agriculture is well developed, the income of farmers will go up as a result of high marketable surplus. This provides good demand for industrial and consumer goods.

4. Rural Marketing Creates Employment Opportunities: Diversification of agriculture, development of village level industries and marketing of modern goods and services, provide employment opportunities.

5. Rural Tourism: Includes a range of activities, services and amenities provided by rural people to tourists. The broad areas covered are cultural and farm tourism, nature holidays and touring in rural areas. Village lifestyle and traditional hospitality are other attractions for tourists. Many urban people would opt for rural tourism since it provides an opportunity to go back to roots (villages) and be away from the pressure of urban life. Rural tourism generates employment opportunities and increase in income for villagers. In addition, rural holidays enables the young urban population to experience rural life.

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CHALLENGING GENDER STEREOTYPES IN LITERATURE

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Written on the Body"

-Jeanette Winterson:

ABSTRACT

Identity is indeed an important aspect of human experience, as it shapes how individuals view themselves and the world around them. Every person has a unique set of characteristics, traits, experiences and perspectives that make up their sense of self. Identity is a complex and multifaceted concept which is constantly evolving. Jeanette Winterson's novel Written on the Body is a notable work which deconstruct the traditional concept of gender and identity. The paper will examine the ways in which the lack of gender specification for the narrator and the other characters influences the reader's understanding of these themes and challenges societal norms and expectations, also explore how the fluidity of gender and sexuality in the novel contribute to a more nuanced and diverse representation of human experience. The aim of this paper is to demonstrate that "Written on the Body" is a ground-breaking novel that encourages readers to consider more inclusive and fluid views on gender and sexuality.

Keywords: Gender, Identity, Written on the Body, Genderless narrator

INTRODUCTION

Narratology is the study of narrative structure in a and wide range of disciplines, including literature, film studies, communication, and psychology. Narration is an art which involves the analysis of narrative events, characters, and settings, as well as the way in which these elements interact to create meaning. Plot, narrative point of view, and narrative voice are some crucial ideas in narratology. In narratology, the narrator is the voice that tells the story. The text is the physical manifestation of the narrative where the narrator influences the way in which the story is told and the way in which it is received by the audience. The narrator provides information about the characters, their actions, thoughts, and feelings etc. It plays a significant role in the development of a character's identity by providing information and perspective to the reader. The narrator's point of view shape the reader's understanding of a character and their perception to a great extent. The identification of a character through gender can be seen through this lens. Gendering the characters in literature is an important tool for identity formation because society often attaches significant meaning to a person's gender and imposes certain expectations and roles based on whether a person is male or female. This can make it easier for an author to create a character's identity by relying on societal conventions and stereotypes associated with a particular gender. When an author creates a character who is strong, self-assured and independent, the reader chooses to give the character a male gender. This allows the reader to draw on cultural ideas about masculinity and male identity to shape the character's personality and actions. Similarly, if an author wants to create a character who is nurturing, expressive and sensitive, they may choose to give the character a female gender. While gendering characters in this way limits the performance of the character and reinforce harmful stereotypes. The Postmodern feminist writers often seek to challenge these traditional ideas about gender by deconstructing the binary gender system and exploring the fluidity of gender identity. Many postmodern feminists argue that gender is a social construct, and that the roles and behaviours associated with different genders are not fixed or natural, but rather are culturally and historically specific. In their writing, postmodern feminists may use techniques such as parody, irony, and playfulness to challenge traditional gender roles and to explore the ways in which gender is constructed and performed. By deconstructing gender, these writers aim to expose the ways in which gender norms and expectations can be oppressive and to promote greater understanding and acceptance of diversity in gender identity and expression.

THE NON-GENDERED NARRATOR

"Written *on the Body*" is the novel by Jeanette Winterson published in 1992. The novel explores themes of love, identity, and gender through the perspective of a genderless narrator. The protagonist of the novel is not identified by gender and is referred to as "the lover". The lover is in a relationship with an Australian married woman named Louise. The novel addresses both the lover's love affair and their difficulties with their own identity and gender.

The use of a narrator in a text can have a significant impact on how the story is perceived by the reader especially the sex and gender of the narrator enables the reader to decode many messages in the text. "I am not a

woman. I am not a man. I am a person. I have a sex but that's not what I am" (85). The representation of the nameless, genderless narrator in first-person narrative challenges the preconceived notions about the relationship between gender, sex, and identity throughout the novel. This is often a perspective that is associated with the concept of a gender-neutral or gender-inclusive worldview. "Gender is not something one is, it is something one does, an act, a doing, a performance." (Butler , 33). According to butler gender is not an inherent aspect of one's identity but rather something that is performed and constructed through daily actions and expressions. She argues that individuals are not born with a specific gender, but rather that gender is something that is "done" and "performed" through societal norms and expectations. Gender is not a fixed or stable but rather a set of practices and expressions that are repeated and reinforced over time in the society and creates an illusion of a stable and coherent identity. By using the pronoun "I" throughout the novel and not specifying the narrator's gender, Winterson effectively destabilizes the traditional associations between certain pronouns and specific genders. This lack of specification creates a sense of fluidity and uncertainty in terms of the narrator's identity, which can be seen as a way of challenging traditional notions of gender and identity. Moreover, by using the first-person point of view and having the narrator tell the story, the reader is forced to identify with the narrator and experience the events of the novel through their perspective, further blurring the lines between the narrator's identity and the reader's own.

Gender is a social constructed idea that is imposed up on an individual. It has the power to dominate through their performance. Patriarchy is such a social system that is deep-rooted in gender performance. Louise is an important character in the novel with whom narrator falls in love, who is biologically female but does not identify with a specific gender. The lovers also use their body to get to know each other: "I would go on knowing her, more intimately than the skin, hair and voice that I craved. I would have her plasma, her spleen, her synovial fluid. I would recognize her even when her body had long since fallen away" (111). A strong desire for a deep and intimate connection with two induvial deconstructing the patriarchal power relation can be seen here. The narrator constantly switches between relationships with people who is referred to us girlfriends and boyfriends without any sexual orientation. This fluidity is reflected in the lover's relationships with others, as they are able to form deep and meaningful connections with people of various genders and sexualities. In a heterosexual world, by deconstructing sexual orientation between lovers and smashing the patriarchy the author paved a new path of sexual fluidity.

In contemporary society clothing is used as a to reinforce gender identity. The norms for dressing are imposed on a child by birth. Societal expectations and norms around clothing is quite rigid, and certain types of clothing are often associated with specific genders. In the novel, even though there are some references to their clothes, they are vague and even ambiguous. Almost at the beginning of the novel, the narrator is described as wearing "a pair of shorts with recycle tattooed across one leg" (12) and later on Louise makes a reference to what the narrator is wearing when she says "Off with the business suit" (72). This problematises the gender-based clothing expectation which are considered to be normal and appropriate.

The fragmented narrative style employs in the novel challenges traditional storytelling techniques and language usage. The narrator often uses metaphors and non-linear narrative structures to convey emotions and experiences, which can be seen as a form of language deconstruction. By using a fragmented narrative style, Winterson highlights the instability of language and the ways in which meaning is constantly deferred. This mirrors Derrida's philosophy of deconstruction, which argues that meaning is never fully present in language and language is inherently unstable, subject to multiple interpretations, and that meaning is constantly deferred and never fully present. Winterson challenges the stability of binary oppositions, complexities of meaning and the ways in which it is subject to multiple interpretations. This view encourages us to question traditional approaches to language and meaning, and to embrace a more nuanced understanding of the world.

CONCLUSION

Gender remains a key component of people's identities and experiences in contemporary society. In contemporary society, the understanding of gender and sex has become more complex and nuanced than the traditional binary understanding of "male" and "female." This is due in part to increased awareness and acceptance of diversity in gender identity and expression. People's behaviour, appearance, and presentation are frequently influenced by traditional gender norms and expectations, which can have a big impact on people's prospects and treatment in society. Gendering characters in literature is an important tool for identity formation because society often attaches significant meaning to a person's gender and imposes certain expectations and roles based on whether a person is male or female. This can make it easier for an author to create a character's identity by relying on societal conventions and stereotypes associated with a particular gender. Power, dominance, and performativity are all concepts that are closely related to gender and can be understood through

the lens of theory. In literature, characters may be depicted as conforming to or challenging gender performativity in different ways, reflecting the complex and fluid nature of gender. In the novel narrator express various. Jeanette Winterson challenges the existing gender stereotypes by presenting a fluid and non-binary portrayal of desire and love. The genderless narrator in "*Written on the Body*" serves as a powerful tool for challenging societal norms and expectations. The narrator's gender is deliberately left ambiguous, allowing for a blurring of traditional gender roles and a subversion of heteronormative expectations. The book explores themes of love, loss, and desire in a way that transcends conventional gender norms, emphasizing the complex and diverse nature of human experience. The narrator's genderless identity serves to underscore the idea that love and desire are not defined by gender, and that these emotions are universal experiences that transcend traditional societal norms and expectations. By refusing to conform to traditional notions of gender, "*Written on the Body*" challenges societal norms and encourages readers to consider more fluid, inclusive perspectives on identity and love.

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WILD ANIMAL DETECTION AND INTRUSION PREVENTION SYSTEM USING CNN

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ABSTRACT

The increasing human-wildlife conflict in India, caused by deforestation, poaching, and other human activities, has led to the death of many wild animals and humans. In response, preventive techniques like illegal electric fencing and trenches have been used, leading to the death of numerous wild animals, including elephants, tigers, and leopards. To mitigate this issue, recent advancements in technology, such as artificial intelligence (AI), have been used to detect the presence of wild animals in human habitats, helping farmers and forest officers to take preventive measures. This technology involves using PIR sensors to detect the presence of intruders, a Raspberry Pi to capture images, and a convolution neural network (CNN) to classify the intruders as wild animals, domestic animals, or humans. When a wild animal is detected, a notification is sent to farmers and forest officers using a GSM module and a speaker, and if a domestic animal or human is detected, only an SMS message is sent.

Keywords - Classification, CNN (convolution neural network), Image detection, Raspberry Pi , Tenserflow,

I. INTRODUCTION

The conflict between humans and wildlife has been a persistent issue in many regions of the world. India, home to a vast range of wildlife species, has seen an increase in human-wildlife conflict due to deforestation, habitat loss, and population growth. Such conflicts have resulted in the loss of human lives, property damage, and fatalities of animals. The problem has been addressed in the past through preventive measures such as electric fencing, trenches, and community-based conservation initiatives. However, these solutions have proven to be ineffective, temporary, and sometimes hazardous to both humans and animals.

Recent advancements in technology have paved the way for the development of a new solution for this problem - an intelligent wild animal detection and intrusion prevention system. The system is designed to detect the presence of wild animals in a protected area and alert the concerned authorities to prevent any damage to humans or property. The purpose of this paper is to propose a system that utilizes deep learning, specifically a Convolutional Neural Network (CNN), to detect wild animals in real-time.

Previous work in this area has primarily focused on traditional security systems that rely on human intervention and may be inadequate in detecting wild animals. The proposed system uses PIR sensors to detect intruders and a Raspberry Pi connected to a camera to capture images. The images are then processed by a convolution neural network (CNN) to classify them as wild animals, domestic animals, or humans. If a wild animal is detected, a notification will be sent to both farmers and forest officers using the GSM module, and the speaker will be turned on to scare the animals away.

The proposed system is a significant contribution to the field of wildlife conservation, as it leverages AI technology to solve a critical problem that has been challenging to address using traditional methods. It is hoped that the implementation of this system will lead to a reduction in human-wildlife conflict and help protect the well-being of both humans and animals.

II. LITERATURE SURVEY

Datta and Sarkar developed an automatic tracking and alert system to prevent human and animal injury and mortality caused by wild animals straying out of national parks and wildlife sanctuaries. The system utilized GSM and GPS technology, with a device attached to the animal continuously monitoring its position with respect to GPS-defined boundaries within the park or sanctuary. An alarm system in human-populated areas is triggered when the animal leaves the designated zone, alerting people of potential danger. The system is cost-effective and adaptable, useful for monitoring wildlife-related complexities such as poaching, accidents, and threats to human life. [1]

Sharma and Shah propose a low-cost approach for automatic animal detection on highways to prevent collisions using computer vision techniques. Their system is trained on 2200 images and tested on video clips of animals at varying vehicle speeds. The suggested approach can inform the driver of animal presence up to 35 km/h, adhering to the two-second rule for safe driving. [2]

R Shanmugasundaram and Pavithra proposed a system to track animal location in zoos and national parks. This System would include a temperature sensor and PIR sensor to detect people in restricted areas. The system alerts individuals of human presence through a pre-recorded voice message and sends location and temperature information to a website via GPS and IOT technology. [3]

Dr. P. Uma Maheswari and Anjali Rose Rajan proposed the bird intrusion is being detected by the use of wireless sensors and buzzers which produce acoustic sounds. Acoustic noises are generated when a bird is identified by sensors in the agricultural area. The birds are irritated by this sound. As a result, when these sounds are produced, the birds will flee since they are unable to adapt to them. As a result, the devastation caused by birds in agricultural areas can be averted. These acoustic sounds that are being generated will be produced only when the birds are detected and continuous for a while until the birds are driven away. [4]

III. METHODOLOGY

Proposed block diagram of wild animal detection and intrusion prevention system using CNN. Is shown in fig 1.
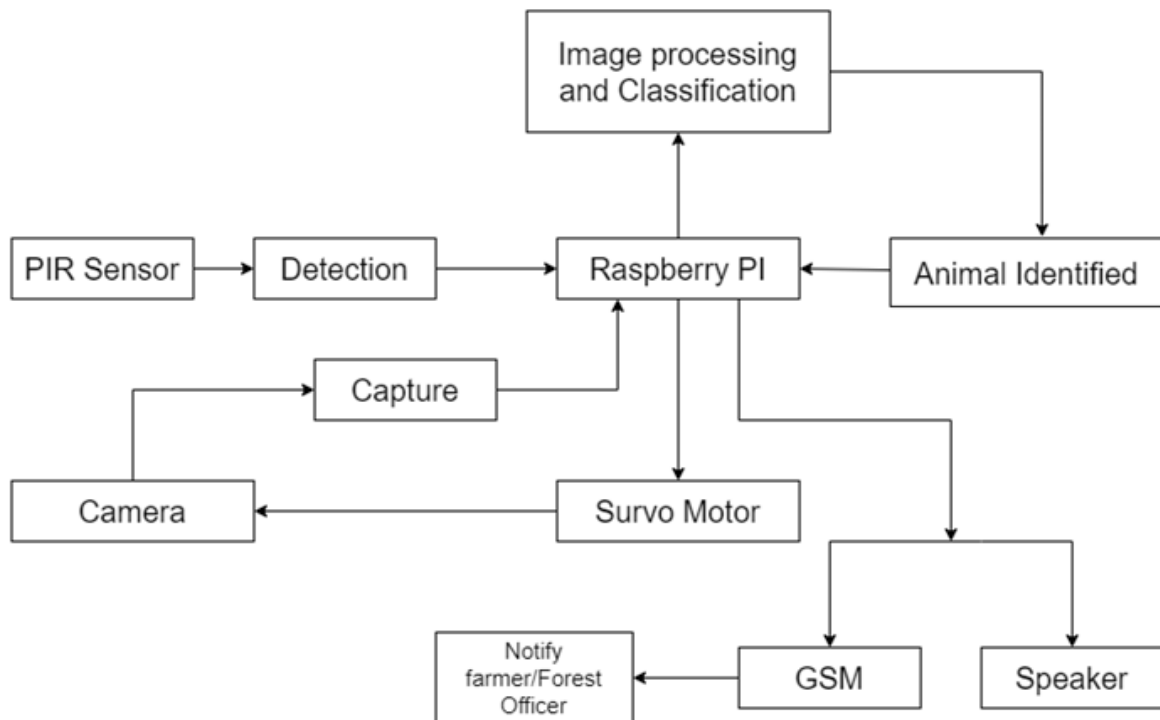
Fig 1. Block Diagram of Wild animal detection and intrusion prevention system.

PIR Sensor: The system comprises a PIR sensor that is capable of detecting the motion of any moving object through its emission of infrared signals or heat waves. Upon detecting movement, the PIR sensor will transmit the output to the Raspberry Pi.

Servo Motor: A servo motor, connected to the Raspberry Pi, is responsible for rotating the camera in the direction of the motion.

Camera: The camera captures the image, which is then send to Raspberry Pi.

Raspberry Pi: In our project, the Raspberry Pi serves as the primary processing unit, which performs the task of image processing on the captured images. The Raspberry Pi executes complex algorithms and manipulates the image data to extract relevant information from the images. Once the image processing is complete, the Raspberry Pi sends the output data to other hardware components for further processing or action.

Notification: If a wild animal is detected, the system provides inputs to a piezo loudspeaker and a GSM module, while if a domestic animal or human is detected, it sends input to only the GSM module. The piezo loudspeaker produces a sound to repel the wild animals, while the GSM module sends an SMS notification to the farmer or any authorized person.

This system is designed to be a sound technical solution for the detection and repelling of wild animals to reduce crop damage and increase farm yield.

IV. RESULT AND DISCUSSION

Proposed system is implented using Tenserflow with MobileNet architecture. Fig 2 and 3 shows the result of proposed system .
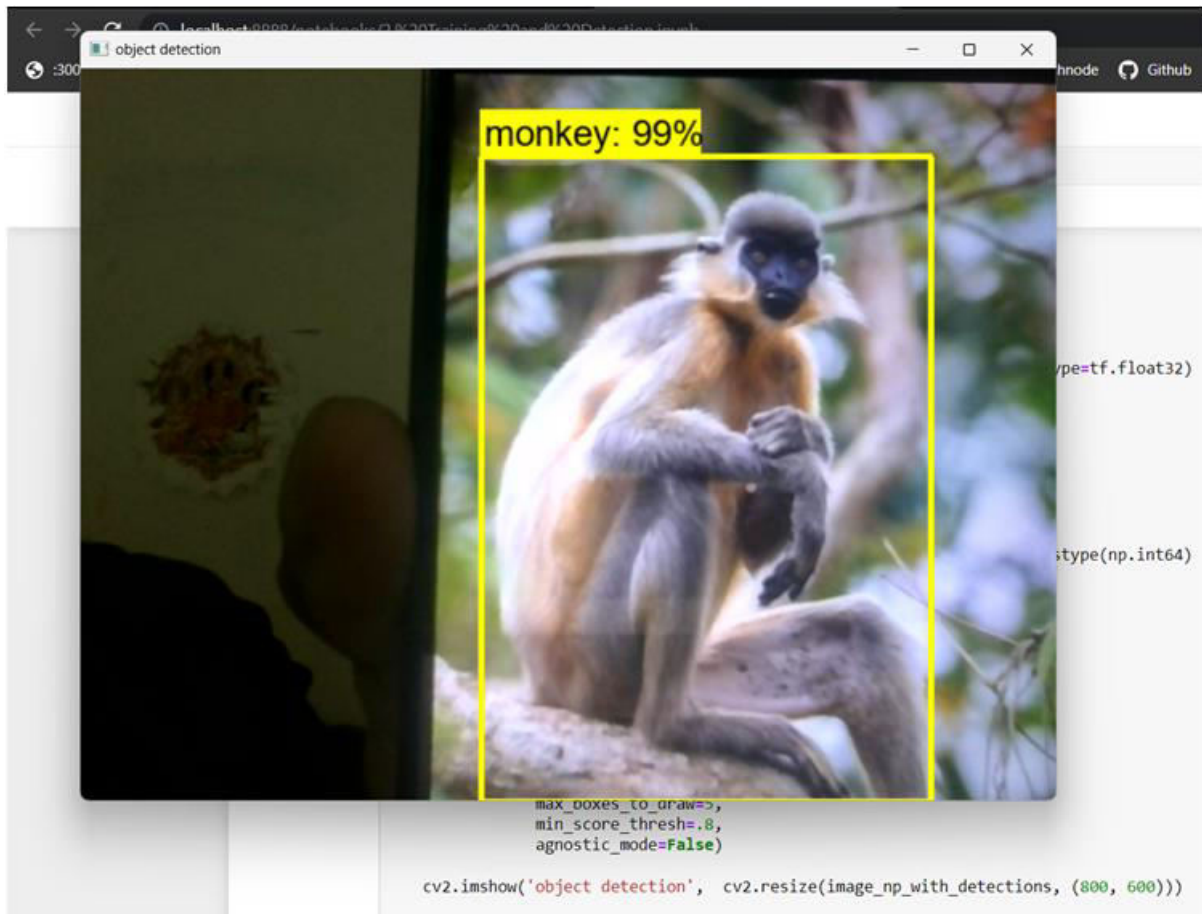
Fig 2. Monkey Detected in Frame with Yellow rectangular box around it.
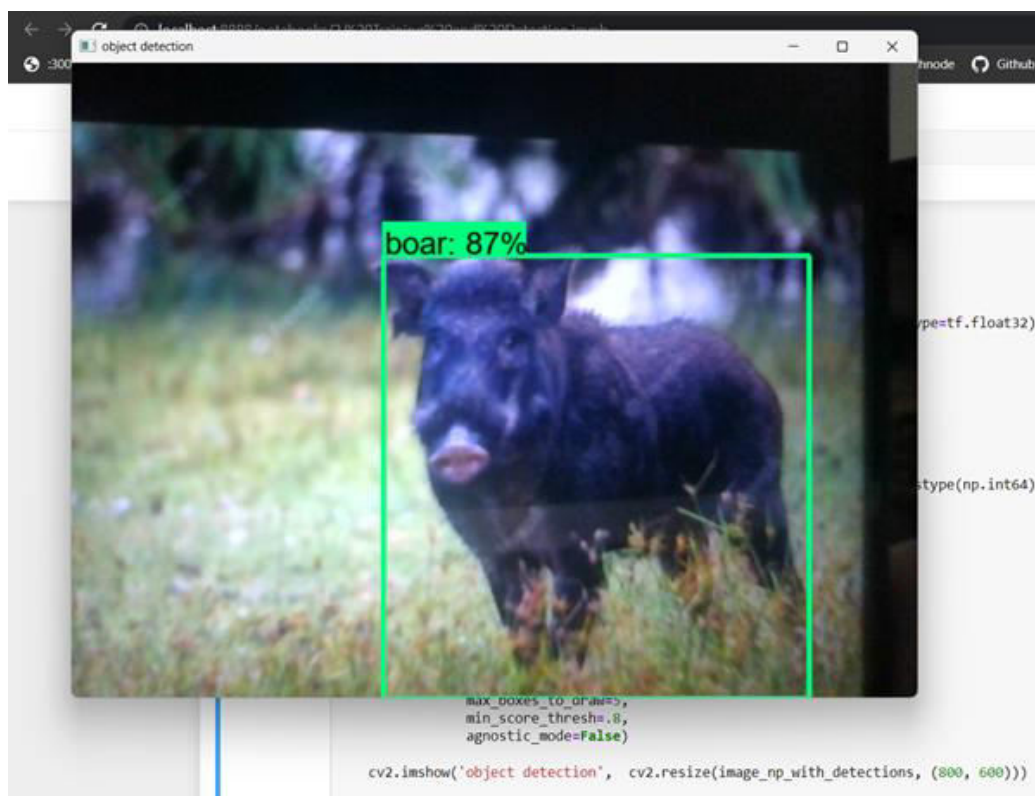
Fig 3. Boar Detected in Frame with Yellow rectangular box around it.

Python language is used for wild animal detection. We have used Tensorflow library for recognition, also MobileNet Architecture for training data. A system that uses the camera as security substance for capturing images when object is detected which will be used for object detection and recognition for further process.

V. PERFORMANCE PARAMETER

Accuracy: The accuracy of the system's object detection and classification, as measured by the percentage of correct predictions made by the model.

The model was trained on a dataset containing a total of 186 images, consisting of both monkey and boar images. Of the 186 images, 97 were monkey images, and the remaining 89 were boar images. During the evaluation process, the model achieved a detection accuracy of 70% for monkey images and 80% for boar images.

For monkey images, out of the 10 images tested, 7 were detected accurately, while 1 was misclassified as a boar, indicating a potential issue with the model's classification capabilities. Additionally, 2 images were not detected at all, indicating a potential weakness in the model's ability to identify and locate monkeys within an image.

For boar images, out of the 10 images tested, 8 were detected accurately, and 2 were not detected. This indicates a relatively high detection accuracy rate for boar images, but there is still room for improvement, particularly in detecting the 2 missed images.

Response time: The time it takes for the system to detect a wild animal and trigger a response, such as sounding an alarm or activating a camera, as measured in milliseconds.

The response time of the model to detect an image is 1500 milliseconds.

Scalability: The ability of the system to handle increasing numbers of wild animal detections and respond appropriately, as measured by the maximum number of detections the system can handle before performance begins to degrade.

Increasing the number of animals that the model needs to detect can potentially degrade the model's performance, especially when deploying it on a Raspberry Pi device. This is due to the limited memory size and processing power of the Raspberry Pi, which can constrain the model's ability to handle larger amounts of data.

V. CONCLUSION

In this study, a wild animal detection and intrusion prevention system using CNN was proposed, which is designed to reduce crop damage and increase farm yield by detecting and repelling wild animals. The system comprises a PIR sensor, a servo motor, a camera, a Raspberry Pi, and a notification system. The proposed system was implemented using TensorFlow with MobileNet architecture and achieved a detection accuracy of 70% for monkey images and 80% for boar images. However, there is room for improvement in the system's ability to accurately detect and classify certain images. The response time of the model to detect an image is 1500 milliseconds, and the scalability of the system can potentially be constrained by the limited memory size and processing power of the Raspberry Pi device. Overall, this study provides a sound technical solution for the detection and repelling of wild animals and can be improved upon with further development and optimization.

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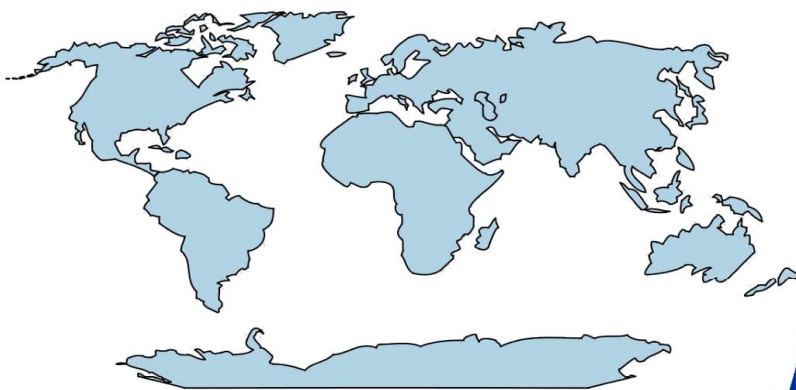
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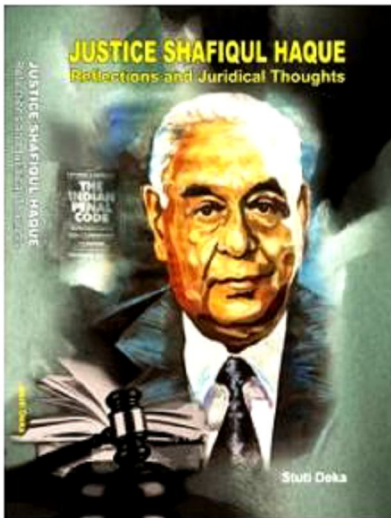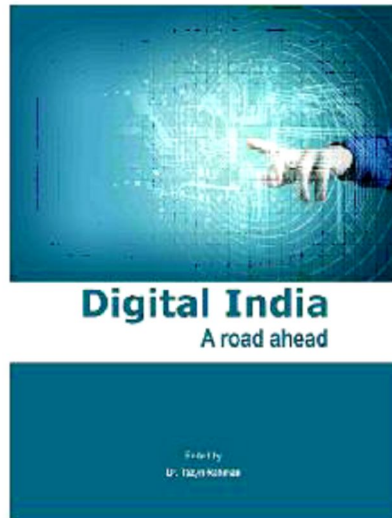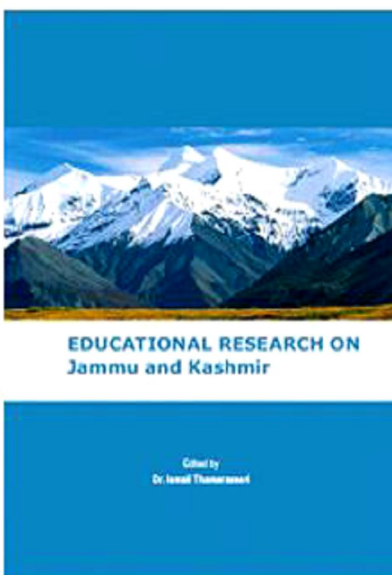
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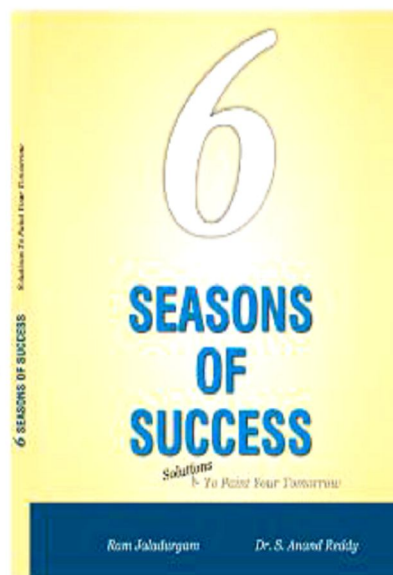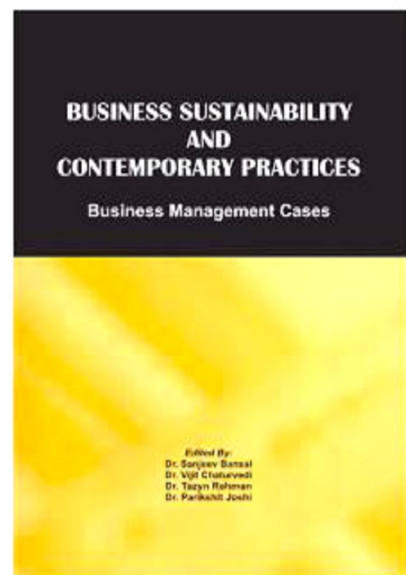
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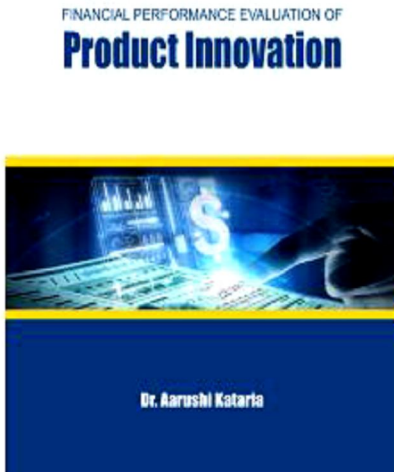
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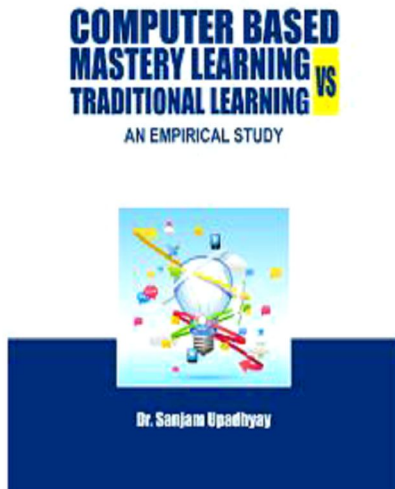
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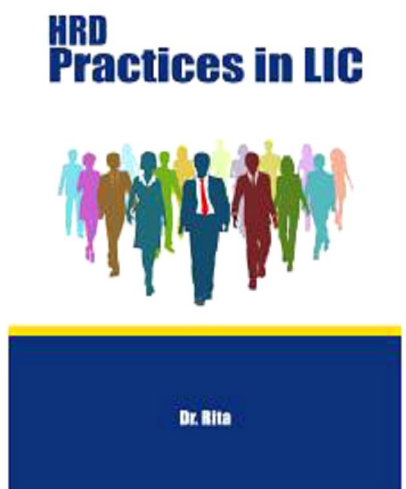
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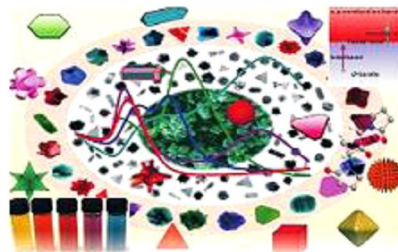
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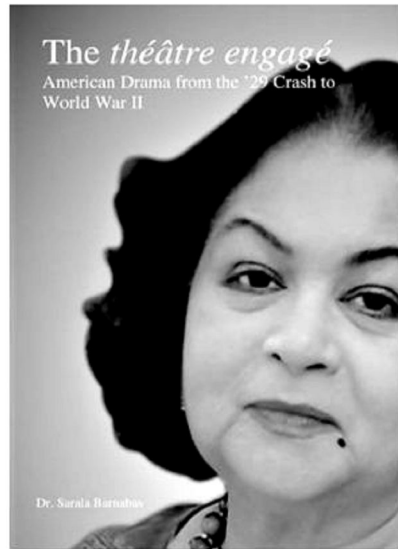
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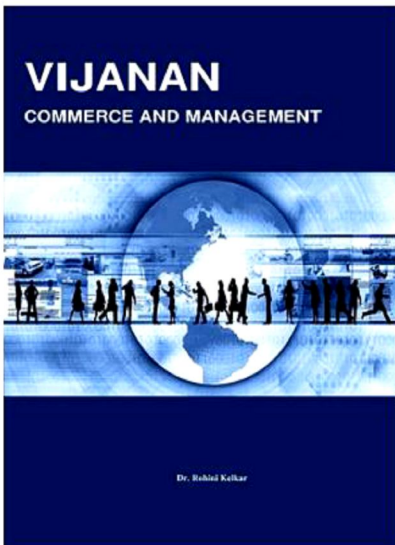
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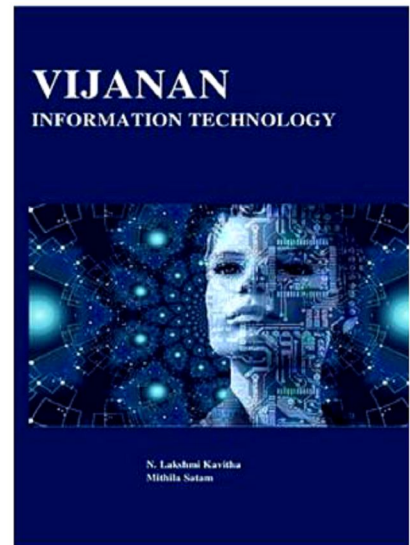
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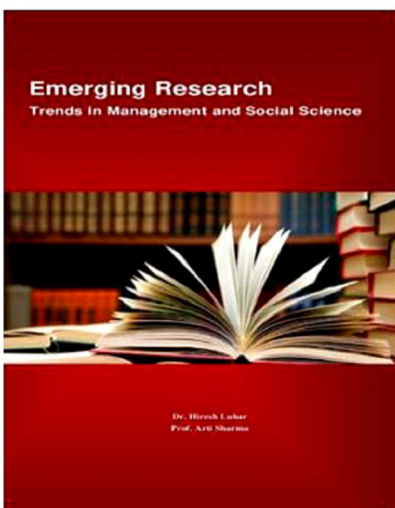
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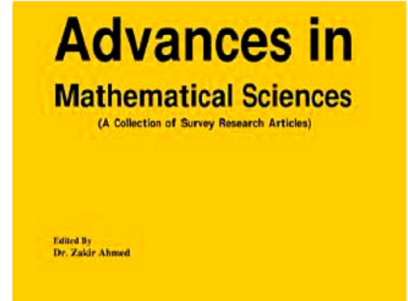
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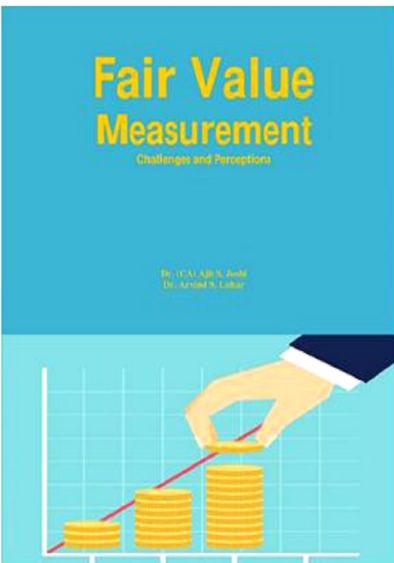
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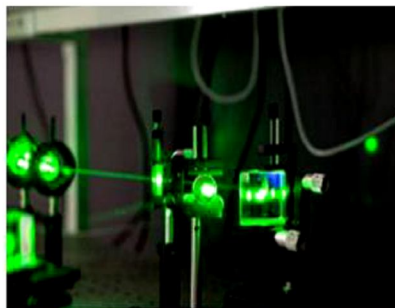
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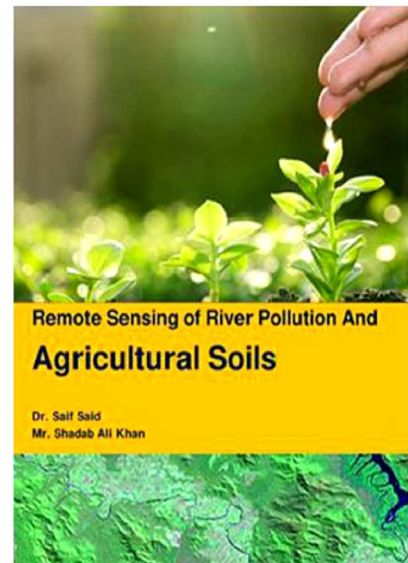
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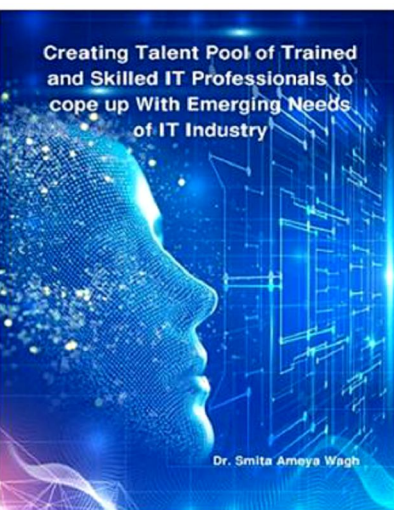
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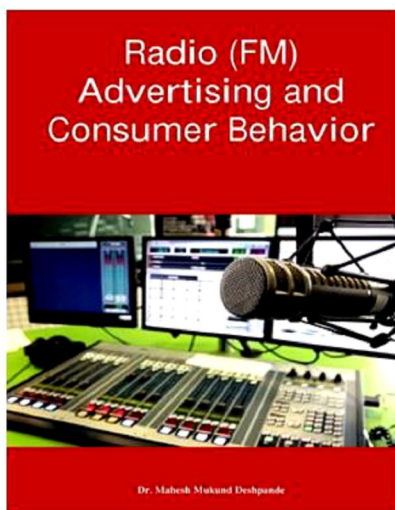
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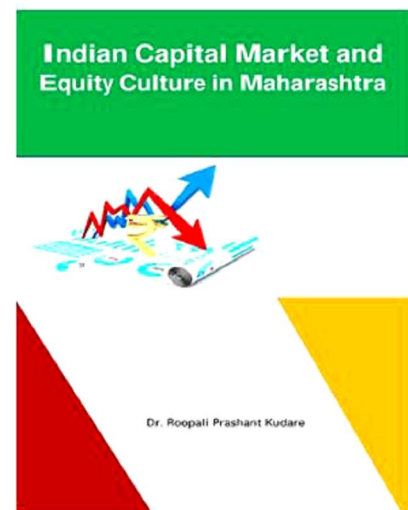
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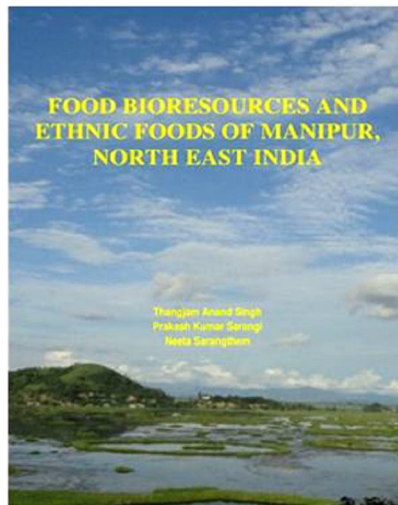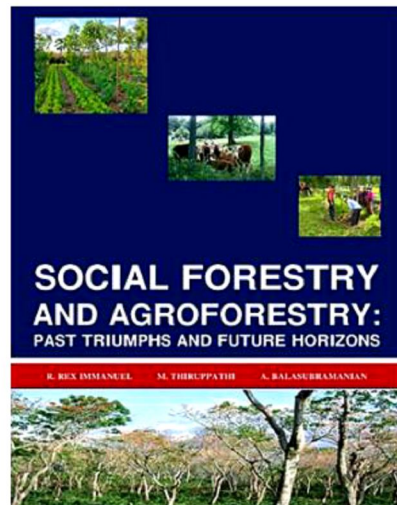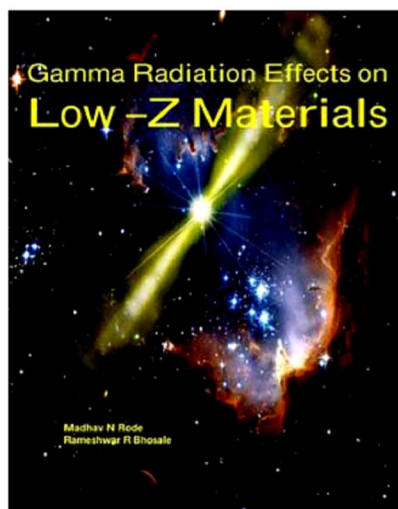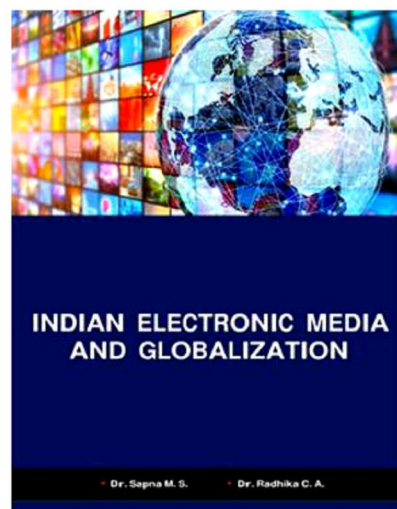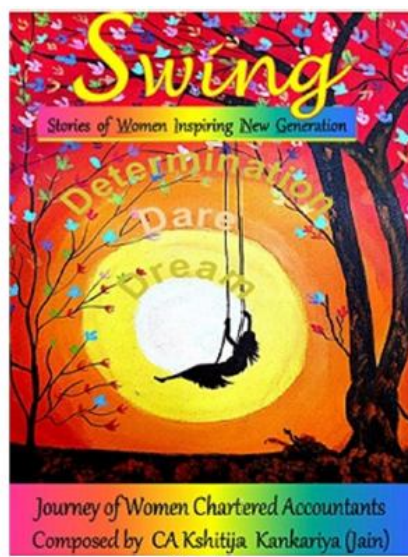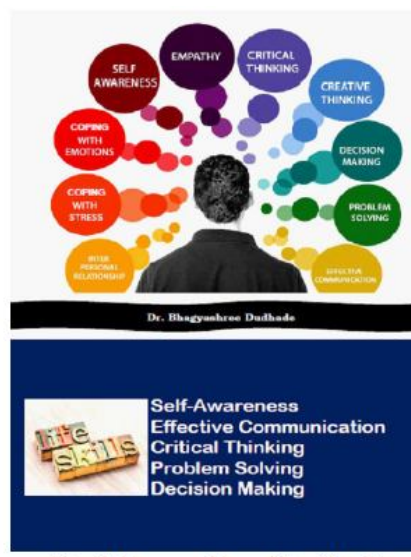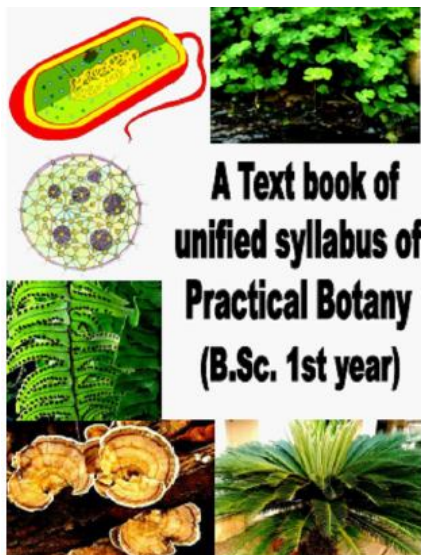
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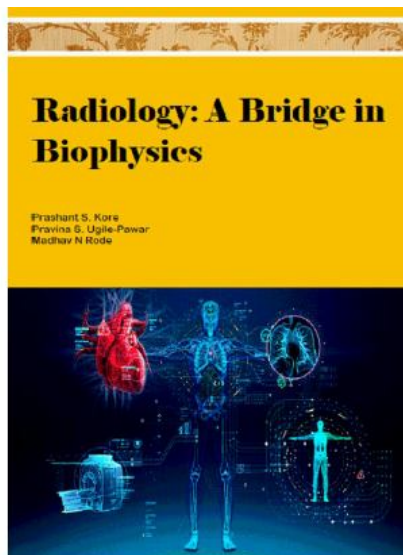
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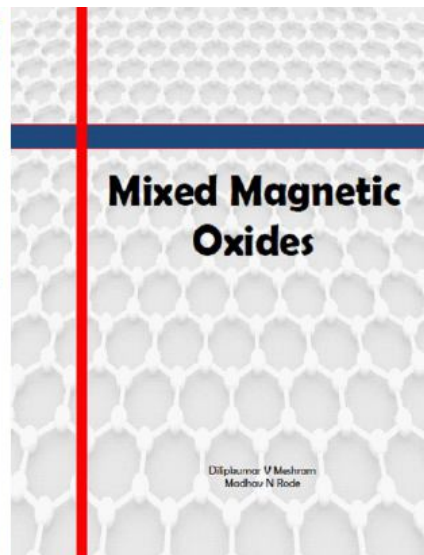
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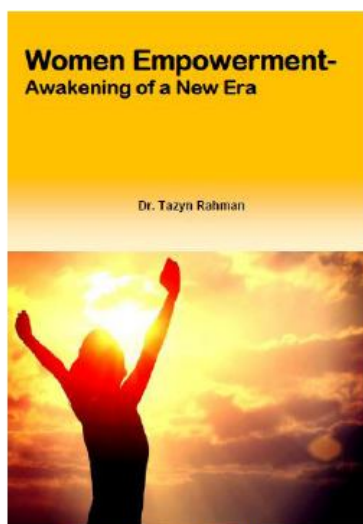
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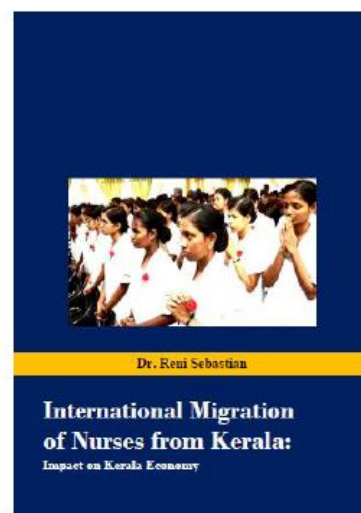
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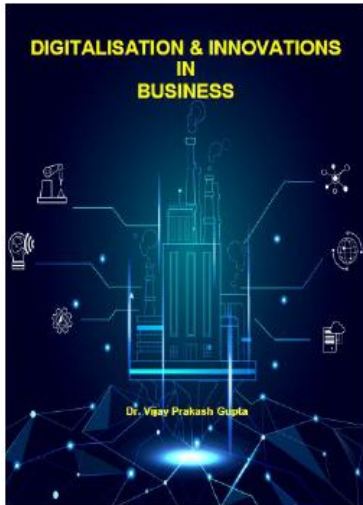
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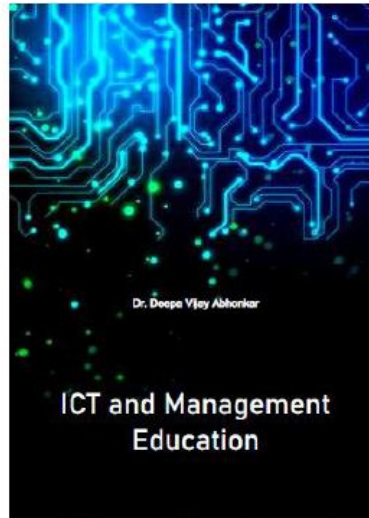
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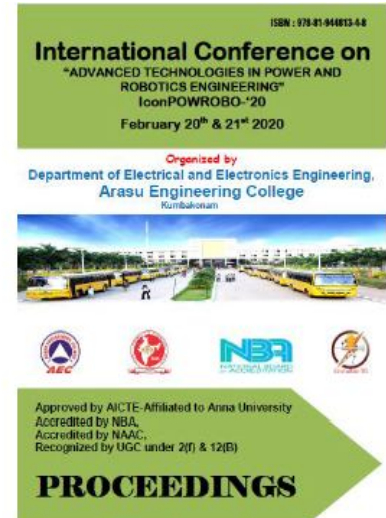
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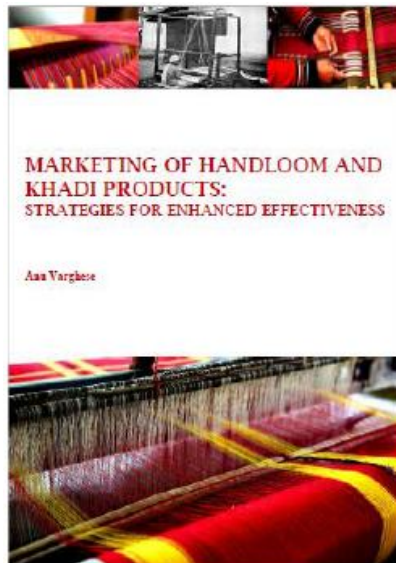
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