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A STUDY OF FURNITURE STYLES IN MING AND QING DYNASTIES IN THE DIMENSION OF MODEL INHERITANCE AND CULTURAL CONNOTATION

Xuefeng Hu¹ and Rosjana Chandhasa²¹Doctoral Student of Philosophy Program in Visual Arts and Design, Faculty of Fine and Applied Arts, Suan Sunandha Rajabhat University²Advisor in Visual Arts and Design, Faculty of Fine and Applied Arts, Suan Sunandha Rajabhat University**ABSTRACT**

To reflect the heritage and innovation of the Ming furniture style, the furniture style of the Ming Dynasty is a treasure of traditional Chinese culture. The researchers used qualitative research methods to study and theoretically explore the innovations and legacies of furniture styles in the Ming and Qing Dynasties, and interviewed furniture experts in the Ming and Qing Dynasties.

The study found that the furniture style of the Ming Dynasty is a glorious historical style, featuring simple and uncomplicated shapes, emphasizing smoothness of lines, balance and harmony in the inherited dimension, paying attention to the quality of materials, and strengthening the mechanical connection of furniture in the dimension of cultural connotation, reflecting the philosophical thought of ancient Chinese culture in terms of aesthetics and symbolic significance. It is characterized by sophisticated trends in engraving and decoration techniques. Elegant and elegant in inherited dimensions, decorative with artistic creation and carving, and developed a wide range of uses for structures. In the dimension of cultural connotation, it reflects its use and decoration, which are mainly nature-inspired imagery, including historical stories and auspicious motifs. This is a reflection of traditional Chinese cultural spirit, the Ming dynasty and qing dynasty furniture style is the embodiment of the furniture manufacture and promote art aesthetic, has important cultural value and artistic value, is the treasure of Chinese culture.

Keywords: modern furniture, furniture design, Ming Dynasty, inheritance dimension, cultural connotation dimension.

INTRODUCTION

Furniture from the Ming and Qing dynasties, the treasures of Chinese traditional culture, has been promoted all over the world, giving Chinese children and grandchildren a glorious chapter to be proud of. Especially the reform movement of the Qing Dynasty, which supported Western learning and colonial culture, the old cultural revolution movement produced the new culture of the People's Republic of China, and the new influence made the Chinese-style furniture gradually submerged in the dust of history. China's furniture industry is developing rapidly. China is the world furniture manufacturing power, but the current situation of furniture manufacturing and design in China has not formed a national theoretical system. However, with the development of modern life, the regional and national characteristics of furniture design began to become more and more important. Gradually to the survival of the basic organization.

The innovation of Chinese furniture is not only reflected in art and craft, but also in technology innovation system, knowledge innovation system and regional innovation system. These innovative art forms are the basis of this system, which not only enhances the modernization of Chinese furniture, but also inherits cultural traditions and reflects national characteristics, while satisfying the diversity of furniture and individual consumption needs. Therefore, in the past year, how to inherit the development of traditional Chinese furniture and how to shape the national style of modern Chinese furniture has become a hot issue discussed in the industry. This had an important impact on the modern structure of Chinese furniture in terms of design, which inherited the Qing Dynasty furniture and implemented innovative designs.

RESEARCH OBJECTIVE

To Study the inheritance and cultural connotation of furniture styles in the Ming and Qing dynasties.

LITERATURE REVIEW

1. Regional features and characteristics of furniture in Ming and Qing Dynasties.

In order to better inherit and develop the essence of Ming furniture, the first is the understanding of Ming furniture, usually divided into Ming furniture and Ming furniture two systems, according to different production areas, Ming furniture can be divided into the Qing Dynasty "Suzuo", "guang", "fine", "Jin", "Ning" and so on. It's tighter. Such as yellow pear, safflower, sandalwood, flowers, simple and elegant, tall and symmetrical. According to the foundation of the beam and column structure of the building, the appropriate proportion is adopted. Ancient Chinese wooden frames used curved steel legs, panel edges, wooden teeth and connected

grooves and spines. In the realization of the mechanical strength of furniture, at the same time to achieve the unity of function and style. For example, square or round legs are like the columns of a building, and beams are like beams, connected and reinforced with teeth. The intersection of the legs and the frame is usually bent and curved. The home has a clear pattern to distinguish straight lines from arcs. In the Ming Dynasty, the furniture structure was clear, inheriting the tradition of Ming furniture.



Figure 1: YungYungYun & Bamble Pear wood 6post bed
Source: https://sucai.redocn.com/yishuwenhua_9983289.html

The furniture of the Ming Dynasty was 231 centimeters high, 218.5 centimeters long and 147.5 centimeters wide. The bed is supported by six pillars, and after four pillars and two beds, the ceiling is made up of six pillars. There are cloud patterns on the roof between the bedposts, and a small partition under the bedposts for ventilation. All boards are made of short boards and joined together in a "Swastika" form. The bed surface is the center of the bed, the teeth under the waist are plate, the front legs are curved, and the ends of the legs are carved out of smoke pipes.

1.1 Inheritance of Ming and Qing Dynasty furniture

Its structure can be seen from the existing Ming and Qing Dynasty relics and furniture. It is mainly derived from traditional Chinese traditions, including philosophical thoughts, rituals, legal ideas, order ideas and Western culture's influence on modern furniture design. The traditional style of Ming Dynasty and Qing Dynasty embodies the spiritual connotation of modern fashion to a certain extent, giving people a sense of modern image, not only inherits and carries forward the essence of traditional Chinese culture, but also gives the modern home design vitality. However, traditional exploration, the construction of ethnic furniture, does not need to completely restore the traditional track, nor does it need to randomly copy the original track.

Modern furniture is characterized by the variety of materials and the function of the system, as well as the industrial system of furniture. Therefore, the design of modern furniture often pursues pure lines and complete harmony. For example, square or round legs are the pillars and cross sections of a building. Wooden furniture designs in the Ming Dynasty inherited the traditional ways of furniture, but were often characterized by complexity, bold lines and carvings. Added bamboo, bamboo, jade, orchid wood inlays and other decorations, some ideas for heritage and innovation. The furniture of the Ming Dynasty and that of the Qing Dynasty were ornate, ornate and bulky, in order to show off their wealth and status.



Figure 2 Arhats bed
Source: Internet images

The five pieces of furniture above are all "Arhat bede", with the same style, technique, shape and material. All the furniture is from the same era, collected by China (Nanjing, Hong Kong) and private furniture companies (Ming Dynasty). The furniture has standard rhythm bed frames with four large ropes at each end. The drawers have light brown coconut mesh edges and old cushions on the sides, and the grooves at the front are optional. The waist matches the back legs of the teeth. It runs along the edge of the leg side. In the long rod section, there is a large edge extending to the bed seat for added stability. The bottom is empty and the tapered legs at the bottom drop into square ball bearings. The front and sides have thousands of short materials with printed patterns.

1.2 Influence of the inheritance of Ming Furniture on the Development of Modern Furniture

From objects and documents, Ming and Qing furniture. You know the most attempted build features. Chinese tradition and philosophy, rituals, the concept of law and order and the influence of Western culture can reflect the above cultural characteristics of modern furniture design. From the simple style, the traditional furniture of the Ming and Qing dynasties is hidden in a sense. The spirit of modern fashion is connected to people to a certain extent, but also gives a sense of modern vision. It not only inherits and inherits the essence of traditional Chinese culture, but also brings new vitality to modern families. Its design can explain the perfect combination of these two characteristics, however, traditional exploration, creation. Ethnic furniture does not need to be completely restored to the ancient style, nor does it need to randomly copy the original style.

Modern furniture is characterized by a variety of material systems, functions and industrial systems of furniture. Therefore, modern furniture production is often pure line, with wood to finish. Although it is elegant and soft, the quality of the material is strong, but it does not offer modern mass-produced materials due to declining yields. Every year inquiries and prices go up. The modern concept of a strong alternative suggests a more elegant and honest feeling, but lacks clarity, so modern materials are used. Such as glass, stainless steel, metal, leather and fabric. In modern furniture design, modern furniture not only develops due to changes in materials, but also changes due to changes in materials, reflecting the spirit of The Times and organization of materials.



Figure 3: Huanghuali three encircled single board arhat bed
Source: Internet images

All five pieces of furniture are handmade, collected by museums in China and the United States (New York, Boston), and are products of the same era. And the beautiful texture of the rosewood.

1.3 Abstraction of Decorative Patterns

Traditional Chinese culture played a role in the unique Art Deco style of furniture in the Ming and Qing dynasties, and the furniture also successfully complemented each other, especially the perfect combination of various decorative patterns such as fruit and carving techniques.

This not only makes the furniture of Ming and Qing have profound cultural connotation, but also makes it a symbol of Ming Dynasty culture.

Ming and Qing furniture is infinite. The decorative styles of Ming and Qing furniture are mainly about use and decoration, which are inspired by natural landscapes, flowers, birds, insects and fish, as well as historical stories. Stories and auspicious patterns can be used as a reflection of the spirit of traditional Chinese culture as a practical medium or decorative technique for the design of modern furniture to better reflect the charm of Ming and Qing Dynasty furniture. It is a concept to create Chinese-style furniture, however, in most cases, traditional decorative styles are very complex and not easy to modern, and the treatment does not reflect the feeling of fashion well. Therefore, it is necessary to study the traditional decorative style and apply the modern element theory, language and symbol theory to refine and inherit the traditional culture more easily.

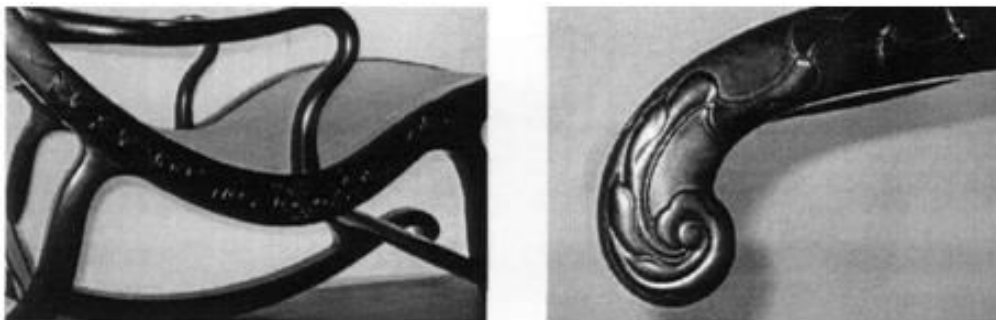


Figure 4: Statue of Ruta

Source: Web image

METHOD

To study the inheritance and cultural connotation of furniture styles in the Ming and Qing dynasties, researchers adopted qualitative research methods to analyze the research stages as follows:

1. Collect information, research relevant literature, and collect information on the heritage and innovation of Ming and Qing furniture styles. In addition, the general database of Chinese publishing industry, electronic database, related publications and books, such as "Chinese Mahogany Furniture Research", "Chinese History", "Arts and Crafts", as well as related academic research papers and doctoral degrees have been passed. Through the collection, classification and analysis of a wide range of research literature. There were five kinds of furniture in the Ming Dynasty and five kinds in the Qing Dynasty.

The furniture design is clearer, starting with the bed design. Generally speaking, bed design is very important in life as a leisure option. The design of the bed focuses on art, sculpture, carving and overall structure to meet the user's living needs.

2. Explore and observe on the spot, understand the different needs of mahogany furniture consumer groups, understand the inheritance and innovation of traditional culture, and understand the different views of different enterprises on "imitation". The innovation of Chinese traditional furniture

3. The researchers used qualitative research methods to find information and theories about the style innovation of furniture in the Ming and Qing Dynasties, and interviewed furniture experts in the Ming and Qing Dynasties. Analyze and collect data on the difference and function of furniture.





4. After analyzing the characteristics of the furniture styles of the Ming Dynasty and the Qing Dynasty, this paper studies the inheritance and cultural connotation of the furniture styles of the Ming Dynasty and the Qing Dynasty

RESEARCH RESULTS

Through the study of the furniture styles of the Ming and Qing dynasties, the paper discusses its inheritance and cultural connotation, so that people and things and the environment, human and society are linked together, the

design principle is to better serve the human. Therefore, in the process of furniture innovation, the differences of each element should be recognized to meet the needs of structural adjustment, and modern Chinese people's pursuit of decorative elements should be paid attention to, and the meaning of traditional culture and modern economy should be applied to modern furniture by using the decorative technology of modern furniture. Pay due attention to materials, construction and workmanship. The results are as follows:

Table 1: Research on the style inheritance and cultural connotation of furniture styles in Ming Dynasty

Picture of Ming Dynasty Furniture	Model Inheritance dimension	Connotation cultural dimension
 <p>Figure 1 Huanghuali three encircled single board arhat bed</p>	<p>Inherit the Ming Dynasty in an even proportion. According to the reasonable proportion of the beam structure of the Chinese wood frame, the frame is round legs, like the building pillars, connecting the grooves and the main axis to strengthen the mechanical strength of the furniture.</p>	<p>The cultural connotation of the Ming furniture style emphasizes the texture and color characteristics of the wood, and the simple patterns reflect the philosophy and symbolism of ancient Chinese aesthetics, the idea of neutrality and harmony. It reflects the wealth, peace and rights of people in traditional Chinese culture. The physical characteristics of the material are closely related to the human spirit, and it is the medium of human and nature.</p>
 <p>Figure 2 Huanghuali three encircled single board arhat bed</p>	<p>Inherit the Ming Dynasty in Correct. An even proportion proportions based on beam Chinese wood, structure shape, leg sides and frame. The horseshoe frame is curved to distinguish straight and lines from curves connects grooves and spurs to strengthen the mechanical. Strength of the furniture.</p>	
 <p>Figure 3 Huanghuali three encircled single board arhat bed</p>	<p>Inherit the Ming Dynasty in based. An even proportion on the Chinese wood frame, The beam constructions borders are ironed frame flat to distinguish straight and lines from curves connected with grooves and spindles to strengthen the spindles to strengthen of the mechanical strength furniture.</p>	
 <p>Figure 4 Huanghuali three encircled single board arhat bed</p>	<p>Inherit the Ming Dynasty in Correct. An even proportion proportions based on beam Chinese wood, structure shape, leg sides and frame. The horseshoe frame is distinguish straight curved to and lines from curves connects grooves and spurs to strengthen the mechanical. Strength of the furniture.</p>	
 <p>Figure 5 Huanghuali three encircled single board arhat bed</p>	<p>Inherit the Ming Dynasty in an even proportion meet the basic proportions requirements of Chinese, wood frame beam structure, the frame is square legs Angle of the board is soft prevent cracks and Angle connect the groove and strengthen, the spindle mechanical strength, simple and elegant of the furniture</p>	

As can be seen from Table 1, the current classical furniture mainly consists of Ming Dynasty furniture and Qing Dynasty furniture, which are divided into two categories: Ming Dynasty furniture and Qing Dynasty furniture.

Imitating Ming and Qing Dynasty furniture nonetheless, it still reveals the essence of traditional culture, simple Ming furniture style, its sculptural beauty and meaning can make people feel comfortable and express the essence of traditional Chinese culture. Therefore, the furniture of the Ming Dynasty not only had a simple and generous style, but also had a rich literary life and emotional spiritual pursuit.

Table 2: Research on style inheritance and cultural connotation of furniture styles in Qing Dynasty

Picture of Ming Dynasty Furniture	Model Inheritance dimension	Connotation cultural dimension
 <p>Figure 1 Red sandalwood single board wai zi arhat bed</p>	<p>This is the Qing Dynasty, the proportions tradition basic Chinese are consistent wood frame beam side legs and construction connecting grooves and spines to strength of the furniture.</p>	<p>The furniture style of the Qing Dynasty inherited the structural characteristics of the furniture of the Ming Dynasty, but the difference was that the furniture of the Ming Dynasty was big in size, thick and luxurious, so when the material was big, it would become bigger. Another feature is characteristic. Furniture with high waists and crutch support structure. Qing Dynasty furniture was widely used in decoration techniques such as burial and carving. The useful life of the furniture was shorter, but on the other hand, the pursuit of the Qing Dynasty furniture style was gorgeous, and the use of mosaics, sculptures, paintings and other decorations was a way of expression, affecting people's wealth, elegance, stability and elegance. The inspiration comes from natural landscapes, flowers and birds, as well as historical stories and auspicious patterns, which all reflect the spirit of traditional Chinese culture.</p>
 <p>Figure 2 Rosewood three screen single board weizi arhat bed</p>	<p>This is the Qing Dynasty. The proportions are consistent. There is a tradition. It is simple pattern composed of beam backrest, construction Chinese wood, caving, side leg connection, frame, etc. Thorn joint groove and painted in the wood surface.</p>	
 <p>Figure 3 Iron power bed rosewood round son three screens arhat bed</p>	<p>This is the Qing Dynasty. The proportions are consistent. There is a tradition. It is simple pattern composed of beam backrest, construction Chinese wood, caving, side leg connection, frame, etc. Thorn joint groove and painted in the wood surface.</p>	
 <p>Figure 4 Red sandalwood accumulates weizi arhat bed</p>	<p>This is the Qing Dynasty. The proportions are consistent. There is a tradition. It is simple pattern composed of beam backrest, construction Chinese wood, caving, side leg connection, frame, etc. Thorn joint groove and painted in the wood surface</p>	
 <p>Figure 5 Huanghuali Arhat bed</p>	<p>This is the Qing Dynasty. The proportions are consistent. There is a tradition. It is simple pattern composed of beam backrest, construction Chinese wood, caving, side leg connection, frame, etc. Thorn joint groove and painted in the wood surface</p>	

As can be seen from Table 2, the furniture structure in the Qing Dynasty did not change much. This reflects the famous interior decoration and rich furniture style. This has influenced the country's politics, economy and culture, but the carving of furniture and other decorations is still a traditional Chinese style, as can be seen from its stability, thickness, strength and other aspects, the use of high-quality materials, as can be seen from its craftsmanship and unique carving, which still has cultural connotations and reflects the spirit of traditional Chinese culture in the traditional carving and structure.

A study of the furniture styles of the Ming Dynasty reveals five styles, all of which can be collectively referred to as Huanghuali Three-way veneer Arhats bed. The five works are based on the relationship of cultural dimensions and reflect the philosophical thoughts of ancient Chinese culture both aesthetically and symbolically, and have been handed down in a quality, concise and orderly way. For example, red sandalwood single-panel arhat bed, mahogany three-screen arhat bed, iron power bed mahogany round bed, three-screen Arhat bed, red sandalwood Jiweizi Arhat bed, Huanghuali Arhat bed, this relationship in the cultural dimension, in the carved patterns, is the embodiment of the spirit of traditional Chinese culture, in the dimension of inheritance, the Ming Dynasty furniture is more complex.

CONCLUSIONS

The research shows that the furniture style of Ming Dynasty has a long history, the economy is booming, the society is stable, people are very interested in the aesthetic research of furniture craft. Its ability to make and use it is unprecedented. The elegant style emphasizes the smoothness of the lines, and the fusion of curves and straight lines creates balance and harmony.

The style of furniture in the Ming Dynasty is stable in the dimension of inheritance. Pay attention to the quality of the material and choose the wood texture wisely to make it a simple yet elegant shape. On the basis of the building beam structure, appropriate proportions. Using ancient Chinese wood frames. The border of the frame. The panel is tightly integrated with the frame. Wood teeth are connected to various grooves. Strengthen the mechanical strength of furniture, improve its style and function, with cultural and artistic value.

The furniture style of Ming Dynasty has strong Chinese artistic characteristics in terms of cultural connotation. The cultural connotation of the Ming furniture style emphasizes the texture and color characteristics of the wood, and the simple patterns reflect the philosophy and symbolism of ancient Chinese aesthetics, the idea of neutrality and harmony. It reflects the wealth, peace and rights of people in traditional Chinese culture. The physical characteristics of the material are closely related to the human spirit, and it is the medium of human and nature.

The study found that the furniture style of the Qing Dynasty was simple and inherited from the furniture of the Ming Dynasty, during this glorious period, the unique furniture style and elegant beauty were enriched and richly decorated as the artistic treasures of the historical period. It influenced Chinese politics, economy and culture, and influenced the international integration of furniture, but the carvings and other decorations still inherited the traditional Chinese style.

From the perspective of inheritance, the structural features and structural characteristics of Qing furniture are different. The difference is that the furniture in the Qing Dynasty is bigger, thicker and more luxurious than the furniture in the Ming Dynasty, so when the material is bigger, the furniture in the Ming Dynasty is also bigger. Another feature is the appearance of the high-waisted furniture and the construction of the use of crutches. Decorative techniques such as burial and carving were added to Qing Dynasty furniture. Over time, the physical properties of furniture gradually decrease, which makes the useful life of furniture shorter and shorter. The selection of high-value textured materials for the structure to keep the appearance of the colour texture consistent and to enhance the strength of the structure in the decorative parts are outstanding features such as wood carving, painting, polishing and sharp patterns. It involves embedding different materials on the surface of the compound, rich decorative materials and various ways of artistic works.

From the perspective of cultural connotation, the style of Qing Dynasty furniture has good aesthetic morality and rich cultural connotation. These patterns are mainly inspired by nature, flowers, birds, historical stories and auspicious patterns. This is a reflection of the spirit of traditional Chinese culture, and the appearance of the furniture can be carved and decorated to reflect Chinese values.

The appearance of furniture can reflect the value of China, and major industries such as furniture promote many related industries and create a large number of jobs. In artistic creation, the use of furniture is extensive and deep, high quality materials and appropriate production process, simple design principles to make it comfortable, the beauty of materials, surface carver, unique carving, etc. In this way, people can be easily observed and appreciated in a unique function and stable decoration.

The combination of the Ming furniture style and the Ming furniture aesthetics facilitated artistic capabilities that had never been available before. A good understanding of Chinese classical furniture is an important part of world culture and a treasure of Chinese culture.

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A STUDY OF THE THEORY OF YIN-YANG AND THE FIVE ELEMENTS OF PRIMITIVE COLORS IN THE CULTURAL DIMENSION THAT APPEARED ON CHINESE PORCELAIN

Yuanyuan Zhao¹ and Rosjana Chandhasa²¹Doctoral Student of Philosophy Program in Visual Arts and Design, Suan Sunandha Rajabhat University²Advisor in Visual Arts and Design, Faculty of Fine and Applied Arts, Suan Sunandha Rajabhat University**ABSTRACT**

Chinese traditional color is an important part of Chinese traditional culture. Nowadays, the research on Chinese traditional color is scattered and shallow. In order to study the cultural dimension of the traditional five-color theory on Chinese porcelain, the author studied the theoretical background of the formation of the traditional five-color theory, the rationality and operation rules of the traditional five-color theory, and studied the application, aesthetics and history of the traditional five-color theory in China. The methods of qualitative and descriptive research, literature review, field investigation and observation were used to collect data and analyze the contents and main points of the findings.

It is found that there is a connection between the traditional five-color theory and the theory of Yin-yang and five elements, and the traditional five-color culture of China is composed of the traditional five-color philosophy and five-color cultural system. The five traditional Chinese colors are red, cyan, yellow, white and black. The development of the color of ancient Chinese porcelain was mainly due to the progress and innovation of firing technology.

Keywords: The theory of Yin-yang and five elements, the traditional five colors, cultural dimensions, porcelain colors

INTRODUCTION

With the development of economic globalization, the politics, economy, culture, society, life and aesthetics of all countries in the world are highly integrated. Western developed countries took the lead in certain industries and established industry rules, theoretical systems and evaluation standards. Due to the infiltration of Western culture, many native aesthetic theories and traditional culture have been forgotten.

Traditional culture is an inexhaustible driving force for the development of a nation and the source of creativity of civilization. Only based on the root of excellent traditional culture can we ensure the sustainable and healthy growth of the Chinese nation (Yijie, 2019). In the domestic design industry lacking national characteristics, the research on traditional color culture in China is scarce and scattered, from textbooks, design, application and cultural exchanges are not deep enough. In order to spread the traditional color preservation and application culture, due to the lack of systematic research information, the author reviews the history of Chinese traditional colors, from the perspective of ancient and modern color development, on the one hand, can have an in-depth understanding of the development of Chinese history, political changes, traditional customs and the formation of culture. On the other hand, from the past and present research, it promotes the application and invention of traditional Chinese colors, and provides the direction for the future development.

RESEARCH OBJECTIVES

To Study the theory of Yin-yang and five elements and the cultural dimension of the traditional five colors on Chinese porcelain

LITERATURE REVIEW**1. Research Theoretical Basis**

In ancient Chinese art and culture, traditional Chinese colors have five basic colors: red, cyan, yellow, black and white. These five colors are important elements in the traditional Chinese theory of Yin-yang and the five elements. The theory of Yin-yang and five elements is the ancient Chinese view of the world and philosophy. (Yuan & Kaicheng, 2012)



Figure 1 Schematic diagram of the theory of Yin-Yang and Five Elements
Source: Baidu

The theory of Yin-yang and the five elements holds that the world is composed of five basic elements: gold, wood, water, fire and earth, which correspond to five basic colors: white, cyan, black, red and yellow. On this basis, Zou Yan in the Warring States Period put forward the theory of "Five Natures", which regarded the five elements as "five natures" and believed that each dynasty represented one nature. According to the order of the five elements, the replacement of dynasties and the change of system were explained.



Figure 2 Schematic diagram of Yin-yang and five Elements theory
Source: Baidu

The succession of these five elements is a cycle that explains the changes and colors of the royal family. The Xia Dynasty was Water Nature, the Shang Dynasty was Gold Nature, the Zhou Dynasty was Fire Nature, the Qin Dynasty was Water Nature, the Han Dynasty was Earth Nature, the Wei Dynasty was Wood Nature, the Jin Dynasty was Gold Nature, the Sui Dynasty was Water Nature, the Tang Dynasty was Earth Nature, the Song Dynasty was Fire Nature, the Yuan Dynasty was Gold Nature, the Ming Dynasty was Fire Nature and the Qing Dynasty was Water Nature. Thus, the Xia Dynasty favored black, the Shang Dynasty favored white, the Zhou Dynasty favored red, the Qin Dynasty favored black, the Han Dynasty favored yellow, the Wei Dynasty favored cyan, the Jin Dynasty favored white, the Sui Dynasty favored black, the Tang Dynasty favored yellow, the Song Dynasty favored red, the Yuan Dynasty favored white, the Ming Dynasty favored red, and the Qing Dynasty favored black.

The traditional Chinese color culture is derived from the philosophy of Yin and Yang and the five elements. It is a color culture system integrating the five colors, five elements, five natures and five directions. It has influenced political systems, social customs, poems, religious sacrifices, ideas and aesthetic standards throughout the ages.

CONCEPTUAL FRAMEWORK

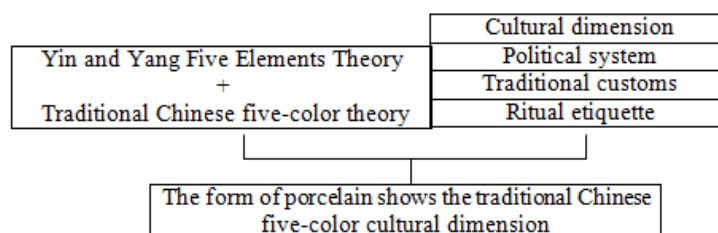


Figure 3: Conceptual framework used in research
Source: Yuanyuan Zhao

RESEARCH METHODOLOGY

In this study, the researcher established a research framework, used qualitative and descriptive research methods, including literature review, field investigation and observation, collected data and conducted analysis.

Step 1: The research scope of the research object is as follows: First, consult ancient Chinese books and documents to collect a large number of traditional Chinese color information. The second is field investigation and observation, close observation of the loss and application of traditional colors in ancient China, and the collection of color types, uses and cultural information.

Step 2: Through literature research, collect and study books, documents and historical materials related to traditional Chinese colors, such as the theory of Yin and Yang and the five elements, the nouns describing ancient colors, and the application of traditional colors in politics, tradition, art and culture. Through field investigation and observation, the Museum of Traditional Colors in Suzhou has collected the sources, application and culture of nearly 100 kinds of traditional Chinese colors, as well as the basic information about the development and research of traditional colors at present. Visited the Palace Museum in Beijing to collect information on the use of traditional colors in ancient palaces.

Step 3: To conduct data analysis after collecting relevant data through qualitative research. Researchers classify and analyze the data into the following three situations:

1. Descriptive analysis. The concept and application of the five traditional Chinese colors, including red, cyan, yellow, white and black, are described. By collecting data from ancient books, museum visits and observation records, the detailed meanings and specific applications of the traditional Chinese colors are summarized.

2. Classification analysis. This study will classify and analyze traditional Chinese colors based on contemporary color classification.

3. Comparative analysis. According to the historical change and development of Chinese traditional colors, this paper makes a comparative analysis of the Chinese traditional five line colors in ancient and modern times.

Step 4: Summarize. The conclusion can be drawn by studying the theory of Yin-yang and five elements, the cultural dimension of Chinese five colors and the cultural dimension of Chinese porcelain colors.

RESEARCH RESULTS

The research on the theory of Yin-yang and the five Elements of China and the traditional five colors shows that:

The theory of Yin and Yang is a branch of ancient Chinese philosophy and the concept of understanding and mastering the laws of nature. Yin and Yang, both opposite and unified aspects of each other. This movement and interaction is the root of all changes in motion. The ancients called this kind of constant movement and change "biochemical ceaseless". The growth, development and extinction of all things in the universe are the result of the constant movement and interaction between the two aspects of things, Yin and Yang. The background of Yin-yang theory is the result of the division of the unity of things in the world, such as heaven and earth, water and fire, day and night, cold and warm.

The five elements refer to the five basic forms of Yin and Yang evolution: water represents infiltration, fire represents collapse, gold represents convergence, wood represents growth, and earth represents fusion. And everything in the world is formed by the movement of the five basic elements: wood, fire, earth, gold, and water. The relationship between these five elements explains the relationship and law between all things in the world. Everything is not isolated and static, but dynamic and changing.

The Chinese traditional five-color culture is derived from the Chinese traditional philosophy of Yin and Yang and five elements. It is a color culture system integrating five elements, five directions and five natures. The ancients' original theory of Yin and Yang and the five elements later derived the five colors, five directions and five natures. The traditional Chinese color system and concept of the five elements are based on the five basic elements of the five elements: gold, wood, water, fire and earth, which respectively produce five colors: white, blue, black, red and yellow. The earliest record of the concept of "five colors" appeared in Shang Shu • Yiji. The corresponding relations between the five colors and the five directions are as follows: East corresponds to cyan, West corresponds to white, south corresponds to red, north corresponds to black, and China corresponds to yellow. The five virtues mean that the five elements of gold, wood, water, fire and earth are regarded as the five natures, and that each dynasty represents the one nature According to the order of the five elements, the five natures are exchanged and repeated, thus explaining the replacement of the dynasties and the change of the system.

Table 1: Traditional Yin and Yang Five Elements Theory and Its Correlation

Yin and Yang Five Elements Theory	Five elements	Elemental morphology	Color	Five natures	Five directions
Everything in the world is composed of five basic elements: metal, wood, water, fire and earth, and these five elements "grow and restrain each other" to make the universe change and develop.	gold	Amass	white	Gold Nature	west
	wood	grow	green	Wood Nature	east
	water	Infiltration	black	Water Nature	north
	fire	Burst	red	Fire Nature	south
	earth	Fusion	yellow	Earth Nature	middle

As can be seen from Table 1, the results of the theory of Yin-yang and the five elements show that everything in the world is composed of five basic elements: gold, wood, water, fire and earth, and there is a relationship between them. With the development of history and the improvement of the theory, the theory of Yin-yang and the five elements has gradually integrated into the elements and dimensions of human understanding of the world, such as the five colors, the five natures and the five directions, forming an increasingly perfect systematic theoretical system. As is shown in the figure, the five elements, the five colors, the five natures and the five directions form a relatively fixed correspondence and unity relationship. Moreover, according to the relationship between the five elements, it affects the change of the "Five natures", which represents the succession of dynasties. According to the thought of the five elements contained in the "Five natures", it determines the prevalence and preference of the colors of the dynasties. So it is interrelated and circular.

The research on the cultural dimension and use of Chinese traditional five colors shows that:

1. The Application of the Cultural Dimension and Political Level of the Traditional Chinese Five Colors

1.1 Color preference. Based on the theory of Yin and Yang and the five elements, the "Five Natures" theory is derived from the theory of gold, wood, water, fire and earth to represent the transport of dynasties or the transport of natures, namely, gold nature, wood nature, water nature, fire nature and earth nature, so as to explain the rise and fall of dynasties and the change of history. The five natures and the five colors corresponded to each other. When a certain dynasty inherited a certain kind of natures, its corresponding colors prospered.

1.2 Positive color concept. Red, cyan, yellow, white and black are regarded as positive colors. In the traditional Chinese ideology, the color representing the government and the official must be the positive color, which is an important expression of following the orthodox etiquette and system.

1.3 Important activities. In ancient important imperial activities, such as funerals, wars, sacrifices, and deliberation, proper colors must be used. For example, red means eternal life, with red painted coffins buried dead relatives; the horses and oxen used in battle should be red and the surrender flag should be white. During the sacrifice, the emperor and vassals had to wear red clothes.

1.4 Hierarchy. There was a strict hierarchy in the use of colors in ancient times. Generally, yellow, a symbol of imperial power and the son of Heaven, could only be used by the emperor. According to the level of the official position, the general official of the higher use of the prevailing or higher status of the orthodox color, the lower official use the lower status of the secondary colour. For example, in the Tang Dynasty, the emperor wore red shirt and robe as the common dress, and the officials of three to five levels were limited to wear red court clothes. In addition, the colors used in edible utensils, residential buildings and travel tools are also strictly graded.

2. The Cultural Dimension and Application of Traditional Chinese Five Colors

2.1 Traditional festivals. The Spring Festival, Qingming Festival, Dragon Boat Festival and Mid-Autumn Festival are traditional Chinese festivals. Red, cyan, yellow, white and black are widely used in China's four major traditional festivals.

2.2 Color features. The Spring Festival is the most important and solemn festival of the Chinese nation. The theme is to bid farewell to the old and usher in the new and pray for good luck in the coming year. Most of the supplies are in red and yellow color, implying happiness, prosperity and good luck. Qingming Festival in the mid and late spring, all things recovery, green, color and nature as one of the main cyan. The Dragon Boat Festival originated from the worship of the sky, and gradually developed from the past dragon totem sacrifice. Its main colors cover red, cyan, yellow, white and black. During the Mid-Autumn Festival, people often use gold to describe the harvest season, such as the golden autumn, so the main color of the Mid-Autumn Festival is yellow.

2.3 Custom activities. The Spring Festival mainly paste couplets, paste window flowers, red envelopes, burning firecrackers, wearing red underwear, wearing red and yellow auspicious knot. The Qingming Festival has the custom of eating Qingtuan made of green mugwort leaves. The main activities of the Dragon Boat Festival include dragon boat racing, wearing long life strands, and wearing sachets. Dragon boat racing is divided into five large dragon boats, namely Red Dragon, Green Dragon, Yellow Dragon, White Dragon and Black Drago. Long life strands are made of red, green, yellow, white and black silk threads. The Mid-Autumn Festival has eating moon cakes, offering the moon, burning lamp activities, yellow round moon cakes symbolize the moon, reunion, used for offering the moon using white yarn paper, burning lamp widely used red, green, yellow and other colors.

3. The Cultural Dimension and Ritual Application of Chinese Traditional Five Colors

3.1 Wedding ceremony. In the Shang Dynasty, people chose daytime for weddings. In the Jin Dynasty, the crown prince wore white clothes and purple ornaments when he got married. In the Tang Dynasty, there were certain restrictions on the use of red. The color of civil wedding was cyan, and men of the scholastic class could wear red to marry the bride. In the Song Dynasty, aristocratic women were allowed to marry in red clothes with large sleeves. The custom of both bride and groom adopting red wedding dresses has been carried on since then. In the 19th century, the white wedding dress became popular in England. At the beginning of the 20th century, white wedding dress from the West into China, people's wedding bride mostly to wear white wedding dress, white veil based.

3.2 Funeral rites. White e is the most important color for funerals in China since ancient times. In the funeral ceremony, wear elegant white clothes, to show respect for the deceased, mourning and filial piety. In ancient times, funerals pay attention to the "white horse and plain cart", that is, white horses and vehicles are used. During the Shang Dynasty, many nobles were buried with white pottery. In addition, relatives of the deceased should wear white hair bands and place white flowers at the scene.

3.3 Social rituals. According to the rules of ancestor worship and banquets in the Zhou Dynasty, a long white dress should be worn inside the sacrificial dress and formal dress, and the white edge should still be shown after wearing the formal dress. On the one hand, it is the need of etiquette and propriety, and on the other hand, it can really enhance the aesthetic feeling of dressing layers. In the Song Dynasty, Scholar-officials, Jinshi and Juzi wore white clothes when socializing, which was elegant and noble. As the Mongolian, Tibetan people's social etiquette articles "Hada", Mongolian mostly cyan. The Tibetan people use white hada, which means a horse, to express respect and enthusiasm. The Mongolian people love white very much. Whenever their relatives travel far, they will sprinkle white milk to pray for peace. White symbolizes auspice, prosperity, purity and peace in the hearts of Mongolians.

3.4 Opening Ceremony. Lion dance is a traditional Chinese folk art, which coincides with festivals, gatherings and celebrations. Lion dance is more popular for one yellow and one red, often appear in the opening, foundation of the wedding occasions, on the one hand, the Chinese pay attention to good things in pairs, on the other hand, yellow represents the auspicious day, everything goes smoothly, red represents prosperous .

Table 2: Analysis results of the cultural dimension corresponding to the five traditional Chinese colors

Cultural dimension	Rules for the use of traditional colors	Scope of application
Political dimension 1.Color preference. 2.Positive color concept. 3.Important events. 4.Hierarchy.	1. Color preference: According to the theory of the five elements of yin and yang and the "five natures", the ancient Chinese dynasty changed and adopted the five colors of red, cyan, yellow, white, and black, cyclical replacement. 2. Normal color concept: red, cyan, yellow, white, black are regarded as positive colors, and other colors are secondary colors. The positive color represents the orthodox color of the government and is authoritative. 3. Important activities: important activities such as funerals, sacrifices, wars, and political discussions of the government must use positive colors or	1. Color preference: Each dynasty prevailed and preferred a color, which would be widely used in all aspects of the emperor's clothing, food, residence, travel, work or living environment. 2. Concept of positive color: The minister of the central court or the local prince should not easily break the color preferred and respected by the ruler of the current dynasty, and must not break the etiquette and rules related to the use of color. Such as morning clothes, accessory colors. 3. Important activities: red for funeral coffins, red for sacrifices to

	<p>relevant prescribed colors, such as red White.</p> <p>4.Hierarchy. Orthodox colors, which generally represent the authority of the government, have strict restrictions on their use, and are generally restricted to emperors, nobles, or important officials, to distinguish between status and inferiority. Red, cyan, yellow, white, and black are all clearly documented about the applicable restrictions.</p>	<p>the heavens, red for cattle and horses in war, white clothes for surrender, and raising white flags Advice on the use of white wine jugs and so on.</p> <p>4.Hierarchy: Both red and yellow were clearly stipulated that only the emperor and the royal family could use them. The officials also distinguish according to their positions and the color of the court's uniform. For example, the emperor of the Tang Dynasty wore a red shirt robe as a regular uniform, and officials of the third to fifth rank were limited to wearing red court clothes.</p>
<p>Traditional dimension</p> <p>1.Traditional festivals.</p> <p>2.Color characteristics.</p> <p>3.Custom activities.</p>	<p>1.Traditional festivals: red, cyan, yellow, white and black are widely used in China's four traditional festivals.</p> <p>2. Color characteristics: The application of China's four traditional festivals has formed a relatively stable color impression, performance and characteristics. The Spring Festival is dominated by red and yellow, the Qingming Festival is dominated by cyan, and the Dragon Boat Festival covers red, cyan, yellow, and White and black are a variety of colors, and the Mid-Autumn Festival is mainly yellow.</p> <p>3. Customs and activities: The Spring Festival mainly includes sticking Spring Festival coupons, pasting New Year paintings, pasting window flowers, wrapping red envelopes, and burning firecrackers "Stepping on the villain". Qingming Festival tomb sweeping and ancestor worship, visiting Qingqing, and eating Qingtuan. The main activities of the Dragon Boat Festival include dragon boat racing, eating rice dumplings, wearing long life wisps, wearing incense bags, picking tea, and drinking. Mid-Autumn Festival eats mooncakes, sacrifices to the moon, lights burning, and watching the tide.</p>	<p>1. Traditional festivals: Spring Festival, Qingming Festival, Dragon Boat Festival, Mid-Autumn Festival.</p> <p>2. Color application: red and yellow are widely used in Spring Festival, New Year painting, window flower, red envelope, firecracker and on the clothes of the natal year; Cyan is fully manifested in tomb sweeping and ancestor worship and green play, and cyan mugwort leaves are made into green groups; Red, cyan, yellow, white, black five colors are used in dragon boats, longevity, Sachets and other items; Yellow is used in mooncake making and packaging, white is used in moon festival activities, and red, green and yellow are widely used in lamp-burning event supplies.</p>
<p>Ritual dimension</p> <p>1.Wedding ceremony.</p> <p>2.Funeral ceremonies.</p> <p>3.Social ceremonies.</p> <p>4.Opening ceremony.</p>	<p>1.Wedding ceremony: Different dynasties are not the same when they get married, and with the elimination of the class system, the restrictions on the color of wedding dresses are gradually relaxed, and the wedding supplies of the people are mainly red and white.</p> <p>2.Funeral ceremonies: In ancient China, there was a whole set of systems and cultures regarding funeral clothing. White is the most important color in</p>	<p>1. Wedding ceremony: In Chinese weddings, red is used in wedding ceremonies for dresses, headdresses, shoes, the character "囍", Bedding, decorative dolls, gift gold red envelopes, souvenirs, etc. Western-style wedding dresses and headwear are white, while most other items are still red.</p> <p>2. Funeral ceremony: choose white horse vehicles and use white pottery</p>

	<p>funeral affairs in China since ancient times.</p> <p>3.Social ceremony: As a country of etiquette, China has attached great importance to social etiquette and rules since ancient times, and social etiquette is different between different ethnic groups, and color performance is not the same.</p> <p>4.Opening ceremony: In important festive occasions such as opening, foundation laying, gatherings, and celebrations, people often use red, yellow, and Green and other cheerful and bright colors mean red fire and smoothness.</p>	<p>to accompany the burial. Wear white clothes, tie white hair bands, and place white flowers.</p> <p>3. Social ceremonies: White appeared in the norms of social dress in the Zhou and Song dynasties. In Mongolian social ceremonies, cyan hada is presented, and Tibetans give white hada. Mongolians throw white milk for their loved ones. The Yi people use black, yellow and red three-color tableware to serve guests.</p> <p>4. Opening ceremony: lion dance, using red lions and yellow lions; Red, yellow and green are widely used in gongs, candies, flower baskets, firecrackers, couplets and other items.</p>
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As can be seen from Table 2, the research results of the cultural dimensions of the five traditional Chinese colors show that the five traditional Chinese colors have a long history and far-reaching influence, and its application involves the country, society, nation and all aspects of people's life. It has formed a relatively stable culture with relatively clear rules of use and specific application categories. It is constantly changing and developing with the change of dynasties and times. Based on the theory of Yin-yang and five elements in traditional China, there are clear color preferences, strong positive color concepts, patterns of color use in important activities and strict color hierarchy at the political level. The traditional five colors show that they are widely used in Chinese traditional festivals, which have obvious characteristics of festival colors and conventional activity colors. The traditional five colors show that there are specific rules and scope of use in specific ceremonies.

Research on the Application of Chinese Traditional Five Colors in Porcelain Shows that:

Ceramic is the general name of pottery and porcelain. Early in the Neolithic Age, we already had painted pottery and black pottery. Of course, at that time, painted pottery mainly showed ochre red, black and white and other relatively simple colors. With the development of technology and craft, in the Han Dynasty, pottery replaced a large number of daily necessities made of copper, greatly improving the artistic and aesthetic value of pottery. So far, pottery gradually changed to porcelain, with the appearance of black porcelain, celadon, white porcelain, red porcelain, yellow porcelain and other porcelain colors.



Figure 4: Northern Song Dynasty Kiln Black Glazed Cup
Source: Baidu

In the Neolithic period, black pottery was unearthed in our country, which was mainly fired by carburizing technology. About 2,000 years before the emergence of porcelain, the craftsmanship and aesthetic value of black pottery had reached a level comparable to that of porcelain. Black porcelain, which was fired with black glaze at high temperature, first appeared in the Shang and Zhou Dynasties and developed in the Han Dynasty. After the Song Dynasty, black glazed porcelain gradually retired.

**Figure 5:** Rain over sky blue glaze**Source:** Baidu

As early as the Shang and Zhou Dynasties, there appeared the original celadon with yellow brown in the green, after the development of the Spring and Autumn period and the Warring States period and the breakthrough of the Eastern Han Dynasty. In the Yuan Dynasty, based on the development of celadon and white porcelain, "blue and white porcelain" appeared. Unlike the previous celadon, which was generally green in color, the blue and white porcelain at this time was blue.

**Figure 6:** Song dynasty kiln white porcelain**Source:** Baidu

It took the ancient Chinese nearly a thousand years until the Northern Dynasty to eliminate the color of iron oxide and produce white porcelain with milky glaze color, which was still slightly bluish in color. Due to the low content of iron oxide in the raw materials of China clay in the north, the main producing areas of white porcelain are in the north, forming an ancient ceramic production pattern of "cyan in the south and white in the north". In the Sui Dynasty, pure white porcelain with smooth glaze was produced. Xing Kiln white porcelain appeared successively in the Tang Dynasty. Its glaze color, shape, sound and texture could compete with cyan porcelain, and it was cheap and fine. The white porcelain of Ding Kiln in Song Dynasty was plain, warm, quiet and good at cutting, printing, scratching and other decorative skills, and then replaced the white porcelain of Xing Kiln. White porcelain in the Ming Dynasty reached its peak, and craftsmen could not surpass it after the Qing Dynasty.

**Figure 7** Glazed red porcelain**Source:** Baidu



Red glazed porcelain was born in the Tang Dynasty. When fired at temperatures above 1,000 degrees Celsius, only copper can give porcelain its red color. Until the Yuan Dynasty, Jingdezhen Kiln was born with integrated red glaze, and there appeared the decoration technique of underglaze color of porcelain -- Youligong. In Ming Dynasty, red glaze firing entered the golden age and reached its peak.






Figure 8 Yellow glazed dragon pattern bowl
Source: Baidu

Yellow-glazed ceramics first appeared in the Tang Dynasty. Low-temperature yellow-glazed ceramics were mainly represented by "Tri-colored pottery of the Tang Dynasty", which mainly included yellow, green and white. The high temperature yellow glaze is the most famous for the yellow glaze porcelain fired by Shouzhou Kiln in Anhui province. Although it is not as beautiful as cyan porcelain and white porcelain, it has achieved a breakthrough in color. In the Ming Dynasty, the firing level of low-temperature yellow glaze reached the highest level in history. However, the imperial family of the Ming Dynasty restricted the use of yellow glaze and prohibited the firing of colored glaze porcelain among the folk.

Table 3: Analysis of application results of traditional Chinese five colors in ceramics

Picture of ceramics	Cultural dimension	Traditional colors and aesthetics
 <p>Figure 1 Northern Song Dynasty Kiln Black Glazed Cup</p>	<p>In the Song Dynasty, because the imperial court attached importance to literati doctors, literati doctors liked to drink tea, and the culture of "fighting tea" prevailed.</p>	<p>Traditional black. The porcelain "black cup" fired in a kiln is popular because it can better highlight the white color of the tea foam. Song Huizong once wrote in "Daguan Tea Theory": "The cup is noble with its cyan and black color".</p>
 <p>Figure 2 Rain over sky blue glaze</p>	<p>1. A breakthrough in firing technology. During the Shang and Zhou dynasties, primitive cyan porcelain with a yellow-brown color appeared in the cyan, and after the development of the Spring and Autumn Warring States and the breakthrough of the Eastern Han Dynasty, the two Jin dynasties to the Southern and Northern Dynasties periods, the firing of cyan porcelain kilns increased Improved quality. 2. Tea drinking culture has prevailed since ancient times. Celadon tea ware can well</p>	<p>Traditional cyan. cyan porcelain is as warm as jade and transparent as ice. Song Dynasty cyan porcelain entered a mature period, and the most famous "the color of cyan sky after raining" appeared, this color is yellow in cyan when the light is sufficient, and the light is blue when the pipeline is dim.</p>

	<p>reflect the color of tea soup, which is obsessed by literati and gentlemen.</p>	
 <p>Figure 3 Song dynasty kiln white porcelain</p>	<p>1. A breakthrough in firing technology to exclude the color of iron oxide. The reason why cyan porcelain is cyan is that the main natural raw material contains iron, and the ancient Chinese experienced nearly a thousand years until the Northern Dynasty period to exclude iron oxide and produce white porcelain with a milky glaze.</p> <p>2. The production pattern of "south cyan and north white" ceramics. Due to the low iron oxide content of porcelain clay raw materials in the north, the main production area of white porcelain manufacturing is in the north, and the main production area of cyan porcelain is in the south.</p>	<p>Traditional white. With the development of white porcelain, its glaze color, shape, sound, and texture can compete with celadon, and it is inexpensive and sells well everywhere. Song Dynasty Ding kiln white porcelain is pure and warm white and quiet, and good at carving, printing, scratching and other decorative skills.</p>
 <p>Figure 4 Glazed red porcelain</p>	<p>1. The improvement of high-temperature firing and coloring technology. The difficulty in firing red-glazed porcelain is that the red glaze is difficult to color under high-temperature firing conditions, and under high-temperature firing above 1000 degrees Celsius, only copper can make porcelain red, but its color tolerance is very narrow. If you miss a little, you will disappear, leaving a blank space.</p> <p>2. The decorative technique of porcelain underglaze color - glaze red. Until the Yuan Dynasty, the Jingdezhen kiln gave birth to a seamless red glaze and decorative technique of porcelain underglaze color appeared - red glaze.</p>	<p>Traditional red. Miss the slightest point, and the ashes are not fired. The requirements are cherished and fascinating. Red-glazed porcelain was born in the Tang Dynasty, and the earliest red-glazed porcelain work is a red-glazed pot unearthed in Changsha kiln. In the Song Dynasty, Neo-Confucianism was raised, Taoism was prevalent in cyan, and red glaze was regarded as a monster, and fell silent for a time. In the Ming Dynasty, red glaze firing entered the golden age and reached its peak.</p>
 <p>Figure 5 Yellow glazed dragon pattern bowl</p>	<p>1. The limitations and breakthroughs of firing technology. Glaze containing copper is green, iron is yellow, limited by firing process technology, although there is yellow glaze in the Han Dynasty, but the color is not pure, yellow glaze utensils are scattered, A scale system has</p>	<p>Traditional yellow. Although it is not as beautiful as cyan porcelain and white porcelain, it has achieved a breakthrough in color. In addition, it is more symbolic and authoritative of imperial power. Yellow glazed porcelain is an important vessel during sacrifices in the Ming Dynasty, and the yellow glaze</p>

	<p>not yet been formed. In the Ming Dynasty, the firing level of low-temperature yellow glaze reached the highest level in history, and the firing glaze method of "pouring yellow" appeared.</p> <p>2. To limit the use of yellow glaze. The Ming Dynasty royal family restricted the use of yellow glaze and banned the yellow color glaze porcelain fired by the people.</p>	<p>of the Qing Dynasty broke through the limitations of sacrifice and tableware in the Ming Dynasty, and was richer in form and color, but more and more restrictive in the internal use of the royal family. Yellow-glazed porcelain is mainly fired in official kilns, and yellow-glazed porcelain in civil kilns is very rare.</p>
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The application results of the five traditional Chinese colors in porcelain in Table 3 show that the traditional Chinese red, cyan, yellow, white and black were widely used in ancient Chinese porcelain. The concept of five colors has a far-reaching influence and the traditional five colors are loved, recognized and pursued by people. Second, the realization of porcelain color mainly lies in the breakthrough and innovation of firing technology. The color of porcelain is affected by raw material composition, glaze composition, temperature, coloring techniques and other factors, which not only affects the purity of the color but also affects the stability of the color. Thirdly, as for the preference of porcelain color, the ancients did not completely follow the rigid "Five Natures" theory, but more influenced by the flourishing culture and practicability at that time, the color concept based on the theory of Yin and Yang and the five elements. After the Tang Dynasty, the emperors only chose a couple to realize their political intentions, rather than following the whole picture. For example, in the Song Dynasty, bearing fire nature, red should flourish, but because of the rise of Neo-Confucianism, advocating cyan, red porcelain was regarded as a demonic object. The Ming Dynasty is fire nature, should prevail red, the Qing Dynasty is water nature, should prevail black. However, in the color concept of Yin and Yang and the five elements, yellow represents the middle position and can highlight the centralization and authority, so yellow prevails and is regarded as a special color for the royal family. Yellow porcelain can only be fired in official kilns, and it is forbidden to fire butter porcelain in civilian kilns.

CONCLUSIONS

Study the theory of Yin-yang and five elements and the cultural dimension of the traditional five colors on Chinese porcelain.

1. The relationship between the traditional Yin-yang and five elements theory and the traditional five colors shows that the traditional Chinese five-color culture is derived from the traditional Chinese philosophy of Yin-yang and five elements, and it is a color culture system integrating the five elements, five directions and five natures.
2. The cultural dimension of the emergence of the five traditional colors shows that the five traditional colors of China involve all aspects of the country, society, nation and people's life, forming a relatively stable culture with relatively clear rules of use and specific application categories, which mainly include three aspects: political system, traditional customs and rituals.
3. Application of Chinese traditional five colors in porcelain Results show that Chinese traditional red, cyan, yellow, white and black were widely used in ancient Chinese porcelain, and the realization of porcelain colors mainly lies in the breakthrough and innovation of firing technology. After the Tang Dynasty, based on the theory of Yin and Yang and the five elements, the "Five Natures Theory", emperors chose only one puppet rather than the whole picture to realize their political intentions.

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RESEARCH ON THE APPLICATION OF CHINESE PAPER-CUT ART TO PRODUCT DESIGN**Jian Ouyang¹ and Rosjana Chandhasa²**¹Doctoral Student of Philosophy Program in Visual Arts and Design, Faculty of Fine and Applied Arts, Suan Sunandha Rajabhat University²Advisor in Visual Arts and Design, Faculty of Fine and Applied Arts, Suan Sunandha Rajabhat University,**ABSTRACT**

The purpose of the research on the application of traditional Chinese Paper-cut art to the product design is to inherit the traditional Paper-cut art of our ancestors and apply it to design and production. This paper uses qualitative research methods to study the use of Paper-cut art to product design, and summarize, present information in the form of tables, and analyze the tools used in research interviews and group discussions to obtain information according to the objectives of the study.

The research shows that the main techniques of traditional Chinese Paper-cut are 1. Yang carved Paper-cut must be connected by a line. 2. Yin carved Paper-cut is made of blocks, so there are no connecting lines. 3. The pattern of Paper-cut in the composition and shape can destroy the time and area of life and draw all objects related to the needs of the model. 4. Emphasizing the same form, creating a beautiful simplicity and makes the picture and the Paper-cut exaggerated. 5. Because of the limitation of the Paper-cut material, it should focus on the main part of the picture and drop the secondary part to keep the content brief and clear. 6. The color of the paper looks simple and bright. The scope of use of Paper-cut art has increased, and it has begun to combine with all aspects of life. These changes have increased the way to develop and promote traditional Chinese Paper-cut art.

Keywords: Paper-cut, cultural heritage, product design

INTRODUCTION

Chinese traditional Paper-cut is a kind of traditional art, which is a kind of intangible culture and intangible cultural heritage handed down orally. It is the product of China's long-term agricultural culture history, nourished by agricultural civilization, and closely related to traditional customs in its historical development process. "Paper-cut is also the art of punching holes." Paper-cut also brings a sense of openness and visual enjoyment to art. Before the invention of paper, trays could be gold and silver foil, bark, leaves, fabric, leather, leather, etc. It has a long history and is a common traditional art in rural areas of China. With the development of society and the change of people's needs, including the development of clothing, food, housing, transportation and even all aspects of real life, the traditional Paper-cut art has also been improved.

This study found that no matter how traditional Paper-cut has changed, it is important to distinguish and study the carrier of Paper-cut. This makes us rethink the causes of different Paper-cut and traditional Paper-cut service providers in changing times. Different cultural service providers and objects create a unique artistic charm. Traditional Paper-cut not only brought people spiritual happiness, but also became an important tool to spread positive, healthy and progressive traditions in that era. Traditional Paper-cut materials (paper, cloth, leather, gold, silver, copper, iron, etc.) and decorative features are not overwhelmed by the changing times, but have a variety of features. It is not only evidence of traditional Paper-cut diversity, but also found its own carrier in a special period of changes in Chinese society and cultural changes. This can not only study the innovation of traditional Paper-cut, but also the complete case of overthrowing service providers.

RESEARCH OBJECTIVES

To study the art of Chinese traditional Paper-cut to the application of product design

LITERATURE REVIEW

This research collects information by consulting "History of Chinese traditional Paper-cut", "Origin of Chinese traditional Paper-cut and Research Status of Paper-cut", "Application of traditional Paper-cut Art in Modern Design". Study how to improve Chinese traditional Paper-cut art, through access to relevant literature, collect relevant information and Chinese traditional Paper-cut design literature, and finally analyze and summarize the results of the study. Previously, the determination of the concept of traditional Chinese Paper-cut and its background was isolated. This paper makes an in-depth analysis and summary of the formation and development process of Chinese traditional Paper-cut, and analyzes various carriers used in Chinese traditional Paper-cut, which is provide better suggestions for Chinese traditional Paper-cut, such as how to design through various service providers. Chinese traditional Paper-cut art is one of the spiritual treasures of China. Traditional Paper-cut uses the punching effect to enhance the artistic beauty in a unique way, which is different from the

general form of artistic expression. As an important intangible cultural heritage, the development and dissemination of traditional Paper-cut needs more attention. In modern society, the development of multiculturalism has had a great impact on traditional Paper-cut. How will traditional Paper-cut change? Providers should be categorized and researched. Therefore, traditional Paper-cut should be invented and integrated with service providers continuously, in order to add value and aware of their own inheritance and development.



Figure 1 Paper-cut porcelain and the decal of Jizhou kiln in the Song Dynasty.

Source: Izhou Kiln Museum

Paper-cut is a traditional art form with a long history originating from traditional lore, which has a broad mass base, vitality and beauty, which is the characteristics and art of long-term historical development. In modern society, the beauty and art of traditional Paper-cut are gradually being touched, and traditional paper-cut elements are also widely used in various fields of life. No matter what changes have taken place in traditional paper-cut, it is of great significance to sort out and study its carrier, which makes us rethink the essence of traditional paper-cut and why service providers have changed in the changing times. Because of different cultures and specific transportation, it has a unique artistic charm. Traditional Paper-cut not only brought people spiritual happiness, but also became an important tool to spread positive, healthy and progressive traditions in that era. Traditional Paper-cut materials (paper, cloth, leather, gold, silver, copper, iron, etc.) are not overwhelmed by the changing times, but have a variety of features. It not only has the decorative characteristics of traditional Paper-cut, but also considered to be the carrier of social upheaval and cultural change in China's special period. This can not only study the innovation of traditional paper-cut, but also the complete case of overthrowing service providers.



Figure 2 Paper-cut with packaging as carrier

Source: Internet 360 picture Search <https://picture.so.com/>



Figure 3 Paper-cut with fan as carrier

Source: Internet 360 picture search<https://picture.so.com/>



Figure 4 Paper-cut with glass as carrier

Source: Internet 360 picture search<https://picture.so.com/>



Figure 5 Paper-cut on stage background

Source: Internet 360 picture search<https://picture.so.com/>



Figure 6 Paper-cut on a clothing set

Source: Internet 360 picture search<https://picture.so.com/>



Figure 7 Paper-cut with Ceramic as carrier
Source: Chaozhou Wedding Porcelain Shop

Through the investigation of documents and on-site research, we can see that today's paper-cut art mostly uses simple paper decorative patterns on various materials, such as the decorative patterns on the surface of ceramics in Jizhou kiln of Song Dynasty, which is the continuation of Jizhou Kiln decals. From these pictures, we can see that the products containing Paper-cut are very limited. Most people only use in specific environments, such as weddings and spring seasons.

METHOD


Therefore, the Chinese traditional paper-cut art has successfully changed the mode of transportation, and a qualitative research has been carried out on the product design dimension of creative art. The researcher has led the descriptive analysis, interview form and discussion, combined with group and field investigation, and the sequence of steps is as follows.






1. To research and collect field data in research fields, such as Jingdezhen Paper-cut Museum and Taoxichuan Cultural Foundation, collect the history of social aesthetics, the cultural background of traditional Chinese paper-cut, and the composition, the production process and meaning related to porcelain.
2. Literature research method is to study and collect literature materials related to this research, and the information comes from books, journals, network materials, etc. As for the field investigation, we went to Jingdezhen Paper-cut Museum, Taoxichuan Cultural Foundation, Jingdezhen Sanbao Ceramics Village and other places to directly collect information about traditional Chinese paper-cut, compare and connect different theories.
3. To study the development of Chinese traditional paper-cut related technologies and products in contemporary society by collecting books, journals, online media and other documents related to this research.
4. To study the preferences of the paper-cut museum and Jingdezhen visitors to the Paper-cut products of various airlines through a questionnaire survey, so as to determine the market position of the paper-cut products.
5. To interview Paper-cut and product design experts through the interview outline to evaluate the efficiency of Paper-cut products of various airlines, and use it to obtain the most suitable products for developing Paper-cut other than paper.

RESEARCH RESULTS

Research on the transformation of traditional Chinese paper-cut tools shows that there are limitations in the use of traditional paper-cut, insisting that if we want to survive in modern society, we must innovate. At present, most of the paper-cut innovations are used in airlines, decorative patterns, and take Jizhou Kiln in Song Dynasty as an example to spray paper-cut on the surface of ceramics. From the pictures, we can see that there are different restrictions on the use of Paper-cut. Most people only use it on certain occasions, such as weddings and New Year celebrations.







Table 1: Analysis of Chinese Paper-cut Art

Picture	Paper-cut Art	Techniques, Values and Meanings
 Figure 8 literature	Yang carved Paper-cut	Paper-cut is very particular about lines, because the pattern of Paper-cut is composed of lines. According to actual experience, the lines of Paper-cut can be divided into five words: "round, sharp, square, lacking, line", meaning: "round as the moon, sharp as wheat, square as brick, lacking as serration, and lines as beards."

 <p>Figure 9 litevature</p>	<p>Yin carved Paper-cut</p>	<p>Yin carved Paper-cut is a black and white cutting method, the production method is opposite to that of Yang carved Paper-cut. Therefore, the characteristics of Yin carved Paper-cut are that the lines are discontinuous, the entire work is blocky, black and white, and has a sense of heaviness.</p>
 <p>Figure 10 litevature</p>	<p>Patterned Paper-cut</p>	<p>For thematic purposes, the paper-cut breaks the relationship between time and space and life by pulling all relevant objects and arranging them together as necessary.</p>
 <p>Figure 11 litevature</p>	<p>exaggerated Paper-cut</p>	<p>Because of the limitation of Paper-cut tools and materials, we should not only understand the nature of the subject, but also connect lines naturally when working with picture. Therefore, we should not adopt natural realism, but focus on the main part of the picture , boldly discard the secondary part, make the main content clear in an instant.</p>
 <p>Figure 12 litevature</p>	<p>simple Paper-cut</p>	<p>Because of the limitation of Paper-cut tools and materials, we should not only understand the nature of the subject, but also connect lines naturally when working with picture. Therefore, we should not adopt natural realism, but focus on the main part of the picture , boldly discard the secondary part, make the main content clear in an instant.</p>
 <p>Figure 13 litevature</p>	<p>Colorful Paper-cut</p>	<p>The color of the paper cut is required to find complexity in its simplicity for a harmonious and bright feel.</p>

From Table 1, we can see that the value and meaning of pattern combination Paper-cut technique: for thematic purposes, Paper-cut picture can break the relationship between time and space and life, arranging all involved objects. The value and meaning of simple picture: Because of the limitation of Paper-cut tools and materials, we should not only understand the nature of the subject, but also connect lines naturally when working with picture. Therefore, the sense of reality of products with Paper-cut technique cannot be applied. 1. Ceramics for weddings 2. Stage layout 3. Glassware 4. Clothing 5. Product packaging 6. Handicraft. The value and meaning of picture exaggeration: because of the limitation of Paper-cut tools and materials, we should not only understand the nature of the subject, but also connect lines naturally when working with picture. Therefore, we should not adopt natural realism, but focus on the main part of the picture, boldly discard the secondary part, make the main content clear in an instant. Products using Paper-cut techniques: 1. Sacrifice. The value and meaning of bright colors: The color of the paper cut is required to find complexity in its simplicity for a harmonious and bright feel. Products using Paper-cut techniques: 1. Decorative paintings used in the room.

Table 2: Paper-cut Art and product design applications

Picture	Paper-cut Art	Techniques, Values and Meanings
 <p>Figure 14 Paper-cut picture</p>	<p>Yang carved and Yin carved pattern</p>	<p>Application of Paper-cut in packaging design</p>
 <p>Figure 15 Paper-cut picture</p>	<p>Yang carved and Yin carved pattern</p>	<p>Application of Paper-cut in wallet</p>
 <p>Figure 16 Paper-cut picture</p>	<p>exaggerated, simple, colorful Yin carved pattern</p>	<p>Application of Paper-cut in decoration</p>
 <p>Figure 17 Paper-cut picture</p>	<p>Yang carved and Yin carved pattern</p>	<p>Application of Paper-cut in stage background</p>
 <p>Figure 18 Paper-cut picture</p>	<p>carving, interpretation of Paper-cut</p>	<p>Application of Paper-cut in clothing</p>
 <p>Figure 19 Paper-cut picture</p>	<p>Yang carved and Yin carved pattern</p>	<p>Application of Paper-cut in Ceramic Products for Weddings</p>

From Table 2, we can see that with the development of society, Paper-cut has shifted from the production and expression of paper to the combination of Paper-cut techniques and various materials. Paper-cut is not just a simple decoration, but expresses through space and three dimensions, which is very suitable for modern society. With the improvement of the quality of life, people's aesthetics and life spirit can better protect and develop traditional paper-cuts, and will be applied to packaging, wallets, decorations, stage backgrounds, clothes and wedding ceramic product designs.

CONCLUSION

Paper-cut art and ceramic art are both carriers of traditional Chinese culture and shadows that enrich national culture. Their forms and expressions have derived and merged over time, have existed for thousands of years, and in recent years have become distinct cultural systems. With the rise of retro style, traditional culture has received unprecedented attention, and Chinese traditional paper-cut art has been constantly trying to develop and innovate in the form of traditional decorative patterns. The first attempt was to try to make paper-cut patterns with different carriers. However, the traditional paper-cut has limited functions, and people only use it during festivals such as weddings and Spring Festival. Therefore, in order to overcome the limitations of Paper-cut, the expression of Paper-cut must take into account the characteristics of modern technology and aesthetic concepts, and ceramics are meeting all the conditions for the development and creation of Paper-cut innovation.

Both Paper-cut and ceramics are considered to be the most traditional arts in China, especially ceramics, which have great influence. In the early Song Dynasty, paper-cuts were used to make ceramics, but the method was very simple, just put the paper-cuts on the surface of the ceramics for firing. In modern times, Chaozhou wedding porcelain puts paper cutouts on the ceramic surface, which is then painted and fired. These methods are only passed down and do not play a role in promoting Paper-cut. In order to enhance the expressive power of Paper-cut and create unique works, it must be combined with the contemporary ceramic art design concept. The development of ceramic art also relies on the essence of traditional art to develop and spread. Therefore, it is inevitable to apply the art of Paper-cut to modern ceramics. At the same time, the art of Paper-cut must let people know more about contemporary society. Finally, no matter how Chinese traditional paper changes, we should study the changes in blotting paper, which makes us rethink the reasons for the different nature of paper and the changes in service providers in the process of social development. Because there are different service providers, Paper-cut has a unique artistic charm. The decorative function shows the nature of diversity in social development. It is not only the decorative feature of traditional Paper-cut, but also finds a carrier suitable for self-improvement, which is of great significance to the study of traditional paper-cut innovation.

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SIMULATION OF AN ELECTRIC TRUCK ON MATLAB SIMULINK

Samar Sawant¹, Dr. Ajay Kumar Gangrade² and Dr. Shivangi Thakkar³¹Student, ²Professor and ³Professor, Department of Mechanical Engineering, K. J Somaiya College of Engineering, Mumbai, Maharashtra, India**ABSTRACT**

Electric Vehicles have offered a great potential for commercial vehicles to drastically reduce energy consumption as well as pollutant emissions into the environment during their operation. This paper showcases the EV energy consumption through a simulation for a custom designed electric truck. For this purpose, a simulation model is created in MATLAB Simulink software. It also includes a vehicle body sub-component, a transmission and a battery model along with a driver model and a controller to represent human driver's behaviour and control the vehicle speed respectively. Moreover, a regenerative braking strategy, based on a series brake system, is developed to model the behaviour of a real braking controller. Auxiliary devices are also included in the EV model to improve energy consumption estimation accuracy as they can have a significant impact on the total energy consumption. The results are showcased at the end of this paper, which demonstrate the difference in the energy consumption and SOC of the vehicle for driving load power consumption and combined load (driving load and auxiliary load) power consumption with effects of both regenerative and non-regenerative braking taken into consideration on the vehicle power system.

Keywords: Electric Vehicle, Battery, Energy Consumption Estimation, State-of-Charge (SOC), Simulation, Matlab Simulink.

I. INTRODUCTION

Air pollution and climate change are one of the main problems that the human kind is currently facing. Toxic pollutants from the internal combustion engines are considered to be primary air pollutants damaging the ozone layer and the environment on the earth. In order to reduce the emissions and mitigate the damage to the environment many developments are taking place for sustainable evolution of the current polluting components in the world. The increase in energy demand can be attributed to a number of global and national economic activities like tourism, industrial manufacturing, and transportation, and their share in global carbon dioxide (CO₂) emissions. The increasing fuel prices in the global market due to several reasons have led to several automotive, transportation, etc. industries to switch to electric vehicles for their fleet as these vehicles will have cheaper fuel cost and will be zero emission vehicles. Social and political pressures to limit the impacts associated with CO₂ emissions and our dependence on fossil fuels is mounting rapidly. Urban freight and transportation vehicles are responsible for a large share of unhealthy air pollutants such as Sulphur oxide, particulate matter, and nitrogen oxides in urban areas. In order to reduce the effects of fossil fuel emissions and resolve environmental concerns, electric vehicles are widely being promoted to be used all over the world.

Hence, a simulation of an electric vehicle of custom parameters will help to identify the energy consumption and the benefit analysis of the EV's over the conventional vehicles. A simulation model for the electric vehicle has been created in matlab simulink software wherein the input parameters are fed into the model for the required output results that are necessary for the electric truck. The created simulink model is firstly verified with the results from other papers published in reputed journals. The results of simulation from matlab simulink model for defined parameters are compared with the results obtained by experimentation / testing of the real-world Electric truck developed from the same defined inputs. Various output parameters like total energy consumption, vehicle speed, battery voltage, current, State of Charge (SOC) and distance(range) are evaluated from simulation. The results are obtained on a self-defined drive cycle as the application of the truck restricts its speed to a certain limit. This study also includes the effect of regenerative braking and auxiliary loads on the output parameters along with more aspects of future work in this domain.

II. METHODOLOGY

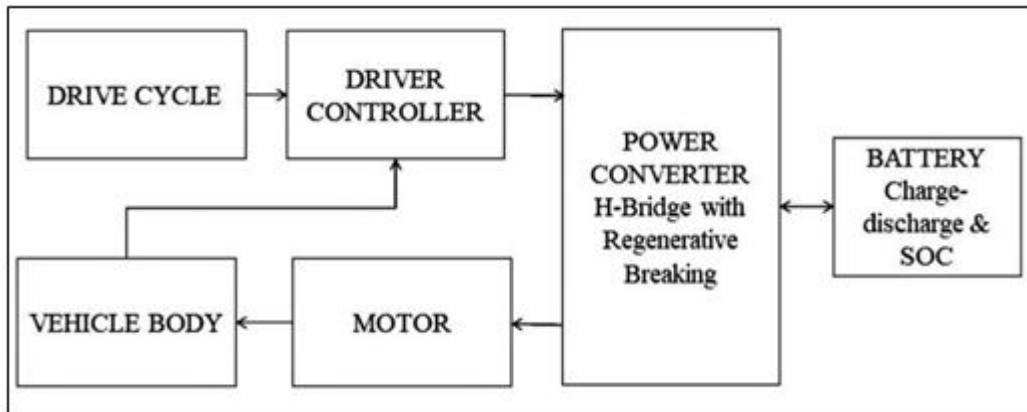


Figure 1. Block diagram of electric vehicle modelling.

The proposed method consists of a battery, motor, controller, power converter, and a vehicle body. The motor is connected to the vehicle body's shaft. Through a power converter, the motor is connected with batteries for controlling. The power converter changes the voltage applied to the motor that changes the speed of the vehicle. Thus, the vehicle body, battery, motor, controller, and power converter are the fundamental components of electrical vehicles, as shown in Figure 1. The concept of electrical engine revolves around magnetism. The engine draws power from the battery making a magnetic attraction propelling the automobile forward that produces high torsion from the start. To simulate the model, a throttle angle and a brake pedal input are given through the drive cycle. The driver controller is needed to track the particular speed of the vehicle to match the drive cycle input. The drive cycle source consists of throttle and brake pedal input. The longitudinal driver controller receives the input from the drive cycle source. The driver controller has three input, namely, reference speed, velocity feedback, and grade and three output ports, namely info, acceleration, deceleration. The output from the driver controller is given to H-bridge via Simulink to physical signal converter and controlled PWM voltage. The pulse width given for activation is five volts. The H-Bridge is powered internally. The battery is used to switch the DC motor. The battery is connected to the motor through a power converter to provide control action. The power converter changes the voltage applied to the motor. DC motor is connected to the axle of the vehicle. The vehicle body consists of velocity, hub, wind, beta, NR, and NF. Rear wheels of the vehicle are connected to the normal rear force of the vehicle body. The front wheels of the vehicle are connected to the normal front force of the vehicle body. Hub of the wheels is connected to that of the vehicle body. Thus, the driver controller is required to track the actual speed of the vehicle for matching drive cycle input. It compares the reference speed with actual speed and calculates the error. The controller used is a Proportional Integral controller. If the error is positive, then there will be acceleration and if the error is negative, deceleration action will be taken in the vehicle.

Quick creations of physical framework models are enabled using Simulink software. With this, physical part models support associations that directly integrate with block diagrams, and other model paradigms are built. Frameworks, such as electrical engines, bridge rectifiers, pressure driven actuators, and refrigeration frameworks, amass crucial elements into a schematic. Simscape add-on things provide additional advanced elements and analysis capabilities. Simscape creates control frameworks and tests system-level execution.

1. SIMULATION MODEL:

III. MODELING AND ANALYSIS

All mathematical equations that apply each component in the battery electric vehicle simulation were selected to model the BEV. The simulation model was designed and created in MATLAB SIMULINK software using several available blocks. The simulation model involves six components of numerous in-built blocks: the transmission model, the electric motor model, the battery charge controller model, the driving cycle, the driver model and the longitudinal vehicle dynamics model as shown in Figure 2. The drive cycle provides the speed vs time plot to the driver model which accordingly provides the acceleration and deceleration command to the controller to provide power through the transmission. Aiming to develop an appropriate throttle and brake commands by PI controller, driver model considers the objective speed and the present real speed. Simulating the role of the driver and the vehicle is explained by this model. To guarantee having the exact reference speed tracking by the vehicle, a feedback control loop of a vehicle speed is utilized. Provided by the electric motor the throttle command from the driver model is transferred into torque and became an input to the transmission model. The controller and power electronics block consists of a DC-to-DC converter.

This block is responsible for flow of power to and from the battery. The battery consists of charge that powers all the systems of EV. Apart from external charging of the EV battery, it also gets charged through regenerative braking. The electric motor is the heart of an electric vehicle. It converts the electrical energy into mechanical energy and vice versa to provide power to the wheels and charge the battery during regeneration respectively. Further, the transmission is the mechanical component to provide effective torque to wheels by reducing the high-speed low torque from the electric motor to low-speed high torque to power the wheels. The longitudinal vehicle acts as the external constraints presented to the vehicle such as rolling resistance, gradient, aerodynamic drag and inertial forces. The car, tires, roadway and driving system interaction can be described under the longitudinal vehicle dynamic model. There are three variables for the status of motion dynamics model of an electric car: Identifying each of the acting forces in a vehicle direction is essential in order to control its movement behavior Also, the system is a closed loop system as the output speed of the vehicle is again fed to driver model so the prompt acceleration and deceleration action can take place to match the speed vs time plot in the drive cycle.

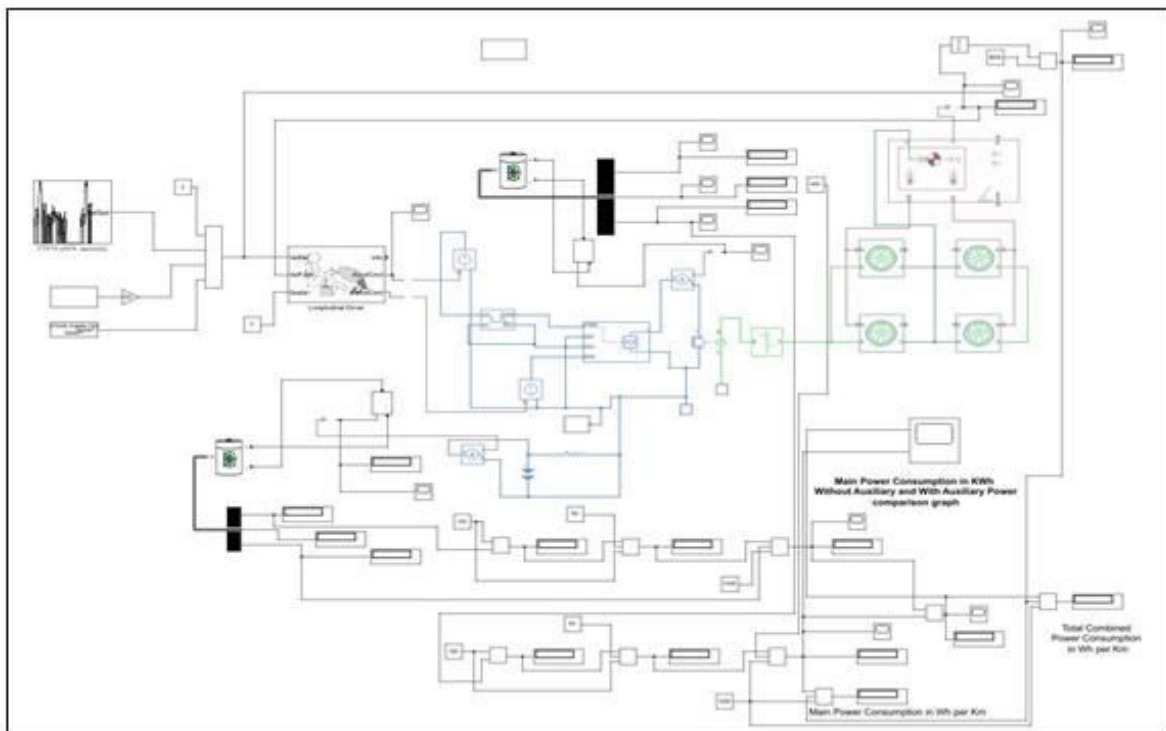


Figure 2: Simulation Model in MATLAB Simulink software.

2. **Vehicle Parameters:** The following are the vehicle parameters followed as inputs,

Parameters	Value	Units
Vehicle Body		
Gross Vehicle Weight	4000	Kgs
Load Carrying Capacity	1000	Kgs
Rolling Resistance	0.01	-
Aerodynamic Drag	0.8	-
Frontal area	8	m ²
Wheelbase	3.8	m
Drivetrain		
POWERTRAIN	Rear wheel drive (RWD)	
Number of motor(s)	1	
Motor type	DC Motor	
Efficiency	84	%
Maximum Speed	3000	rpm
Rated Speed	1500	rpm
Rated Torque	244	Nm
Rated Power	38.5	kW
Rated Current	89	Amp
Weight	320	Kgs
Transmission		
Type	Single-speed transmission	

Simple fixed gear ratio	14.7:1	
Front/rear tyres used	TATA 409	
Front/rear tyres diameter	0.812	m
Battery configuration		
Battery Type	Lithium-ion	
Battery configuration	9 Modules (108 Cells)	
Nominal cell voltage	3.7	V
Nominal battery pack voltage	400	V
Nominal battery pack	60	Ah
Nominal battery pack energy	24	kWh
Weight	150	Kgs
Performance		
Top speed	15	KMPH
Acceleration (0-15 km/hr)	7.5	Secon
Auxiliary Load		
Average Auxiliary Load for Vehicle Accessories, Control Cooling Systems	24V, 400W	
	Continuous	
(Considering Not being used)		

Table 1. Vehicle input parameters.

3. Drive Cycle

According to the testing track, the speed profile with respect to time was plotted for simulation purpose. The drive cycle data is plotted in table below:

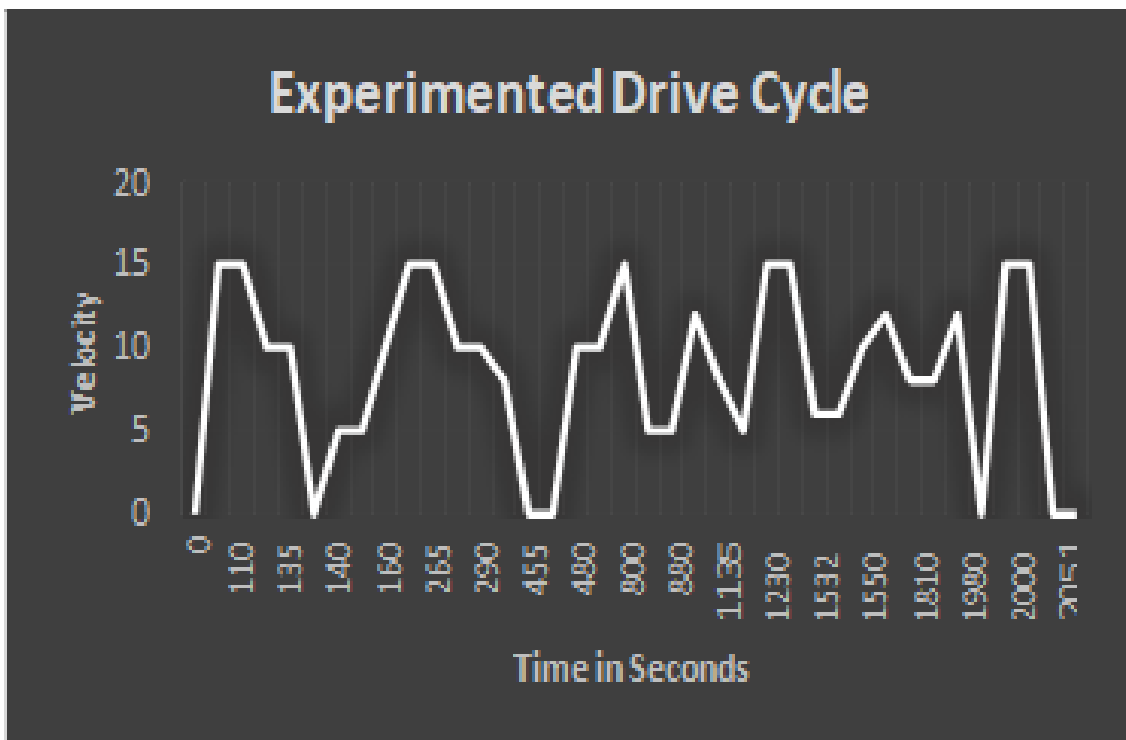


Figure 3: Self-designed drive cycle.

A drive cycle that will mark the instantaneous velocities for time travelled by the electric truck was necessary. However, a drawback with available theoretical drive cycles was that they were having too much extent of their speed profiles and thus were also not feasible for our specific speed application that would be limited by the component capacity to these cycles. But, as per road conditions we have simulated with a gradient of 9 (4^o slope) which is also a standard practice for simulating on Indian road conditions as per recommended standards.

IV. RESULTS AND DISCUSSION

The vehicle speed profiles for 2100 seconds have been specified to complete the defined drive cycle loop as discussed in 3.3. The net weight of the vehicle is 3000 Kgs while load carrying capacity is 1000 Kgs making the gross vehicle weight (GVW) as 4 Tons. The simulated results for the same are shown as below,

1. Speed Profile Comparison:



Figure 4. Ideal and actual/reference speed profiles on the Experimentation Drive Cycle. (Speed in KMPH vs Time in seconds.)

2.Distance Travelled: 6.265 Km

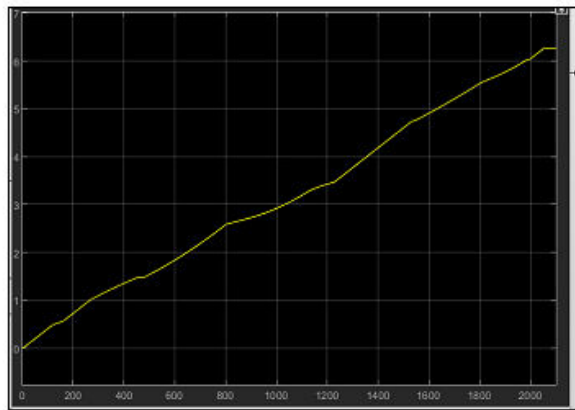


Figure 5. Distance Travelled in Km vs Time in Seconds.

3. Current discharge: Max. Current = 76.6 A.

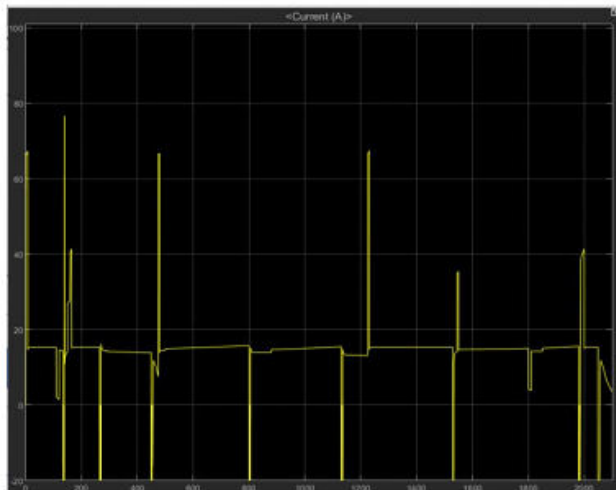


Figure 6. Current in Amperes vs Time in seconds

4. Battery SOC main driving load=85.89 %

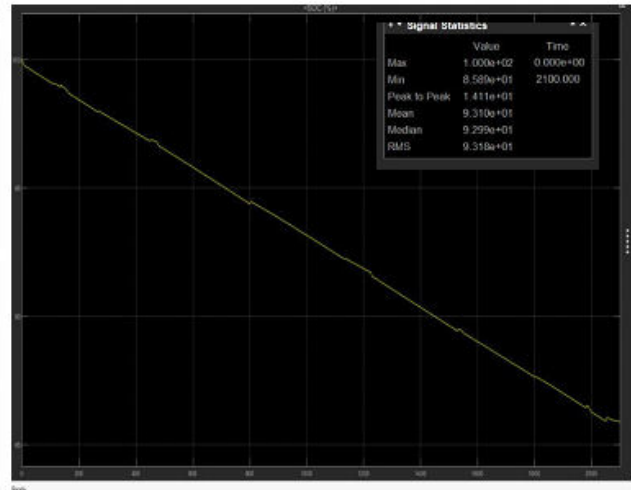


Figure 7. Battery S-O-C for Main Driving Load.

1. Power Consumption in KWh:

1. Main Driving Load and Combined Load Energy Consumption in KWh:



Figure 8. Battery packs energy in KWh vs time in seconds.

In results, we have showcased the speed profile comparison between the ideal cycle that is fed to the system by a drive cycle source and the reference speed that is taken from the feedback of the system and both the plots overlap showcasing follow-through of the drive cycle by the longitudinal driver in the simulation by providing necessary accelerations and decelerations at the required time instances. Further, the distance plot shows the distance travelled by the vehicle at the particular time instance. The current plot shows the positive and negative current peaks that is fed to the drive system for carrying out the acceleration and deceleration commands according to the drive cycle wherein positive current indicates acceleration while negative current indicated deceleration. When positive current is drawn, battery SOC reduces while where negative current is drawn, a reverse voltage is applied by the controller resulting in reverse flow of current (negative current) which charges the battery and increased battery SOC. This phenomenon is called as regenerative braking. The peak current if multiplied by the instantaneous voltage can give the power required at that instance by the vehicle to match the speed profile of drive cycle in accordance with road slope and vehicle weight. In figure 8, the power consumption is shown for the same simulation wherein the battery power consumption is compared for the condition where in one case only main driving load is having power consumption from the battery while in another case, the main driving load along with auxiliary load (Combined Load) is having power consumption from battery. It is clear that combined load will have a greater power consumption than the main load and the magnitude of the difference is stated in table 2. below.

6. Results In Tabular Format:

No.	Parameter	Result	
		Driving	Driving with Auxiliary
1.	Weight	4000 kgs	
2.	Time in Seconds	2100 seconds	
3.	Distance travelled	6.265 Km	
4.	Gradient	9 Grad (4 degrees)	
WITH REGENERATIVE BRAKING			
5.	Battery S-O-C	85.89 %	84.875%
6.	Battery Charge	8.46 Ah	9.075 Ah
7.	Battery Energy Consumption	3.38 KWh	3.63 KWh
8.	Energy Consumption per KM	540.46 Wh/Km	579.4 Wh/Km
9.	Range	44.4 Km	41.42 Km
WITHOUT REGENERATIVE BRAKING			
10.	Battery S-O-C	84.5 %	83.45%
11.	Battery Charge	9.3 Ah	9.925 Ah
12.	Battery Energy Consumption	3.72 KWh	3.97 KWh
13.	Energy Consumption per KM	593.77 Wh/Km	633.67 Wh/Km
14.	Range	40.42 Km	37.85 Km

Table 2. Results of energy consumption of electric truck for different parameters and constraints.

Table 2. Consists of results of energy consumption of electric truck for different parameters and constraints for driving load and combined load (driving load along with auxiliary loads) for the results with regenerative braking and non-regenerative braking cases. In the results, Battery SOC is being noted from simulation according to constraints. For regenerative braking, it is seen that the battery SOC for driving load is 85.89 % while for combined load is 84.875 %. From the battery SOC, the battery charge/energy consumed is calculated which is used to find the range of the vehicle at the specified condition for 100% battery energy consumption. Similarly, results are noted and specified for non-regenerative braking case. It is seen that for case 1 with regenerative braking, the vehicle range is 44.4 Km for driving load and it falls nearly 6.8% to 41.42 km for combined load on battery. Similarly, the vehicle range is 40.42 Km for driving load and it falls nearly 6.3% to 37.85 km for combined load on battery for case 2 having no effect of regenerative braking on battery. From the results, it is seen that the combined loads have 9% more energy consumption of the battery than main driving loads alone while, regenerative braking increases the vehicle efficiency by increasing the range of the vehicle by almost 9% than the vehicle having no regenerative braking.

V. CONCLUSION

The main purpose of this study was to design and develop an electric vehicle computer-based simulation model to estimate EV energy consumption along with a defined driving cycle. The design stage of the paper consisted of the electric power train design and the component selection according to constraints and surrounding conditions required for the vehicle performance and application. A forward vehicle simulation model was developed in MATLAB/Simulink, including the powertrain system and the longitudinal vehicle dynamics. The powertrain model was implemented using accurate efficiency maps of the electric motor and the power system used. The powertrain system also includes transmission and battery where the Thevenin equivalent circuit battery model was used. Moreover, the resistance forces opposed to the vehicle motion were modelled in the longitudinal vehicle dynamics. A driver model was developed using a PI controller to control the vehicle's speed. In addition, a regenerative braking strategy that models the behaviour of a real braking controller was developed to distribute the braking torque demand between the friction and regenerative brakes.

As a perspective to future research of this study, the proposed model can potentially be used as a base for EV range estimation and different ranges are been specified in the simulated results according to the given conditions. For this purpose, additional information about the road such as traffic and weather conditions and also driver's characteristics should be added. In addition, the battery model can be improved by considering the effects of battery SoC and state-of-health (SoH) which have a major impact on battery efficiency and energy consumption. In addition, the inertia of the vehicle's rotating components such as the wheels, brakes and rotor can be also calculated and included in the model to improve its accuracy. Carrying out simulation with same model parameter but with a super capacitor can be taken as a future scope of this report. Along with that Battery management system and battery cooling system simulation along with temperature profile of the batteries in an Electric vehicle can be analyzed depending on different drive profiles. The proposed model may be used as a starting point for EV range prediction in this study's future research. Additional road information, such as traffic and weather conditions, as well as the characteristics of the driver, should be provided for this purpose. Lateral dynamics of the vehicle can be included which can show the stability behaviour of the vehicle during over steering and under steering sort of conditions

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CUSTOMER SEGMENTATION WITH COHORT ANALYSIS-IMPLEMENTATION THROUGH PYTHON CODE

Naresh Chandra¹, Dr. Arvind Kumar Shukla² and Subhash Chand³

^{1,3}Research Scholar and ²Associate Professor, IFTM University, Moradabad, U.P, India- 244001

1. ABSTRACT

Customer segmentation is the process of dividing a company's customers into groups based on the similarity, commonalities and common characteristics amongst customers in each group. Over a period of time, the engagement of the users is being measured by Cohort Analysis. Cohort analysis is done for examination of behavior and performance of a group of users shared with common attribute or the characteristics. In this paper we have segment the customers with cohort analysis using the python code over the dataset.

Keywords: Customers, Segmentation, Cohort Analysis, Marketing Strategy

2. INTRODUCTION

Customer segmentation is the process of dividing a company's **customers** into groups based on the similarity, commonalities and common characteristics amongst **customers** in each group. The objective of **segmenting the customers** is to handpicked how to rely to **customers** in each **segment** in order to optimize the value in the context of Return on Investment (ROI) to the business for each **customer**.

Over a period of time, the engagement of the users is being measured by Cohort Analysis. Cohort analysis is done for examination of behavior and performance of a group of users shared with common attribute or the characteristics. In this paper we have segmented the customers dataset with cohort analysis. We have taken UK based e-commerce retailer companies' online transaction dataset from 01.12.2009 to 09.12.2011 which is freely available on kaggle.com website.

Some of the code used in analysis of the data are shown in italics in this paper.

To analyze different aspect of business of product can be used customer segmentation with cohort analysis. Customer segmentation and Cohort Analysis methods are not interchangeable but rather complementary.

The cohort analysis is a time bound method of segmenting the users. We work with customer's data for a specific period of time in cohort analysis. Unlike, Customers segmentation is not linked with a specific period of time. Most of the companies applies the Cohort Analysis on month-to-month basis. We can go for further customer retention strategies to win users back at a high risk of churning.

Cohort Analysis is widely Used in the Following Verticals:

- i. e-commerce
- ii. Mobile applications
- iii. Cloud Software
- iv. Digital Marketing
- v. Online Gaming and
- vi. Website Security etc.

3. DATASET

The Online Retail data set includes the sales of an UK based online retail store of the period from 1/12/2009 to 09/12/2011 freely available on <https://www.kaggle.com/>. The "Online Retail" dataset is characterized by the following 08 attributes:

- i. Invoice No:** Invoice number is a unique number for every transaction occurred. Invoice number starts with C is a cancelled operation
- ii. StockCode:** Product code is a unique number for every product exist in store
- iii. Description:** Name of the Product
- iv. Quantity:** Number of the products in the invoices have that have been sold is referred by the Quantity.
- v. InvoiceDate:** Invoice date of the transaction
- vi. UnitPrice:** Price of the Product
- vii. CustomerID:** Unique customer identification number and
- viii. Country:** The name of the country where the customer lives.

4. DATA PREPARATION AND PRE-PROCESSING:

For cleaning and organizing the data in machine learning refers to the data processing, which makes data suitable for training and building the machine learning modules. We have done all the exercises related to this paper practically with code in Python.

First, we import all the required libraries just like below,

```

import pandas as Pd
import numpy as np
import matplotlib.pyplot as plt
import datetime as DT
import seaborn as sns
from sklearn.preprocessing import StandardScaler
from sklearn.cluster import KMeans
    
```

Reading the dataset and then using the function “shape”, we examine that 541910 rows and 08 columns are there in dataset. First ten rows of the data using “sample” function are shown like:

	Invoice	Stock Code	Description	Quantity	Invoice Date	Price	Customer ID	Country	
	224005	556502	23202	JUMBO BAG VINTAGE LEAF	10	2011-06-13 08:43:00	1.95	13761.0	United Kingdom
	12415	537376	21495	SKULLS AND CROSSBONES WRAP	25	2010-12-06 12:59:00	0.42	16722.0	United Kingdom
	116434	546246	22720	SET OF 3 CAKE TINS PANTRY DESIGN	6	2011-03-10 13:28:00	4.95	14841.0	United Kingdom
	132563	547670	22364	GLASS JAR DIGESTIVE BISCUITS	1	2011-03-24 13:41:00	2.95	16769.0	United Kingdom
	395672	571039	21991	BOHEMIAN COLLAGE STATIONERY SET	2	2011-10-13 12:59:00	1.25	16121.0	United Kingdom
	90305	543996	22558	CLOTHES PEGS RETROSPOT PACK 24	12	2011-02-15 10:46:00	1.49	15811.0	United Kingdom
	246103	558681	21931	JUMBO STORAGE BAG SUKI	3	2011-07-01 11:20:00	4.13	NaN	United Kingdom
	20703	538071	20719	WOODLAND CHARLOTTE BAG	2	2010-12-09 14:09:00	1.66	NaN	United Kingdom
	499898	578701	23354	6 GIFT TAGS 50'S CHRISTMAS	12	2011-11-25 10:52:00	0.83	17624.0	United Kingdom
	349594	567508	23028	DRAWER KNOB CRACKLE GLAZE BLUE	12	2011-09-20 14:50:00	1.65	17724.0	United Kingdom

Dropping the duplicate values, discarding the rows contains C in “Invoice”, which indicate the orders are cancelled and considering only the Quantity and Price greater than zero, we have 524879 rows and 09 columns are there in dataset now. Also, with adding a new column of “TotalPrice” by multiplying the “Price” with “Quantity”.

COHORT ANALYSIS-Implementation through Python Code:

Defining a Cohort month function like the code below:

```

def get_mon(x): return dt.datetime(x.year, x.mon, 1)
    
```

```
df['InvoiceMon'] = df['InvoiceDate'].apply(get_mon)
grouping = df.groupby('Customer ID')['InvoiceMon']
df['CohortMon'] = grouping.transform('min')
def get_date_int(df, column):
year = df[column].dt.year
mon = df[column].dt.mon
day = df[column].dt.day
return year, mon, day
invoice_year, invoice_mon, invoice_day = get_date_int(df, 'InvoiceMon')
cohort_year, cohort_mon, cohort_day = get_date_int(df, 'CohortMon')
years_diff = invoice_year - cohort_year
mons_diff = invoice_mon - cohort_mon
df['CohortIndex'] = years_diff * 12 + mons_diff + 1
```

Using the function `print(df.head(10))` and `print(df.tail(10))`, we have the output shown in Table-01 and Table-02 respectively.

Table-01												
	Invoice	Stock Code	Description	Quantity	Invoice Date	Price	Customer ID	Country	Total Price	Invoice Mon	Cohort Mon	Cohort Index
0	536365	85123A	White Hanging Heart T-Light Holder	6	2010-12-01 08:26:00	2.55	17850.0	United Kingdom	15.30	2010-12-01	2010-12-01	1.0
1	536365	71053	White Metal Lantern	6	2010-12-01 08:26:00	3.39	17850.0	United Kingdom	20.34	2010-12-01	2010-12-01	1.0
2	536365	84406B	Cream Cupid Hearts Coat Hanger	8	2010-12-01 08:26:00	2.75	17850.0	United Kingdom	22.00	2010-12-01	2010-12-01	1.0
3	536365	84029G	Knitted Union Flag Hot Water Bottle	6	2010-12-01 08:26:00	3.39	17850.0	United Kingdom	20.34	2010-12-01	2010-12-01	1.0
4	536365	84029E	Red Woolly Hottie White Heart.	6	2010-12-01 08:26:00	3.39	17850.0	United Kingdom	20.34	2010-12-01	2010-12-01	1.0
5	536365	22752	Set 7 Babushka Nesting Boxes	2	2010-12-01 08:26:00	7.65	17850.0	United Kingdom	15.30	2010-12-01	2010-12-01	1.0
6	536365	21730	Glass Star Frosted T-Light Holder	6	2010-12-01 08:26:00	4.25	17850.0	United Kingdom	25.50	2010-12-01	2010-12-01	1.0
7	536366	22633	Hand Warmer Union Jack	6	2010-12-01 08:28:00	1.85	17850.0	United Kingdom	11.10	2010-12-01	2010-12-01	1.0
8	536366	22632	Hand Warmer Red Polka Dot	6	2010-12-01 08:28:00	1.85	17850.0	United Kingdom	11.10	2010-12-01	2010-12-01	1.0
9	536368	22960	Jam Making Set With Jars	6	2010-12-01 08:34:00	4.25	13047.0	United Kingdom	25.50	2010-12-01	2010-12-01	1.0

	Invoice	Stock Code	Description	Quantity	Invoice Date	Price	Customer ID	Country	Total Price	Invoice Mon	Cohort Mon	Cohort Index
541900	581587	22730	Alarm Clock Bakelike Ivory	4	2011-12-09 12:50:00	3.75	12680.0	France	15.00	2011-12-01	2011-08-01	5.0
541901	581587	22367	Childrens Apron Spaceboy Design	8	2011-12-09 12:50:00	1.95	12680.0	France	15.60	2011-12-01	2011-08-01	5.0
541902	581587	22629	Spaceboy Lunch Box	12	2011-12-09 12:50:00	1.95	12680.0	France	23.40	2011-12-01	2011-08-01	5.0
541903	581587	23256	Childrens Cutlery Spaceboy	4	2011-12-09 12:50:00	4.15	12680.0	France	16.60	2011-12-01	2011-08-01	5.0
541904	581587	22613	Pack Of 20 Spaceboy Napkins	12	2011-12-09 12:50:00	0.85	12680.0	France	10.20	2011-12-01	2011-08-01	5.0
541905	581587	22899	Children's Apron Dolly Girl	6	2011-12-09 12:50:00	2.10	12680.0	France	12.60	2011-12-01	2011-08-01	5.0
541906	581587	23254	Childrens Cutlery Dolly Girl	4	2011-12-09 12:50:00	4.15	12680.0	France	16.60	2011-12-01	2011-08-01	5.0
541907	581587	23255	Childrens Cutlery Circus Parade	4	2011-12-09 12:50:00	4.15	12680.0	France	16.60	2011-12-01	2011-08-01	5.0
541908	581587	22138	Baking Set 9 Piece Retrosport	3	2011-12-09 12:50:00	4.95	12680.0	France	14.85	2011-12-01	2011-08-01	5.0
541909	581587	POST	Postage	1	2011-12-09 12:50:00	18.00	12680.0	France	18.00	2011-12-01	2011-08-01	5.0

Heat map is used to represent for visualization of the strength of correlation among the variables. In heatmap, individual value is represented by a color in two-dimensional graphical representation of data. Retention gives us the percentage of the customers in comparison to the actual total numbers of customers.

Followings are necessary to create Cohort Retention:

Cohort: The dimension that defines our cohort. This dimension is placed vertically.

Cohort Size: The variable contains the total number of customers in the cohort.

Duration: Data points are organized in second dimension and this is "the Nth mon after the initial".

Value: The raw count of our "returned customers". Retention Rate is calculated by dividing this by Cohort Size.

Note: If cohort size is not selected, the first mon is considered as cohort size,

Thus, Customer retention rate (CRR) is calculated by the formula as:

$$CRR = [(C_{End} - C_{New}) / C_{Start}] / 100$$

Where, C_{End}:Numbers of the Customer at the end,

C_{New}:Numbers of the New Customers) and

C_{Start}:Numbers of the Customers at Starting.

We plot the heatmap of retention rate over the period of time using the following python code over the data:

```
grouping = df.groupby(['CohortMon', 'CohortIndex'])
cohort_data = grouping['Customer ID'].apply(pd.Series.nunique)
cohort_data = cohort_data.reset_index()
cohort_counts = cohort_data.pivot(index='CohortMon',
columns='CohortIndex',
values='Customer ID')
cohort_sizes = cohort_counts.iloc[:,0]
retention = cohort_counts.divide(cohort_sizes, axis=0)
```

```
retention.index=retention.index.date
```

```
#sns.set()
```

```
plt.style.use('fivethirtyeight')
```

```
plt.figure(figsize=(12,10))
```

```
plt.title('Retention Rates')
```

```
sns.heatmap(data = retention,
```

```
annot = True,
```

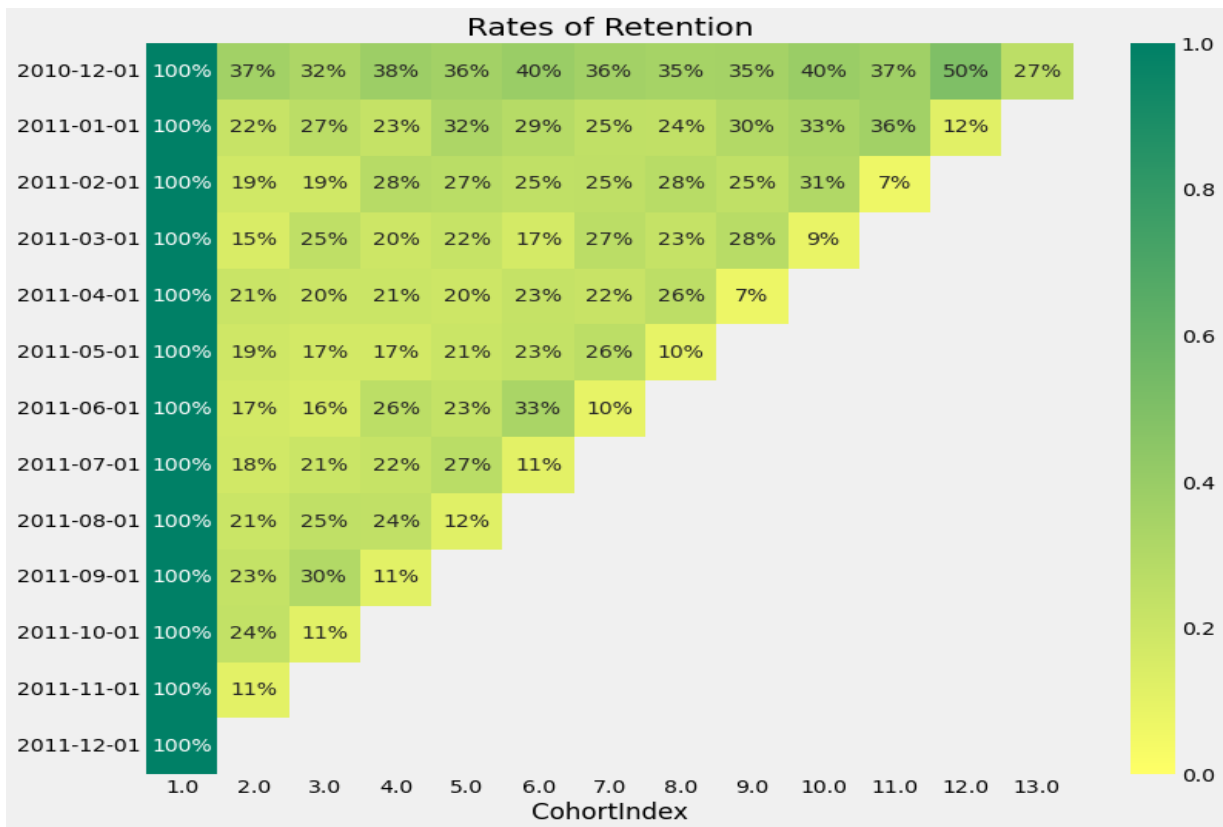
```
fmt = '.0%',
```

```
vmin= 0.0,
```

```
vmax=1.0,
```

```
cmap='summer_r')
```

```
plt.show()
```



Interpretation of the Above Heatmap:

In December- 2010 there were 100% new customers. Out of these in January-2011 retention rate is 37% in February-2011 retention rate is 32% in March-2011 retention rate is 38% and so on. Figure of 50% in a cell is indicating the exception, there may be some special promotional offers etc. in this mon.

The heatmap of average quantity of each cohort is plotted using the following code:

```
grouping = df.groupby(['CohortMon', 'CohortIndex'])
```

```
cohort_data = grouping['Quantity'].mean()
```

```
cohort_data = cohort_data.reset_index()
```

```
average_quantity = cohort_data.pivot(index='CohortMon',columns='CohortIndex',values='Quantity')
```

```
average_quantity.round(1)
```

```
average_quantity.index = average_quantity.index.date
```

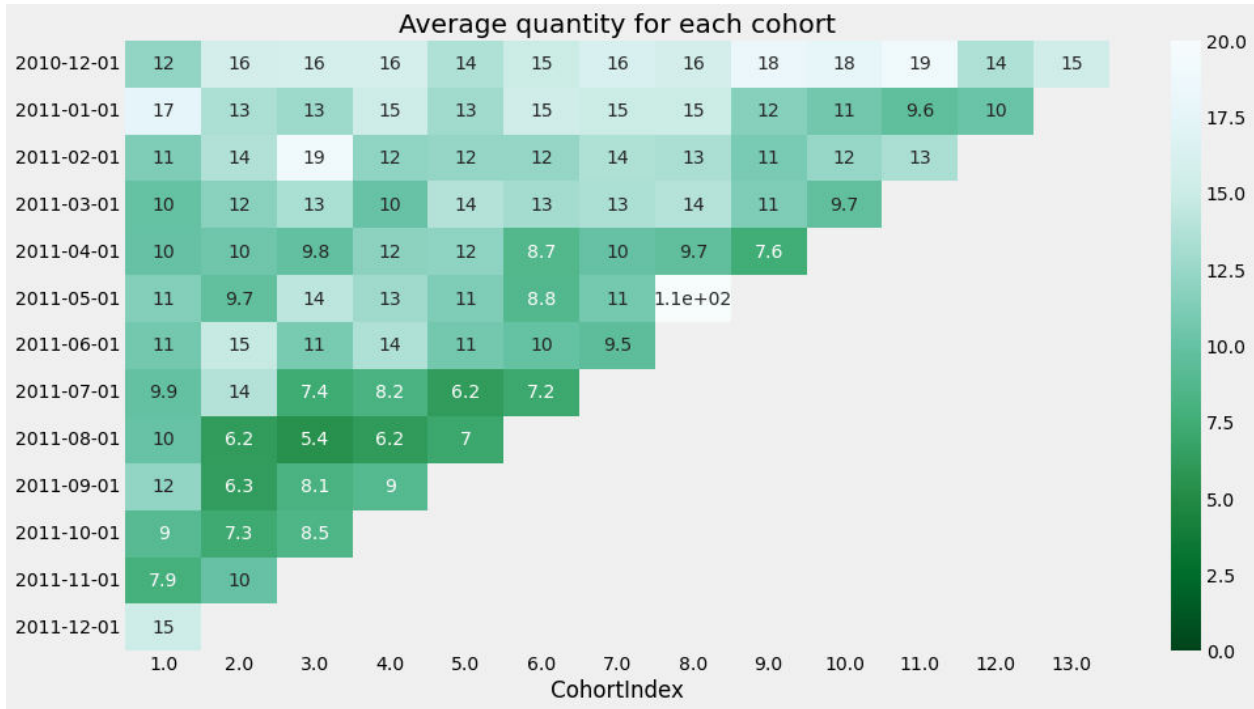
#Building the heatmap

plt.figure(figsize=(15, 8))

plt.title('Average quantity for each cohort')

sns.heatmap(data=average_quantity,annot = True,vmin = 0.0,vmax =20,cmap="BuGn_r")

plt.show()



CONCLUSION

The aim of this study was to use the Cohort Analysis to segment the customers from a total of 54,190 online transactions occurred from 1/12/2009 to 09/12/2011 at a UK based retailer. So that the Company can make the best and different marketing strategies as per the Retention Rate or average quantity of each cohort of the customers indicating in plotting of heat map for maximize (optimize) the Return on Investment (RoI).

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A STATISTICAL STUDY ON PATTERNS OF IMMUNIZATION COVERAGE OF CHILDREN OF DHEMAJI DISTRICT, ASSAM, INDIA

Achinta Saikia

Assistant Professor, Department of Statistics, Mariani College, Mariani, Assam, India

ABSTRACT

Background: Immunization has been described at the first line of defence against disease and one of the most effective health advantages available to children. Immunization prepares our bodies to fight against diseases in case we come to contact with them in future.

Aim: The present study is conducted to estimate the pattern of immunization among children in the age group upto 23 months in the Dhemaji District, Assam.

Subject and Methods: For this purpose of data collection, different sampling methods have been used and other related variables are also analyzed by using pre-tested questionnaire. Chi-Square test has been used as statistical technique for analyzing the data to pertinent the present study.

Results: The present study is conducted to estimate the pattern of immunization among children in the age group up to 23 months in the Dhemaji District of Assam. A total of 100 study subjects were included in the study. The result shows that 85% of children are fully immunized, 9% of children are partially immunized, and 6% of children are not immunized in Dhemaji District.

Conclusion: The immunization coverage among children whose Father smoke experience a low immunization than whose Father does not smoke.

Keywords: Immunization, BCG vaccine, DPT, Probability proportional to sampling, North-East, Chi-Square, NFHS.

Abbreviations: BCG, DPT, NFHS, RCH, UNICEF, WHO, GAVI

1. INTRODUCTION

Immunization has been set up at the first line of protecting against disease and the most important health system available to children. The human body is protecting against this infectious disease through vaccination. Immunization produces our bodies to fight against diseases in case we come to contact with them in future. It is a show tool for eliminating and controlling critical infectious diseases and estimated to prevent over 2 to 3 billion deaths every year (Greenwood 2014). Immunization is one of the cost effective health investments, with proven strategies that make it reachable to even the most hard to vulnerable and reach populations (WHO 2018; Bbaale 2013). It can be delivered effectively through outreach vaccination and activities do not require any major change (Simons and Frankfurt 2015). By which, Immunization is process one individual's immune system becomes secure against on agent (Chaplin 2010). When the system is exposed to molecules that are foreign to the body, it will adapt an immune response, but the ability of Immunization can be developing to quickly respond to ensuring encounter (Thakur et al. 2019). Therefore, in a controlled way by the exposing an animal to an immunogenic, its body can learn to safe itself, known as active immunization (Janeway 2001). The memory B cells and memory T cells are most important elements of immune system that are improved by immunization. This Immunization can be done through various methods, most commonly vaccination (Claire-Siegrist 2017). The fact that alteration can cause cancer cells to produce molecules or proteins that are unknown to the body forms the theoretical basis for curative cancer vaccines (Melief et al.2015; Schlom et al.2014). Immunization necessitates the introduction of a foreign molecule into the body and which causes the body itself to generate immunity against the target (Bethesda 2007). The person becomes immunized, if the person has not yet come into contact with the bacillus and has no pre made antibodies for protection (Nicholson 2016). The system of immune will eventually create antibodies and other protection against the germs. Next time, response against the immune this bacillus can be very efficient, many of the child hood infections that a person only contracts once, but it is immune (Chandrakant et al.2011). The host defenses of Immunization are the effective way of controlling the spread of infection to strengthen. It is one of the cost effective and most powerful weapons of modern medicine. There are some infectious diseases whose control is solely based on active immunization, e.g., measles, polio, diphtheria and tetanus. The Vaccination against these diseases is given as early childhood with periodic boosters and routine during infancy to maintain adequate level of immunity regrettably we do not have vaccines for every infectious disease (Drexier 2010; Glory and Salve 2017). Diseases for which costly vaccines are needed include Hepatitis B, tuberculosis, Japanese Encephalitis, rabies, etc. Immunization is a mass means of defending the greatest number of people. By the number of susceptible

reducing in the community, it augments “community immunity” making the infection more difficult to spread (Vashishtha et al.2014). It also reduces the risk for those who have not developed satisfactory protection or those individual who have escaped vaccination. Immunization has to be planned according to the need of the situation. Every country has its own immunization schedule, so does each medical society and adding to confusion (WHO 2019).

1.1 The importance of Immunization

Vaccines are largely controlled, if the diseases that once spread quickly and killed thousands, because many vaccine-preventable diseases are more common and more deadly among infants and small children. Clearly, immunization of childhood is an important step in maintaining high vaccination levels and which cure breakout of such diseases (Hebert et al.2012). The disease is unlikely that an individual who is Immune to a disease will pass on it to someone other. In this way, vaccine not only protects the child receiving, but also those in the child’s community (Damnjanovic et al.2018). For this fact, schools must need that children be fully immunized when enter. Results in the positive outcomes also protect children against severe diseases other than improved physical health, including the ability to attend school more regularly and the absence of increased family stress (Allensworth et al.1997).

In the past time, parents informed so many cases of children that died in their supreme. Many of these guardians did not enjoy birthing and rearing because of this early death and many did know why these children died (Emery and Crowley 1956). However, many children survive nowadays compared to children two decades ago, in recent survey. The reason is not implausible. It is because of the immunization program going on over the breadth and length of this nation (NFHS-3 2006).

It is an act of curing childhood diseases such as measles, chicken pox, whooping cough, yellow fever, diphtheria, poliomyelitis and small pox, which has the causative, organize of the infection to reduce death-dealing state by giving chemical substance, either be given by through mouth or injection (Sadeeqa et al.2018).

Firstly, as earlier said, reduced mortality rate among children about two decades ago many children died because children were not immunized from these life-threatening childhood illnesses. Next door neighbor’s attack and so many mythical beliefs, Parents then attributed the death of these children to mystical phenomenon such as the attack by witches and wizards on their wards (Bisht and Coutinho 2000). Due to this program and public awareness given to it, many parents notice- the call and immunized their children against these childhood illnesses, the result is what we have now that is the children are alive (Weiss and Esparza 2015).

Secondly, children are now looking healthy not only are the children having long life span but also they are looking fit and hearty. They do not have fitful growth. Some children are gone the days using buttress to walk because of not being immunized against poliomyelitis (WHO 2011).

Thirdly, the part of guardian mainly mothers, they have the sign of relief due to surviving rate of their children. Who will ask them to pay huge sums of money before treating the child, if they do not pass through agonizing experiences (Alma et al.2012) of taking their wards to spiritualists and herbalists.

In conclusion, immunization has brought sound health to the children in the world, it has reduced the agony parents pass through during child rearing and lastly, it has reduced.

1.2 Immunization in India

Immunization against common childhood illnesses has been an integral component of mother and child bearing services in India. The focus of this paper is to examine the status and performance during 2005-2015 of the child immunization programmed in India and to suggest policy and programmes for perception of the goals of universal immunization (Vohra et al.2013). Data sources on immunization coverage used for this study include secondary data from the National Family Health Surveys (NFHS) and RCH Surveys in India. Every other child in is incompletely protected and one out every of three children is a dropout from the programmed of immunization (CSP 2015).

Immunization forms a critical component of primary health care, and ensures nation’s health care. Although international agencies such as the United Nations Children’s Fund (UNICEF), World Health Organization (WHO), and now the Global Alliance for Vaccines and Immunizations (GAVI) impart extensive support for immunization schemes, the immunization program success in any country depends more upon local actualities and national schemes (Geneva 2019).

1.2.1 Immunization in Assam

The children of Assam in the North-East Region of India have persistently evidenced low rates for schedule childhood immunizations. A study was previously conducted by department of Statistics to evaluate the factors

affecting the immunization coverage (Vashishtha and Kumar 2013) in the first year of life of the children and about 62.2% of the children were fully immunized. Lack of particulars among the parents was one of the major causes of end of vaccinations (Madhavi 2005). The education level showed significant role of children from urban areas and mothers in immunization coverage (Gupta et al.2013). The reduction in the misfit rate of improvement in female literacy coupled would add to achieve a higher target of immunization among children in the study area (Phukan et al.2009).

National Family Health Survey (NFHS) in Assam, only 31 percent of children age 12-23 months is vaccinated fully against the six major childhood diseases: measles, diphtheria, tetanus, tuberculosis and polio. The proportion of children fully vaccinated in Assam is below the national average of 44 percent. Fifteen percent of children in Assam did not receive any of the recommended vaccinations. This proportion is higher than in all Indian states, except Meghalaya, Nagaland, and Arunachal Pradesh 62 percent of children age 12-23 months have received a BCG vaccination and 59 percent have received at least the propose three doses of the polio vaccine. However, only 45 percent have received the three propose doses of the DPT vaccine and even fewer, 37 percent, have been vaccinated against measles. The polio and DPT vaccines are given in a sequence (NFHS-3, 2006). The first dose gets many children but do not finish the series. Drop out is a very serious problem in Assam, North-east India. Between the first and third doses, the dropout rate for the DPT vaccine is even higher at 33 percent and the dropout rate for the polio vaccine is 28 percent. In spite of the current low level of immunization coverage in Assam, India, there has been significant improvement in coverage between NFHS-2 and NFHS-3. Full immunization nearly doubled from 17 percent in NFHS-2 to 31 percent in NFHS-3, and the coverage of all individual vaccines also increased. The largest advancement was in the coverage of three doses of the polio vaccine, up by 21 percentage points, doubtlessly as a result of the pulse polio campaign. However, in spite of extra attempts to eliminate the illnesses in Assam, 41 percent did not receive the recommended three doses and 18 percent of children did not receive a single dose of the polio vaccine (Immunization Handbook for Health Workers 2011).

2.1 OBJECTIVE OF THE STUDY

The objectives of the present study are

1. To accesses the level of immunization among children age up to 23 months in the five Villages of Dhemaji District, Assam. Namely- Majgaon, Kopatoli, Naharani, Bhutobari, Kulapathar.
2. To study the affect of different demographic and behavioral factors on Immunization in this five villages of Dhemaji District, Assam.

2.2 MATERIAL AND METHODS

A household base cross-sectional study design is adopted in the present study. The sampling method use is multistage cluster sampling. In the stage one District of Upper Assam, namely Dibrugarh is selected purposively. From the selected District 5 clusters (here a village or a ward is designated as a cluster) are selected by using probability proportional to size sampling (PPS). From each selected cluster 10 child of age 9 months are selected by using circular systematic sampling as prescribed by World Health organization.

2.3 Probability Proportional to Size Sampling

In some cases the sample designer has access to an “auxiliary variable” or “size measure”, believed to be correlated to the variable of interest, for each element in the population. These data can be used to improve accuracy in sample design. One option is to use the auxiliary variable as a basis for stratification.

Another option is probability-proportional-to-size (PPS) sampling, in which the selection probability for each element is set to be proportional to its size measure, up to a maximum of 1. In a simple PPS design, these selection probabilities can then be used as the basis for Poisson sampling. However, this has the drawback of variable sample size, and different portions of the population may still be over or under represented due to chance variation in selections. To address this problem, PPS may be combined with a systematic approach (Sing and Chaudhary 2005).

3.1 ANALYSIS OF DATA

3.1.1 Chi-Square Test for Independence of Attributes

One of the most frequent uses of Chi-Square is for testing the null hypothesis that two criteria of classification are independent. To conduct the test, a sample is drawn from the population of invest and the observed-frequencies are cross-classified according to the two criteria. This cross-classification can be conveniently displayed by means of a table called contingency table. Let us designate the two attributes as A and B where attribute A is assumed to have r categories and attribute B is assumed to have c categories. Furthermore, assume

the total number of observations in the problem is N. A representation of these observations is shown below in a table where O_{ij} represents the observation i^{th} row and j^{th} column (Montgomery et al.2010). Such a table in the matrix form is called a contingency table and is shown Table 1.

Table 1: rxs Contingency table

Attribute A	Attribute B				Total
	B ₁	B ₂	B ₃ B _j	B _p	
A ₁	O ₁₁	O ₁₂	O ₁₃ O _{1j}	O _{1p}	R ₁
A ₂			..... O _{2j}		R ₂
A ₃	O ₂₁	O ₂₂	O ₂₃ O _{2j}	O _{2p}	R ₃
.			..... O _{2j}.....		.
.	O ₃₁	O ₃₂	O ₃₃ O _{3j}	O _{3p}	.
.			..... O _{3j}.....		.
A _i	.	.	.	.	R _i
.			.	.	.
.			.	.	.
.			.	.	.
A _r	.	.	.	.	R _r
	O _{i1}	O _{i2}	O _{i3} O _{ij}	O _{ip}	
			..... O _{ip}		
	
	
	
	O _{r1}	O _{r2}	O _{r3} O _{rj}	O _{rp}	
			..... O _{rp}		
Total	C ₁	C ₂	C ₃ C _j	C _p	N

In the table R_i is the total of i^{th} row and C_j is the total of j^{th} column. The frequencies in these cells are termed cells are termed as cell frequencies (Indrayan and Sarmukaddan 2001).

The present study includes a total 100 babies at age group up to 23 months from 5 randomly selected villages and wards of Dhemaji District. The demographic characteristics of the study are presented in table.

Table 2: Pattern of Immunization

Characteristics	Frequency	Percent	Cumulative percent
Not immunized	6	6.0	6.0
Partially immunized	9	9.0	15.0
Immunized	85	85.0	100.0
Total	100	100.0	

From the analysis it is found that about 86% Childs of Dhemaji District (i.e., namely- Majgaon, Kopatoli, Naharani, Bhutobari, Kulapathar) are fully immunized while about 9% are partially immunized and 6% are not immunized at all.

Analysis for Chi-Square test

Table 3: Age of father and Dependent Crosstabulation

Age of father	Dependent		Total
	Not immunized	immunized	
Upto 30	11	70	81
31 and above	4	15	19
Total	15	85	100

Table 4: Chi-Square Tests

	value	d.f.	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson chi-Square	.674	1	.0412		
Continuity Correction(a)	.215	1	.643		
Likelihood Ratio	.627	1	.428		
Fisher's exact test					
Linear-by-Linear Association	.667	1	.414	.476	.307
N of Valid Cases	100				

- 1) From the table it is seen that age of father in the age group up to 31 years and above has better immunization than those in the age group up to 31 years and from the chi-square table the p value is calculated as 0.0412 which is less than 0.05. Hence we conclude that there is significant difference in age of father category.

Table 5: Age of mother and Dependent Crosstabulation

Age of mother	Dependent		Total
	Not immunized	Immunized	
Upto 30	13	83	96
31 and above	2	2	4
Total	15	85	100

Table 6: Chi-square tests

	Value	d.f.	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson chi-Square	4.003	1	.045		
Continuity Correction	1.654	1	.198		
Likelihood Ratio	2.858	1	.091		
Fisher's exact test					
Linear-by-Linear Association	3.963	1	.047	.106	.106
N of Valid Cases	100				

- 2) From the table it is seen that age of mother in the age group upto 31 years and above has better immunization than those in the age group up to 31 years and from the chi-square table the p-value is calculated as 0.045 which is less than 0.05. Hence we conclude that there is significant difference in age of mother category.

4. DISCUSSION AND CONCLUSION

The present study is conducted to estimate the pattern of immunization among children in the age group up to 23 months in the Dhemaji District of Assam. A total of 100 study subjects were included in the study.

The result shows that 85% of children are fully immunized, 9% of children are partially immunized, and 6% of children are not immunized in Dhemaji District.

The children of Assam in the North-East Region of India have consistently evidenced low rates for routine children immunizations.

Despite the current low level of immunization coverage in Assam, there has been significant improvement in coverage between National Family Health Survey-2 (NFHS-2) and National Family Health Survey-3 (NFHS-3).

The present study shows that the Demographic factors such as Age of Father, Age of Mother. Type of Family does not have any influence on immunization coverage. In case of behavioral factors, the immunization coverage among the children whose Father do not consume Alcohol is better than the Father who consume Alcohol. The immunization coverage among children whose Father smoke experience a low immunization than whose Father does not smoke.

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EVALUATING EXISTING INFRASTRUCTURE AND DEMOGRAPHY OF MANALI FOR DEGRADING URBAN ASPECTS

Vandna Sharma

Assistant Professor, Department of Architecture, National Institute of Technology, Hamirpur (HP)-177005

ABSTRACT

Manali is considered as one of the most picturesque hill stations of the state Himachal Pradesh. The area is unique in terms of its topography and scenic beauty. The area also has vast tourist potential which is great economic activity generator. However, the area is presently in state of excess demographic profile which puts extra stress on existing infrastructure facilities, has unplanned housing expansion with rather lack of basic amenities. Present research explores the problems related with unplanned housing expansion in the area and lack of facilities like sewer and drainage. Research proposes to regulate the housing expansion so that undue pressure on services might be released.

Keywords: Housing, urban, degrading, infrastructure

INTRODUCTION

Urban aspects like building fabric, building height, land use pattern, transportation routes, building density, provision of open and green spaces, public facilities all create an overall urban form of a space and lends an image to the urban aesthetics of an area which might look appealing to the visitors in addition to inhabitants or look otherwise[1]. Hill towns of state Himachal Pradesh are facing problems due to uncontrolled growth and ever increasing population due to rapid increase in tourism industry along with already existing spectacular natural scenic backgrounds and healing environment. Manali, one of the many beautiful hill towns located in north-western state of Himachal Pradesh is facing similar grave concerns [2]. Present research works is an attempt to explore present condition of infrastructure facilities in proportion to increasing demography and provide proposals as solutions for the same.

EXISTING INFRASTRUCTURE FACILITIES

Manali agglomeration have areas like Nagar Panchayat area, Nasogi, Old Manali, Vashisht, Chachoga, Chadhiari, Aleo, Prini, Shuru, Ranghri, Suinsa, Sial, Chhial settlements. It caters to the population of entire Naggar Block along for higher order services. The areas have range of infrastructure facilities. However, since all the areas have excess ingress of population; the infrastructure facilities are overburdened given the additional factors of tourist and floating population to serve the tourist population.

Demography

According to 2001 Census, the population of Manali is 17390 persons [2]. The decadal growth rate during 1991-2001 has been 28.26%. The Manali Nagar Panchayat has witnessed a growth rate of 157.50% while the surrounding areas included in the Manali Agglomeration have a growth rate of 30% [3]. This clearly shows that surroundings of Manali town are also getting inhabited due to lack of vacant land in the town itself. This also gives a picture of the fact that infrastructure and services are overstrained in the area.

Literacy Levels

The sample survey has revealed that 20% of the population does not have any formal education. Therefore, the literacy rate is 80 % in the area. The educational facilities are well distributed in the town.

Occupation Structure

Nearly 40.96% workers are engaged in agriculture and allied activities, business and service sector account for 29.65% and 29.39% persons, respectively. This also accounts for their spending capability in context to buildings like houses. Since most of the population is engaged in business and service sector which is again related to tourism industry in one way or the other, spendings on construction of new hotels, restaurants and similar types of many new structure are coming up very fast in the area without any serious consideration for the changing urban pattern and character of the area with reference to hilly topography.

Housing and Sewerage

Nearly 29.32% residential plots are smaller than 100sqm and 70.68% houses have plot area of more than 100sqm. Out of, total housing stock 94.09% of the houses have more than 75% covered area. It is important to mention here that only 17% houses plans are approved by competent authority, whereas 82.71% don't have approved plans. This creates problems in terms of stressed infrastructure facilities. 60.55% houses have 2 storeys only and 24.08% houses have only single storey whereas 3.21%of houses have more than three storeys as is evident in figure 1.



Figure 1: Existing building heights of buildings in Manali (in mall road area)

The 8.24% houses have only single room accommodation. Houses having 2 habitable rooms are 22.12% and 26.82% are houses having more than 5 rooms each. 48.80% houses have no bathrooms, 40.04% have single bathroom. The houses with 2 & more than 2 bathrooms are 11.16%. Nearly 46.17% houses have no latrine, 6.78% use sand pits, 11.60% have dry latrines and 35.45% have water closets. Open air defecation is a common problem. The 95.62% houses don't have sewerage connection as shown in table 1.

Table 1: Existing condition of sewage facility in housing

Sewerage	Number	%age
Yes	20	4.38
No	437	95.62
Total	457	100

As is evident from the table, most of the houses do not have proper drainage and sewage facility either in the house or having connection to municipal sewer. This creates not only unpleasant and unhygienic sight but also degrades the urban character of the area. Therefore, solutions should be tried to address these problems.

RESULTS AND DISCUSSION

The questionnaire-based case study included recording of data and visuals pertaining to the present scenario of present urban design aspects and degrading infrastructure facilities. Housing scenario needs to be looked upon in light of scarce land and multiple requirements in context of increased demographic profile. If left ignored and inattentive, the situation would create slum-like conditions in future which would be a negative remark on urban fabric and urban aspects of the area.

CONCLUSION

Manali has vast potential for economy in terms of tourism industry. However, degrading visual aspects like open drains or problematic sewer conditions, unregulated expansion of housing in all directions as sprawl would adversely effect the tourism industry. People prefer to visit the places with have refreshing effects rather than unappealing views full of filth and foul odor with chaos. Proper planning regulations needs to be considered along with housing expansion has to be monitored and regulated to avoid unnecessary stress on existing infrastructure facilities.

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ROLE OF PHYSICAL AND SOCIO-CULTURAL FACTORS IN VERNACULAR ARCHITECTURE

Vandna Sharma

Assistant Professor, Department of Architecture, National Institute of Technology, Hamirpur (HP) - 177005

ABSTRACT

Vernacular architecture is affected by a range of factors like social, cultural, physical factors in addition to environmental factors and climatic conditions. Present study gives a brief insight into the role of these factors through a case study. Questionnaire based case study was conducted in Hamirpur region of Himachal Pradesh which involved visual survey, exhaustive interaction with the people to understand perception of people, requirements and usage patterns linked with their houses and their change due to socio-cultural, economic and physical factors along with climatic considerations. Satisfaction of respondents were recorded to understand the effect of these factors on evolution of different elements in vernacular architecture specifically. Results of the study showed that design-planning aspects of a building have important influences of socio-cultural factors and therefore shall be considered in spatial planning

Key words: Vernacular Architecture. Socio-cultural factors, design, planning

INTRODUCTION

Vernacular architecture as we know is the most natural art of making buildings or a simple shelter for common people by common people [1]. Therefore, vernacular architecture essentially involves efforts by local people which are based on knowledge of local climatic conditions, topography, availability of local materials, and most importantly local traditions and customs that imbibe the society [2]. Physical factors and socio-cultural factors have a major role to play in the final shaping of elements of vernacular architecture.

International research work in this field suggests that socio-cultural and economic factors along with climatic factors greatly influence the decision regarding designing and planning techniques to be adopted in the construction of a house [3]. The author discussed at length the function of social, economic, and cultural factors in the shaping of the local traditional architecture of North East India [3]. Similarly, Majid et al. [4] explored the ways in which these factors have influenced the architectural style of houses in Oman. Through the study of both traditional vernacular and modern conventional houses; the author found that in addition to climatic factors, and environmental reasons, socio-cultural and socio-economic factors play a great role in deciding the type of building elements and characteristics features of a house. Further, the influence of these factors is of such great importance that sometimes people even tend to ignore the advantages and disadvantages of a particular construction system. These factors also help to define the character of a building whether it is vernacular or modern. To add to this, these factors also decide the energy using and saving aspects of a building and therefore help to improve its energy efficiency aspects.

Another research work stated that preference for a specific architectural style and adoption of a particular construction system is affected by physical, social, economic, technical and legal factors [5]. The author termed this adaptation as housing obsolescence which is further defined in terms of different housing obsolescence theories. The author stated that these factors play a vital role in deciding the construction techniques to be adopted at the time of construction and further maintenance to be applied in later stages when the building becomes operational. These socio-cultural, economic and physical; aspects help to define building adaptation index which has a gamut of factors like building age, structural and surface

defects, provision of building services (fire, electrical, telecommunication installation), sufficing of designed purpose or the intentions with which the building was designed, flexibility of original design to undergo changes as per changing lifestyle conditions, acoustic treatment, height of the buildings, energy saving aspects associated with the building, its maintenance cost, adaptation cost, indoor environmental quality, accessibility. These factors are area specific and vary as per the occupants and their lifestyles.

Case Study: Hamirpur

Hamirpur is located in the north-western part of state of Himachal Pradesh. The area has composite climate [6]. Area is rich in vernacular architecture and has fast spread of modern conventional architecture style as well. The study was carried in 30 vernacular houses and modern houses to understand the role of socio-cultural and economic factors in shaping of architectural style of the area. The study was conducted through socio-economic survey and spatial measurements of the different houses. Exhaustive interaction with the respondents helped to understand the role of social, cultural and economic factors in design, planning, construction and functional aspects of the houses of the area that developed with time.

The design aspects were defined as internal massing of spaces, placing of corridors, rooms and other areas with relation to each other, shape of the building etc. Planning aspects are defined in terms of layout to the building with respect to the direction and orientation of sun, wind, topography, contours, consideration of climatic conditions prevailing in the area, compactness of a building. Construction aspects includes the use of construction techniques, building materials adopted, care of the services to be included in the houses etc. which are also again influenced by topography, climate and availability of material in the area.

Function aspects are defined in terms of building shape, number and size of rooms, room height, fulfilment of designed purpose, flexibility in design to undergo change s asper changing lifestyle conditions, presence of open spaces like veranda in house linked to different utility purposes etc.

Based on these different aspects, houses were studied based on questionnaire-based survey and the detailed description has been given below.

Physical Aspects

Physical aspects were defined in terms of building age, structural and surface defects. Further it also recorded, satisfaction of people with materials of wall (adobe), roof (bamboo/wood and slates) and floor (rammed earth) and building age which is 60-80 years and dissatisfaction of people with structural defects like structural cracks in walls and roof, surface defects like peeling of plaster, surface erosion, cracks in surface developed in slab, walls.

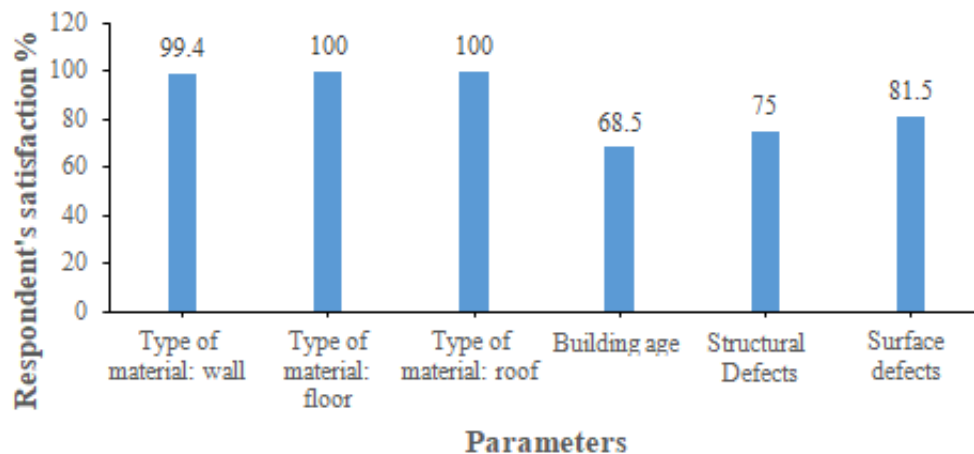


Figure 1: Satisfaction levels of the people with the Physical Parameters

Functional Aspects

It includes aspects of building like fulfilment of original design purpose, the flexibility of design, the maximum number of rooms existing, the maximum size of rooms existing, the number of stories, the height of rooms.

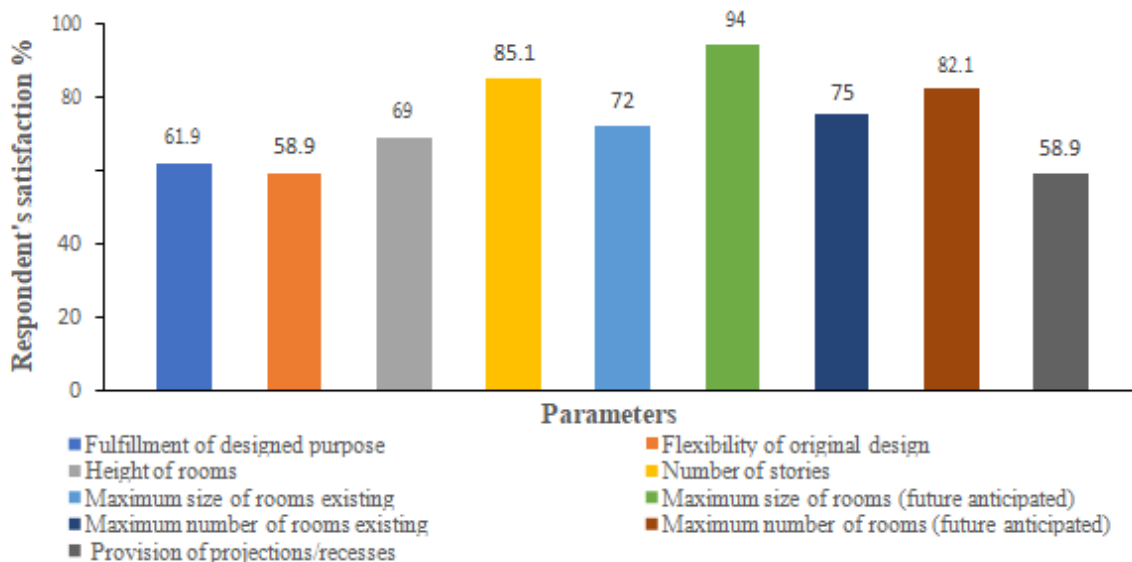


Figure 2: Satisfaction levels of the people with the Functional Parameters

Social Aspects

These are defined in terms of aesthetic quality of the building which is further governed by the choice of material used in construction and aesthetics, and financial aspects involved as construction cost. It also reflects the acceptability of the structure and its usefulness in social context. Use of verandas as open space for ceremonial functions is one example of such social aspects associated with a house. The survey showed that most of the residents are satisfied with the social aspects like aesthetics, provision of open spaces etc. in the house.

RESULTS AND DISCUSSION

A field study was conducted to understand the role of socio-cultural and economic parameters in shaping of different architectural elements of a building that constitutes vernacular architecture. The questionnaire-based survey showed the results that different aspects like physical, social, functional etc. influence choice and perception of people for the use of materials, type of building construction techniques to be adopted along with design of built masses and their spatial arrangement. For example choice and provision of open spaces like veranda in a house serves dual purpose of functional requirements as well as gathering place for all family members or would serve the purpose of ceremonial functions. Therefore social, cultural, physical and functional aspects are important contributors in shaping of an architectural style of an area and more specifically the traditional or the vernacular architecture.

CONCLUSION

Decision for built masses and shaping of spaces are influenced by gamut of factors other than the climatic and topographic factors. Personal preferences of people, requirements of spaces as per traditions and culture, aesthetics of buildings, provision of open spaces within built masses, are all contributes towards appropriate planning and designing of built masses which further decides the energy usage within a building. Ignorance of these factors not only defunct the functional aspects of the building but also consumes more energy for achieving proper comfort levels within the buildings.

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URBAN DESIGN DEGRADATION: CASE STUDY OF A HILL TOWN

Vandna Sharma

Assistant Professor, Department of Architecture, National Institute of Technology, Hamirpur (HP)-177005

ABSTRACT

Urban patterns and urban forms are largely affected by the demography and ancillary services/ facilities in an area whereby provision of land as resource has a greater impact. Given the geographical profile all areas have different types of topography, climatic conditions and requirement of inhabitants given the factors of socio-cultural and economic parameters that influence the settlement patterns. Present urban settlements and their respective forms are very much affected by scenario of rapid urbanization given the constraints of land availability for future expansion especially in hilly areas. Small Hilltown of Manali located in north-western part of Himalayas, has seen unprecedented growth in demographic profile and tourism industry as well. These two factors along with rapid urbanization have put a lot of stress on exiting urban infrastructure facilities and also on existing land which has resulted in urban degradation and worsening condition of buildings as well. Present paper is focused at addressing these issues so that they can be addressed through proper planning and regulations which may also improve upon the blight condition of degrading urban aesthetics.

Keywords: Manali, Hilltown, urban degradation

INTRODUCTION

Urban forms over the ages have been influenced by the population settling in by and large given its requirements in terms of facilities, socio-cultural and economic aspects that affect the social interactions and dictate overall urban pattern of the area. Geographic location of areas very much affects its scope and direction of future expansion specifically in case of hill towns and similar hill settlements. These hill towns and hill settlements are known for their beautiful natural settings which not only offer great health benefits but also attracts many tourist to the places for the sake of adventure and entertainment. Manali; a beautiful hill town located in foothills of Himalayas in north-western part of India, is known for its breathtaking scenic beauty, natural healing environment, and majestic mountain ranges[1]. In addition, it is also known for its traditional settlements with sloping wooden roofs covered with slates, adobe and stone walled houses set along the narrow winding lanes of organic settlements layout in the town. However, with ever increasing rapid urbanization, the town just like all other hill towns of the state Himachal Pradesh has witnessed unprecedented growth and expansion pattern which has not only degraded its visual aesthetics as urban form but also has stressed infrastructure facilities altogether. Present research paper takes into account the present urban scenario and situation of the urban growth patter of Manali.

EXISTING PATTERN AND URBAN FORM

Manali is located on gently sloping terraced land which is parallel to river Beas and has spurs created by drains and nullahs, with tracts of forest cover. However, at present, the physical environment of Manali is changing rapidly due to unprecedented growth of population, tourism industry and to support the floating population finding livelihood in false demand for more built up commercial space in the form of hotels and shops as is shown in Figure 1.

AGGLOMERATIONS

The traditional and indigenous architecture has almost vanished and rather modern architecture has come into its place which seems more imported from the plains [2]. Now in modern architectural style as is evident mostly in Manali, the buildings are constructed with Reinforced Cement Concrete (RCC), bricks and imported stones and similar building construction material. Most of the buildings in the area belong to the commercial category with many of them being the hotels, retail shops, and other being the office space sand institutional buildings along with utilities and services meant to support the inhabited population.

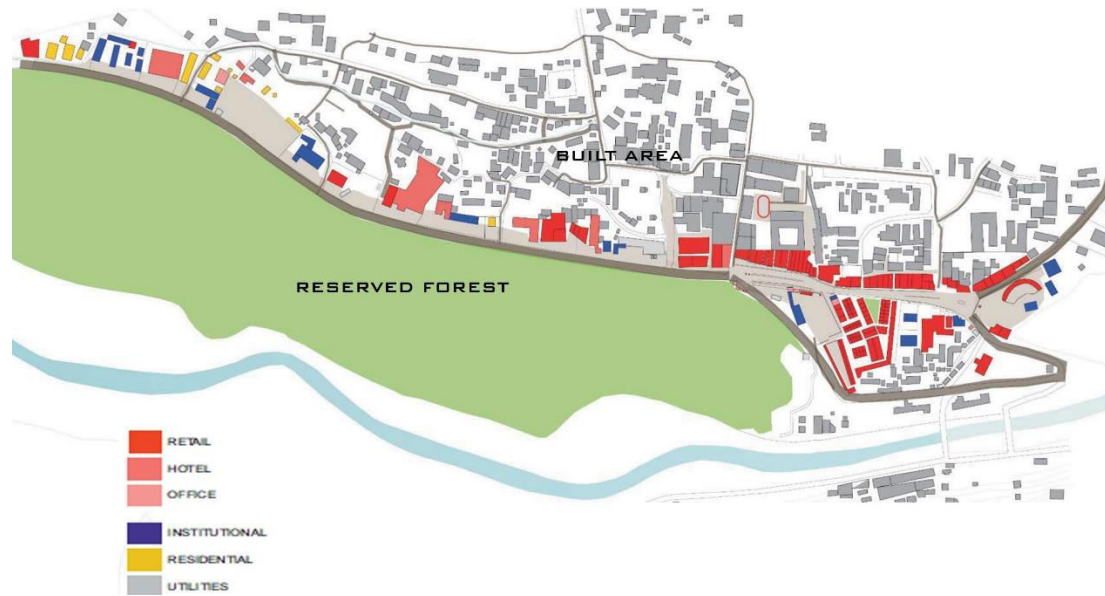


Figure 1. Existing urban scenario of Manali town (along Mall road)

BUILDING CONDITION

It can be clearly seen from the figure that the town is mostly in congested condition with many habitations grown in the area which is beyond the actual bearing capacity of the infrastructure facilities present in the area[3]. Figure 2 shows the condition of buildings in the area. Buildings have sprung up in the area without much thought process given to the layout of essential services like road, physical infrastructure facilities, provision of open spaces, green areas like parks, playgrounds etc. spaces etc. this has resulted in chaos in the urban pattern of the area. It can be clearly interpreted from the figure that buildings along with the main spine/road stretch are so much congested that they are beyond the level of repair and maintenance. The buildings are in clear state of degradation and blight.

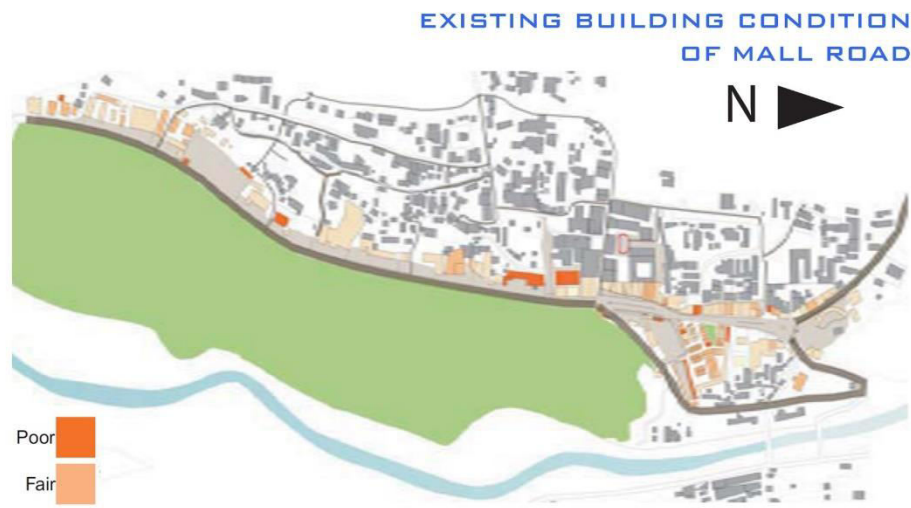


Figure 2. Existing building condition of Manali

GROWTH PATTERN

Census of Manali clearly shows that Manali town has seen the highest increase in growth pattern among the different urban centers in the state especially during the period from 1991 to 2001. Population of Manali town increased with a growth rate of 27.83% from 1971 to 1981, with a growth rate of 5.74% from 1981 to 1991, and a phenomenal increase in from 1991 to 2001. It has registered an unprecedented growth rate of 157.50% which shows that Manali has attracted substantial number of people during this decade. This growth pattern is reflective of great green spaces turning into concrete jungle without approval or authentication of their much feasibility and viability.

OCCUPATION AND ECONOMY

While most of the people are engaged in agriculture, services and tourism forms an important industry which has come up recently. A lot of people have migrated in search of livelihood that has been thus created by the

growing tourism industry. This has further overburdened the infrastructure facilities of the small town. The study also showed that in addition to rising number of habitations in the area which do not adhere to byelaws and norms, as sharp increase in number of vehicles is another cause of degrading urban aesthetics of the small town of Manali. This has caused not only chaos and congestion but also degraded the visual appeal of the small hill town as well as increased the pollution levels in the area.

RESULTS AND DISCUSSION

From the case study of Manali town regarding urban scenario at present in small hill town of Manali, it is clearly seen that Manali has more demography than it can actually support and this increment in population is both in terms of permanent population and migrants who seek livelihood opportunities in growing tourism industry. But this has stressed the existing land and infrastructure facilities in which former cannot be increased and later also cannot be increased beyond a limit. Further, more elaborate research studies can be undertaken in the very area to understand the problematic elements specifically in case of infrastructure facilities.

CONCLUSION

Rapid growth in demographic profile in the small town of Manali has disrupted the normal living style, land and services, created traffic congestion and urban chaos besides degrading the urban aesthetic quality of the area. Urban planning guidelines regulating the expansion process and land acquisition needs to be considered in coherence with growing tourism industry needs so that degradation of urban form and aesthetic quality may be addressed.

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ROLE OF LIBRARIANS IN PUBLIC LIBRARIES**¹Arun Kumar Pandey and ²Dr. Ashok Kumar Upadhyay**¹Research Scholar and ²Librarian & Associate Professor, Department of Library & Information Science, Mangalayatan University, Aligarh**ABSTRACT**

Public Libraries continue to contribute a great deal towards users in Society. This paper analyses the roles and responsibilities of a Librarians in Public Libraries for the progressive improvement of the society. The Public Library is playing an important role in education, research and extension activities. Public Libraries have important social and economic responsibilities in addition to their educational ones. This paper discussed the significance of Librarians, or library professionals in Public Libraries, as well as essential recommendations for improving the quality of Public Library services, which will aid in Society development.

Keyword: Public Library, Librarians, Library Services, Extension Services, Research Activities.

INTRODUCTION

A public library is a nonprofits organisation that is run for the benefit of the general public and supported by tax. Public libraries, in contrast to other libraries, meet the information needs of the general public by making all types of knowledge and information accessible to all community members, regardless of race, nationality, age, gender, religion, language, disability, economic status. Additionally, public library could offer additional community activities including children's storytelling, after-school programmes, language instruction, seminars, and workshops.

The public library is crucial to people's lives as a hub for knowledge development and access to information. Public libraries are significant institutions for information, education, culture, and society.

Role of Public Libraries

The public library is playing an important role in education, research and extension activities in the Public. Public libraries have important social and economic responsibilities in addition to their educational ones. Public libraries began to care about assisting business and economic growth as a result of economic development and globalisation by offering local business communities efficient business services, resources, and literacy initiatives.

- ✓ The main role of the Public Library is to increase the use of resources in education, research and extension services.
- ✓ Providing latest information services to users, researchers, professionals, students, farmers, ladies, old age person and common people involved in Society.
- ✓ Assistance for improving the quality of education, research and extension services.
- ✓ Increasing cooperation with other resources to access information resources.
- ✓ Organizing awareness programs for People in rural/urban areas.
- ✓ Organizing exhibition of latest research/Information, publications related to awareness.

Roles and Responsibilities of a Librarian in Public Libraries

- ✓ To assist users in the search of information in the library.
- ✓ To aware of the information sources and services of public library.
- ✓ To fulfil the information needs of the users from the various information sources available in the library.
- ✓ To promote the development work of the library.
- ✓ To performing various functions related to information service.
- ✓ To creating and disseminating of information related to awareness.
- ✓ To help library users access information from online information sources.
- ✓ To help library users to access information from Internet, search engine, databases and CD ROMs
- ✓ To organizing daily work and other services in the library.
- ✓ To acquaint the different users with the modern technology used in the library.

Suggestions for effective use of Public Libraries

Public Libraries should encourage and assist in education, training, extension, and research. Libraries should be used as a resource for advanced study.

- ✓ Public libraries should promote all teaching, training, extension and research activities. The library should act as an advanced learning centre.
- ✓ Library services must be accessible to users at all times 24*7.
- ✓ Computerization should be given importance in the library and all the works in the library should be automated.
- ✓ Public libraries should organize orientation programmes, lectures etc related to user awareness.
- ✓ Regular awareness and training should be necessary for the library staff of Public libraries.
- ✓ RFID should be used for exchange of books in the Public libraries.
- ✓ Public libraries should provide awareness information for the all community.
- ✓ Feedback should also be given more attention after providing information to the users of Public libraries.
- ✓ Mobile app should be developed for library services.
- ✓ Modern equipments like computer, mobile, laptop, etc. Should be Use for library services
- ✓ Proper Drinking Water, Proper Cooling, Proper Display /arrangement of library resources and Cleanliness, Pleasant Environment might attract users towards Public libraries.

In society, public libraries perform vital functions. They are establishments for learning. To raise customers' literacy skills, they provide educational programmes including kids' and adult literacy courses. Additionally, they favour lifelong learning and education. In order to address the issues of the global economy, public libraries also play a role in offering business resources and collections in their institutions. They also play a crucial role in the operation of a democratic society by ensuring that everyone has free and open access to excellent information.

CONCLUSION

Rarely is the value of a librarian understated. Because of shifting user needs and technological improvements, the role of the librarian has changed. We must adjust to shifting conditions and be mindful of both our users and ourselves. It's critical to keep in mind that we are here to assist you as service providers. In this era of knowledge and technology, those who work in libraries and information should develop their abilities and volunteer to help users.

This necessitates librarians of public library becoming more proactive in their efforts to improve their ability to use technology effectively and efficiently. If attention is paid to the use of technology in the public library, then there will be prosperity in the society. In the age of information technology, the people associated with the library and information should upgrade themselves with their capabilities. Librarians need to increase their skill level and be more proactive for using technology.

Librarian of public library has to come forward to bring back the glory of public library.

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SOCIAL NETWORKING TOOLS: A STATE-OF-ART OF LITERATURE

Upasana Bisht¹, Dr. Sarvesh Kumar², Dr. Deepmala³ and Dr. Ashok Kumar Upadhyay⁴¹Research Scholar, ²Assistant Professor, ³Assistant Professor and ⁴Librarian & Associate Professor, DLIS, Mangalayatan University, Aligarh, Uttar Pradesh, India**ABSTRACT**

Websites for social networking allow users to create a profile that will be visible to others inside a closed system. Social networking tools also let users examine lists of other members that the system has located and display some of the persons they contact with. A social networking website's primary goal is to make it possible for users to access existing connections. Websites for social networking were developed with the intention of fostering friendships between total strangers. The three major components of social networking services are categories, ways to interact with friends, and a trust-based recommendation system. It has been divided into three categories: social network services for existing friends. This paper aims to study the published literature on social networking tools to understand the use to social networking tools among users. Various authors have their difference opinions.

Keywords: Social Networks, Social Media, Social Networking Tools, Virtual Community

INTRODUCTION

Everyone in the globe can access the different educational opportunities made possible by internet technology. Since technology and the internet have a significant impact on education, the area has undergone a full transformation. Due to the development and revolution of social networking tools, educators are always investigating how they might be applied in the classroom through utilising social networking sites for active learning. Social networking tools are digital internet platforms that enable global communication amongst academics, professors, and educators. As a result, they are able to interact with students more effectively, increase their interest in learning, and promote excellent academic collaboration. The technological revolution has lowered the communication barrier, and new methods of linking people are arising. The introduction of internet access and other communication technologies provides good support for the development of social networking tools.

Websites for social networking allow users to create a profile that will be visible to others inside a closed system. Social networking sites also let users examine lists of other members that the system has located and display some of the persons they contact with. A social networking website's primary goal is to make it possible for users to access existing connections. Websites for social networking were developed with the intention of fostering friendships between total strangers. The major components of social networking services are categories ways to interact with friends, and a trust-based recommendation system. It has divided into three categories: socialising Social network services, such as Facebook, are mostly used for socialising with existing friends, networking social network services, which are for non-social interpersonal contact (like LinkedIn, a site focused on careers and jobs); and assisting users in finding certain information or resources. The majority of social networking tools are computer applications based on software. This online tool facilitates communication between users. Blogs, Wikis, video conferencing, online chat, instant messaging, and other typical social networking platforms are just a few examples. In the last ten years, the social networking phenomena has grown. Since then, the use of social networking technologies has expanded from a small subset of internet users to a massive, both personal and professional, online activity.

REVIEW OF LITERATURE

Devi, Silpiskha (2020) indicated that using social networking sites as a reliable source of knowledge and information for research and academic purposes is possible. A variety of information can be provided with the least amount of time for librarians. A global information explosion has been caused by the rapid transformation of traditional libraries into digital ones. It has become crucial to provide accurate information to a needy user for at least some period of time due to the explosion of information. Social networking sites in this context enable distant access to knowledge and information as well as very quick access to material for researchers and LIS professionals. Through the social networking sites with which a person is more familiar, information can be accessed. Thus, the demand for and use of social networking sites has been growing over time. By utilising various forms of new technology, libraries are able to bring in more patrons who will make proper use of their resources and services. **Sumadevi, S. and Mallinath Kumbar (2019)** said that the way individuals find, read, and exchange news, information, and content has changed as a result of social media. While new opportunities and the importance of using social networks immediately contribute to a higher exposure of the library in the

digital environment, active user engagement adds value to the performance of library services. Indirectly, it improves the library's publicity in its current setting and boosts circulation while also raising satisfaction levels with the services provided. **Prabhakar, S.V.R and Rani, S.V.M (2016)** have determined that article's impact on libraries and information centres on social networking sites. The major justifications centred on the most recent advancements in library science, where social networks are essential for informing users of information. The study examined how people are connected to one another through numerous social networks, including Twitter, Facebook, LinkedIn, flickr, and others. According to the study's findings, SNS are one of the technologies that give academic libraries the chance to connect with their patrons. As a result, both users and library personnel may effectively exchange knowledge and skills. For academic libraries, **Sonawane, K.S. and Patil, P.T. (2015)** have streamlined social networking technologies. The study's primary goals were to advertise events, library services, and library collections. Analysis was done on the study's findings. Only 2% of the academic libraries surveyed have a social media policy that was special to the library. 94% of these libraries are primarily active on Facebook, Twitter, and YouTube. 33 They emphasise the significance of connecting the academic library's social media policy to the mission statement of the institution. In conclusion, mission-based goals and activities are especially useful in fields that experience rapid change, like social media. The guiding principles in these rules should reflect the fact that the mission of the library should direct its actions. According to **Batrinca, B. and Treleaven, P.C. (2015)**, a survey of methods and tools for social media analytics. Introductions to sentiment analysis, data cleansing, and social media scraping are also part of this study's main goal. Due to the availability of web-based application programming interface provided by Twitter, Facebook, and News services, sentiment analysis of social media, in particular Twitter feeds, has grown to be a significant academic and business activity. Conclusion of this study: Useful software tools for scraping, cleaning, and analysing a variety of social media. It also covered the need for an experimental computational environment for social media. As per **Chitumbo, E.M.M. (2015)**, academic libraries should use social networking tools. The study's primary goals include giving academic libraries a chance to connect with their communities outside of the library's doors. According to the study's analysis, 40% of people worldwide use the internet, and of them, 74% use social media. In light of this, this study investigated how academic libraries in Zambia may use SMTs to advertise their services to both current and new customers. Data were analysed for the study's findings using the social science statistical programme SPSS and content analysis. In the study's conclusion, more than 80% of the respondents said they would support its adoption due to the many advantages of social media tools. **Omekwu et al. (2014)** evaluated how undergraduate students at the University of Nigeria utilised social networking sites and found that nearly all of them used them for interacting with friends, connecting with classmates for online learning, debating important national problems, and viewing movies. The study found that using social networking sites has given students certain advantages. The academics recommended that university administrators hold seminars to educate students about the negative aspects of current social networking networks. The impact of social media on young people in India has been studied by **Mahat and Mundhe (2014)**, who found that it helped them learn more about society and current issues such as crime against women, corruption, and the violation of human rights, education, and the unfavourable 38 effects of global warming. The study found that social media had given a forum for conversation on these topics. The academics recommended that youth be shielded from the harmful contents and impacts of social media. In his research piece, **Mazzocchi, J. (2014)** noted the use of social networks and blogs in libraries. The study's primary goals involve adopting SNs and blogs as social networking tools in libraries. One of the earliest Web 2.0 technologies that libraries have utilised to interact with their users is the blog. They appear to have been overtaken by other techniques like social networks, particularly Facebook. In light of the social network expansion, this article examines the declining trend facing library blogs. Additionally, the interaction between social networks and blogs as tools for library communication is examined. Because libraries typically employ blogs and social networks as one-way communication platforms, the study's findings indicate that their uses are similar. The study's usage of blogs and social networks came to the same conclusion because, in most cases, libraries utilise them to post information about the library, promote services, and advertise events—tasks that, among other things, should already be performed by the administrative library website. According to **Mohammad Reza Niazmand and Tahmine Malekzadeh (2013)**, modern nations educate their citizens not just through formal education but also by making access to the world of knowledge convenient. Information literacy, which is primarily web- and internet-based, is therefore crucial. The authors of this article talked about the value of web 2.0's functional criteria as one of these techniques for finding information. **Rithika and Selvaraj (2013)** "investigated the effect of social media on the academic performance of students in India and found that social networking sites like Facebook, Twitter, Orkut, etc. had distracted students from their academics. According to the report, pupils spend more time on social media than on schoolwork. The academics recommended that teachers effectively advise pupils on how to use social media. According to **Thanuskodi, S.**

(2012), it was difficult to train and prepare librarians for new age libraries since the boundary between physical and digital library spaces and services was not obvious enough in the past. All across the world, users of libraries are in constant demand for services. Thus, the function of libraries, librarians, patrons, the internet, and its content creators is getting more and more complex. Libraries and librarians now need to handle the developing usage patterns and consumer expectations brought on by the rise of Library 2.0 and the proliferation of Web 2.0. The level of Library.2.0 application awareness among library and information science professionals at Annamalai University was investigated by the author. There was a high level of awareness of 2.0 applications and web browsing (including search engines) that was accessible. Additionally, the author listed potential initiators for library 2.0 implementation. **King, Reabeka (2011)** did research to determine how the usage of web 2.0 was a useful tool for teaching information literacy and was accountable both in the classroom setting and, on the teacher's, own. The meta-cognitive framework of Information Literacy was implemented using Salmon's chart of online proficiency and Boom's Digital Taxonomy as recommendations. **Rehman, Ata-ur, and Shafique, Farzana (2011)** obtained information on web 2.0 usage in Pakistani libraries. Web 2.0 applications were being used more often in both the public and private sectors. Three professional discussion groups' LISTSERVS were emailed links to an online survey that had been produced. Additionally, semi-structured interviews were planned. The results of the interviews revealed that professional associations and library schools played a crucial part in educating library professionals on web 2.0 tools. Realization that skilled human resources will be required to meet the problems of the next age was important for library schools, professional organisations, and the national library. **Aqil, Mohammad; Parvez Ahmad, and Mohammad Asad Siddique**—discussed the possibilities of web 2.0 in libraries in 2011. Web 2.0 technologies like social networks, wikis, blogs, streaming media, RSS, and others are now giving libraries new opportunities to provide updated, user-friendly services. The development of these new elements in recent years has allowed libraries to offer customers interactive services that are upgraded, regardless of their users' physical locations, such as virtual reference services, audio visual media, etc. In order to comprehend the life cycle of library 2.0 in academic libraries, **Chiu, Ming-Hsin (2011)** did a study. After assessing the user experience, the main focus of this study was on the characteristics influencing library 2.0 innovation and implementation. **Virkus, Sirje (2011)** conducted this study with the primary goal of examining how students participating in the Erasmus Mundus Digital Library Learning (DILL) perceived and used web 2.0 tools. Twelve master's programme students from Asia and Africa were chosen for this interview and were asked semi-structured open-ended questions. It was not acceptable to regard the results as generalised because the targeted group was too small. When creating and executing a DILL programme. When the idea of using web 2.0 to integrate information and communication technology in education was taken into consideration, this study was favourable. A study on the development and research methodology of the CAVAL 2009 Visiting Scholar Research Project was undertaken in 2010 **Stephen, Michael; Sayers, Richard; Cheetham, Warren** in order to evaluate the value and impact of Learning 2.0 in libraries. Learning activities were crucial to this programme, and all staff members participated. As a result, some LIS professionals described the Learning 2.0 programme as a fruitful means of involving employees. This programme has been successfully implemented in Australian libraries across the globe and many others. A thorough study was conducted on the use of web 2.0 technology in information literacy, according to **Luo, Lili (2010)**. His research gave us insight into how librarians at three distinct levels use web 2.0 effectively in teaching and learning. **Zanin- Yost, Alessia (2010)** stated that Users like changes since their needs are constantly evolving. The library is similarly true; otherwise, it would receive less use. However, it should be remembered that the functionality of libraries may be harmed by the adoption of new technology without proper consideration for modernization. Therefore, technology should be applied appropriately for the proper operation of libraries. Here, the functions of wikis, blogs, and RSS were shown. But when there was a platform for information exchange between users and librarians, different demands would arise. **Partridge, Lee, Munro, and Carrie (2010)** noted that after a call from Stephan Abram, Vice President of innovation at Srsi Dynix, in 2005, a debate and discussion regarding the "core skills" required by Librarian 2.0 appeared in the biblioblography. Professionals in the field of library and information science (LIS) were urged to start transforming into "Librarian 2.0." To determine the essential abilities needed by Librarian 2.0, a few systemic and empirically based research projects were simultaneously funded by the Australian Learning Research Council and the Australian Learning and Teaching Council. There were eight themes that had been found, including technology communication, teamwork, user attention, business sway, and personal trails. According to **Godwin (2009)**, Web 2.0 includes a variety of tools that a librarian might use to support students' learning behaviour in an innovative, interactive way. Using web 2.0, librarians may help their patrons become more literate in information. The use of web 2.0 to promote information literacy is thus becoming more and more apparent to librarians. Using web 2.0 tools, **Whittaker, Sarah, and Joanne Dunham (2009)** conducted research on information literacy development among medical students at the University of Leicester. Actually,

the goal was to understand how the library imparts information literacy in order to alter current learning habits. By locating and evaluating research materials on their own, students' personal learning environments were also intended to alter. Nine months were spent on the project. The library was just starting to use web 2.0 at the time. Due of the modules hurried structure, the library had to concentrate on raising awareness of its resources using web 2.0. The breadth of reading among the students was increased by this endeavour. However, there was no discernible improvement when employing web 2.0 technologies to improve their learning. Therefore, in order to increase the effectiveness of library services, Information Literacy and Web 2.0 had to be integrated into the course itself. Information literacy is the subject of **Markless's (2009)** investigation into the UK higher education system. This essay focuses on learning concepts, students' perspectives on information literacy in higher education, the impact of web 2.0, and recommending an appropriate framework for information literacy. The author also included some suggestions for further study. The convergence of the open knowledge movement with Web 2.0 in computer-mediated scholarly communication was examined by **Mukhopadhyay, P. (2009)**. While Web 2.0 tools and services can make information services interactive and collaborative, open access resources help to eliminate publishing and financial obstacles. Today, library professionals are successfully integrating these resources, tools, and services to enhance the current services and create next-generation library services. A study on web 2.0 applications was undertaken by **Chua, Alton Yeow Kuan; Goh, Dion Hoe; and Lee, Chei Sian (2008)** to learn about libraries' perspectives on users and key changes to the services. For this, the focus was placed equally on community building and innovative library services offered through web 2.0 applications. The study included 90 library websites, ranging in location from Europe, North America, and Asia. According to the study, the primary three web 2.0 categories—push/pull retrieval and exchange—had been adopted there. **Shoniwa and Hazel Hall (2007)** stated 2.0 was mostly a web-based technology tool, according to the library. However, it was almost entirely about technology, with librarians providing the service. The physical activities were being changed by the library 2.0 concept. The authors cited a study that attempted to analyse library 2.0 in the UK academic library sector, and the results of that study found that library 2.0 was seen as a selective application of web 2.0 capabilities, with potential consequences for service delivery.

CONCLUSIONS

We can connect with folks through social networking sites who share our interests and hobbies. Social media platforms like WhatsApp, Instagram, Facebook, and Twitter, especially for children and young adults, have practically become indispensable parts of many people's everyday life. A recent study found that they might have both important benefits and grave problems for children. The latest survey sheds light on the same issue by revealing that most students were frequent user of social networking sites. Facebook and WhatsApp were the social media sites that these students utilised the most frequently, therefore this might serve as inspiration for the librarians who work at these colleges. They could create a Facebook page and link it to the library's website, or they could start a WhatsApp group and use it to market to the group's members.

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ASSESSING THE SUITABLE CROP ESTABLISHMENT METHOD AND NUTRIENT NEED OF BARNYARD MILLET IN SODIC SOIL

Dr. S. Anandha Krishnaveni

Associate Professor (Agronomy), Tamil Nadu Rice Research Institute, Aduthurai- 612 101, Thanjavur District, Tamil Nadu, India

ABSTRACT

An experiment was conducted with an objective to find out the effect of different methods of crop establishment and to optimize the nutrient requirement for barnyard millet (*Kudiraivali*) under sodic soil condition using the short duration high yielding variety Co (KV)₂ during kharif season of 2016 at Anbil Dharma lingam Agricultural College and Research Institute. The experiment was carried out in FRBD comprising two factors viz., crop establishment techniques like line sowing at 25 x 10 cm (E₁) and 35 x 10 cm (E₂) and transplanting at 25 x 10 cm (E₃) and 35 x 10 cm (E₄) and nutrient management practices like N₁ at 75 %, N₂ 100% and N₃ 125 % recommended dose of fertilizers. The experiment was replicated thrice. Totally twelve treatment combinations were analyzed. Results revealed that transplanting at 35 x 10 cm with 125 % RDF recorded higher grain yield of 980 kg/ha with increased growth parameters like plant height, number of tillers and yield attributes viz., number of panicles, length of panicle and weight of the panicle.

Keywords: crop establishment, nutrient requirement, barnyard millet, sodic soil

INTRODUCTION

In recent years, there has been increasing recognition of the importance of millets as a substitute for major cereal crops. Millets have the potentiality of contributing to increased food production both in developing and developed countries Sahu (1965). Barnyard millet or *Kudiraivali* (*Echinochloa frumentacea*) is native of Eurasia. In India it is an important dry land crop and cultivated over a wide array of environmental conditions even under poor soil conditions. It has the special feature of drought resistance and can withstand water logging up to two weeks. It has field duration of 70-90 days. Due to its quick growth, it can be grown as a short-term catch crop. It is used as reclamation crops on land that is too saline for rice. It is the very quickest crop among all millets. It is equally important as a grain and fodder crop. Thus it deserves a greater importance than other millets. However, in reality the potentiality of this crop is not fully exploited.

One of the major reasons for low productivity of crops grown in salt-affected soil is the salt toxicity and poor soil properties (Gao *et al.*, 2008). In India, 3.79 million ha and 0.35 million ha in Tamil Nadu have been affected by sodicity which affects productivity of the land directly. Soil sodicity is characterized by high pH, high water soluble and exchangeable sodium and low biological activity. As a result, these soils exhibit poor physical properties often leading to low water conductivity at the surface and transmission within the profile besides, being deficient in many essential nutrients (Ghafoor *et al.*, 2008).

The lower crop productivity is mainly due to poor crop management practices such as inadequate planting density and nutrition, high weed infestation, incidence of disease and insect pests. Optimum population level is the one, which provides the plant with the best environment to express its capacity fully under the given conditions. Intra and inter row spacing is one of the important components of systematic cultivation and manipulation, that could enhance productivity of this important crop. Due to proper spacing plant can gain sufficient sunlight, water and nutrition from soil, which can influence healthy yield and yield attributes. Therefore, there is a need to understand the relationship between plant density and nutrient requirement with yield. Hence, an experiment was carried out with an objective to find out the suitable crop establishment technique and to optimize the nutrient requirement for barnyard millet (*kudiraivali*) under sodic soil condition.

MATERIALS AND METHODS

A field experiment was conducted at Anbil Dharmalingam Agricultural College and Research Institute with an objective to find out the suitable crop establishment method and to optimize the nutrient requirement for barnyard millet (*Kudiraivali*) under sodic soil condition using the short duration high yielding variety Co (KV)₂ during *kharif* season of 2016. The experiment was carried out in FRBD and replicated thrice. Treatment comprising two factors as follows.

Factor I: Method of crop establishmentE₁ – Line sowing with 25 x 10 cmE₂ – Line sowing with 35 x 10 cm

E₃ – Transplanting with 25 x 10 cm

E₄ – Transplanting with 35 x 10 cm

Factor II: Nutrient management

N₁ - 75 % Recommended dose of fertilizer

N₂ - 100 % Recommended dose of fertilizer *

N₃ - 125 % Recommended dose of fertilizer

* Recommended Dose – Nitrogen 44 Kg/ha and Phosphorous 22 kg/ha

Kudiraivali variety Co (KV) 2 comes to harvest at 90 days. Totally twelve treatment combinations were tried. Biometric observations were recorded at various growth stages. At establishment stage plant population /m² was taken. The growth parameters like plant height and number of tillers were recorded. At harvest stage the yield attributes viz., number of panicles/hill, length of the panicle and grain yield were recorded. All the collected datas were statistically analyzed.

RESULTS AND DISCUSSION

The effect of different methods of crop establishment and nutrient management practices on growth parameters and yield attributes are presented in Table 1 and table 2, respectively. The results revealed that transplanting at 35 x 10 cm with 125 % RDF (E₄N₃) recorded the highest plant population and showed significant differences with other treatment combinations. Similarly the same treatment combination (E₄N₃) recorded the highest plant height and more number of tillers per hill. However, there is no significant difference in the growth parameters viz., plant height and number of tillers. The increase in all growth parameters may be due to reduced plant population per unit area due to wider spacing which resulted in lesser competition among the plants and also more photosynthesis activity as a result of better solar light inception on the leaves and also proper utilization of water and nutrients in a critical crop growth period. These findings are supported by the findings of Avasthe *et al.* (2012) where in rice lesser number of tillers and panicles per hill were recorded at closer spacing while wider spacing recorded higher number of tillers and panicles

Regarding the yield attributing characters transplanting at 35 x 10 cm with 125 % RDF (E₄N₃) recorded more number of panicles per hill (7.60) and panicle length (23.60). It is found that there is a significant difference between the treatments in number of panicles and panicle length. This might be due to more population of plants by close spacing and hence more yield per hectare. Highest grain yield of 997 Kg/ha was recorded in the treatment combination of transplanting at 35 x 10 cm with 125 % RDF (E₄N₃). This is followed by the treatment transplanting at 25 x 10 cm with 125 % RDF (E₄N₂). Line sowing at at 25 x 10 cm with 75 % RDF recorded the lowest grain yield of 708 Kg/ha. This is mainly due to adequate spacing plant can gain sufficient sunlight, water and nutrition from soil, which can influence healthy yield and yield attributes. Khan and Agrawal (1995) reported in ragi that the seed yield was highest with 2, 60,000 plants per hectare compared to reduced populations than this.

CONCLUSION

From this study, it is concluded that transplanting at 35 x 10 cm with 125 % RDF (E₄N₃) could be adopted to get higher grain yield in barnyard millet under sodic soil condition.

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Table 1: Effect of Crop Establishment Techniques and Nutrient Management Growth Parameters

Treatment	Plant population per quadrat (0.25 m ²)	Plant height (Cm)	No.of tillers per hill
Factor – 1 : Method of crop establishment			
E ₁	6.32	137.8	3.68
E ₂	7.11	145.2	5.11

E ₃	7.64	153.9	6.23
E ₄	8.15	162.5	6.96
SED	0.22	10.23	0.70
CD (0.05)	0.43	20.41	0.15
Factor – 2 : Nutrient management			
N1	6.18	142.4	5.29
N2	7.27	153.6	5.49
N3	7.81	165.8	5.71
SED	0.16	9.82	0.06
CD (0.05)	0.34	19.1	0.03
Interaction			
E ₁ N ₁	6.17	142.3	3.30
E ₁ N ₂	6.29	146.5	3.70
E ₁ N ₃	6.76	150.6	4.03
E ₂ N ₁	7.08	154.2	4.97
E ₂ N ₂	7.29	157.3	5.12
E ₃ N ₃	7.89	161.4	5.24
E ₃ N ₁	7.88	162.5	6.08
E ₃ N ₂	8.23	169.7	6.18
E ₃ N ₃	7.88	173.2	6.43
E ₄ N ₁	8.23	165.4	6.80
E ₄ N ₂	8.60	169.7	6.97
E ₄ N ₃	8.69	171.3	7.12
SED	0.18	10.14	0.12
CD (0.05)	0.37	21.02	NS

Table 2: Effect on yield and yield attributes of barnyard millet under sodic soil condition

Treatment	Number of panicles per hill	Panicle length (Cm)	Grain Yield (Kg/ha)
Factor – 1 : Method of Crop Establishment			
E ₁	3.55	21.61	736
E ₂	3.63	21.50	783
E ₃	4.20	22.26	873
E ₄	5.83	20.33	917
SED	0.06	0.17	12.24
CD (0.05)	0.12	0.35	25.38
Factor – 2 : Nutrient management			
N1	3.37	20.30	793
N2	4.38	21.61	825
N3	5.16	22.38	864
SED	0.05	0.15	10.60
CD (0.05)	0.11	0.30	22.00
Interaction (E x N)			
E ₁ N ₁	3.00	20.44	698
E ₁ N ₂	3.60	22.08	736
E ₁ N ₃	4.04	22.30	781
E ₂ N ₁	3.30	20.74	740
E ₂ N ₂	3.60	21.86	790
E ₂ N ₃	4.00	21.90	838
E ₃ N ₁	3.60	21.28	849
E ₃ N ₂	4.00	21.90	898
E ₃ N ₃	5.00	23.60	946
E ₄ N ₁	3.60	18.70	905
E ₄ N ₂	6.30	20.60	951
E ₄ N ₃	7.60	21.70	997
SED	0.10	0.29	21.20
CD (0.05)	0.22	0.61	43.00

EMERGING SCIENTOMETRICS STUDIES ON LITERATURE IN PEDIATRIC CARDIOLOGY**K. Pandiyarajan¹, K. Balendran² and M. Surulinathi³**¹Research Scholar and ²Librarian, Govt. Arts and Science College, Trichy³Assistant Professor, Bharathidasan University, Trichy**ABSTRACT**

Scientometrics and bibliometrics frequently entail research monitoring, assessing the scientific contribution of authors, journals, or individual works, and analysing the scientific information distribution process. It is the science of measuring and analysing science. Scientometrics is a branch of library and information science. Scientometrics data can be useful to measure research collaborations among scientific environments and to monitor the evolution of special scientific subjects and fields. Scientometrics tools can be used to measure and compare the scientific activities at various levels of aggregation including institutions, sectors, provinces and countries. Pediatric Cardiology is the study and treatment of disorders of the heart in children; It is a medical specialty which is involved in the care of all things associated with the heart and the arteries. A study on Scientometrics analysis on paediatric cardiology was conducted to identify the geographical wise distribution of Publications in Pediatric Cardiology and to know the Citable documents. All publications on Pediatric Cardiology (Research Areas: "Pediatric Cardiology") in address field were downloaded from *Web of Science database*. The data were exported and processed in the HistCite to find out the contribution of Authors, Citations in the field of Pediatric Cardiology research during years 1989–2016. Based on the analysis undertaken for the present study found that USA is the most productive Country with 904 (50.10 %) publications followed by Canada with 177 (9.8 %) publications and Germany with 110 (6.1 %) publications. The study found that top 20 positions occupied by USA Institutions except 5 and 6 (Canada). Similarly top ranking source of titles is highly impact factor journals. Journal Circulation ranked first in order with 259 (14.3%) articles (Impact Factor is 14.43) and next to Journal of the American College of Cardiology ranked second with 156 (8.6%) articles (Impact factor is 17.76) during the period of study.

Keywords: Scientometrics, Pediatric Cardiology, Web of Science, Journal Circulation

INTRODUCTION

Scientometrics is the science of measuring and analysing science. In practice, Scientometrics is often done using bibliometrics, which is a measurement of the impact of (scientific) publications. Scientometrics means literally "measurement of science". In reality it means the application of statistical indicators (especially bibliometric indicators) as a mean for the evaluation of scientific productivity. Methods of research include qualitative, quantitative and computational approaches. One significant finding in the field is a principle of cost escalation to the effect that achieving further findings at a given level of importance grow exponentially more costly in the expenditure of effort and resources.

Scientometrics and bibliometrics frequently entail research monitoring, assessing the scientific contribution of authors, journals, or individual works, and analysing the scientific information distribution process.

Generally quantification of scientific activities is measurable by producing statistics on scientific publications indexed in indicator databases such as SCOPUS and ISI. Scientometrics data can be useful to measure research collaborations among scientific environments and to monitor the evolution of special scientific subjects and fields. Also decision and policy-makers are going to be interested in Scientometrics indicators.

Scientometrics is "the study of the measurement of scientific and technological progress" (Garfield, 1979b). Scientometrics is a branch of library and information science. Scientometrics tools can be used to measure and compare the scientific activities at various levels of aggregation including institutions, sectors, provinces and countries. Scientometrics empirically describe the constantly changing relationship between science, technology and the research productivity.

Cardiology is the study and treatment of disorders of the heart; it is a medical specialty which is involved in the care of all things associated with the heart and the arteries. A cardiologist is not the same as a cardiac surgeon - the cardiac surgeon opens the chest and performs heart surgery, a cardiologist, on the other hand, carries out tests and procedures, such as angioplasty. Heart disease differs from cardiovascular disease, in that the latter refers to disorders and illnesses of the heart and blood vessels, while the former is only concerned with the heart. Some of literatures relevant to this work are as follows.

Tang, X., & Du, J. (2015) Recognizing the importance of innovation in science and technology (S&T) as a driver of continued economic growth, B. M. Gupta, S. M. Dhawan and Ritu Gupta (2016) had examined world

publications output on social media research (46354) published during 2001–2014. V. Krishnan and S. Raja (2016) focused the journal has spacious distribution in India and Global among the genetically experts and other medical scientists from academic institutions, hospitals and other research laboratories.

R. S. Vishnumaya, P. Nishy and S. Mini (2016) had analyzed the growth and development of rare earths research in India based on the publication output as reflected in Web of Science (WoS) during 1987–2013.

Keeping this in view, a study on Scientometrics analysis on paediatric cardiology was conducted with the following objectives.

- To identify the geographical wise distribution of Publications in Pediatric Cardiology
- To Know the Citable documents
- To find out the Highly cited papers

METHODOLOGY

All publications on Pediatric Cardiology (Research Areas: “Pediatric Cardiology”) in address field were downloaded from *Web of Science database*. The data were exported and processed in the HistCite to find out the contribution of Authors, Citations in the field of Pediatric Cardiology research during years 1989–2016. The year of publication, Citations, Self Citations, journals and authors were analyzed and displayed in tables using HistCite. The Global Citation Scores and Local Citation Scores are examined to identify the pattern of research contribution on Pediatric Cardiology

Web of Science Online Database

The Web of Science platform is the search and discovery choice for 7,000+ academic and research institutions, national governments, funding organizations, and publishing organizations in 100+ countries worldwide. Find cover-to-cover indexing of the world’s most important multidisciplinary research covering scholarly journals, books, proceedings, published data sets, and patents. Explore research and ideas from different disciplines around the world by leaping through more than 1 billion cited references.

Web of Science Core Collection

Within the Core Collection of the Web of Science platform, a key set of citation indices make up the most influential content. These indices, most notably Science Citation Index Expanded, Social Sciences Citation Index, and Arts & Humanities Citation Index are complemented across the broader platform by additional indices, covering specific subjects, specific regions or specific publication and data types.

RESULTS OF THE STUDY

Geographical wise distribution of Publications

Table 1 highlights the number of Literature on Pediatric Cardiology from 90 countries during 1989–2016. It was observed that USA is the most productive Country with 904 (50.10 %) publications and received 11530 citations followed by Canada with 177 (9.8 %) publications and 3404 citations and Germany with 110 (6.1 %) publications and 1790 citations and UK with 91 records (5%) and Japan with 58 records (3.2) and India ranked 18th position in the world with 14 Publication and received 566 Citations. Nearly 90 countries are contributed the total of 1805 Publications and the very least is Yugoslavia 1 records (0.1%).

Table 1: Geographical wise distribution of Publications

S.No	Country	Records	%	TLCS	TGCS
1	USA	904	50.1	732	11530
2	Canada	177	9.8	193	3404
3	Germany	110	6.1	63	1790
4	UK	91	5.0	84	1714
5	Japan	58	3.2	32	916
6	Spain	54	3.0	80	1099
7	Turkey	52	2.9	22	222
8	Italy	51	2.8	35	901
9	France	45	2.5	23	1084
10	Netherlands	41	2.3	28	798
11	Australia	33	1.8	25	1012
12	Belgium	33	1.8	47	637
13	Austria	31	1.7	12	710

14	Brazil	<u>28</u>	1.6	18	811
15	Switzerland	<u>27</u>	1.5	16	553
16	Poland	<u>21</u>	1.2	9	134
17	Denmark	<u>14</u>	0.8	3	58
18	India	<u>14</u>	0.8	6	566
19	Peoples R China	<u>12</u>	0.7	2	25
20	Saudi Arabia	<u>12</u>	0.7	1	67
21	Chile	<u>11</u>	0.6	15	54
22	Israel	<u>10</u>	0.6	12	187
23	Portugal	<u>10</u>	0.6	5	64
24	Sweden	<u>10</u>	0.6	2	116
25	Iran	<u>9</u>	0.5	0	18
26	Finland	<u>8</u>	0.4	2	129
27	Greece	<u>8</u>	0.4	8	204
28	Norway	<u>8</u>	0.4	3	111
29	Hungary	<u>7</u>	0.4	1	58
30	Mexico	<u>7</u>	0.4	1	25
31	Russia	<u>7</u>	0.4	0	2
32	Colombia	<u>5</u>	0.3	4	23
33	Egypt	<u>5</u>	0.3	0	58
34	Qatar	<u>5</u>	0.3	7	41
35	Czech Republic	<u>4</u>	0.2	4	197
36	Romania	<u>4</u>	0.2	0	49
37	Serbia	<u>4</u>	0.2	0	4
38	South Korea	<u>4</u>	0.2	1	38
39	Taiwan	<u>4</u>	0.2	1	27
40	Argentina	<u>3</u>	0.2	0	20
41	Cuba	<u>3</u>	0.2	0	0
42	Ireland	<u>3</u>	0.2	0	2
43	Kuwait	<u>3</u>	0.2	0	41
44	Pakistan	<u>3</u>	0.2	0	40
45	Slovenia	<u>3</u>	0.2	0	63
46	Thailand	<u>3</u>	0.2	0	62
47	FRG	<u>2</u>	0.1	3	31
48	Lebanon	<u>2</u>	0.1	0	43
49	Malta	<u>2</u>	0.1	0	5
50	Morocco	<u>2</u>	0.1	0	42
51	Oman	<u>2</u>	0.1	1	8
52	Uruguay	<u>2</u>	0.1	5	10
53	Vietnam	<u>2</u>	0.1	0	3
54	Algeria	<u>1</u>	0.1	0	40
55	Angola	<u>1</u>	0.1	0	1
56	Armenia	<u>1</u>	0.1	0	40
57	Azerbaijan	<u>1</u>	0.1	1	4
58	Bolivia	<u>1</u>	0.1	0	0
59	Bosnia & Herceg	<u>1</u>	0.1	0	40
60	Bulgaria	<u>1</u>	0.1	0	40
61	Burkina Faso	<u>1</u>	0.1	0	0
62	Cambodia	<u>1</u>	0.1	0	4
63	Cote Ivoire	<u>1</u>	0.1	0	0
64	Croatia	<u>1</u>	0.1	0	40
65	Grenada	<u>1</u>	0.1	0	1
66	Guatemala	<u>1</u>	0.1	0	3
67	Guyana	<u>1</u>	0.1	1	14
68	HONG KONG	<u>1</u>	0.1	0	0

69	Iceland	<u>1</u>	0.1	0	2
70	Indonesia	<u>1</u>	0.1	0	0
71	Iraq	<u>1</u>	0.1	0	0
72	Jordan	<u>1</u>	0.1	0	0
73	Kenya	<u>1</u>	0.1	0	40
74	Latvia	<u>1</u>	0.1	0	4
75	Lithuania	<u>1</u>	0.1	0	40
76	Malaysia	<u>1</u>	0.1	0	4
77	Moldova	<u>1</u>	0.1	0	40
78	New Zealand	<u>1</u>	0.1	0	7
79	Peru	<u>1</u>	0.1	0	0
80	Slovakia	<u>1</u>	0.1	0	1
81	Sri Lanka	<u>1</u>	0.1	0	0
82	Sudan	<u>1</u>	0.1	0	40
83	Syria	<u>1</u>	0.1	0	40
84	Tajikistan	<u>1</u>	0.1	0	40
85	U Arab Emirates	<u>1</u>	0.1	0	40
86	United Kingdom	<u>1</u>	0.1	1	6
87	Uzbekistan	<u>1</u>	0.1	0	0
88	Venezuela	<u>1</u>	0.1	0	0
89	Yugoslavia	<u>1</u>	0.1	0	0
90	Others	<u>190</u>	10.5	114	1793

Source Title Wise Distribution of Publications

Table 2 shows that Top- 100 ranking of journals according to their productivity with minimum of 2 Publications. Journal Circulation ranked first in order with 259 (14.3%) articles (Impact Factor is 14.43) and next to Journal of the American College of Cardiology ranked second with 156 (8.6%) articles (Impact factor is 17.76) during the period of study. Pediatric Cardiology ranked third in order published 140 (7.8%) articles (Impact Factor is 1.45 and the remaining journals are ranked in the below table according to their publications, Citations and Cited references. During the study period researchers have published 1805 articles in 413 source titles.

Table 2: Source title wise distribution of Publications

S.No	Journal	Records	%	TLCS	TGCS	TLCR
1	Circulation - (if14.13)	<u>259</u>	14.3	104	2186	56
2	Journal of the american college of cardiology - (if17.76)	<u>156</u>	8.6	208	5616	78
3	Pediatric cardiology (if: 1.45)	<u>140</u>	7.8	108	996	116
4	Congenital heart disease – 1.21	<u>59</u>	3.3	64	286	76
5	Cardiology in the young – 0.86	<u>54</u>	3.0	53	308	58
6	Pediatrics – 4.47	<u>47</u>	2.6	129	1283	45
7	Revista espanola de cardiologia – 3.79	<u>34</u>	1.9	53	313	74
8	Catheterization and cardiovascular interventions – 2.18	<u>27</u>	1.5	18	231	27
9	Canadian journal of cardiology – 3.11	<u>26</u>	1.4	29	284	22
10	Current opinion in pediatrics – 2.20	<u>26</u>	1.4	10	189	32
11	Journal of the american society of echocardiography	<u>26</u>	1.4	17	205	23
12	Current opinion in cardiology	<u>23</u>	1.3	5	83	12
13	International journal of cardiology	<u>23</u>	1.3	7	235	16
14	Archives des maladies du coeur et des vaisseaux	<u>21</u>	1.2	2	8	2
15	Journal of pediatrics	<u>21</u>	1.2	26	305	15
16	Monatsschrift kinderheilkunde	<u>20</u>	1.1	7	17	13
17	Progress in pediatric cardiology	<u>18</u>	1.0	6	25	5
18	Clinical pediatrics	<u>15</u>	0.8	22	121	23
19	Archives de pediatrie	<u>13</u>	0.7	1	40	9

20	Pace-pacing and clinical electrophysiology	<u>13</u>	0.7	18	389	17
21	Zeitschrift fur kardiologie	<u>13</u>	0.7	4	71	1
22	American journal of cardiology	<u>11</u>	0.6	9	243	8
23	Archives of pediatrics & adolescent medicine	<u>11</u>	0.6	36	277	6
24	Jacc-cardiovascular interventions	<u>11</u>	0.6	9	95	14
25	Echocardiography-a journal of cardiovascular ultrasound and allied techniques	<u>10</u>	0.6	5	73	4
26	Journal of cardiovascular medicine	<u>10</u>	0.6	2	60	7
27	Pediatric clinics of north america	<u>10</u>	0.6	4	92	14
28	Pediatric critical care medicine	<u>10</u>	0.6	1	175	7
29	European journal of pediatrics	<u>9</u>	0.5	8	97	11
30	Pediatric radiology	<u>9</u>	0.5	15	124	7
31	Texas heart institute journal	<u>9</u>	0.5	1	11	1
32	Journal of heart and lung transplantation	<u>8</u>	0.4	2	65	17
33	Pediatrics international	<u>8</u>	0.4	3	31	3
34	Saudi medical journal	<u>8</u>	0.4	0	30	8
35	American journal of medical genetics part a	<u>7</u>	0.4	2	80	3
36	Journal of cardiology	<u>7</u>	0.4	1	41	5
37	Journal of interventional cardiology	<u>7</u>	0.4	3	37	1
38	Medical physics	<u>7</u>	0.4	5	167	11
39	Pediatric research	<u>7</u>	0.4	8	26	1
40	Thoracic and cardiovascular surgeon	<u>7</u>	0.4	1	2	1
41	Ultrasound in obstetrics & gynecology	<u>7</u>	0.4	5	155	2
42	Annals of thoracic surgery	<u>6</u>	0.3	1	45	2
43	Circulation journal	<u>6</u>	0.3	0	33	2
44	Heart rhythm	<u>6</u>	0.3	6	108	19
45	Journal of pediatric psychology	<u>6</u>	0.3	5	21	15
46	Journal of thoracic and cardiovascular surgery	<u>6</u>	0.3	2	88	4
47	Pediatric nephrology	<u>6</u>	0.3	0	22	0
48	Revista portuguesa de cardiologia	<u>6</u>	0.3	4	16	4
49	Telemedicine and e-health	<u>6</u>	0.3	5	29	19
50	American journal of diseases of children	<u>5</u>	0.3	4	78	0
51	Anadolu kardioloji dergisi-the anatolian journal of cardiology	<u>5</u>	0.3	2	9	2
52	Fetal diagnosis and therapy	<u>5</u>	0.3	0	16	0
53	International journal of cardiovascular imaging	<u>5</u>	0.3	1	18	2
54	Journal of adolescent health	<u>5</u>	0.3	6	70	7
55	Klinische padiatrie	<u>5</u>	0.3	0	11	6
56	American heart journal	<u>4</u>	0.2	1	29	6
57	Annals of pediatric cardiology	<u>4</u>	0.2	0	1	2
58	Archives of cardiovascular diseases	<u>4</u>	0.2	0	10	2
59	Arquivos brasileiros de cardiologia	<u>4</u>	0.2	1	12	4
60	Birth defects research part a-clinical and molecular teratology	<u>4</u>	0.2	1	52	6
61	British heart journal	<u>4</u>	0.2	4	78	0
62	Clinical research in cardiology	<u>4</u>	0.2	0	7	0
63	European heart journal	<u>4</u>	0.2	2	32	2
64	European journal of cardio-thoracic surgery	<u>4</u>	0.2	2	69	1
65	Heart	<u>4</u>	0.2	8	268	15
66	Iranian journal of pediatrics	<u>4</u>	0.2	0	6	0
67	Journal of telemedicine and telecare	<u>4</u>	0.2	5	22	9

68	Journal of ultrasound in medicine	<u>4</u>	0.2	2	19	4
69	Pediatric anesthesia	<u>4</u>	0.2	6	93	3
70	Pediatric annals	<u>4</u>	0.2	0	1	7
71	Pediatric emergency care	<u>4</u>	0.2	0	30	5
72	Revista brasileira de cirurgia cardiovascular	<u>4</u>	0.2	0	2	0
73	American journal of transplantation	<u>3</u>	0.2	0	3	0
74	Archives of disease in childhood	<u>3</u>	0.2	1	22	5
75	Bulletin de l academie nationale de medicine	<u>3</u>	0.2	0	0	1
76	Cardiology clinics	<u>3</u>	0.2	2	25	3
77	Catheterization and cardiovascular diagnosis	<u>3</u>	0.2	6	31	1
78	Circulation-cardiovascular imaging	<u>3</u>	0.2	0	10	3
79	Clinics in perinatology	<u>3</u>	0.2	0	15	2
80	Critical care medicine	<u>3</u>	0.2	5	102	1
81	Emergency medicine clinics of north America	<u>3</u>	0.2	0	4	4
82	European heart journal supplements	<u>3</u>	0.2	1	1	0
83	Indian pediatrics	<u>3</u>	0.2	1	4	2
84	Intensive care medicine	<u>3</u>	0.2	1	112	0
85	Jacc-heart failure	<u>3</u>	0.2	0	12	3
86	Jama-journal of the american medical association	<u>3</u>	0.2	17	346	3
87	Journal of cardiac failure	<u>3</u>	0.2	3	42	2
88	Journal of cardiovascular electrophysiology	<u>3</u>	0.2	1	9	4
89	Journal of cardiovascular magnetic resonance	<u>3</u>	0.2	1	17	3
90	Journal of emergency medicine	<u>3</u>	0.2	7	17	3
91	Journal of paediatrics and child health	<u>3</u>	0.2	0	5	0
92	Journal of the american heart association	<u>3</u>	0.2	0	3	10
93	Journal of the american medical informatics association	<u>3</u>	0.2	0	7	3
94	Rofo-fortschritte auf dem gebiet der rontgenstrahlen und der bildgebenden verfahren	<u>3</u>	0.2	3	35	5
95	Stroke	<u>3</u>	0.2	0	0	0
96	World journal of pediatrics	<u>3</u>	0.2	0	7	0
97	Academic medicine	<u>2</u>	0.1	0	21	0
98	Acta paediatrica	<u>2</u>	0.1	0	63	1
99	Acta radiologica	<u>2</u>	0.1	0	1	3
100	American journal of obstetrics and gynecology	<u>2</u>	0.1	0	27	0

FINDINGS AND CONCLUSION

Based on the analysis undertaken for the present study, the following findings are drawn

- The study found that USA is the most productive Country with 904 (50.10 %) publications followed by Canada with 177 (9.8 %) publications and Germany with 110 (6.1 %) publications.
- The study found that top 20 positions occupied by USA Institutions except 5 and 6 (Canada).
- The study found that top ranking source of titles is highly impact factor journals. Journal Circulation ranked first in order with 259 (14.3%) articles (Impact Factor is 14.43) and next to Journal of the American College of Cardiology ranked second with 156 (8.6%) articles (Impact factor is 17.76) during the period of study. Pediatric Cardiology ranked third in order published 140 (7.8%) articles (Impact Factor is 1).
- India rankedth passion in the world with 14 Publication and received 566 Citations.
- Nearly 90 countries are contributed the total of 1805 Publications.

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A REVIEW ON ACTIVE INTELLIGENT FILM BASED ON ANTHOCYANIN FOR MONITORING FOOD FRESHNESS

Lakshaya K, Saraswathy K, Meenambiga Setti Sudharsan* and Sowmya Hari

Department of Bioengineering, School of Engineering, VELS Institute of science Technology and Advanced Studies, Pallavaram, Chennai

ABSTRACT

The review highlights the importance of eco-friendly biodegradable pH-sensitive indicator for monitoring food freshness. "Smart packaging" a new technology that employs intelligent and active components to extend food's shelf life and instantly detect rotting, is becoming more and more prevalent in the food industry. In order to create sustainable packets that can be used to track microbial food deterioration, anthocyanins, a type of polyphenol pigment found in plants, are being used. Indicators of natural dyes such as anthocyanins could express the quality and shelf life of perishable food products. It's also a water-soluble natural pigment with good antioxidant and antibacterial properties, and their colors are pH sensitive to the environment. At present, the use of plant source anthocyanins to prepare active and smart packaging film has attracted increasing attention in the field of food engineering. Biodegradable polymers have been developed in response to the growing environmental concern about the disposal of plastic packaging. The development of active and intelligent packaging systems to monitor the quality of packaged food is further required by consumer demand and health concerns. Therefore, the researchers are concentrating on naturally occurring pigments originating from plants and food waste as an identifying component in biodegradable packaging as well as for the valorization of food waste. Attempts are made to develop novel colorimetric indicator film based on pectin matrix incorporated with black rice anthocyanins using solution casting method. Thus, the natural pH indicator with visible color variation allows for simple, economic and safe monitoring of perishable foods.

Keywords: Anthocyanin, pectin, pH indicator, food freshness.

INTRODUCTION

The demand for sustainable, environmentally eco-friendly products has increased as a result of pressing issues like global warming and environmental deterioration^[1]. Consumers can easily see and understand information on the quality and freshness of packaged food products thanks to smart packaging, a new technology in the food sector. Recent years have seen a shift in the food packaging industry towards natural rather than synthetic materials that are more biodegradable and environmentally friendly. Food freshness can be monitored with the help of biodegradable polymer-based colour indicator smart packaging sheets that comprise anthocyanin^[2]. So, an easy way to assess the freshness of food is to measure the pH value variation associated with it. In light of this, pH-sensitive indicators are gaining more attention due to its inexpensive cost, non-destructive nature, and usefulness in checking food freshness it is easy to use, extremely sensitive, and compact. Due to the ability of microorganisms' metabolic byproducts to modify the pH of the environment in which they thrive and reproduce, it is possible to create high-performance pH indicators through visible colorimetric changes that can qualitatively or semi-quantitatively detect the presence of microbes. In recent years, a number of colorimetric indicators have been created, based on the integration of materials into polymers that change colour in response to pH variations. Due to their versatility, stability, and ease of handling (e.g., in the form of films, fiber-mats, etc.), mechanical stability, ductility, and light weight, polymer-based indicators are becoming more popular. Above all, the polymer-based indicators maintain or even enhance the functionality of the encapsulated pH-sensitive molecules, and in some circumstances, the polymer matrix significantly improves their performance. For tracking food freshness, anthocyanin-infused biodegradable polymer-based colour indicator smart packaging films are very helpful. Polysaccharides, proteins pectin and lipids are the typical biopolymers used to create smart packaging films. demonstrates the changes in smart food packaging publications over the past ten years, separating them into active and intelligent publications. The number of publications increased noticeably for active packaging starting in 2015, whereas those for intelligent packaging also increased gradually throughout the course of the study period^[3]. The interest in these novel packaging technologies, which aim to create a safer and more effective food supply chain by minimising food loss and waste and avoiding wasteful transit and logistics from the start, is reflected in these developments. Excellent assessments of active and intelligent food packaging solutions have been recorded in recent years among various journals. As far as we know, only that recently published deals with describing the development of biobased antimicrobial films and sensors to be used as indirect indicators of food spoilage^[4]. In this context, the present review attempts to describe recent progress and new trends in the production of smart, active and intelligent food packaging, with focus on biodegradable and biobased polymers, which will be referred as biopolymers throughout this review.

The most noteworthy pigments, anthocyanins, give most fruits, vegetables, flowers, and some cereal grains their characteristic red, orange, pink, and blue ^[5]. One of the most prevalent anthocyanins found in dark-colored grains, such as black soybean and black rice, is cyanidin-3-glucoside. As a result of the distinctive colour shift that it produces, the colour of the bioactive anthocyanin can be utilised as a biosensor to identify chemical reactions in food products. The pH indicator is reliable. Many natural pigments, including anthocyanin, have recently been employed as pH indicator colours. Due to its ability to change colour across a wide pH range, safety, and plentiful availability, as well as its beneficial properties like antibacterial and antioxidant activities, anthocyanin has been the one of them that has been utilised the most. Anthocyanins, a family of polyphenol-based flavonoids, are natural pigments that reflect visible spectrum light from red to blue. One of the most intriguing and thoroughly researched plant chemicals is anthocyanin, which is made up of the anthocyanidins glycosylated structure. Anthocyanidins come in six different varieties, which are mainly found in the environment: cyanidin, pelargonidin, delphinidin, petunidin, peonidin, and malvidin. Additionally, nature contains about 600 anthocyanins. Except for certain rare exceptions, anthocyanins are primarily found in higher plants. The review starts out by outlining the anthocyanins natural origins, characteristics, and uses. Finally, we thoroughly covered the use of pH-responsive smart packaging films to monitor the freshness and quality of food ^[6]. This was followed by a thorough discussion of the use of anthocyanins with various types of biodegradable polymers. In-depth information of the advantages of pH-responsive, anthocyanin-based color-changing shelf-life indicators for use in food pack-aging applications for certain foods is also provided in this review. As far as we are aware, this field has only seen the publication of a few review papers. Therefore, this in-depth research effectively offers insights into the pH-responsive color-changing indicator technology and may be applied to intelligent food packaging and novel food packaging. The most prevalent anthocyanins in nature are cyanidin, delphinidin, and pelargonidin, which together make up 50% of flower pigments, 70% of fruit pigments, and 80% of anthocyanins in plant leaves. The most popular anthocyanin in fruits is cyanidin-3-glucoside. Sources of cyanidin anthocyanin include pear, fig, cherry, red cabbage, apple, gooseberry, etc. Mango, cherry, plum, berries, grapes, etc. are peonidin anthocyanin sources ^[7]. Sources of pelargonidin anthocyanin include red cabbage, bananas, sweet potatoes, strawberries, etc. Red grapes, bilberries, etc. are sources of petunidin and malvidin anthocyanins. Among the foods that contain delphinidin anthocyanin are purple carrot, green beans, pomegranates, eggplant etc.

SOURCES OF ANTHOCYANINS

Anthocyanin (ANC) can be found in various types of frequently consumed plant foods, viz., fruits, vegetables, cereals, nuts, and legumes. 36 Fruits have considerable content of ANC in comparison to the other plant foods. Specifically, berries as blackberry, blueberry, chokeberry, cranberry, elderberry, raspberry, and strawberry are good sources of ANC. Also, red and black currants exhibit a high concentration of ANC. Among vegetables, red cabbage, eggplant, radishes, and purple sweet potatoes exhibit a high content of ANC. Even though nuts and seeds cannot be considered as sources of ANC, if compared to fruits and vegetables, they contain some ANC, cyanidin is present primarily in almonds, hazelnuts, pecans, pistachios, and walnuts ^[8]. Among cereals, purple wheat, purple and black rice, and purple and red corn are the most highlighted sources. Finally, legumes such as black and red kidney beans, and black cowpeas contain a very high concentration of ANC.

STRUCTURE AND PROPERTIES

The chemical structures of anthocyanins contain polyhydroxy or polymethoxy derivatives of 2-phenyl benzopyrylium ^[9]. A phenolic compound consists of two aromatic rings linked by a 3-carbon chain that forms an oxygenated heterocyclic ring. The group of organic substances known as anthocyanidins includes anthocyanins. These are the sugar-free anthocyanins' equivalents, which are based on the flavylium ion or 2-phenylchromenylium ion. Anthocyanins may be neutral. Several foods, including American pokeweeds, blackcurrants, and roselles, have an averagely high proportion of anthocyanins. Foods like American cranberries, bilberries, figs, soy beans, and common grapes have all been shown to contain anthocyanins, however their amounts have not been defined. In light of this, anthocyanins may one day serve as a biomarker for the ingestion of certain foods. a member of the anthocyanidins class of organic substances ^[10]. These are the sugar-free anthocyanins' equivalents, which are based on the flavylium ion or 2-phenylchromenylium ion. Many fruits, vegetables, flowers, and cereals have colourful anthocyanin pigments that give them their appealing red, purple, or blues. In plants, they act as attractants for pollination and seed distribution, provide defence against the negative effects of UV radiation, and have antiviral and antibacterial properties. Regularly produced anthocyanin-based colourants are made from horticulture crops and processing byproducts for use in food. Anthocyanins and anthocyanidins are extensively used in the food and pharmaceutical industries due to their colourant characteristics, bioavailability, and antioxidant action. In the first part of this body of work, we discussed the structure, photophysical characteristics, co-pigmentation, antioxidant capabilities, glycosylation, and complexation of anthocyanins and anthocyanidins.

According to theory, human physiological responses to coloured food are identical to those that the same pigments exhibit in plants^[11]. Anthocyanins and betalains, which can be found in both fresh and processed fruit and vegetables, serve two purposes: they enhance the food's overall look and promote the health and wellbeing of customers.

THE FUNCTION OF pH

The pH of the vacuole where these compounds are kept influences their hue, which ranges from red in highly acidic conditions to purple-blue in intermediate pH levels to yellow-green in alkaline settings.

In conjunction with pH, the degree of hydrogenation or methylation pattern of the A and B rings and the glycosylation pattern can influence the hue of these flavonoids. Finally, the color of some plant pigments is caused by complexes formed by anthocyanins, flavones, and metal ions^[12]. Because of the alterations in chemical composition that occur in reaction to pH changes, anthocyanins are frequently utilized as pH monitors.

BIOLOGICAL FUNCTIONS OF ANTHOCYANIN

Numerous biological and functional properties of anthocyanins include antioxidant activity, anti-angiogenic effect, anti-fatigue activity, free radical scavenging activity, detoxification activity, antimicrobial, neuroprotective effect, anti-cancer properties, anti-diabetic effect, and controlling type II diabetes functions^[13]. Additionally, anthocyanins are known to offer benefits for the immune system, cardiovascular health, and obesity prevention by blocking digestive enzymes. Due to their potent antioxidant function, anthocyanin pigments also aid in shielding plants from UV deterioration. Anthocyanins can absorb light at the same wavelength as chlorophyll b, protecting plant tissue in the process. Because of their capacity to absorb light, anthocyanins can filter out harmful radiation, operate as a monosaccharide transporter, and regulate osmosis in cold and dry environments. Anthocyanins have been found to have yet another appealing quality.

APPLICATIONS OF ANTHOCYANINS FOR SMART PACKAGING FILMS:

The ability of anthocyanins to change colour in response to pH has led to the development of real-time pH change indicator films for packaged foods. The development of polymer-based colour indicator films using anthocyanins has received a lot of attention. As solid substrates for anthocyanins, biopolymers are typically preferred over synthetic plastics because they are biodegradable, biocompatible, non-toxic, and ecologically acceptable. Compared to synthetic, non-biodegradable polymers made from petroleum, biopolymers have many advantages. Biopolymers are readily biodegradable in the environment, annually renewable, and abundantly available^[14]. They also emit fewer greenhouse gases, which lowers carbon dioxide emissions. In order to provide extra functional characteristics, biopolymers are also employed as transporters of different functional materials, such as antimicrobials, antioxidants, micronutrients, and pigment. Although biopolymer-based packaging films displayed intriguing features, they were occasionally constrained by their low mechanical strength, low barrier strength, high polarity, and other factors.

BIODEGRADABLE PACKAGING MATERIALS

1. Chitosan

Deacetylation of chitin results in the production of chitosan (CS), a natural cationic polysaccharide with a high molecular weight^[15]. It is frequently used for food packaging since it is biodegradable, biocompatible, non-toxic, has good antibacterial properties, and forms films well. To enhance the film's qualities, including its antibacterial capacity against foodborne germs, CS packaging has been infused with a number of chemicals, including essential oils and natural extracts. Due to its fragile texture and subpar mechanical properties, however, CS's use in food packaging is constrained. So that its applications are increased, CS can be combined with other polymers.

2. Starch

Due to its advantages of being in abundant supply, being inexpensive, having good biodegradable and biocompatible qualities, and having the ability to create films, starch is thought of as an ideal food packaging material. The hydrophilicity, quick ageing, and poor mechanical qualities of the starch films, however, can be enhanced by adding plasticizer or combining materials with complementary features. When creating composite films with starch, materials with strong biocompatibility for film formation include CS and PVA. Researchers discovered that CS helped to increase the extensibility of the CS/starch composite films^[16]. To ensure the creation of the films with enhanced mechanical and functional properties, 10-20 weight percent PVA must be added to the maize starch/CS (70/30) matrix. As a material for active and passive films, starch has received a lot of interest.

3. Others

Other biodegradable polymers with good film-forming, mechanical, and oxygen-barrier characteristics, such as gellan gum, pectin, protein, and gelatin, were also used to create edible, active, and intelligent films for use in food packaging^[17]. In order to improve their mechanical properties for a variety of applications, they are frequently mixed with a number of different materials to create composite films. The antibacterial activity of a pullulan-based packaging film combined with nisin, lauric alginate, thymol, and polyethylene, for instance, was good against foodborne pathogens in meat and poultry items. A semi-refined blueberry pectin (SBP)/gelatin composite film was created in a recent study, and the addition of SBP improved the film's tensile strength and thermal stability. demonstrates the changes in smart food packaging publications over the past ten years, separating them into active and intelligent publications. The number of publications increased noticeably for active packaging starting in 2015, whereas those for intelligent packaging also increased gradually throughout the course of the study period. The interest in these novel packaging technologies, which aim to create a safer and more effective food supply chain by minimising food loss and waste and avoiding wasteful transit and logistics from the start, is reflected in these developments^[18]. Excellent assessments of active and intelligent food packaging solutions have been recorded in recent years among various journals.

ADVANTAGES AND DISADVANTAGES

Anthocyanin-based films have a high sensitivity to pH and could serve as an indicator of food freshness or deterioration. These films can protect food against oxidation processes and food-borne microbes since they are safe, non-toxic, biodegradable, and frequently have strong antioxidant and antibacterial characteristics^[19]. However, the anthocyanin-based coatings are vulnerable to temperature and light deterioration, as well as water vapour and oxygen permeability, which could cause food to degrade. Additionally, many composite films frequently display unsatisfactory mechanical characteristics. The main drawback is that the films' ability to monitor food freshness is lost due to the breakdown of anthocyanins with time. Therefore, further research should be done in the future to address these issues^[20]. As far as we know, only that recently published deals with describing the development of biobased antimicrobial films and sensors to be used as indirect indicators of food spoilage. In this context, the present review attempts to describe recent progress and new trends in the production of smart, active and intelligent food packaging, with focus on biodegradable and biobased polymers, which will be referred as biopolymers throughout this review.

CONCLUSION

In conclusion, anthocyanins seem to be attractive chemicals for the creation of versatile pH colorimetric indicators. Their proper incorporation into polymeric composites can increase their stability and protect the pH-induced colour spectrum. Additionally, the finished system can display increased overall performance, including mechanical and barrier properties, when combined with the correct polymer matrices and depending on the intended application. Additional capabilities, such as the antioxidant and antibacterial activity, can be assessed thanks to the intrinsic features of the anthocyanins and the colour change response to varied pH conditions. As was said in this review, the pH-indicating capabilities of the integrated anthocyanins and, consequently, the material's sensitivities, are strongly influenced by the structure of the polymeric matrix. In recent years, anthocyanins for packaging technologies have advanced and are now being integrated into smart food packaging systems to satisfy the needs of the food supply chain. It may be beneficial for safety, monitoring, and providing information about the food product in the package for the food business to adopt an appropriate indicator. The packaging system that is now in place may be further enhanced as a consequence of anthocyanin research. Application of natural dyes improves the standard of living for consumers. Scaling up and industrialising anthocyanin for use in food packaging applications could be difficult, so this should be taken into account in the early stages of development for a successful commercialization.

FUTURE PERSPECTIVE

As a result of its unique qualities, anthocyanin offers potential applications in the food industry and other sectors. Additionally, it perfectly satisfies the demands of contemporary society for food safety environmental protection due to its biodegradability and non-toxicity. The Yield and manufacturing costs of anthocyanin based biofilm, however constitute a significant issue limiting its utilization of food industry. The Characterization studies of this biofilm showed that it has many interesting physical, chemical and biological properties that can be exploited in various uses.

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GREEN SYNTHESIS NANOPARTICLES AND ITS APPLICATIONS TOWARDS DRUG DISCOVERY-A REVIEW

G. Yazhini S and Rajakumari K*

Department of Bio-Engineering, School of Engineering, Vels Institute of Science, Technology and Advanced Studies (VISTAS), Pallavaram, Chennai- 600117, Tamil Nadu, India

ABSTRACT

Oral cancer-lining of the lips, mouth, or upper throat- starts as a painless white patch- that thickens-develops red patches-an ulcer- looks like a persistent crusting ulcer-symptoms painful swallowing-new lumps or bumps in the neck-a swelling in the mouth-or a feeling of numbness in the mouth or lips. Taraxacum officinale - perennial plant-highly nutritious- antioxidant activity-vitamin C-potassium-calcium-iron-magnesium-phosphorus-thiamine –riboflavin-beta carotene-fibre- used to treat infections-bile and liver problems- diuretics-used for increasing appetite-plant bitter for improving digestion-antimicrobial and anticancer properties-used in cancer research-potential to slower the growth of cancer cells-prevent it from spreading-reduces cholesterol and sugar level-boost bile juice production-reduces inflammation-help with gall bladder issues and liver issues.

Keywords: Oral-Cancer, Taraxacum officinale, anti-oxidant, nano-particles.

INTRODUCTION

Nanotechnology is a fast-expanding science with numerous applications in biology, medicine, and engineering. The production of nanoparticles of diverse sizes and forms and their possible applications are the focus of nanotechnology. Although the physical and chemical processes used to synthesise nanoparticles result in well-defined, pure nanoparticles, these nanoparticles are highly expensive and might not be environmentally benign [1]. The manufacture of nanoparticles through physical and chemical means could be replaced by the use of microbes and plant resources. The idea of using natural resources to synthesise metal nanoparticles has shown to be an effective and environmentally sound strategy. The green synthesis of metal nanoparticles using plant extracts is thought to be more affordable and environmentally beneficial.

The polyol components in plant extracts are in charge of the bio reduction of metal ions during the green synthesis of metallic nanoparticles, whereas water soluble heterocyclic components stabilise the nanoparticles produced. According to reports, metal nanoparticles have anti-inflammatory, antibacterial, magnetic, catalytic, and optical capabilities. One of these features, the antibacterial property, is regarded as being particularly significant and having great promise for use in both human and animal medicine. Plant extract-mediated nanoparticles are said to have strong antibacterial action in addition to being eco-friendly and less expensive.

In this study, *Taraxacum officinale* flower sheath extract was used as both the reducing and capping agent during the quick, one-step, green biosynthetic synthesis of iron nanoparticles (FeNPs). The synthesised nanoparticles were also evaluated for their ability to fight off dangerous bacteria.

The lining of the lips, mouth, or upper throat is affected by oral cancer, sometimes referred to as mouth cancer. It typically begins as a painless white area in the mouth, thickens, develops red patches, and eventually becomes an ulcer. On the lips, it frequently resembles a slow-growing, chronic crusting ulcer that does not heal. Other signs may include trouble swallowing or pain, new lumps or bumps in the neck, a swelling in the mouth, or a tingling sensation in the lips or mouth. Smoking and drinking are risk factors. People who use both alcohol and tobacco have an oral cancer risk that is 15 times higher than people who do not. Other risk factor include, HPV infection like chewing pan and sun exposure on the lower lip are additional risk factors. Head and neck cancers include oral cancer as a subtype. A biopsy of the problematic area is used to make the diagnosis. This is followed by an investigation using a CT scan, MRI, or PET scan, as well as testing to see if the disease has spread to other parts of the body.

Dandelion, or *Taraxacum officinale*, is an herbaceous perennial flowering plant of the family Asteraceae. Although dandelion is typically regarded as a weed, the leaves contain pharmacologically active substances such flavonoids (luteolin, apigenin, isoquercitrin, caffeic acid, and chlorogenic acid), terpenoids, and triterpenes (Xue et al. 2017). For its choleric, diuretic, and anti-inflammatory qualities, dandelion has long been utilised as a harmless medical herb (Efimia Dermesonluoglu et al. 2016; Gonzalez-Castejon et al. 2012). Additionally, it has been said to have antioxidant properties and to be effective in treating obesity, cancer, and cardiovascular issues (Hu and Kitts 2003). It grows in residential and recreational lawns, on the sides of roads, and along the edges of waterways in many countries. It is also a typical weed in a number of crops. A perennial plant with many sources of minerals and nutrients, *Taraxacum Officinale* is very nutrient-dense. It contains lots of

antioxidants. It has been applied in studies on cancer. It has the ability to limit cancer cell proliferation and stop the disease from spreading. It lowers blood sugar and cholesterol levels. It increases the synthesis of bile juice and decreases inflammation, which can help with liver and gall bladder problems.

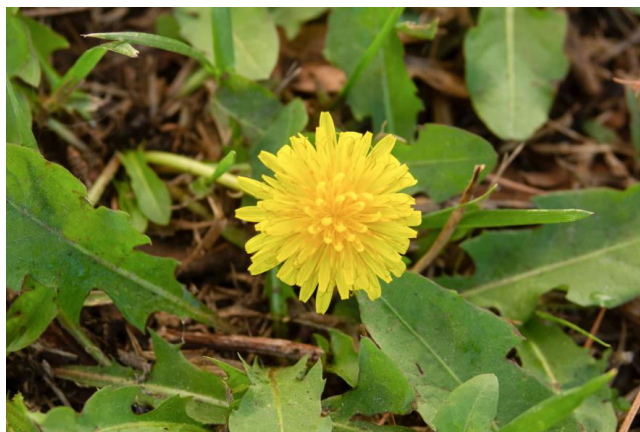


Figure 1. *Taraxacum officinale*

NANOPARTICLES

Nanoparticles are extremely small particles with diameters measured in nanometres (1 nm = 10⁻⁹ metre). In addition to being produced by human activity, nanoparticles also occur in the natural world. Manufactured nanoparticles may have practical uses in a number of fields, including medical, engineering, catalysis, and environmental remediation. This is because they are sub microscopic in size and have unique material properties. A distinct nano-object with all three Cartesian dimensions smaller than 100 nm is what the International Organization for Standardization (ISO) called a nanoparticle in 2008. One-dimensional nano-objects and two-dimensional nano-objects, such as nano discs and nanoplates, were both described by the ISO standard (i.e., nanofibers and nanotubes). Even if an object's other dimensions are outside of this range, it just needs one of its distinctive dimensions to fall within the range of 1-100 nm to be considered a nanoparticle. (The reason why 1 nm is utilised as the bottom limit is because atomic bond lengths are attained at 0.1 nm.) The size range originally allocated to the discipline of colloid science—from 1 to 1,000 nm—which is frequently referred to as the mesoscale—overlaps significantly with that of 1 to 100 nm [2].

Depending on the size, shape, and material characteristics of a nanoparticle, it can be categorised into any of a wide range of categories. Dendrimers, liposomes, and polymeric nanoparticles are classified as organic nanoparticles, whereas fullerenes, quantum dots, and gold nanoparticles are classified as inorganic nanoparticles. Other divisions of nanoparticles include those based on carbon, ceramic, semiconducting, or polymeric materials. Additionally, there are two categories of nanoparticles: hard (such fullerenes, titania [titanium dioxide], and silica particles), and soft (e.g., liposomes, vesicles, and nanodroplets). Nanoparticles are often categorised according to their use, such as in fundamental research vs diagnosis or therapy, or it could be based on how they were made.

Properties of Nanoparticles

Nanoparticles have three main physical characteristics, all of which are interconnected: (1) they are highly mobile in the free state (for example, in the absence of any other external forces, a 10-nm-diameter silica nanosphere has a sedimentation rate under gravity of 0.01 mm/day in water); (2) they have enormous specific surface areas (for example, a standard teaspoon, or about 6 ml, of 10-nm-diameter silica nanospheres has more surface As a result, depending on the application or final product, nanoparticle compositions might vary greatly.

Nanoparticles Based Technologies

The main focus of nanoparticle-based technology is on ways to increase the productivity, sustainability, and efficiency of current operations. That is achievable because nanoparticle-based technologies employ less material, a major fraction of which is already in a more "reactive" form, when compared to the materials normally used for industrial processes (for example, industrial catalysis). Other applications for nanoparticle-based technologies include the field-deployable remediation of organochlorine chemicals, such as polychlorinated biphenyls (PCBs), in the environment using nanoscale zero-valent iron (NZVI) particles. Organochlorine reactivity in deep aquifers can be reduced by NZVI particles' ability to penetrate rock strata in the ground. Other uses for nanoparticles include improving coatings, composites, or additives by manipulating or organising matter at the nanoscale, as well as using the particles' quantum effects (such as quantum dots for imaging, nanowires for molecular electronics, and spintronics and molecular magnet technologies) [5].

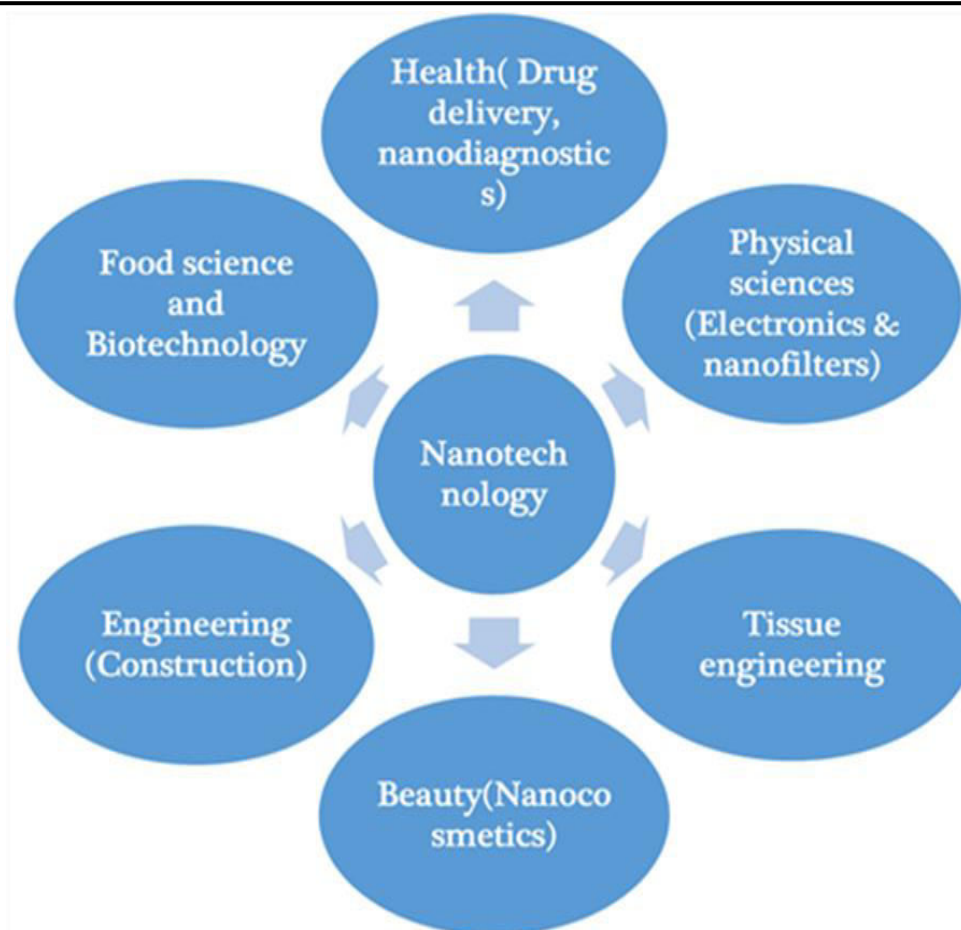


Figure 2. Application of Nanoparticles Based Technologies

Nanoparticles Application in Medicine

Nanoparticles are small size makes them particularly useful in medicine because they cannot only circulate widely throughout the body but also enter cells or be made to bind to particular cells. These characteristics have made it possible to develop novel techniques for improving imaging of organs, tumours, and other sick tissues in the body. They have also aided in the development of novel therapeutic delivery strategies, including as local heating (hyperthermia), limiting blood flow to tumours and damaged tissues, and conveying medicinal payloads. For monitoring the spread of cancer along lymph nodes, magnetic nanoparticles have been utilised in place of radioactive technetium. The superparamagnetic iron oxide nanoparticles used in magnetic resonance imaging cause a change in contrast that the nanoparticles take advantage of (MRI). Using an alternating magnetic field to heat and damage tissue on a local level, these particles can also be utilised to eradicate tumours by inducing hyperthermia. Nanoparticles can be created to improve fluorescence imaging, positron emission tomography (PET), or ultrasound pictures. The same targeting concept might theoretically be applied to help with the exact delivery of a medicine to a specific illness site. The drug may be delivered using a porous Nano sponge structure, a Nano capsule, a liposome, or another delivery method that would allow for a delayed release of the medication. The creation of nanoparticles that facilitate the inhalational delivery of a medication to the brain has great potential for the treatment of neurological conditions like Parkinson's disease, Alzheimer's disease, and multiple sclerosis.

In the creation of new scaffold structures for bone and tissue repair, nanoparticles and nanofibers are crucial components. Such scaffolds contain biocompatible nanoparticles. Future tissue-repair therapies might, for instance, combine collagen or collagen substitutes with calcium hydroxyapatite nanoparticles, a natural component of bone. Future medical advances based on the use of nanoparticles are anticipated to have a large positive impact on patient care, yet the use of nanoparticles also poses considerable risks to human health. For instance, little is known about what happens to nanoparticles once they enter the body or whether they have any negative effects on it (see below Health effects of nanoparticles). To properly address concerns about the security and efficacy of nanoparticles employed in medicine, extensive clinical trials are required. Additionally, there are production issues that must be resolved, such as the need to create sterile nanoparticles for use in medical applications.

Iron Nanoparticles (FeNPs):

Iron particles that are smaller than a micron is known as nanoscale iron particles. They have a big surface area, which makes them very reactive. They quickly oxidise to produce free iron ions when oxygen and water are present. They have been researched for clean-up of industrial areas contaminated with chlorinated organic chemicals in addition to their widespread use in medical and laboratory applications. Grounds contaminated with polychlorinated biphenyls (PCBs), chlorinated organic solvents, and organochlorine insecticides can all be efficiently treated with nanoscale iron particles. Groundwater can easily carry iron particles as small as nanoscale [6]. The water-nanoparticle slurry can also be pumped into the contaminated area and remain there for extended periods of time.

Although metallic iron nanoparticles effectively remove pollutants, researchers have shown that they have a propensity to aggregate on soil surface. In response, metallic iron nanoparticles have been supported by water-soluble polyelectrolytes and carbon nanoparticles. Sand and soil permeability are increased as a result of the hydrophobic pollutants adhering to these supports. Field experiments have often supported lab results. The use of nanoscale iron particles for reducing ground contamination is not yet widespread because research is still in progress.

Application of Iron Nanoparticles

Because iron oxide is easily broken down, it can be used in vivo [citation needed]. Results from exposure to seven industrially significant nanoparticles by human mesothelium and murine fibroblast cell lines revealed a nanoparticle-specific cytotoxic mechanism for uncoated iron oxide. The cytotoxic reaction was shown to be significantly influenced by solubility. An intriguing new technique for tracking such tagged cells in real time via magnetic resonance tomography involves labelling cells (such as stem cells and dendritic cells) with iron oxide nanoparticles.

Iron oxide nanoparticles are employed in cancer magnetic nano therapy, which is based on the magneto-spin effects in free-radical reactions and semiconductor materials' capacity to produce oxygen radicals. It also controls oxidative stress in biological media under irregular electromagnetic radiation. By using an anticancer magnetic complex during chemotherapy, reactive oxygen species (ROS) and reactive nitrogen species (RNS)-mediated local toxicity in the tumour is controlled remotely, with reduced adverse effects in normal tissues. Due to their ability to be remotely controlled while targeting with a constant magnetic field and further strengthening of their antitumor activity by moderate inductive hyperthermia (below 40°C), magnetic complexes with magnetic memory that consist of iron oxide nanoparticles loaded with antitumor drug have advantages over conventional antitumor drugs [7]. Iron oxide nanoparticles have begun to transmit unpaired electrons from iron oxide nanoparticles to anticancer drugs and tumour cells under the combined influence of inhomogeneous constant magnetic and electromagnetic fields during nano therapy. In particular, the anticancer anthracycline doxorubicin develops the magnetic characteristics of paramagnetic substances despite being diamagnetic in its natural condition. The length of time that radical pairs remain in the triplet state, the likelihood of their dissociation, and the concentration of free radicals can all be increased by electromagnetic radiation with a hyperfine splitting frequency.

Experimental information was gathered regarding the relationship between electromagnetic field radiation frequency and magnetic characteristics and the quantity of complex paramagnetic centres [17]. Through the use of external magnetic fields, it is possible to modify the severity of local toxicity in malignant tumours as well as the kinetics of free-radical processes. The capacity to kill or stop the proliferation of cancer cells makes oxidative assaults on them and the local creation of high levels of oxidative stress in tumour tissue a particularly effective therapeutic approach to cancer. Multifunctional magnetic complexes with magnetic memory can integrate cancer magnetic nano therapy, tumour targeting, and medical imaging functions in theragnostic for individualised cancer treatment.

However, when iron oxide magnetic nanoparticles are targeted with inhomogeneous stationary magnetic fields, tumour growth may be accelerated. Through the action of the inhomogeneous stationary magnetic field, magnetic force transmission through magnetic nanoparticles to the tumour reflects mechanical stimuli, transforming iron-induced reactive oxygen species formation to the modification of biochemical signals [14]. Additionally, iron oxide nanoparticles may be utilised in magnetic hyperthermia as a cancer treatment strategy. In this procedure, iron oxide-containing ferrofluid is injected into the tumour and heated using an alternating high-frequency magnetic field [14]. This heat generation's temperature dispersion may aid in the elimination of malignant tumour cells. Superparamagnetic iron oxide (SPIO) may also be utilised in place of radioisotopes as a tracer in sentinel node biopsy procedures.

APPLICATIONS OF IRON OXIDE NANOPARTICLES IN CANCER THERAPY

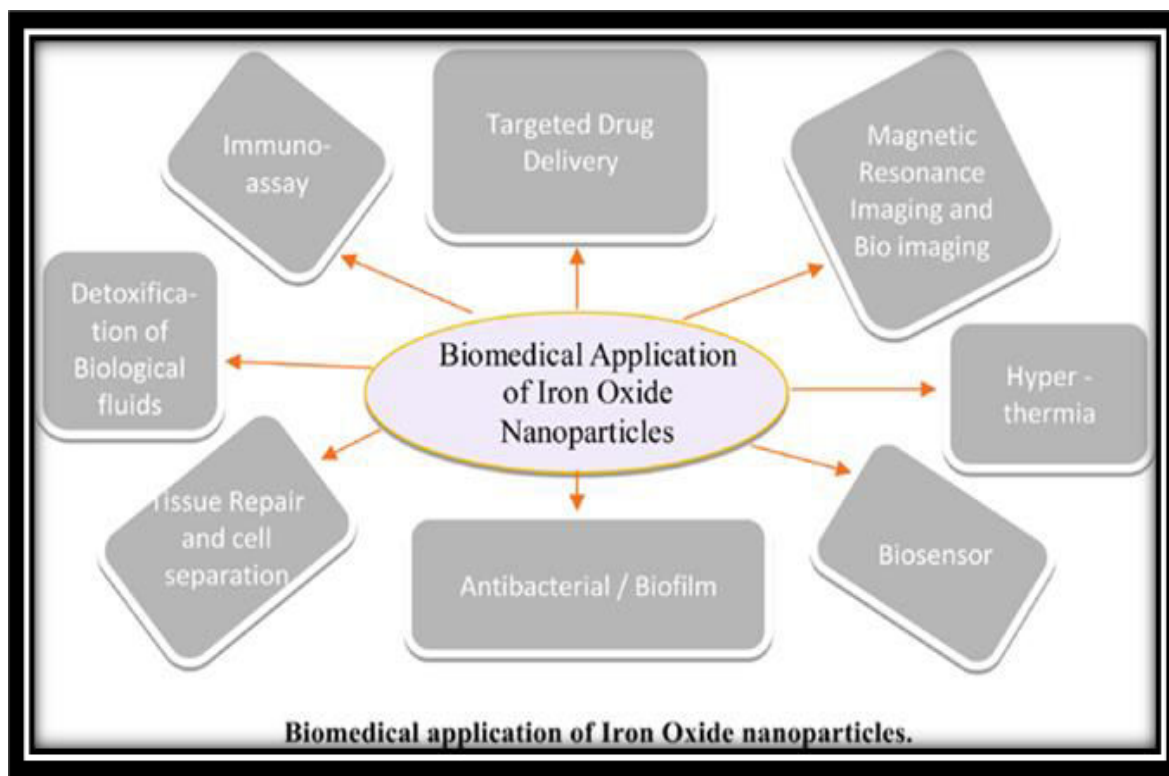


Figure 3. Biomedical application

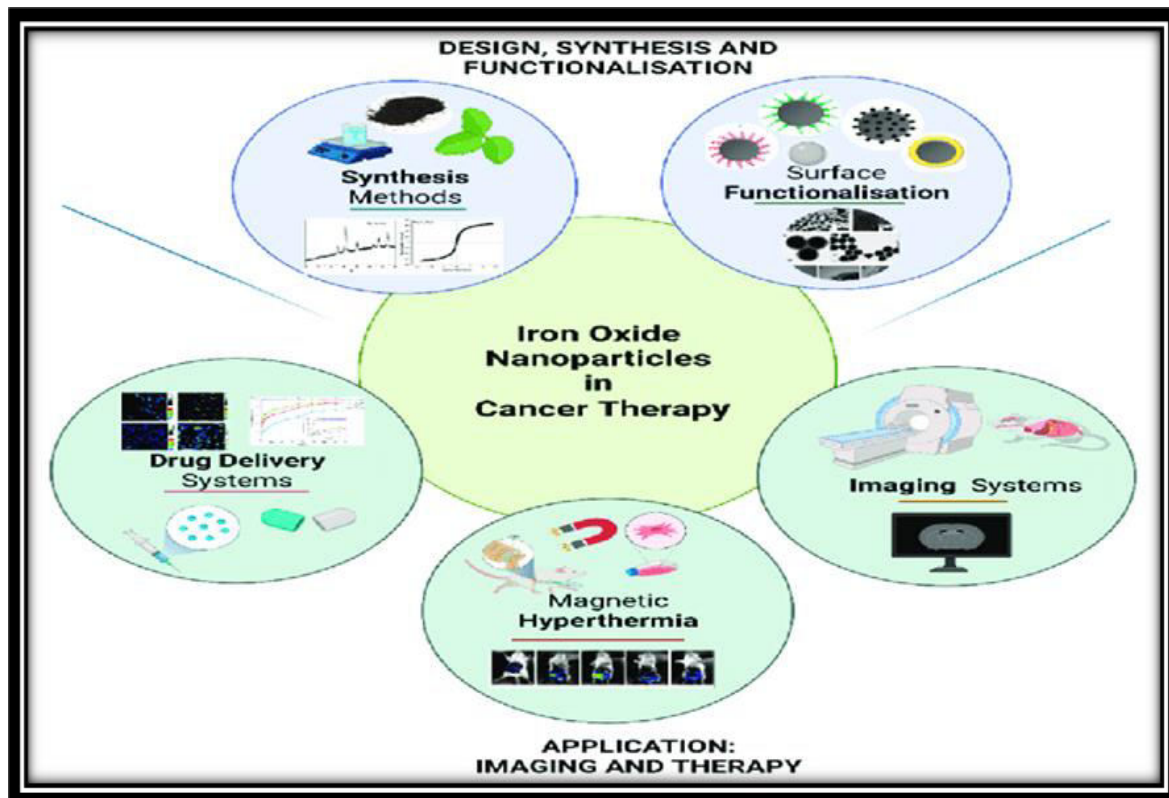


Figure 4. Cancer therapy

Nanotechnology application in Food

The latest applications of nanotechnologies for the food industry have been identified in a number of papers and evaluations [5]. Food goods and packaging that contain chemicals and additives that are nanosized or nano encapsulated are the main application areas. Applications of food nanotechnology appear to have no end. The food industry is already investigating nanotech uses in all areas, including ingredients, packaging, and food analysis techniques. Numerous prospective applications for better food production, processing, packing, and storage are being produced as a result of these [5]. Nano encapsulation of bioactive food ingredients, intelligent,

active, and smart food packaging systems, and bacteria detection and food quality monitoring utilising biosensors are a few examples of growing applications of nanotechnology for the food industry. Food packaging can utilise carbon nanotubes to enhance its mechanical qualities. *Escherichia coli* bacteria were shown to instantly perish upon direct contact with aggregates of carbon nanotubes, demonstrating the potent antibacterial properties of these materials. In actuality, the long, thin nanotubes pierce *E. coli* cells and harm the cells.

Nanotechnology applications in the production of organic food call for care because little is known about how they will affect the environment and public health [17]. There have been reports on new nanotechnology uses in food, safety and risk issues with nanomaterials, methods for nanoparticles to enter the body, existing nanotechnology legislation in various nations, and a certification system for nanoproducts. There have been more and more reports of the use of nanotechnology-developed instruments and methods for identifying cancer-causing microorganisms as well as biosensors for better and contaminant-free meals [17]. Numerous areas of the food business are finding use for functionalized nanostructured materials, including the development of novel nanosensors, new packaging materials with enhanced mechanical and barrier qualities, and effective and focused nutrition delivery systems [17]. Researchers have offered their perspectives on the potential advantages of nanotechnology in food safety. The main accomplishments include using casein micelles, a naturally occurring nano vehicle of nutrients, to deliver hydrophobic bio actives; finding distinctive nanotubes based on the enzymatic hydrolysis of α -lactalbumin; introducing novel encapsulation techniques based on cold-set gelation to deliver heat-sensitive bio actives, including probiotics; and developing and using conjugates of milk proteins and polysaccharides based on the Maillard reaction to encapsulate by beet-pectin, for bioactive delivery [17].

The use of milk proteins for drug targeting includes lactoferrin or bovine serum albumin conjugated nanoparticles for effective in vivo drug delivery across the blood-brain barrier; beta casein nanoparticles for targeting gastric cancer; fatty acid-coated bovine serum albumin nanoparticles; and combining the surface properties of whey proteins with stabilisation properties of polysaccharides in advanced W/O/W and O/W/O double emulsions [17]. The potential of nanotechnology for food applications will be realised with the help of microfluidics, microelectromechanical systems, and DNA microarrays. Applications for the Nano Charcoal adsorbent include the discoloration of food products [5].

NANOPARTICLES COATING

The coatings can compete with conventional active packaging technologies like oxygen scavengers in terms of how well they keep out oxygen and retain carbon dioxide. Examples include an aqueous-based nanocomposite barrier coating called a nanocoating, which offers an oxygen barrier with a 1-2 micron coating for use in food packaging, and plasma arc deposition of amorphous carbon, which is deposited within PET bottles to act as a gas barrier [15].

EDIBLE NANOCOATING

Nanoscale edible coverings as thin as 5 nm are now possible thanks to nanotechnology. In addition to being able to deliver colours, flavours, antioxidants, enzymes, and anti-browning agents, edible nano coatings could also act as a barrier to moisture and gas exchange, extend the shelf life of manufactured foods even after the packaging has been opened, and be used on meats, cheese, fruit and vegetables, confectionery, bakery goods, and fast food [15]. Mango puree edible films can be reinforced with cellulose nanofibers to greatly enhance their characteristics. On top of baked items, an ingestible antimicrobial nanocoating can be added.

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DIGITAL AGE – IS IT A BREAKTHROUGH IN LEARNING LANGUAGES AND HUMANITIES?**Dr. A. Satya Phani Kumari**

Associate Professor, Department of English & Humanities, Anil Neerukonda Institute of Technology and Sciences, Sangivalasa- Visakhapatnam Dist. Andhra Pradesh, India- 531162

ABSTRACT

In this world, change is inescapable. Everyone's success is profoundly influenced by appearance, advanced outlook and ability to understand. Any positive modification or change ought to be embraced. Otherwise, the universe wouldn't be progressing. Not just in science and technology, but in every field as well, this transition or change has been taking place. Additionally, alterations are encouraged to obtain new tools, new theories, and fresh experiments. Such a shift also occurred in the economic world, but in the shape of digital technology and humanities. "The inabilities to learn, unlearn, and relearn will be what defines the illiterate of the twenty-first century, not the inability to read and write". (Alvin Toffler). That much is true. Learning and development are ongoing processes. A progressive step in the computer age is the pragmatic and methodical use of digital resources in the humanities. This paper examines the careful application of digital technology to preserve the historical texts as well as the proper digitalization of new terminologies, theories, and business-related operations. It also discusses how digital technology benefits those who are constantly looking to learn new information and conventional pedagogy.

Keywords: Digital Humanities, Trade and Commerce, Advanced Technology, New-normal Pedagogy, Pragmatic Learning, New-normal Vocabulary

Digital literacy, digital world, digital form, digital marketing or business, digital technology, digital humanities etc. are the buzz words at present. Although many of us may not be very familiar with them, the humanities are not a novel subject or idea, and business or trade is not unique subjects either. They are age-old topics that are concerned with people, their way of life, their culture and traditions, and the society in which they reside. Humanities are limited to Mathematics, Physical Sciences, and Social Sciences as the world shifts toward technology, while business is restricted to Commerce. Humanities are viewed as a discipline that studies trade and tradition, civic sense and society's culture, history, literature, music, and many arts at the period of the Renaissance. At that time, business and the humanities were given more exposure.

ROLE OF WRITING SKILLS IN DIGITAL TRADE ERA

Edward de Bone a famous business teacher said, "from the world of business and management come many powerful words which have been developed to describe the line processes that go one in that world. In contrast to the academic world which is a world of description the business world is a world of action." Many business gurus claim that the typical manager in industry cannot write concise, clear prose. They might be familiar with fundamental grammar concepts like sentence construction, tenses, and punctuation. However, they have a few bad writing habits that detract from their writing abilities and cause vacuous language and ambiguity. Three categories of persons can be identified while examining the business people's writing abilities. Some businesspeople believe that speaking is more significant than writing, which they view as tedious and unnecessary. Some people are excellent communicators but terrible writers. They are unconfident in their writing abilities and find it difficult to begin any kind of writing. The third sort of person is really interested but lacks the necessary education.

GRAY AREA IN NEW NORMAL ERA

Business etiquette is a murky subject for many businesspeople in this COVID era. Due to a lack of comprehension in Digital English, it is a grey area. They are unsure about the appropriate form of English to employ when conducting business. This appalling command of the English language may result in misunderstandings and misinterpretations that may harm job advancement. A person will be more likely to receive outsourced chances if they use positive language, gestures of gratitude, and assertiveness. The current imperative is to learn digital symbols, emoticons, memes, and SMS words related to business. Business opportunities are improved by this knowledge.

As digital technology and humanities themes are combined, the field of "digital humanities" is growing in importance. This field investigates novel approaches to literary analysis, research techniques, lab work, and social networks. It describes the fundamental function of technology in the humanities in both traditional and current terms. Researchers have identified two categories of digital humanities. using computers for study in the humanities and viewing technology, particularly digital instruments, as an integral component of the humanities When he says that, Dave Parry summarises these many claims to some extent to a definition of the area, "what

is at stake here is not the object of study or even epistemology, but rather ontology. The digital changes what it means to be human, and by extension what it means to study the humanities." (Parry 2012)

HOW CAN WE APPLY THESE DIGITAL SKILLS IN OUR STUDY?

The major goal of digital commerce and humanities is to combine the work from many different professions into digital work and make it more appropriate and realistic. The people have had to adapt to the IT rise of the twenty-first century in terms of concordance, cross-referencing, and text-handling techniques. This collaborative endeavor, however, might result in an interdisciplinary field. Even from the views of various academic disciplines, the current idea of digital literacy is that technology permits novel approaches to humanistic inquiry or makes it possible to pose new questions. Prof. Dasgupta emphasizes that because we live in a digital age, it is impossible to envision the scholarship of trade and arts existing somewhere else. We must relearn how to ask questions in this new digital environment, which is in some ways also a critical and disciplinary problem. While some of the fundamental conceptual questions for the humanities and the business world may not have changed, the way we ask questions has. While this does not solve the definitional issue, it does offer a helpful starting point for considering potential issues with digital technology, particularly in the context of India.

TOOLS FOR GETTING KNOWLEDGE IN DIGITAL HUMANITIES AND ENTREPRENEURSHIP

There are several tools for numerous topics in the humanities and business. Nowadays, finding any knowledge on any subject in our profession is a cake walk. We don't need to visit libraries, colleges, or information centers. We can become experts in our profession if we have access to these digital tools.

Tools for artists include drawing display tablets, graphics drawing pen tablets, electronic writing pads, green chalkboards, vinyl stickers, tripod stands with green boards, condenser clips, white chalkboards, LCD drawing boards, LCD writing pads, LCD E-writers, and digital drawing tablets with screens. Senior artists can provide access to this information for those who desire to learn drawing.

Keyboards, starter guitars, mindtap music, wooden xylophones, stacking drums, etc. are available for music lovers.

Automobiles used in construction, medical equipment, Unifix cubes, Imagi Make, Wonder Boxes, Calculation Boxes, Rainbow Stackings, laptop notepads, etc. There are numerous tools available to learn every subject.

Various apps for doable learning Busuu: apps that can provide a wealth of knowledge on a variety of topics, including language learning, Tureng dictionaries, FluentU, Tesen, Mindsnacks, Duolingo, Memrise, Drops, Babel, HelloTalk, Innovative 101, Mondly, Mango Languages, Tandem, HiNative, Lingo Vocabulary Trainer, iGeeksBlog, and many others. These apps allow one to advance their business chances.

USING DIGITAL TECHNOLOGY TO IMPROVE ENGLISH VOCABULARY

Etymology – interesting origins: English language enthusiasts and language enthusiasts are interested in learning about fascinating aspects of language. It was difficult in the past to become familiar with strange idioms and new words. In our day and age, where the digital divide is heavily utilised, it is both feasible and hopeful. Quiz, Berserk, Nightmare, Sandwich, Malayria, Quarantine, Clue, Palace, Ketchup, etc. are some intriguing word origins.

Sobriquets: A sobriquet is a word or name that describes a person's peculiarity or notoriety and becomes a representation of that characteristic. Sobriquets have existed for as long as society has celebrated its gods, heroes, and leaders and denigrated its criminals and miscreants. The Sobriquet Hall of Fame is home to names like "The Almighty," "The Prince of Peace," and "The Prince of Darkness," while others like "The Great Emancipator," "The Yankee Clipper," "The King of Pop," and "Lucky Lindy" are instantly recognizable

Eponyms are words formed from people's names in reference to their characteristics. They could be made up people or real people. Examples include the phrase "Achilles' heel," "Achilles' tendon," "Adam's apple," "Adam Walsh's Code Adam," "Abduction-murder victim," and several medical terms like "islet of Langerhans," "Krebs cycle," "Kupffer cells," "Leydig cells," "Wernick's region," "Parkinson's disease," etc.

Palindromes: A word, a phrase, a sequence, a number or a sentence that reads the same forward or backward. Eg. Civic, level, refer, madam, tenet etc.

Portmanteau words: At present the youth feel crazy about portmanteau words. If the teachers introduce portmanteau words to the learners, they can enjoy the session. The learners do not know the meanings of many words but use them frequently in their conversation. If the teachers teach them the origin, usage, meaning to the words, they will be perfect in their knowledge. The teachers can initiate the students to recognize and find out new words by giving them some puzzles. Some portmanteau words are:

Chortle	chuckle+snort
Mockumentary	mock+documentary
Spork	spoon+fork
Slithy	lithe+slimy
Mimsy	flimsy+miserable
Widget	window+gadget
Cosplay	costume+roleplay
Dramedy	drama+comedy
Edutainment	education+entertainment
Newscast	news+broadcast

There are so many words that are formed recently in a portmanteau way. Film stars Saif Ali Khan and Kareena became Saifeena and Brad Pitt and Angelina Jolie became Branjelina before their divorce. Virat Kohli and Anushka Sharma became Virushka. In this way, many new expressions enter the English world in the form of portmanteau words.

Riddles: Riddles are the fun ways to ameliorate our vocabulary.

Riddles: Riddles is a fun way to ameliorate the verbosity of the students. They expand the thoughts in a creative way and widen cognitive thinking. They sometimes help to solve our problems also.

1. If two's a company, and three's a crowd, what are four and five?

A. Nine

2. After a train crashed, every single person died. Who survived?

A. All of the couples.

3. What can you catch but not throw?

A. A cold

4. What begins with T, finishes with T, and has T in it?

A. A teapot

5. Where does success come before work?

The dictionary.

New normal Pedagogy: As Covid-19 entered people's lives forcefully, they didn't accustom to lead that drastic, perilous life. However, the time has made people overcome those dangerous feelings and habituate to lead a normal life. This is called new-normal life. Teachers are introducing new pedagogy as it is not possible to meet the students directly and physically. Online teaching gets popularity and Digital Humanities again at the helping end. Many words have entered in students' verbosity.

Eg. Quarantine, isolation, seclusion, sanitization, contamination, pandemic, epidemic, endemic, prevalent, rampant, physical-distancing, mask-wearing, coronavirus, symptomatic and asymptomatic, community spread, clinical trial, contact-tracing, confirmed positive case, contactless, containment area, epidemic curve, epidemiology, forehead thermometer, Hydroxychloroquine, immune surveillance, incubation period, lockdown, national emergency, patient zero, person-to-person transmission, pre-symptomatic, presumptive positive case, respirator, screening, self-isolation, self-quarantine, home-quarantine, vaccine, ventilator, Spanish-flu, work-from-home. etc.

This medical and other rare words entered humanities with the help of technology. the writers describe these incidents, stories, sad happenings throughout the world crossed the threshold of medical terminology and become a part of humanities.

ATTENTION-GRABBING WORDS IN COVID-19 PERIOD:

1. Social gifting: Doing a kind act for other people or to benefit the community instead of buying someone gift.
2. Impact exercise: The activity of combining a sporting challenge such as running a marathon with working on a project that benefits the people who live in the same area.
3. Woke capitalism: A strategy used by some major businesses in which they become involved in popular social and political issues in order to make more money.
4. Recrudescence: The recurrence of the undesirable condition
5. Bailout: an act of giving financial assistance to a failing business or economy to save it from collapse.
6. Disinfectant: a chemical liquid that destroys bacteria
7. Livedo: skin discoloration
8. Solastalgia (environmental change) A form of homesickness one gets when one is still at home, but the environment is changed.
9. Farrago: a confused mixture.
10. Rodomontade: boastful or inflated talk or behaviour.

CONCLUSION

People now have wisdom in various areas, which is a benefit of Covid-19. Due to the rapid dissemination of information, people are advised to take safeguards. People with education are always learning new things and new disciplines, thus many students have enrolled in online courses in an effort to benefit from them. By adopting cutting-edge educational apps and a variety of online teaching strategies, academic staff members have transformed into technocrats. The lives and hopes of some people have been abandoned by Covid-19. All nations around the world now have a different image thanks to it. People have, nonetheless, also picked up some useful lessons. Authors have sufficient time to finish their works, while students who are staying in dorms and rooms can spend time with their families.

Numerous businesses and academic institutions have offered motivated students free certifications and knowledge-sharing initiatives. Different courses have been made available to education enthusiasts by Coursera, NPTEL, edX, Udemy, Future Learn, Udacity, Kadenze, and others. Learning new languages has been prompted by some apps. People have developed excellent vocabulary in addition to English and other languages. On this page, poetry and stories have been written in a number of languages, and many of those poems have been translated. Everyone on this planet, including writers, artists, surgeons, engineers, lawyers, scientists, travelers, students, and instructors, has learned a great deal from literature. Digital trade is the only way that this is feasible. Future events could be documented and included in digital humanities and digital trade. Historians might refer to this pandemic situation as a major historical change, filmmakers and storytellers might use it as a theme in their works, teachers might adopt new pedagogy or a paradigm shift could happen as a result of this pandemic, and scientists might be prepared to develop new vaccines. These digital talents could grow significantly in the future.

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THE EVOLVING TRAJECTORY OF E-COMMERCE IN INDIA: 2022 AND BEYOND

¹Athira S and ²Dr. Sudeep B. Chandramana¹2nd Year B. Com, CHRIST (Deemed to be University), Bengaluru, Karnataka- 560029²Associate Professor, Mar Athanasios College for Advanced Studies Tiruvalla (MACFAST), Kerala, India, PIN- 689101**ABSTRACT**

Due to the introduction of numerous new businesses, the Indian retail industry has become one of the most dynamic and quick-paced sectors. In addition to contributing about 10% of the nation's GDP, it also provides over 8% of all jobs. India is the fifth-largest global retail market in the world. India is the fifth-largest international retail destination in the world and is ranked 63 in the World Bank's Doing Business 2020 report. In the 2019 Business-to-Consumer (B2C) E-commerce Index published by the United Nations Conference on Trade and Development, India is placed 73. Although e-commerce has been popular in the nation for more than ten years, the proper ecosystem has only recently begun to take shape. The way individuals buy and sell goods and services has evolved over the past ten years thanks to the Internet. Consumers' purchasing experiences are changing as a result of online retail or e-commerce. Particularly in the previous two years, the sector has experienced unheard-of growth. Technology adoption makes the e-commerce industry more accessible and effective. Smartphones, tablets, and network technologies like 3G, 4G, Wi-Fi, and high-speed internet are all contributing to a growth in online shoppers. India is on its way to becoming the e-commerce market with the highest rate of growth in the world thanks to these motivators. This article provides an overview of the current e-commerce market in India, some of the major investments in this sector in the recent past, initiatives from Government of India and a perspective view on the future of e-commerce industry in India.

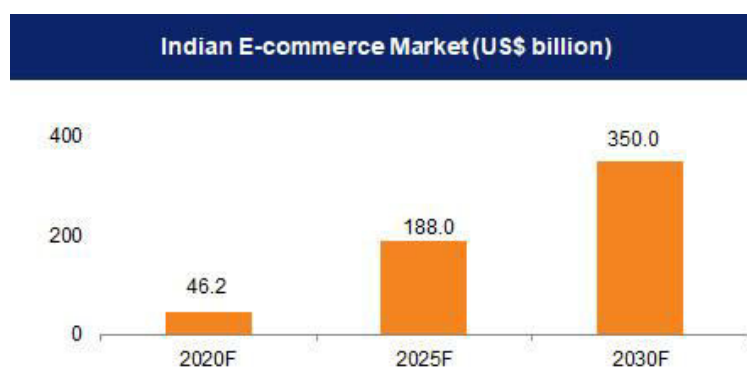
Keywords: e-commerce, retail, digital India, Electronic retail, internet commerce

INTRODUCTION

India has seen a growth in the use of smartphones and the internet in recent years. Due to large role played by the "Digital India" effort, there were 830 million internet connections worldwide in 2021. 55% of all connections to the internet were in metropolitan areas, and 97% of those connections were wireless. The number of smartphones has also greatly grown, and by 2026, that number is anticipated to be 1 billion. India's digital economy has benefited from this, and by 2030, it is predicted to be worth US\$1 trillion. The rapid growth of India's e-commerce industry has been aided by the country's increasing affluence, quick increase in internet users, and smartphone penetration. The e-commerce industry in India has revolutionized how business is conducted around and opened up a variety of market niches, including business-to-business (B2B), direct-to-consumer (D2C), consumer-to-consumer (C2C), and consumer-to-business (C2B) (C2B). Significant markets like D2C and B2B have grown tremendously in recent years. By FY27, the D2C market in India is anticipated to grow to \$60 billion. The global e-commerce market is anticipated to increase by 21.5% in 2022 to reach US\$ 74.8 billion, and is projected to reach US\$ 350 billion by 2030 (IBEF 2022, BCG 2022).

MARKET SIZE

From US\$ 3.95 billion in FY21 to US\$ 26.93 billion in 2027, the Indian online grocery market is predicted to grow at a CAGR of 33%. India's consumer digital economy is predicted to increase from US\$ 537.5 billion in 2020 to US\$ 1 trillion by 2030, thanks in large part to the rapid uptake of online services like e-commerce and edtech in the nation. By 2025, Grant Thornton study estimates that India's e-commerce will be valued US\$ 188 billion.



Source: IBEF study on e-commerce in India, August 2022

The Indian e-commerce market is projected to grow from US\$ 38.5 billion in 2017 to US\$ 200 billion by 2026, driven by increasing smartphone penetration, the introduction of 4G networks, and rising consumer wealth.

India overtook Canada to become the eighth-largest e-commerce market in 2020 with a \$50 billion revenue, trailing only France. India, with 150 million online shoppers as of FY21, was third in size behind China and the US, and is projected to reach 350 million by FY26 (*Deloitte 2021, Forbes 2022*).

Even before the country begins to put out the most recent mobile broadband technology, Indian consumers are adopting 5G handsets at an increasing rate. In 2021, 169 million smartphones were shipped, and 5G shipments saw an increase of 555% over the previous year. Even before the country begins to put out the most recent mobile broadband technology, Indian consumers are adopting 5G handsets at an increasing rate. In 2020, increased consumer demand following the lockdown helped smartphone shipments reach 150 million units and 5G smartphone shipments surpass 4 million. In India, there are currently 622 million internet users. A survey by IAMA and Kantar Research estimates that number to rise to 900 million by 2025, with a CAGR of 45%. Indian e-commerce platforms made sales with a Gross Merchandise Value (GMV) of US\$ 9.2 billion for the festive season of 2021, a 23% rise from US\$ 7.4 billion the previous year.

INVESTMENTS

The following are some significant developments in the Indian e-commerce industry (*as per various media reports, AT Kearney 2019 FDI Confidence Index, Prime Database, etc*):

- In 2021, India's eCommerce sector got US\$ 15 billion in PE/VC investments, a 5.4-fold increase from the previous year. The investment value obtained by this industry in India is the highest it has ever been.
- To encourage the expansion of craftsmen and weavers throughout the state, Amazon India and Manipur Handloom & Handicrafts Development Corporation Limited (MHHDCL) inked an MoU in June 2022.
- To enable the trade-in of smartphones, Flipkart introduced the "sell back programme" in February 2022.
- In February 2022, the logistics e-commerce platform Xpressbees was recognised as a unicorn with a US\$1.2 billion valuation. With its Series F fundraising, the company raised \$300 million USD.
- To promote MSMEs, Amazon India launched the One District One Product (ODOP) bazar in February 2022 on its platform.
- Flipkart announced an expansion of its grocery services in January 2022 and would now provide services in 1,800 Indian cities.
- Walmart will begin inviting Indian vendors to join its US marketplace in January 2022 with the goal of having India export US\$ 10 billion annually by the year 2027.
- The US-based ecommerce company XPDEL announced its launch into India in November 2021.
- In September 2021, Sequoia Capital India led a Series A funding round that saw Bikayi, a mobile commerce enabler, raise US\$10.8 million.
- Amazon introduced Prime Video Channels in India in September 2021. Prime members will enjoy a smooth experience and have access to a number of well-known video streaming providers thanks to Prime Video Channels.
- CARS24, the top used automobile e-commerce site in India, raised US\$ 450 million in fundraising in September 2021. This sum was split between a US\$ 340 million Series F equity round and a US\$ 110 million debt deal from different financial institutions.
- India's leading e-commerce company, Flipkart, declared in July 2021 that it had secured US\$ 3.6 billion in new capital from a variety of sources, including its parent company - Walmart, private equity firms, and sovereign institutions.

GOVERNMENT INITIATIVES

The Indian government has made a number of announcements since 2014, including Digital India, Make in India, Start-up India, Skill India, and Innovation Fund. The development of E-commerce in the nation is anticipated to be supported by the timely and efficient implementation of such schemes. The following are some of the main steps the government has taken to encourage e-commerce in India (*compiled from News Articles, Ministry of Statistics and Programme Implementation, UN Report 'The power of 1.8 billion', etc.*):

- National Retail Policy: The government identified five areas in its proposed national retail policy - ease of doing business, rationalisation of the licence process, digitization of retail, focus on reforms, and an open network for digital commerce - asserting that offline retail and e-commerce need to be administered in a seamless manner.
- In order to promote a cashless, paperless, and transparent payment system for a variety of services, Government e-Marketplace (GeM) and Union Bank of India signed a Memorandum of Understanding (MoU) in October 2019.
- To promote digitisation, the government launched a number of projects under the Digital India movement, including Umang, Start-up India Portal, Bharat Interface for Money (BHIM), etc.
- The Department for Promotion of Industry and Internal Trade (DPIIT) is reportedly planning to use the Open Network for Digital Commerce (ONDC) to establish protocols for cataloguing, vendor discovery, and price discovery in an effort to systematise the onboarding process of retailers on e-commerce platforms. In the greater benefit of the nation and its citizens, the department seeks to give all market participants equal chances to utilise the e-commerce ecosystem to its fullest potential.
- As on June 8 2022, 4.56 million registered sellers and service providers through the Government e-Marketplace (GeM) portal had served 10.35 million orders totaling Rs. 258,359 crore (US\$ 33.07 billion) to 60,632 purchasers.
- E-commerce businesses are required to declare the nation of origin alongside their product listings under the Consumer Protection (e-commerce) Rules 2020, which were announced by the Consumer Affairs Ministry in July. The companies will also be required to disclose the criteria used to choose which products appear on their platforms.
- The government enforced permanent account numbers for foreign businesses using Indian e-commerce platforms in October 2020, altering the equalisation levy rules of 2016. (PAN). The sale of goods or the provision of services through a non-resident ecommerce operator was subject to a 2% tax in the FY21 budget.
- In October 2020, Sri. Piyush Goyal, the Minister of Commerce and Industry, welcomed start-ups to register at GeM, the public procurement platform, and sell goods and services to PSUs and government agencies.
- The Indian Government increased the restriction of FDI in the E-commerce marketplace model to up to 100% in order to increase the participation of international businesses in the industry (in B2B models).

ROAD AHEAD

The e-commerce industry in India has a direct impact on micro, small, and medium-sized businesses (MSME), and it also has a beneficial cascading effect on other sectors by providing access to funding, technology, and training. By 2034, it is anticipated that the Indian E-commerce market will overtake the US to overtake it as the second-largest E-commerce market in the world. The development of the sector is projected to be aided by technological innovations including digital payments, hyper-local logistics, analytics-driven customer engagement, and digital marketing. Additionally, India intends to launch an Open Network for Digital Commerce (ONDC). The ONDC will give e-commerce platforms the ability to display goods and services from every platform while also synchronising search results across all of them. This would enable MSMEs do more business and support the expansion of e-commerce in India. Long-term improvements in customer products and services will be made possible by the sector's growth, which will also promote employment, raise export revenue, increase tax collection for the exchequers, and increase export revenues.

The Indian e-commerce market is probably going to grow in new markets. India's e-retail market is anticipated to maintain its rapid expansion; in FY20, it reached Rs. 1.8 trillion (US\$ 25.75 billion) with a CAGR of over 35%. The Indian e-retail sector is expected to attract more than 300–350 million customers over the next five years, increasing the online Gross Merchandise Value (GMV) to US\$ 100–120 billion by 2025 (*Statista 2022*).

The gross merchandise value (GMV) of social commerce in India was estimated by a Bain & Company analysis to be over US\$ 2 billion in 2020. Due to widespread mobile usage, it is anticipated to reach US\$ 20 billion by 2025 before potentially skyrocketing to US\$ 70 billion by 2030.

CONCLUSION

Customers find it convenient to shop even while they are on the run. The expansion of e-Commerce in India has a very bright future, and the widespread use of smartphones will only fuel it further. The e-commerce sector is anticipated to grow and reach a market size of US\$ 188 billion by 2025 as it gains more traction. The e-

commerce industry in India has a unique opportunity to fundamentally alter the way businesses communicate with their customers because to expanding internet and smartphone penetration, increased acceptance of online payments, and favourable demographics.

The ambitious "Digital India" project of the government, which intends to provide a one-stop shop for government services, will support the industry by bringing internet and broadband to outlying regions of the nation and boosting trade.

Although a few industry giants are mostly responsible for the e-commerce sector's expansion, a number of smaller firms are also steadily securing their place in the market. Additionally, the sector adopts new technologies quickly. The quick adoption of cutting-edge technology, their affordability, and their ease of use are further factors influencing the future of e-commerce.

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UTILIZATION OF MARKET WASTE FOR MAGGOT CULTIVATION (*HEMATIA INFLUENCES*) AS A SOURCE OF PROTEIN SUBSTITUTION IN LIVESTOCK

Devi Yuliananda, Retno Widyani*, Bayu Arisandi, Dein Iftitah, Bastoni, Fitri Dian Perwitasari and Mus Nilamcaya

Universitas Muhammadiyah Cirebon, Fatahilah Street No 40, Watubelah, Sumber, Cirebon, West Java, Indonesia- 45611

ABSTRACT

*Garbage is a major problem in the world today. Various efforts to utilize waste have been made. In the world of animal husbandry, organic waste can be used as fertilizer for crops and or for animal feed. As animal feed, efforts need to be made to convert the organic waste into a source of protein. One of them is by making organic waste from the market for the cultivation of Maggots (*Hematia illuences*). The research was conducted in Cirebon using a survey method for the use of market waste in Maggot cultivation as well as a literature study on the nutritional content of Maggot, research on Maggot as a bacteriolytic agent, chicken ration formulations using Maggot protein sources, chicken performance and quality of chicken carcasses fed Maggot rations including growth rate, feed consumption, feed conversion, protein, fat, pH, meat quality consisting of cooking loss, tenderness, and water holding capacity, as well as the formulation of maggot as feed for gourami and catfish. The results showed that market organic waste can be used for the cultivation of maggots and Maggots processed into substitutes for fish meal for chicken, gourami fish, and catfish feed, so and the best solution to garbage problems.*

Keywords: Garbage, Maggot, Protein, Livestock

INTRODUCTION

Garbage is a major problem in various areas including the city of Cirebon. Waste production in the city of Cirebon is 300 tons per day, which consists of organic waste and inorganic waste. Organic waste is used for maggot cultivation and inorganic waste is recycled into plastic seeds by the Cirebon City Government with a capacity of 10 tons per day (Cirebon City Environment Service, 2022). The waste produced by the community reaches 600 m³ every day, up to 550 m³/day can be transported and disposed of and 50 m³ by the community is burned, buried, and disposed of carelessly (illegal dumping). Waste management in the city of Cirebon is 91.67% of waste transported from 600 m³/day assuming a waste production of 685.75 m³/day.

Government policy in there are 2 systems namely macro and microsystems. The macro system involves the community at the RW level coordinated by the Head of the RW paying a garbage fee. Every household puts garbage in trash cans, then the trash cart will pick it up periodically and move it to the Temporary Disposal Sites that have been prepared. Community service movements are carried out on holidays or special occasions such as the commemoration of the Republic of Indonesia's Anniversary, to clean public facilities and the environment. The macro system, namely the Government's Sanitation and Landscaping Service, is tasked with cleaning up waste from the ditches and highways, TPS which is transported to the Final Disposal Site (TPA). Garbage carts are used to transport waste to the TPS and continue to the Final Disposal Site by garbage truck, or pick-up. Waste management at TPA by separating organic waste and inorganic waste. Some of the organic waste is composted and some are buried in the ground. The use of organic waste that has been encouraged is for Maggot cultivation. Maggot can be processed into protein-rich flour or maggot oil which can be used as raw material for medicine and cosmetics. Based on this background, a study was carried out on the benefits of maggots as a source of protein substitution in livestock.

RESEARCH METHODS

This research method is a survey method to markets and organic waste processors for Maggot cultivation as well as a literature review on the use of Maggot as a substitute for protein sources in animal feed.

RESEARCH RESULTS AND DISCUSSION**Utilization of Organic Waste for Maggot Cultivation**

Maggots are the larvae of flies. This type of large black fly is called BSF which can be cultivated using garbage. BSF maggot metamorphosis takes 40-45 days, starting from eggs, hatching into larvae, developing into prepupae, pupae, and finally adult flies. Maggot from this super fly is used to overcome the amount of organic waste which has been a problem for society and the government for a long time. BSF maggots will eat organic waste in a short time because 15 thousand Black Fly Soldier larvae in 24 hours can consume around 2 kg of food. One BF produces 600 eggs, then 20 tails produce 12 thousand larvae which are rich in protein so that they

are used for animal feed. Maggot production is carried out by PT Qitajaya, which is located in Dukuh Semarang, Cirebon City. It receives supplies of organic waste from various markets to be used as maggot cultivation material.

Maggot Nutrition Content

The results of the maggot flour proximate analysis conducted by Budiana (2019) included 95.96% dry matter, 34.98% crude protein, 7.78% crude fat, 30.28% crude fiber, 8.96% ash (ash), 13.97% BETN and 2311.9685 Kcal/kg Metabolizable Energy (ME). However, this nutritional content can be different if given a different composition of culture media. The results of Azir's research, et al (2017) showed that the highest production of maggot with media of 3 kg of fish waste and 3 kg of coconut pulp reached 1,149.88 grams, yielding 8.2347%. The lowest 6 kg of fish waste media, the maggot is only 494.08 grams with a yield of 8.2347%. Media 50% fish waste and 50% bran produced the highest protein nutrient content, namely 41.22%, and the lowest A treatment was 25.22%. Maggot's amino acid profile has been studied by Cahyadi et al, (2019) using the High-Performance Liquid Chromatography (HPLC) method. The research results of Cahyadi et al. (2019) protein levels before trypsin hydrolysis were 224.74 µg/ml and after hydrolysis with trypsin 102.52 µg/ml ($P < 0.05$) this indicated that 1/2 of maggot protein could be digested by trypsin. The valine, isoleucine, and leucine obtained from the protein extraction filtrate were 40, 40, and 50 µg/mL, while the amino acid concentration of 1218.64 µg/ml from the protein extraction filtrate was higher than the protein digested filtrate of 290.75 µg/ml.

Maggot as a Source of Protein in Chickens

Free-range chicken. The experiment of giving maggot to free-range chickens turned out to be well received. Free-range chickens prefer fresh maggot to flour mangot. As a source of protein, maggots can be given to all types of domestic chickens at various ages (Natsir et al., 2020). Giving Maggot to free-range chickens was researched by Wahid (2020). The results of this study indicate that the treatment has a significant effect. The performance of free-range chickens increased by providing 75% larval flour substitution.

Broiler. According to Anas (2021), maggot flour can replace 100% fish meal where the digestibility level of dry matter is 57.96-60.42%, energy digestibility is 62.03-64.77% and protein digestibility is 64.59-75.32% without any negative effect. The best results were obtained from the substitution of the fish meal up to 25% or 11.25% in feed. Indarmawan's research (2014) shows that maggot also contains antimicrobials and antifungals, thereby increasing the resistance of livestock to diseases caused by bacteria and fungi. Sandy et al. (2016) showed that the substitution of fish meals with maggot flour is highly prospective, with a usage percentage of less than 10%. Whereas in laying hens, based on research by Maurer et al. (2016) showed that using maggot as a protein source of 12 and 24 grams/100 grams of feed replacing 50% and 100% soybean meal did not show any difference in production performance and the quality of the eggs produced. Based on the results of a meta-analysis, adding maggot to feed has no impact on daily body weight gain (PBBH) and feed conversion, although it significantly reduces feed consumption (Anas, 2021).

Laying hens. The results of Adha's research (2021) male laying hens aged 13 days that were given maggot did not affect feed consumption but did affect PBB and feed conversion.

Giving 25% maggot is no different from finisher broiler rations as a source of animal protein in male layer rations for the finisher period. Afikasari et al (2022) examined the administration of Maggot to laying hens. The results showed that BSF Maggot could be a source of protein in spawning chicken feed, with the lowest feed consumption of 117.16 g/head/day. Normal feed consumption for laying hens during the spawning season is 100-120 g/head/day. Samiati et al (2022) examined the use of Maggots in laying hen feed. 80 purebred chickens aged 6 months, divided into 4 treatments and 5 replications. Administration of 5%, 10%, and 15% maggot *Hermetia illucens* had no significant effect ($P > 0.05$) on egg production and egg quality, egg weight, feed consumption, and feed conversion but had a significant effect ($P < 0.05$) on egg protein and cholesterol levels.

Sentul Chicken. Baihaqi et al (2022) examined the administration of Maggot to Sentul chickens. The quality of Maggot can be improved by adding *Rhizopus oligosporus* crude extract. Experiments were carried out on the supplementation of hydrolyzate and non-hydrolyzed BSF maggot with RAL 7 treatments and 3 replicates @ 3 Sentul chickens in the grower period. The results had a very significant effect ($P < 0.01$) on optimal energy and protein consumption of Sentul chicken feed up to a level of 6%.

Maggot as a source of a Fish Feed Protein

Catfish. (Ogunji J.O. et.al., 2007) researched that maggots can replace a fish meal with as much as 30% fingerling-size catfish *Ictalurus punctatus* (Setiawibowo, et al, 2009). The results of Nuryahati's research (2020) on catfish feed formulations using Maggot protein sources showed that maggot flour formulations and

Azolla pinnata 1:1, 1:2, and 2:1 contained different protein values, where the highest protein value was found in the 2:1 formulation with a protein value of 32%. Proximate test results for water content 3%, ash 9.35%, fat 25.9%, crude fiber 19%, and carbohydrates 10.5%. Composition results of the 2:1 formulation showed a good response ($P > 0.05$) to the growth of catfish with an SGR (Specific Growth Rate) value of 3.5%.

Bala shark Fish. Giving maggot to *Balantiocheilus melanopterus* Bleeker with a size of 2.0 ± 0.2 g gives better growth and survival, as well as the blood picture of fish, increases the fish's immune system (Fahmi, et al., 2009). Pomfret. The crude protein content of freshwater pomfret (*Colossoma macropomum*) fed with 12%, 14%, and 16% maggot flour fermentation substitutes resulted in the best crude protein content of $19.418 \pm 0.407\%$, followed by $19.770 \pm 0.314\%$ and the lowest $19.662 \pm 0.368\%$. The best crude fat content was $1.484 \pm 0.284\%$, followed by $1.439 \pm 0.055\%$, and the lowest $1.388 \pm 0.236\%$, and $1.418 \pm 0.148\%$ in substitution of maggot flour fermentation 12%, 14%, 16% and 18% under environmental conditions 3-6.1 mg/l dissolved oxygen and 0.5-1 mg/l ammonia, temperature 24.8-30.0 oC, pH 6.7-8.7, (Budiana, 2019).

Potential of Maggot As Animal Feed in Various Regions

Purwasari village. The use of Maggots as fish feed has been carried out in Purwasari Village. Scraps of vegetables, fruits, and meat bones that come from households and farms give off an unpleasant odor. So far, fish breeders use pellets as fish feed at high prices, so it is necessary to look for other alternatives to reduce feed costs. Maggot cultivation is a solution as a substitute for pellets. On this basis, SUIJI SLP held maggot cultivation socialization activities with lectures, discussions, and practices. It turned out that the community was very enthusiastic about participating in interactive discussions between lecturers and the community (Amandanisa and Suryadarma, 2020).

Kismantoro District, Wonogiri. The results of the research by Sholahudin et al. (2021) in Miri Village, Kismantoro District, and Wonogiri Regency regarding the potential for maggots as catfish feed to replace expensive pellets. However, residents need education and training in maggot cultivation to increase their knowledge and skills. Maggot cultivation socialization and training is a series of community service activities in the form of presentations on the benefits and cultivation of maggots, the practice of trapping eggs, maintaining maggots, and how to harvest maggots. The increase in participants' knowledge regarding maggot cultivation was 21.32%. after participating in this activity and they are interested in practicing BSF cultivation using household waste to produce maggot as animal feed, as well as organic fertilizer maggot cultivation.

Janapria District, Central Lombok. Salman et al. (2020) carry out community service activities. Garbage is still a problem for the environment. Wisdom is needed in waste management, one of which is utilizing waste for BSF maggot cultivation. Community service activities for BSF maggot cultivation have been carried out in Pendem Village to empower residents to process organic waste into animal feed. Counseling was carried out together with village officials and village community leaders and continued with the practice of making cages for BSF flies, producing maggots as animal feed, and the waste for organic fertilizer in packaged form. The community is very enthusiastic about cultivating maggot.

Political Will Utilization of Maggot as Livestock Feed

A special BSF webinar has been conducted by the Indonesian Ministry of Maritime Affairs,

the Association of Indonesian Professors, the Council of Professors (DGB) of IPB, academics, business people, and the public which is a Penta helix collaboration. The webinar raised the theme of Policy Support for the Utilization of Black Soldier Fly and Increasing Economic Value Added. This webinar needs to be echoed by social media to achieve its goals. According to Gemmi Triastutik (2022) the target of the Director General of Aquaculture, Ministry of Maritime Affairs of the Republic of Indonesia is fish and shrimp production of 7.92 million tons and the need for fish and shrimp feed is 10.22 million tons. It is necessary to provide alternative feed to meet the production target because this feed requirement comes from the production of a feed factory with a capacity of 6,400,000 tons per year, with a shortage of around 2,900,000 tons of feed. Maggot or BSF is expected to be an alternative substitute for animal and vegetable flour at this time. Maggot is a fly larvae bioconversion of organic waste as an alternative to imported protein source feed ingredients. Two of Indonesia's big problems is the maggot is ecologically beneficial because of its very high ability to consume organic waste. Economically, as an alternative source of protein, and feed that is high in energy and produces organic fertilizer from former larvae that mature in a shorter time, it even has the opportunity to become Indonesia's mainstay export commodity (Sri Endah Ekdari, 2022). Maggot has the potential to be an alternative food, sold and processed in Europe to become food (Andriyansah, 2021).

ECONOMIC ANALYSIS

Mr. Endy's BSF maggot cultivation in Pauh Duo, South Solok Regency. This study aims to find out the technical aspects of BSF maggot cultivation and to analyze the benefits of BSF maggot cultivation. This research uses case study method. The data collected in this study are primary data, obtained through field studies through interviews with business owners, and secondary data obtained from books, central statistics agencies and journals. This research was carried out using qualitative and quantitative descriptive analysis methods. The research variables consisted of seeds, growing media or feed, cultivation management, housing, marketing, costs, revenues, profits, and R/C ratio in January - March 2021. The results showed that the cultivation techniques were quite good. The production costs incurred by Mr. Endy from January to March 2021 are Rp. 5,653,400 and received Rp. 10,740,000. The total profit that Mr. Endy got from January - March 2021 was Rp. 5,086,600. Mr. Endy's BSF maggot cultivation business has an R/C Ratio of 1.9 meaning the R/C Ratio is > 1 , so Mr. Endy's BSF Maggot cultivation business is profitable. Keywords: BSF Maggot, cultivation techniques, profits and R/C Ratio (Satria, 2021).

Maggot's potential as catfish feed has been studied by Fauzi (2018). The results showed that it took 2 weeks to produce maggot which was ready to be used as feed. Maggot's potential as catfish feed is very good, using 50% pellets and 50% maggot can save 22.74% on feed costs.

CONCLUSION

Garbage is a global problem that must be taken seriously. Organic waste can be used for Maggot cultivation which has great potential as animal feed as a substitute for animal protein sources. Efforts to promote Maggot cultivation have been carried out in various regions in Indonesia so that this country is free from organic waste into products of high economic value. The ecological problem is solved and the animal feed problem is solved with Maggot as an organic waste bioconversion animal.

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EFFECTIVENESS OF ALLIUM SATIVUM AGAINST BACTERIAL AND FUNGAL ISOLATES IN COMPARISON WITH STANDARD ALLOPATHY DRUGS**Dr. Bhuvaneshwari G¹, J. R. Lilly Grace², M. Malavika³ and Dr. P Neelusree⁴**¹Assistant Professor and ⁴Professor, Department of Microbiology, Saveetha Medical College, Thandalam
^{2,3}M.Sc., Medical Microbiology Final Year, Saveetha Medical College, Thandalam- 602105**ABSTRACT**

Alliin is one of the main components of fresh and crushed garlic with a varied range of effects, including genotoxic, antiapoptotic, antimicrobial, antiviral, antifungal, antiparasitic properties. The extract of garlic was collected by the aqueous extraction method. Aim of this study is to detect the invitro antibacterial activity of Allium sativum (crude extract) on Multi Drug Resistant Gram positive, Gram negative bacteria and Yeast form of fungi. Isolation of multidrug resistant bacteria and fungi was done by conventional method. Agar cup diffusion method was adapted for performing antibacterial susceptibility testing against Allium sativum. Scanning Electron Microscopy was performed at Indian Institute of Technology, Madras in order to analyze the Allium sativum activity on cell membrane of bacteria and Yeast cells. 3500 samples received during the period of three months in the Clinical Laboratory of Saveetha Medical College and Hospital. Out of 3500 samples, 1789 isolates were culture positive, from that 230 samples were multidrug resistant bacteria and 71 isolates were yeast cells. The strains isolated were Escherichia coli, Staphylococcus aureus, Pseudomonas aeruginosa, Klebsiella pneumoniae, Enterococcus species. Antibacterial susceptibility with Allium sativum showed that all isolates were sensitive to garlic extract. Out of 71 fungal isolates, Candida albicans were isolated from 17 (24%) and the remaining 54 (66%) were Candida non-albicans. All the bacterial isolates that were resistant to standard allopathy drugs were susceptible to crude extract of garlic. Scanning electron microscopy investigation post treatment with Allium sativum crude extract indicated loss of structural integrity for both bacteria and unicellular fungus.

Natural species of garlic possess effective antibacterial and antifungal activity and thus can be used for prevention of drug resistant microbes and to help in the treatment by equipping clinician with herbal antimicrobial agents.

With future research works in the field, many such natural herbal extracts can be proven to be effective against many pathogenic fungal infections.

Keywords: Candida Spp, MIC, Allium sativum, Antifungal susceptibility testing, SEM, Antibacterial drugs, Multidrug resistant bacteria

INTRODUCTION

The medical and antimicrobial activities of extracts from plants are gaining attention of researchers worldwide. The modern medicine has its own advantages and side effects, so the plant based products are getting more popularity, as they are safe to use, and comparatively easily available and cheap. Many extracts possess antifungal activity.⁽²⁾ The use of plant based products in medicine, the usage of these extracts in plant protection also now becoming popular throughout the world.⁽³⁾ Garlic is one among the important earliest known medicinal plants.⁽⁴⁾ Being an important food spice plant, it has significant role in disease prevention and control, many of the disease can be cured with garlic.⁽⁵⁾ It has been used since long time against human pathogens.

Garlic (*Allium sativum*) owes its properties mainly to the presence of sulfur compounds, namely allicin with the chemical name of S-Allyl-L-cysteine sulfoxide, as well as organic acids, carbohydrates, and vitamins. Allicin is one of the main components of fresh and crushed garlic with a varied range of effects, including genotyping, antiapoptotic, antimicrobial, antiviral, antifungal, antiparasitic properties. Accordingly, this component entails antifungal properties against *C. albicans*. The microbial infections are the major cause of morbidity and mortality of developed and developing country, although a number of antimicrobial agents are available for the treatment and management of infectious diseases. In addition, misuse of the antibiotics which can lead to the development of antibiotic resistance is also a major health concern⁽⁶⁾.

When a single bacterium is resistant to more than one antibiotic it is said to be Multidrug resistant (MDR). The effective antibacterial agents against these MDR organisms are of great interest for researchers in recent years. Some other antibacterial agents include nanoparticles, herbal extracts etc., The use of nanoparticles and combination therapy have proved to overcome resistance among bacterial agents⁽⁷⁾. Some of the herbal extracts studied against these MDR organisms include *Auklandia (Saussurea lappa)*, *Tribulus*, *Noni (Morinda Citrifolia)*, *Brahmi*, *Liquorice*, etc.

Not only antibacterial activity but also the antimycotic activity of allicin has been reported to be due to many different factors, including inhibition of succinate dehydrogenase. The research work was aimed to determine of aqueous garlic extract on *Candida spp* at different concentrations and to determine the minimum inhibitory concentration MIC of aqueous extract of garlic.

The present study was aimed to determine the *in vitro* antibacterial and antifungal activity of aqueous garlic extract on the isolates of multidrug resistant Gram-negative bacteria, Gram-positive bacteria and *Candida* species with the view to finding alternative means of treating infections caused by them. This may help future researchers to identify the specific antibacterial phytochemical compounds from this extract and to provide effective therapy in treating the super bugs. To perform Scanning Electron Microscopy for analysis of cell membrane deterioration.

METHODOLOGY

Continuous sampling methods were used in the study. 3500 Samples received to Clinical Microbiology Laboratory during the period of six months (Feb 2020- July 2020) were included in the study.

Preliminary isolation, identification was done based on Binesh et al. ⁽⁸⁾ Water based extraction of *Allium sativum* (crude extract) was done based on Rajam et al. ⁽⁹⁾ Agar cup diffusion method was adopted for antibacterial and antifungal Susceptibility testing method. ⁽¹⁰⁾

CRUDE ALLIUM SATIVUM EXTRACTION PROCEDURE

Preparation of water Garlic extract

Fresh garlic bulbs (90g) were mixed with demineralised water (200g) and grinded in a blender for 15 min. The solid parts of the garlic were removed by filtration through sterile gauze, followed by centrifugation at 4500 rpm for 30 min at 20 °C. The supernatant was filtrated through filter paper and stored in refrigerator at 4°C. The extract samples were lyophilised for 3 days.

Antibacterial and Antifungal susceptibility test with *Allium Sativum*

The Antibacterial and antifungal susceptibility testing was based on the agar cup diffusion method⁽¹¹⁾. 20 mL of molten Muller Hinton agar was seeded with 0.2 ml of 10² dilution from overnight broth culture of the test isolate, rolled between palms and poured into petri dishes and allow it to set. The surface was then dried in a sterile drier and with the aid of a sterile 8mm cup borer, one well were bored into agar plates. Then the plates were filled with 10µl of water extract of *Allium sativum* ⁽¹²⁾ and now the plates were incubated in the incubator at 37°C overnight.

Scanning Electron Microscopy was performed at Indian Institute of Technology, Madras, through Sophisticated Analytical Instrumentation Centre (SAIF).

Procedure for Scanning Electron Microscope:

Take 2 grease free slide and mark it as gram positive bacteria as *S.aureus* and gram negative bacteria as *E.coli* in separate slides. Now take two tubes and mark as *E.coli* and *S. aureus* and weigh the organisms and water extract with the use of Mc Farland Standard.

Then inoculate the 0.5µl organisms in 50µl *Allium sativum* water extract and incubate it for 30 minutes in incubator under 37°C, then after 30 minutes take loopful of organisms which were incubated and do smear in marked slides then air dry the slides.

Scanning Electron Microscope was done at IIT Madras under 2000x magnification.

RESULT

3500 samples were received during the study period of three months. Out of 3500 samples 1208 (34.51%) were urine samples, 781(22.31%) were Respiratory samples, 754 (21.54%) were Exudate samples and 757 (21.62%) were Blood samples. 1789 (51.11%) samples had bacterial growth 71 (2.02%) had fungal growth in culture and 1640 (46.87%) samples had no bacterial growth. Out of 1789 isolates 471 (26.32%) were multidrug resistant.

Species Wise Distribution from Different Samples

Out of 471 (26.32%) multidrug resistant bacterial isolates, 94 (19.95%) isolates were *Klebsiella pneumoniae*, 42 (8.9%) isolates were *Pseudomonas aeruginosa*, 6 (1.27%) isolates were *Enterococcus species*, 108 (22.92%) isolates were *Staphylococcus aureus*, and 221 (46.92%) isolates were *Escherichia coli*.

Out of 71 fungal isolates, 17 (24%) were *Candida tropicalis*, 17 (24%) were *Candida albicans*, 19 (27%) were *Candida glabrata*, 11 (15%) were *Candida parapsilosis* and 7 (10%) were *Candida krusei*. Among the 71 isolates, 54 (76%) were *Candida non-albicans* species. The speciation with Chrom Agar was depicted in Figure 1.

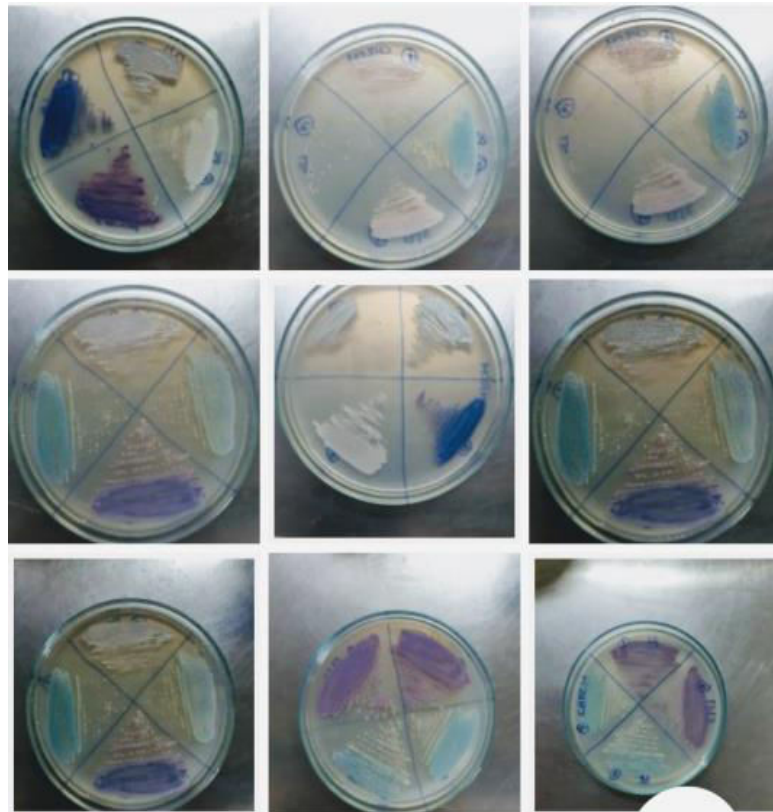


Figure 1: Differentiation of *Candida* Species on Chrom Agar

Antibacterial and Antifungal Resistance against Standard Drugs Compared with Allium Sativum:

Methicillin Susceptibility of *Staphylococcus Aureus*

None of the isolates were sensitive to penicillin, 66.3% of *Staphylococcus aureus* isolate sensitive to Gentamicin, 99% to Amikacin, 45% to Erythromycin, 72% to Ciprofloxacin, 100% to Clindamycin, 70% to Cefoxitin and Linezolid, Vancomycin, Teicoplanin all showed 100% sensitive.

Analysis of ESBL and Carbapenemase Production among Gram Negative Bacilli:

In this study, ESBL production was observed in 79(83%) isolates of Gram Negative Bacilli. Among ESBL producers *E.coli* shows 46%, *K.pneumoniae* 13%, *Pseudomonas aeruginosa* 17%. Among Carbapenem resistant *E.coli* shows 28%, *K.pneumoniae* 21%, *P.aeruginosa* 30%. Of all these isolates, Maximal ESBL production was seen in *S.aureus*. Maximal carbapenem production was seen in *E.coli*. Figure 8 represents the ESBL and Carbapenamase production.

All the bacterial isolates which were exhibiting multidrug resistance were shown to be sensitive to the crude extract of *Allium sativum* Water extract at even very less concentration (100mg/mL). Figure 2-6 exhibits the Antibacterial susceptibility of *Allium sativum*.

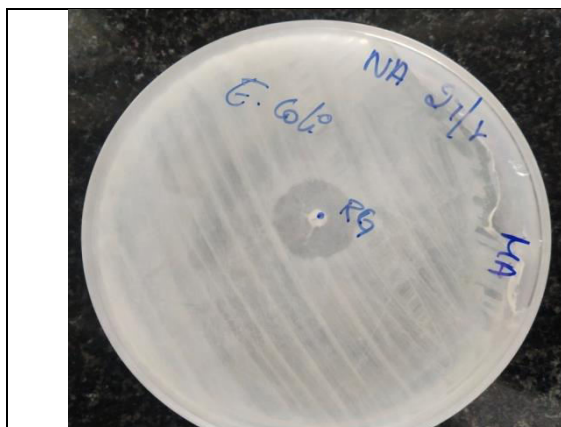


Figure 2: Antimicrobial susceptibility of *Allium sativum* against *Escherichia coli*



Figure 3: Antimicrobial susceptibility of *Allium sativum* against *Staphylococcus aureus*

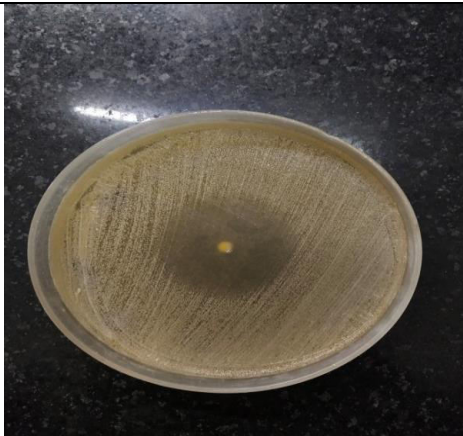


Figure 4: Antimicrobial susceptibility of *Allium sativum* against *Pseudomonas aeruginosa*

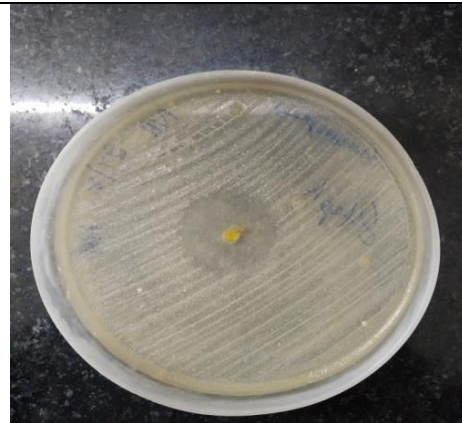


Figure 5: Antimicrobial susceptibility of *Allium sativum* against *Enterococcus faecalis*

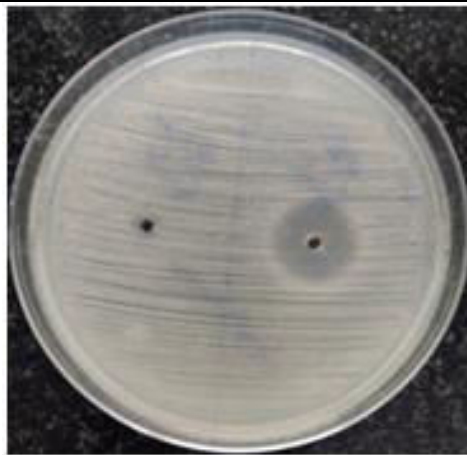


Figure 6: Antimicrobial susceptibility of *Allium sativum* against *Staphylococcus aureus*

Candida Species Resistance

71 isolates were sensitive to all three concentrations of water garlic extract showed sensitivity. 59% of *C.albicans* was susceptible to Fluconazole and 41% were resistance.

71% of *Candida tropicalis* in our study was susceptible to fluconazole. All 27 isolates of *Candida glabrata* were 100% susceptible to voriconazole. 79% of *Candida glabrata* were susceptible to fluconazole. Isolates of *Candida parapsilosis* were 100% susceptibility to voriconazole. Amphotericin B showed 100% sensitivity. Table 1 and 2 explains the antifungal activity of Amphotericin B, fluconazole and voriconazole and water garlic crude extract in different concentrations respectively.

Table 1: Antifungal susceptibility test (AST):

Antifungal drugs <i>Candida species</i>	Fluconazole		Voriconazole		Amphotericin B	
	Sensitive	Resistant	Sensitive	Resistant	Sensitive	Resistant
C. albicans 17 (24%)	10 (59%)	7 (41%)	12 (71%)	5 (29%)	17 (100%)	0
C.tropicalis 17 (24%)	12 (71%)	5 (29%)	15 (83%)	3 (17%)	17 (100%)	0
C. glabrata 19 (27%)	15 (79%)	4 (21%)	19 (100%)	0	19 (100%)	0
C.parapsilosis 11(15%)	11 (100%)	0	6 (55%)	5 (45%)	11 (100%)	0
C.krusei 7 (10%)	5 (57%)	2 (21%)	3 (43%)	4 (57%)	7 (100%)	0

Table 2: Antifungal activity of water extracts of *A. Sativum* at different concentrations

Concentration (in µg/ml)	C. albicans 17 (24%)		C. tropicalis 17 (24%)		C. parapsilosis 11 (15%)		C. glabrata 19 (27%)		C. krusei 7 (10%)	
	S	R	S	R	S	R	S	R	S	R
100mg/mL	17 (100%)	0	17 (100%)	0	11 (100%)	0	19 (100%)	0	7 (100%)	0
125mg/mL	17 (100%)	0	17 (100%)	0	11 (100%)	0	19 (100%)	0	7 (100%)	0
150mg/mL	17 (100%)	0	17 (100%)	0	11 (100%)	0	19 (100%)	0	7 (100%)	0

Antifungal susceptibility testing was performed with the water garlic extract and it showed sensitivity in all the three dilutions by forming a zone of inhibition, this is compared with the Amphotericin B, Voriconazole and fluconazole and found that garlic extract is equally sensitive to antifungal drugs which is shown in figure 7.



Figure 7: Antibiotic Susceptibility of *Candida Spp* to Various Antifungal Drugs

In this study all the isolates of *Candida* showed 100% susceptibility to water garlic extract in higher concentration. Figure 8 depicts *Candida* species showing zone of inhibition in all three dilutions against water garlic extract.



Figure 8: Antifungal activity of *Allium sativum* -water garlic extract

Figure 9, 10, 11 &12 gives the Scanning electron microscopic view of *Staphylococcus* ATCC 25923, *Escherichia coli* ATCC 25922 and *Candida* species before and after exposure to *Allium sativum*. It shows the loss of cell integrity and action with cell membrane.

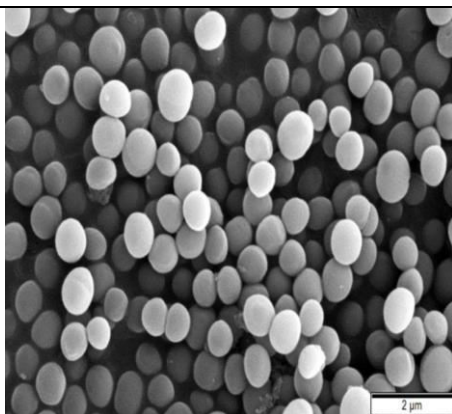


Figure 9: Scanning Electron Microscopy of *Staphylococcus aureus* in the fresh medium.

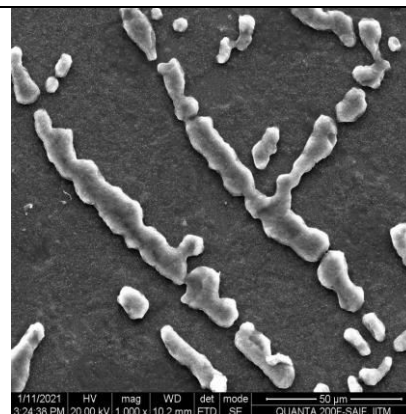


Figure 10: Scanning Electron Microscopy of *Staphylococcus aureus* in the fresh culture medium with the extract of *Allium sativum*.

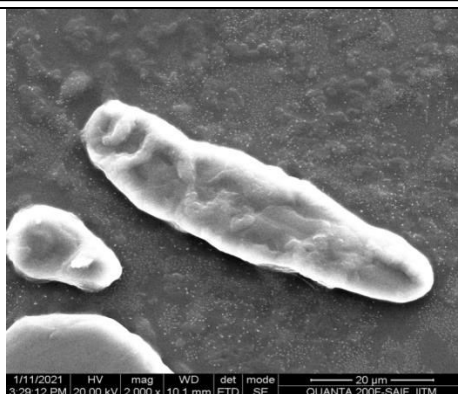


Figure 11: Scanning Electron Microscopy of *Escherichia coli* in the fresh culture medium with the extract of *Allium sativum*.

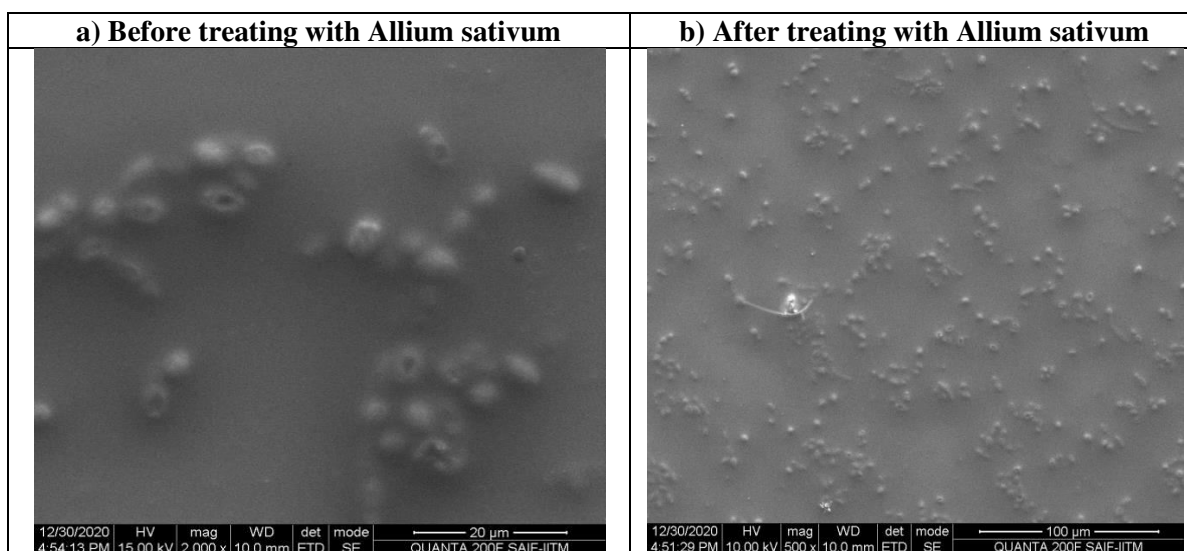


Figure 12: Scanning Electron Microscope:

DISCUSSION

In this present study, during a period of three Months (February 2020- April 2020), 3500 samples were received to Clinical Microbiology Laboratory of Saveetha Medical College and Hospital.

In this study, there was a slight increase in incidence of urinary tract infection in Female as 93 (40.43%), Male was 137 (59.57%).

In this study, there was an increase in incidence of all various samples from Urology unit 5%, followed by OG ward 58%, Medicine and 78%, Surgery 57%. In the study Lin Cao et al.^[67], there was an increase in incidence of all various samples from Nephrology unit 11.42%, Pediatric ward 17.14%, Dermatology unit 22.85%, Male surgery ward 8.57%, Female surgery ward 19.04%, which was similar to our study.

Antibiotic susceptibility testing was done by the following antibiotics- Amikacin, Ampicillin, Cefazolin, Cefoxitin, Cefotaxime, Cefepime, Cefoperazonesulbactam, Ciprofloxacin, Cotrimoxazole, Colistin, Ertapenem, Gentamicin, Imipenem, Meropenem, Nitrofurantoin, Norfloxacin, Ofloxacin, Piperacillin-tazobactam and Polymyxin B. The percentage of susceptibility towards Amikacin was 78%. The percentage of susceptibility to Gentamicin was 54%. The percentage of susceptibility for Ertapenem was 47%. The highest resistance was noted for Ampicillin 78%. The resistance to Cotrimoxazole was 64% and resistance to Ciprofloxacin was 60%.

In this study SEM reveals that the cells were damaged of *E.coli* and *S.aureus* in the extract of *Allium sativum*.

In our study 71 Candidal isolates were sensitive to all three concentrations of water garlic extract. In another study done by Martinez et al, The ethanol extracts of *A. sativum* showed relatively lower antifungal activity, though 100% ethanol extract of *A. sativum* managed to show 50% growth inhibition.⁽¹³⁾

In our study, 75% of isolates were susceptible to Fluconazole. This is concordant with the study conducted by Berkow et al. who reported that 75% of *Candida* isolates were susceptible to fluconazole.⁽¹⁴⁾

71% of *Candida tropicalis* in our study were susceptible to fluconazole. This is in concurrence with the study conducted by Binesh lal et al, ⁽⁸⁾ where they reported that 62% of the *Candida* isolates were susceptible to fluconazole. 71% of the *Candida tropicalis* were susceptible to Voriconazole.

In our study, all isolates of *Candida parapsilosis* and 27 isolates of *Candida glabrata* were 100% susceptible to voriconazole, this is concordant with study by Fadda et al. ⁽¹⁵⁾ who reported that voriconazole was the most efficient antifungal for *Candida glabrata* with 100% susceptibility.

In this study amphotericin B showed 100% sensitivity in this study. A similar study was done by Shrvanthi Reddy et al., ⁽¹⁶⁾ In their study also amphotericin B is 80-90% sensitive to the isolates. With the Scanning Electron Microscopy, the bud scar and scar plug are evident on the surface of the cell in the micrograph. Both the bud scars and scar plugs appear more prominent in SEM surface observations. Barnes et al., reported that in his study with miconazole Scanning electron microscopy revealed the cell membrane activity and also the effect with germ tube formation. ⁽¹⁷⁾

CONCLUSION

In this study, among the multidrug resistant strains *Escherichia coli* was the predominant isolate followed by *Staphylococcus aureus*, Enterococcus, *Pseudomonas aeruginosa*, *Klebsiella pneumoniae*. 40% drug resistance was observed in *Escherichia coli* followed by *Staphylococcus aureus*. All the multidrug resistant strains were sensitive to the Water extract of *Allium sativum*. They were more common among in-patients. Thus stringent action has to be taken in identifying the source and prevention of transmission.

Candida tropicalis and *Candida albicans* together accounted for about 48% of the isolates. Maximum numbers of *Candida* species were isolated from urine and blood specimens. Antifungal susceptibility results revealed that all isolates were susceptible to amphotericin B. There were 55% of *Candida non-albicans* species. In our study all the *Candida* isolates showed 100% to water extract in three dilutions.

As antibacterial and antifungal effectiveness of *Allium sativum* was determined and the resistance is not noted by agar cup diffusion and supported by scanning electron microscopy with loss of cell integrity, they can be chosen as alternative medicine especially for skin and soft tissue infections with further protein analysis.

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Conflict of interest: Nil

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PARA WORLDLY MEASUREMENT IN JAIN LITERATURE

Akansha Jain and Jayanti Lal Jain
Mangalayatan University, Aligarh- 202145

ABSTRACT

This paper aims to explore the various parts of para – worldly mathematics in Jain Literature. The importance of education has been told in every period. The thing which is of importance above caste, clan and tradition is 'knowledge'. In this paper we have considered knowledge as "Mathematics" because to see something with a closer look, we need tools, instruments, proofs, measurements and different things to become cognoscente in that particular object or subject, and it can only be possible through mathematics. So, we can define closer look equals to math. Here, we have divided mathematics(closer look) on the thing or object over which one wants to be master into four parts - matter, space, time, thoughts - by which a man may know the thing better. There are four parts, each part has different subparts. The smallest value of matter is one (ek) parmanu and the largest value is the collection of all substances, and the smallest value of the space is a region and the largest value is the whole sky, the smallest value of time is a samay and the largest value is the group of 3 eras. The smallest value of thoughts is the subtle nigodiyalabdhiaparyaptak ka labdhiakshargyan, and the largest value is kevalygyan. In this manner, we will be defining and elaborating each smallest value and largest value of described parts of math.

Keywords: Kevalygyan, Infinite, Countable, Uncountable, Matter

INTRODUCTION

Defining mathematics is as difficult as making the impossible possible. If mathematics is explained in simple language then it is the science by which we can understand numbers. To understand mathematics, it is very important to understand its expansion, its necessity. There are many places where we are using maths to measure an object, to know its precision, or many other daily tasks, without even realizing it. Like when we go to buy vegetables, how much to buy, how much spice to use in cooking, all these measurements and weights are so buried in our mind that we don't feel that we are doing maths. These are very simple things, which can still be widely known. But there are many other things, which cannot be assumed without being told. Like how to measure our feelings, emotions, how much karma we have done by doing any action and reaction, but Jainism gives an account of our entire history relating to anything.

Mathematics is such a subject which cannot be understood without knowing, reading and understanding from a knowledgeable person and without mathematics the knowledge of other subjects is also incomplete. For example, if we go to buy something, how much is it?, how much will it cost?, how much should it have come?, how much will it fall? There are many questions, situations, incidents that we face in our daily life, and the solution to all the questions is just a math.

Knowledge is strong only when it is authentic, and the authenticity of knowledge comes from the following four main points:

- o Study of scriptures
- o Logic
- o Lectures from teachers
- o Self-Experience

And these things are taken from scriptures, monks and their books, and from self-experience.

There have been many scholars of mathematics, who have taken the science of mathematics in a new direction. The first scientist of mathematics who discovered "0", after that many scientists have gradually raised mathematics to a very high position, but still there are many things which are neither used nor discovered.

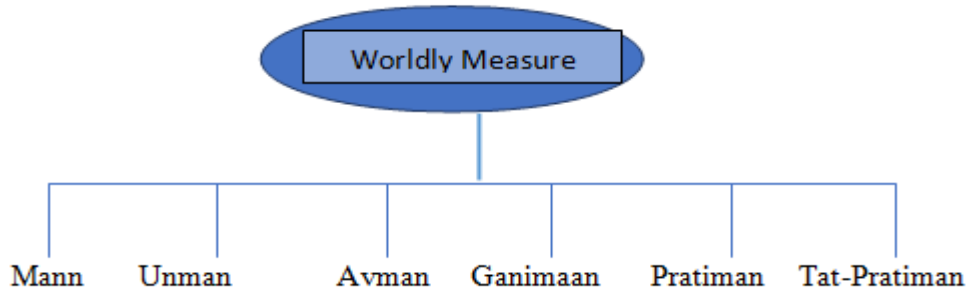
Just as numbers from 1 to thousand, ten thousand, lakh, crore have been told in Indian mathematics, similarly in Jain scriptures from 0 to infinity, but there are so many hidden things whose description has not yet been done in Indian mathematics. And it has been described in great detail in Jain scriptures as described below.

DETAIL EXPLANATION OF JAIN MATHEMATICS

- Firstly we divide mathematics into four parts - Matter , Space, Time and Thoughts. Then we will divide each of these parts into different subparts.

- Under mathematics, there are two types :
 - Worldly measure (described under fig:1)
 - Para worldly measure (described under fig:2)

Fig: 1.1



Mann: includes currency running at your specific place (rupees, coin etc)

Unman: includes the weighing in scales (Kilo, Pound etc)

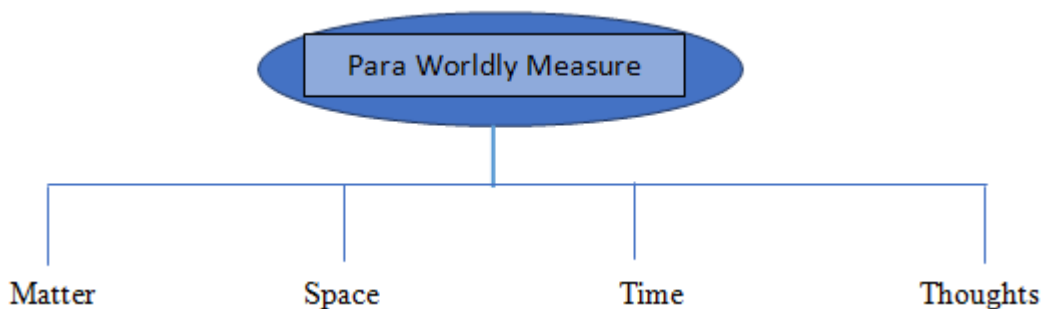
Avman: includes the measurements of movable things (Litre etc)

Ganiman: includes the numbers from 1, 2.....infinity

Pratimaan: includes the measurements of liquid things(milligram etc)

Tatpratiman: includes the measurements of living beings(price of horse)

Fig: 1.2



Matter

Matter is a part of mathematics, whose subparts are *sankhiyat*, *asankhiyat* and *anant* which can also be defined as countable, uncountable and infinity. Under each part, they are divided into different subparts as follows:

Table: 1.1

MATTER														
Sankhiyat (Countable)			Asankhiyat (Uncountable)						Anant (Infinity)					
S.	M.	L.	Parita		Yukta		Asankhiyata Sankhiyat		Parita		Yukta		Anantanant	
			S.	M.	L.	S.	M.	L.	S.	M.	L.	S.	M.	L.

Describing the details of mathematics wherein three distinctions of matter are: Countable, Uncountable, Infinity. After this, three types of countable have also been told: Smallest, Medium, Largest.

Describing the three distinctions of uncountable and their further branches:

Parita Uncountable :Smallest, Medium, Largest.

Yukta Uncountable: Smallest, Medium, Largest.

AsankhiyataSankhiyat uncountable: Smallest, Medium, Largest.

Similarly, the same distinctions will reflect under the part of infinity, will replace only third subpart *AsankhiyataSankhiyat* to *Anantanant*. This way we categorised 21 distinctions of matter.

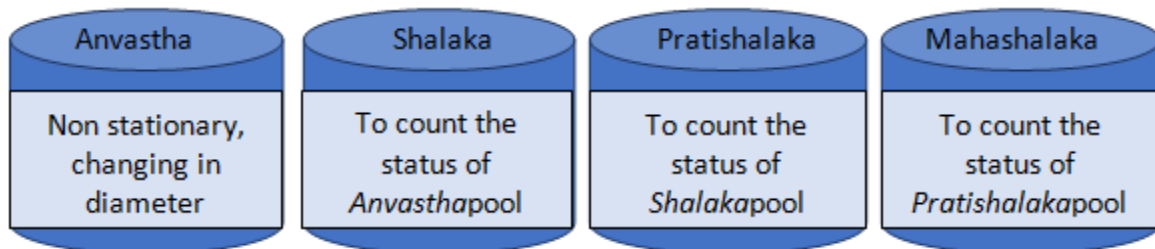
VALUES OF SUBPARTS

Countable: The value of smallest number of countable is 2, since if we apply any arithmetic operation on 1, then there is no increase and decrease in it and in the sequence of numbers, 2 is the second smallest number. So it's chosen as smallest number of countable. The largest number is (smallest uncountable number -1) and the remaining numbers between smallest and largest will count under medium number. Hence, the value of medium number is (3 to largest -1).

(Jain A. , 2020)The values of medium numbers are already defined.

Ek = 1 , Das =10 , Shat = 100 ,Shahastra = 1000 , Das shahastra = 10,000 , Shat shahastra = 100,000 , Das shat shahastra = 1,000,000 ,Koti = 10,000,000 ,Pakoti = (10,000,000)² ,Kotippkoti = (10,000,000)³ , Nahut = (10,000,000)⁴ , Nihhut = (10,000,000)⁵ , Akhobhini = (10,000,000)⁶ , Bindu = (10,000,000)⁷ , Abundh = (10,000,000)⁸ , Nirbbuta = (10,000,000)⁹ ,Ahah = (10,000,000)¹⁰ , Abab = (10,000,000)¹¹ ,Atat = (10,000,000)¹² , Soghandik = (10,000,000)¹³ , Uppal = (10,000,000)¹⁴ , Kumud = (10,000,000)¹⁵ ,Pundrikh = (10,000,000)¹⁶ ,Padhum = (10,000,000)¹⁷ ,Kathan = (10,000,000)¹⁸ ,Mahakathan = (10,000,000)¹⁹ ,Asankhiyey = (10,000,000)²⁰ , Pudhathi = (256)² ,Badaal = (Pudhathi)² ,Ikatathi = (badaal)²

Uncountable:The value of smallest number of uncountable is explained by *Kundvidhan*. For that, we need to take 4 pools – *Anvasha* , *Shalaka* , *Pratishalaka* , *Mahashalaka*.



Moving further with the expansion of uncountable, taking 4 pools whose purpose and names are written in Fig:1.3, initially all the pools will be equal in dimensions i.e. 100,000 *yojan*wide and 1000 *yojan*deep (60,00,000 km). Starting with the processes, primarily pick *anvashapool* and try to fill it with the mustard seeds, the value of the seeds will be 413 ,4526303 ,0820317 ,7749512 ,1920000 ,0000000 ,000 0000 (46 can be called as *ankpraman*) and at once when *anvashapool* is filled with mustard seeds, put one mustard seed into second pool i.e.*shalakapool*. After this process, starting with the second step, where we need to pickone mustard seed from *anvashapool* and put it into the *dweep* and then again pick one mustard seed put it into*samudhraly*ing in *Madhya lok*(where consecutively uncountable *dweep* and *samudhra* are present). This way pick mustard seedsgradually and put them into the *dweeps*and *samudhras*, process will continue until all the mustard seeds of *anvashapool* are finished. Now, we need to take the diameter of last mustard seed’s *samudhra* or *dweep* to make new *anvashapool*. It means the diameter will always be equal to the last mustard seed’s *samudhra*or *dweep*and depth will always be equal to 1000 *yojan*.

To proceed further, repeat the first three steps, wherein *anvashapool* will be filled by mustard seeds, and when it gets filled, put second seed into *shalakapool*, and pick mustard seedsone by one from the *anvasha* pool and put into *samudhra* or *dweep* (and this timesequence of *samudhra* or *dweep* will start from the last *anvashapool*’s last *dweep* or *samudhra*). This action will take place until *shalakapool* is filled with mustard seeds, and when *shalaka* pool is filled, then put one mustard seed into *pratishlakapool*.

To continue with the activity, need to repeat all the actions preformed above. For making *anvashapool* hollow, put single mustard seeds into *dweep* or *samudhra*. Afterwards, mark the dimension of last mustard seed’s *dweep*or *samudhra*and make new *anvashapool* and fill it with mustard seeds and when it gets filled, put one seed into *shalakapool*, rerun similar procedure until *shalakapool* is filled and when it gets filled up, put second seed into *pratishlakapool*.

This method will go on till *pratishalakapool* is filled up with mustard seeds, and when it gets filled up, put one mustard seed into *mahashalakapool*. To move further, repeat the steps(make *anvashapool* empty, put one seed into *shalaka* pool and it gets filled, again make *anvasha pool empty till* *shalaka* pool is full, after *shalakapool* is filled to capacity, put one mustard seed into *pratishalakapool* and again start with the beginning process and when *pratishalakapool* is filled, put one mustard seed into *mahashalakapool*) for filling up the *mahashalakapool*. Once the *mahashalakapool* is filled up, then at the same time numbers of seeds present in *anvashapool* is equal to the smallest*parita* uncountable.

Let's understand with one example:

Assuming *anvasthapool* can have 5 mustard seeds, when *Anvastha* pool having 5 mustard seeds then at once *anvastha* pool will be considered full, and when *anvastha* pool is gets filled by 5 times, then *shalaka* pool gets filled up at once. so this way when 5*5 times *anvastha* pool is filled up, then *shalaka* pool gets filled up by 5 times, then *Pratishalaka* pool is filled up once, and when *pratishalaka* pool is filled up 5 times(considering *anvastha* pool will be 5*5*5 times and *shalaka* pool will be 5 *5 times), then at once *mahashalaka* pool is filled up.

After understanding this example, there are some formulas which come out:

- *Anvastha* pool = $(46 \text{ ankpraman})^3$ times
- *Shalaka* pool = $(46 \text{ ankpraman})^2$ times
- *Pratishalaka* pool = 46 *ankpramantimes*
- *Mahashalaka* pool = 1 time.

Medium *parita* uncountable = Largest *parita* uncountable – 1.

Largest *parita* uncountable = Smallest *yukta* uncountable – 1.

Moving with the value of smallest *yukta* uncountable, wherein *deyvirlanvidhan* will execute.

Formula = $(\text{dey})^{\text{virlan}}$, example $(2)^5 = 32$ and it could be written as $2*2*2*2*2 = 32$.

Now, we will be applying on the data and the result would come as:

Smallest *yukta* uncountable = $(\text{smallest parita uncountable})^{\text{smallest parita uncountable}}$.

Medium *yukta* uncountable = largest *yukta* uncountable – 1

Largest *yukta* uncountable = smallest *asankhiyatasankhiyat* -1

Continuing with the value of smallest *asankhiyatasankhiyat* = $(\text{Smallest yukta uncountable})^2$

Medium *ansankhiyatasankhiyat* = largest *asankhiyatasankhiyat* -1

Largest *ansankhiyatasankhiyat* = smallest *parita* infinity -1

Infinity:To find out the value of smallest *parita* infinity by *shalakatreynisthapanvidhan*, and this method will be executed three times to obtain the correct values, wherein three things are taken up, *shalaka*, *deyandvirlan*. and at once *virlan* and *dey* action is done, then subtract one from *shalaka*, this way perform the activity until *shalakabecomes* zero. When the procedure is completed, it is called *shalakatreynisthapanat* once. Afterwards, the value which we got from last *shalakatreynisthapan*, will be the current values for *shalaka*, *deyandvirlan*. Again perform the same method, until *shalakabecome* zero. And when it got completed, it is called second time *shalakatreynisthapan*. Another time, the values which we got from second times*shalakatreynisthapan*, will be the current values for *shalaka*, *dey and virlan* and this will be called the last or third *shalakatreynisthapan*.

Let's understand by taking the smallest number 2:

First time *shalakatreynisthapan*:

<i>Virlan</i>	<i>Dey</i>	<i>Shalaka</i>	$(\text{Dey})^{\text{Virlan}}$
2	2	$2 - 1 = 1$	$(2)^2 = 4$
4	4	$1 - 1 = 0$	$(4)^4 = 256$

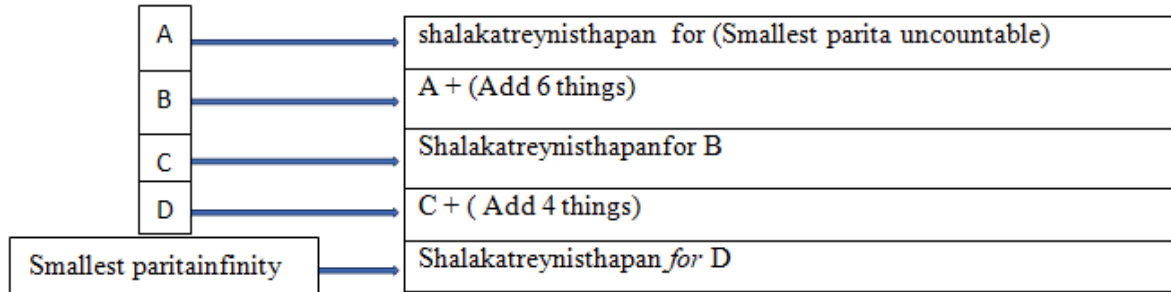
Second time *shalakatreynisthapan*:

<i>Virlan</i>	<i>Dey</i>	<i>Shalaka</i>	$(\text{Dey})^{\text{Virlan}}$
256	256	$256 - 1 = 255$	$3.231700607E616$
$3.231700607E616$	$3.231700607E616$	$3.231700607E616 - 1 =$ A (*assumed due to being unable to perform * And need to perform until the value becomes zero)..... = 0	$(A)^A = B$

Third time *shalakatreynisthapan*

<i>Virlan</i>	<i>Dey</i>	<i>Shalaka</i>	$(Dey)^{Virlan}$
B	B	B -1	$(B)^B = C$
C	C	B -1 -1= 0	$(C)^C = D$

After applying on data, the outcome would come as Smallest *Paritainfinity* :



Medium *paritainfinity* = Largest *paritainfinity* – 1.

Largest *paritainfinity* = Smallest *yuktainfinity* – 1.

Moving with the value of smallest *yuktainfinity*, wherein *deyvirlanvidhan* will execute. Formula = (*dey*) ^ *virlan* , example $(2)^5 = 32$ and it could be written as $2*2*2*2*2 = 32$.

Now, will be applying on the data and the result would come as :

Smallest *yuktainfinity* = (smallest *paritainfinity*) ^ smallest *paritainfinity*.

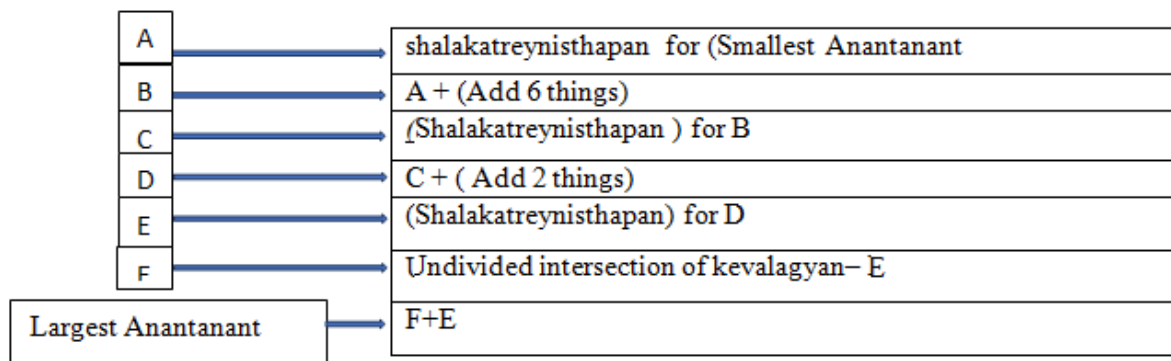
Medium *yukta* infinity = largest *yukta* infinity – 1

Largest *yukta* infinity = smallest *Anantanant*-1

Continuing with the value of smallest *Anantanant* =(Smallest *yukta* infinity) ^ 2.

Medium *Anantanant* = largest *Anantanant*-1.

The value of the largest *Anantanant*would be obtained by the same method as smallest *parita* uncountable , but here the things which add would be different from *parita* uncountable.



Space

Place, sky, and universe these are similar words, but when we look at it with a close eye, then you feel a lot of difference. If you try to understand the word " place", it is an empty space, that is used to keep living and non - living being, to fill it. If you try to understand the sky, then scientists have already defined,that it's a dark energy and dark matter, which changes every few days, and it's difficult to understand it, but they are trying their best to understand. And there is one more word “ universe”, where several galaxies, several stars, moons exist.

According to Jainism, there is *teen lok* where all the substances residing in it, all the qualities of those substances, all the alternatives of those qualities, appear simultaneously. It's their perception that Space (*akash*) is one, but it is divided into two parts due to the existence of all the matter. The types are *Lokakash* and *Alokakash*.

Lokakash is the place where all the things are present, with each separate block. It means all the devils are living in separate block, all the human beings are staying in different block. How this will happen? how it will be possible? The elaborations will be present in the thesis.

Explanation of the details of Space on the basis of some numbers are:

- *Dravyaabhibhagipratichedh = parmanu*
- *Anantanantparmanu = 1 avsanyasan*
- *8 avsanyasan = 1 sannyasan*
- *8 sannyasan = 1 trutrenu*
- *8 trutrenu = 1 trasrenu*
- *8 trasrenu = uttambhogbhumi'sbalagrah*
- *8 uttambhogbhumi'sbalagarh = madhiyambhogbhumi'sbalagarh*
- *8 madhiyambhogbhumi'sbalagarh = minimum bhogbhumi;sbalagarh*
- *8 minimum bhogbhumi'sbalagarh = karambhumi'sbalagarh*
- *8 karambhumi'sbalagarh = 1 leekh*
- *8 leekh = 1 jun*
- *6 Angul = 1 paad*
- *2 paad = 1 kalvast*
- *2 kalvast = 1 haath*
- *4 haath = 1 dhanush*
- *2000 dhanush = 1 kos*
- *4 kos = 1 yojan*

Time

There is a period described in Jainism of 20 *Kodakodisagar*, in which there are two distinctions of *Utsarpini* and *Avasarpini*. The *Avasarpini* period is of 10 *Kodakodi Sagar* and the *Utsarpini period* is also of 10 *Kodakodi Sagar*. These periods are each divided into 6 periods. The sequence of the *Utsarpini* period follows the sixth, fifth and so on whose names are:

- *DukhmaDukhma*
- *Dukhma*
- *DukhmaSukhma*
- *SukhmaDukhma*
- *Sukhma*
- *SukhmaSukhma*

And the sequence of the *Avasarpini* period follows the first, second, third, etc. form. The sequence of *Avasarpini* period is:

- *SukhmaSukhma*
- *Sukhma*
- *SukhmaDukhma*
- *DukhmaSukhma*
- *Dukhma*
- *Dukhma, Dukhma.*

At present, the fifth period of *Avasarpini* period is going on, which is of 21000 years, and it is also proved by identifying the declining facts. Earlier people's height , age , intellectual used to be a lot , people used to do

every work without any equipment. People / scientists thought that this is the period of growth. Deterioration of human body and intellect can easily be seen by the people. The devastation in Japan caused by radiation in March 2011 is not hidden from anyone. Hence, the meaning from the decline of *Avarspini* kaal is that age, body, knowledge, religion, muscle power, seriousness, etc. It will be discussed in more detail in the thesis.

Thoughts

The smallest unit of thoughts is the knowledge of *sukhmanigodlabdhiapariyaapta* and this is the knowledge called the smallest value of thoughts. In modern science we talk about the microorganisms and their species are the smallest which we are unable to see by our naked eyes. Their lives are so difficult to live and impossible to feel. Who keeps on doing birth and death 6000 times in an *muhurata* (*less than 48 minutes*).

The largest value of thoughts is *kevalagyan* (which is already defined by largest *anantanant* under matter parts). The expansion of the middle values will be done in thesis.

CONCLUSION

Hence, the things which look like imaginary, difficult to believe, difficult to understand, but they are really helpful in new technologies, new inventions, new AI formations. Thus, one finds it difficult to understand the infinity and other related concepts which have been described in Jain literature in elaborated form.

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SYNTHESIS AND CHARACTERIZATION OF AN ECO-FRIENDLY ANIMAL FREE VEGAN LEATHER USING PLANT BASED SUBSTRATES

P. S. Jothika, Sowmya Hari* and Meenambiga Setti Sudharsan

Department of Bioengineering, School of Engineering, Vels Institute of Science Technology and Advanced Studies Chennai- 600117, Tamilnadu, India

ABSTRACT

Most of the textile and cosmetic industries use animal skin leather for manufacturing expensive fashion products. Commonly used leather is taken from cow skin which highly durable. However, it has ethical, environmental, and social issues. To overcome the increasing demand for leather in the market, an alternative to animal leather which is cost effective, reliable, eco-friendly is needed to be designed. That is vegan leather. Vegan leather is a relatively new creation; it is currently a popular concept to produce leather from plants and biowastes rather than animal skin. Although cow leather is durable, it poses ethical and social environmental difficulties. The market is seeing a surge in demand for animal leather, which is both eco-friendly and economically effective; this is known as vegan leather. The leather made from plant biowastes is non-hazardous and environmentally beneficial. This work highlights the methods of production of synthetic vegan leather with the same properties, durability and characteristics from fruits and vegetable peels along with bacterial cellulose.

Keywords: Vegan leather, Cellulose, Eco-friendly, Human awareness, Plant peel, biowaste

INTRODUCTION

Normally we all know that the leather will be manufactured from the animal skin. The peeling out of the skin and manufacturing a leather for the human needs for example: fashionable handbags, dresses, foot wares etc., it is a tedious process and hazardous to the environment. Toxins that are emitted from leather tanneries endanger human and ecological health by polluting regional waterways with mineral salts, formable coal-tar derivatives, oils, dyes, salt, lime sludge, sulphides, and acids. Residents of tannery towns have a greater-than-average chance of developing leukaemia, and more than half of all tannery workers develop testicular cancer [1]. The textile industry is the second-largest polluter globally, behind only the oil industry. Thus, textile companies have been looking for safer materials to replace current highly polluting manufacturing methods, and studies on sustainable alternative raw materials are currently being conducted worldwide [2,3,4]. Bacterial cellulose is one of these biomaterials with considerable potential for use in the fashion industry [5]. On the other hand, leather industry is using huge energy like transports, killing of animals and taking out of the skin and making it suitable for making a leather for the use. But, in alternative way of making leather it is cost efficient and eco-friendly for the environment like taking a plant or biowaste and making it as a leather it won't cost that much and it is sustainable for the environment. There are variety of materials which can be used to create vegan leather which may also include synthetic materials like plastic waste, natural waste including fruits and cork etc., [6]. Global fashion industry is actively working towards reducing fibre waste. The common synthetic leathers are made of (PVC) Poly vinyl Chloride and (PU) Polyurethane. These are, plastic based raw materials and the leather made from them are also called as "Pleather" (Leather made of Plastic) [7]. But using plastics again they won't degrade and it will take 1000 years to degrade in the environment. But the natural leathers or not like that they are biodegradable and not harmful to the environment. And some luxury brands are also moving their ideas through natural upcoming up-cycled ideas which are sustainable to their companies and their environment. Designers in the industry look forward to viable alternatives in the global fashion industry and are converting food waste, plant based and textile waste into future fashion impacting the earth and industry in a big way (Anna-Sophie Stabler, VolkerHeinz, Kemal Aganovic, 2020) [8].

REVIEW OF LITERATURE

Leather manufacturing is a multi-international business. the demand for good manufacturing leather is high and the environmental impact for developing leather from animal skin is also increasing. that's why we are moving from animal-based leather to plant-based leather like manufacturing leather from plant biowastes [9]. There are many leathers which are developed from many sources like from plastic Pvc leather, and making from some fruits mixed peels. These leathers were do not having any toxic chemicals and eco-friendly to the environment and cost efficient.

The main theme for this literature is making plant-based leather which is cost efficient, eco-friendly for the environment and a save for animal life.

Some Fashion companies are exploring ways to use wood, fruit, cactus, and other natural textile waste materials to create their textiles materials which are easily biodegradable once disposed. But the carbon footprint of apparels can be reduced in other ways, too. The purchase patterns of the clients have one of the greatest effect Environmental preservations and the use of sustainable materials are closely related to ethical future fashion. "Fashion is part of the daily evolution, and this is very well related to with quick fashion trends and expectations [10]. Whether recycling food waste or just connecting the DNA of vegetation to produce inventive new plant textile Future textiles and materials for fashion will be made of this. Industry. Some of the "Circular Systems" inventive technology possibilities to convert plant waste fibres into fashion leather and textiles.

FRAME WORKS

COCONUT FRAME WORK

Because the coconut flesh and water are edible, the coconut tree is also commonly referred to as the "wishing tree." brooms, foot mats, and other items may be made from the shell's fibres, which are also drinkable. Both the trunk and the root are highly medicinal. The entire world production of coconuts is more than 60 metric tonnes, with a yearly increase estimated to be roughly 3%.

The traditional coconut jelly known as "Nata de coco" that was created in the Philippines from mature coconut milk and coconut water then fermented to create coconut leather. In the fermentation process, bacteria (*Acetobacterxylinum*) are widely utilised. Fermentation produces a jelly-like material that is then sterile and suitable for consumption [11].

The leather production process occurs concurrently with the farming of matured coconut water. For 5 -6 days the bacterial culture is incubated. The sterilised coconut water and bacterial culture mixture is done. When the bacterium feasts and ferments for around 12–14 days, cellulose jelly is produced. This sheet is sterilised and with some natural fibers the like pine apple, banana, and some fibrous plants and the leather is made. After this process the leather sheet is made and we can make that into any of the shape we wanted.

PINE APPLE FRAME WORK

Pineapple cultivation is quite time-consuming. The fruit takes between 14 and 18 months to fully grow and become ready to crop. The Grown pineapple leaves were taken from the crop and then they were taken. These leaves were split, and cellulose fibres were taken from the long, stiff, white, creamy, and glossy (like silk) pineapple leaves. They are then felted into a mesh (non-woven) [12].

When compared to animal leather, this procedure uses fewer synthetic chemicals and produces a product that is far more sustainable, yet not entirely biodegradable. Pineapple leaves, resins derived from petroleum, and PLA (Polylactic Acid), a biodegradable material derived from renewable resources, are all combined to create it. It takes around 16 pineapples to generate 1mtr of pineapple cloth, which is more cost effective. Because this is made of fabric, the responsibilities may be developed and produced to meet the needs of the product produce. Pina apple leather may be created in a range of hues and textures, as well as with a metallic gloss. Compared to other imitation leathers, this leather is supple, lightweight, and softer [13].

ORANGE LEATHER FRAME WORK

Every year, the citrus sector discards 1 shedload of citrus fruit peels. Even though the skins naturally decompose, it still costs a lot of money to dispose of them properly. The fibre from orange peels may be utilised to create a new line of silk textiles made entirely from leftover citrus fruit peels. Oxygen and hypochlorite are used to beach the primitive celluloses.

Oxygen and hypochlorite are used to bleach the primitive celluloses. The cellulose elements which are physical and chemical descriptions indicate to a high standard of purity, low crystallites, brightness, water content, and suitable molecular mass. These qualities are taken up by the skin, nourishing it and enabling the fabric feel like soft cream rather than oily or unpleasant [14].

CACTUS FRAME WORK

Desserto is a highly sustainable plant-based material derived from cactus that is distinguished by its exceptional softness to the touch while providing excellent performance in a broad range of applications and fulfilling the most exacting quality and environmental criteria. The cactus substance Desserto meets the fashion industry's technological criteria. Industry such as leather products, premium packages, and furnishings[15]. The brand-new leather is partly biodegradable and breathable because it is a non-toxic substance chemicals and Polyvinyl chloride has a lifespan of up to ten years, almost the same as Skin of an animals.

MUSHROOM FRAME WORK

Mushrooms are fungi with a stalk, top, and gills. These fungi are naturally high in fat and gluten free. They have a relatively short lifespan and agriculture differs from that of other flora due to a lack of chlorophyll. The skin of the mushroom called as aka mushroom is used to make this leather (Muskin). In essence, it is made from the *Phellinusellisoideus* mushroom and then it is tanned to give it a traditional leather look. No hazardous substances are employed to provide the natural appearance [16]. It is produced from the skin or vegetative portion of a fungus on which the spores grow at different humidity and temperature levels before being tanned to give it an appearance like to cow, snake, and other leathers. For the creation of environmentally friendly and degradable leather, relatively little energy is required [17]. Fungus grows on logs in forests and produces mushrooms. Mycelium, the root system of mushrooms, develops and spreads by absorbing the nutrients present in the environment, which makes it robust and resilient. Mycelial mat, a dense foam-like material with a bead structure that gives the wood a leather-like appearance, is removed. Mycelium cells are first obtained and placed on the dish in order to transform this substance into fabric. By ingesting cellulose-rich foods, these cells develop into fibres known as (hyphae), and the greatest results (dense fibrous network) may be obtained if the temperature, CO₂, and humidity are managed. This fibrous network resembles a bed of leather [18]. After this mat has reached the desired size, it is sliced into pieces and subjected to a procedure that gives animal leather a weathered appearance. Mushroom leather is highly biodegradable, does not decay like animal leather, and requires no further salt or chemical treatments. Jewellery and accessories can also be made from this leather.

BIO CELLULOSE IN VEGAN LEATHER

The most prevalent biopolymer on earth by volume is cellulose, cellulose is mostly obtained from higher plants like cotton and wood [19]. It is a renewable resource, plant-based cellulose is extensively utilized in a variety of products, including paper, textiles, and building materials. It does, however, include hemicellulose, lignin, waxy aromatic compounds, and other impurities that need further energy or chemical-intensive purifying operations to achieve pure cellulose [20]. Numerous microorganisms produce bio cellulose (BC), also known as bacterial cellulose, which is an extracellular cellulose variant that is chemically purer. BC is produced when an acidic environment and a carbon source are available [21]. It is devoid of lignin, hemicellulose, and other contaminants and contains solely b-glucose. Compared to plant cellulose, BC has superior properties such a high degree of polymerization, high capacity for holding water and higher tensile strength [22]. In Thailand, bio cellulose-producing bacteria were found in lychee, mangosteen, papaya, rambutan, watermelon, and sapodilla. No bio cellulose-producing bacteria could be isolated from soil samples [23].

FERMENTATION PROCESS**CULTURE CONDITION**

BC manufacturing undergoes static, agitated, or stirred fermentation processes. These circumstances lead to the production of various cellulose types. Under static conditions, a three-dimensional, interconnected reticular pellicle was seen, but agitated and stirred conditions led to the production of irregularly shaped, sphere-like cellulose particles (SCP) [24]. When every bacterium is trapped by a pellicle that is growing downhill, BC synthesis reaches its maximum potential. Due to a lack of oxygen, bacteria become dormant [25]. At industrial scale, semi-continuous processes under static conditions are advised since they result in higher BC productivity than continuous processes do. Contrarily, the majority of cellulose utilised for commercial purposes is produced by agitated fermentation due to the low yield of static synthesis [26]. SCP is a kind of irregular cellulose that can take the shape of fibre suspension, spheres, pellets, or irregular masses when agitated [27]. Compared to pellicle from static culture, the SCP has poorer crystallinity, mechanical strength, and degree of polymerization. The disruption caused by aeration on the establishment of hydrogen bonds between cellulose and the changed microfibrils organisation was hypothesised discovered that the number of SCP reduced as inoculum volume increased, but that the influence of varying initial glucose concentrations only had an effect on the mean diameters of SCP. However, the process through which SCPs arise is still a mystery.

CULTURE MEDIUM

Due to the depletion of fossil fuel supplies, the biorefinery idea predicts a gradual shift to economically renewable materials as feedstock for chemicals, materials, and fuels [28]. Numerous research have examined agricultural waste and industrial by products as prospective media in the search for a more affordable culture medium for BC production on an industrial scale [29]. Some of them, such leftover beer yeast, dry oil mill residue, thin stillage, grape peel, and maple syrup, have been demonstrated to be advantageous carbon sources for BC production [30]. Additionally, using such items has a favourable effect on the related business by reducing environmental issues related to trash disposal. Additionally, it was determined that medium supplementation with nitrogen and phosphorus sources will improve BC synthesis [31]. The creation of

gluconic acid as a by product in the culture medium is linked to the use of glucose as a carbon source during BC synthesis. The culture's pH will drop as a result of this by product, which will have a detrimental impact on how much BC is produced. But the presence of antioxidant and polyphenolic chemicals is able to prevent the development of gluconic acid [32].

RECENT ADVANCES IN THE FIELD OF ARTIFICIAL LEATHER

Leather is one of the globe's most commodities in the market[33]. The leather goods business is vital to the global economy. Vegan leather is becoming increasingly popular because to its numerous applications, including purses, bags, clothes, furnishings, and accessories. Every year, vast sums of animals are slaughtered to produce leather for our apparel, home furnishings, and other uses. The fur of cattle and other animals is extracted in three stages: preparation, tanning, and crusting [34]. Synthetic polymer-based and plant based leather substitutes fare better in terms of ecological sustainability and have risen to the top of the market recently. The fashion industry has consistently been a significant area for vegan activists with the goal of helping to improve animal safety and rights, sore fining the industry ethical and ecological effect returns the sector to the manufacture of vegan alternatives [35].

CONCLUSION

Cellulose is a versatile polymer that is utilised in industry. Chemical modification of cellulose is performed to produce cellulose derivatives (cellulose's) that are generally strong, low cost, reproducible, recyclable, and biocompatible, allowing them to be tailored for industrial purposes. Bacterial cellulose is cost effective and can be produced in mass production, and it is also stronger and more hydrophilic than plant cellulose, making it durable and useful in many medical fields and also in leather industry. The world economy depends heavily on the leather goods industry. Due to its many uses in accessories, furniture, clothing, handbags, and bags, vegan leather is growing in popularity. Numerous animals are killed every year to make leather for our clothing, furniture, and other uses. Cattle and other animals' fur is removed in three steps: preparation, tanning, and crusting. In recent years, synthetic polymer-based and plant-based leather alternatives have dominated the market because they are more environmentally sustainable. The fashion industry has continually been an important area for vegan activists with the goal of improving animal safety and rights, sore fining the industry's ethical and ecological influence returns the sector to the manufacture of Vegan alternatives.

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MAHATHIR'S AND ISLAMIZATION IN MALAYSIA: A SOCIOLOGY OF KNOWLEDGE PERSPECTIVE

Azizan Bin Had

Universiti Malaysia Sabah, Sandakan Campus

ABSTRACT

The past thirty years have seen a swift advance in the idea of Islamization of Knowledge (IoK) in Malaysia. The term 'Islamization' meaning the reform of knowledge in Islam, has been used by Syed Muhammad Naquib al-Attas and Ismail Al-Faruqi, especially in the late 1970s, to explicate the process of Islamizing and the reformation of academia in the Muslim world, in the aftermath of the 'malaise' of the 'ummah. The IoK project in Malaysia is substantially related to the Sociology of Knowledge (SoK) theory which accentuates that ideas are closely related to the settings where the ideas initiated. This paper analyses the origin of the IoK as an ideology using a SoK theory proposed by Karl Mannheim (1893-1947). According to Mannheim, the particular conception of ideology implied when a person is being skeptics of the ideas forwarded by his opponent whether it is an individual, groups or organization. From this point of view, we are looking at the person's idea merely as a disguise or falsification of his true nature or interest. Mannheim called this a 'distortion' rather than simply lies and it can gradually become clear when it is contrasted with the total conception of ideology (Mannheim, 1954). The total conception of ideology for Mannheim is somewhat different in its scope where it deals with the ideology of a certain time in history or a historical-social group and it is concerned with the characteristics and composition of the total structure of the mind of the people or group in this certain time frame (Mannheim, 1954). Furthermore, the paper investigates a different perspective of knowledge where it will look into the questions of 'What makes Malaysia's intellectual and political environment so conducive to generating the IoK project? What were the main reasons for the government to engage in a project like IoK? What was the role of the Prime Minister of Malaysia, Mahathir Mohammad in promoting IoK and what was the reason for him in doing so?' The paper concludes that Mahathir's Islamization project is also part of his bid to stay in power by controlling knowledge. Under Mahathir's rule, he tries to control the way knowledge is disseminated to the people by controlling Islamic institutions, strengthen Islamic law against the civil law of the country and formed Islamic based institution of higher learning promoting his way of Islam.

Keywords: SoK, Theory, Karl Mannheim, Peter Berger, Foucault, Hussein Alatas, IoK, Mahathir Mohammad.

INTRODUCTION

This paper analyses the development of IoK in Malaysia using Western views on the SoK proposed by Karl Mannheim (1893-1947) where both ideas were put into a single topic. Despite being introduced by Mannheim, the SoK theory was later assumed and expanded by other scholars such as Peter Berger in his work *The Social Construction of Reality* (Berger & Luckmann 1991). Another scholar who had a corresponding vision as Mannheim is Michel Foucault in his work *Archeology of Knowledge* (1972), *The Order of Things* (1994) and *Discipline and Punishment: The Birth of the Prison* (1977). According to Mannheim, the particular conception of ideology implied when a person is being skeptics of the ideas forwarded by his opponent whether it is an individual, groups or organization. From this point of view, we are looking at the person's idea merely as a disguise or falsification of his true nature or interest. Mannheim called this a 'distortion' rather than simply lies and it can gradually become clear when it is contrasted with the total conception of ideology (Mannheim, 1954). The total conception of ideology for Mannheim is somewhat different in its scope where it deals with the ideology of a certain time in history or a historical-social group and it is concerned with the characteristics and composition of the total structure of the mind of the people or group in this certain time frame (Mannheim, 1954). Mannheim gives common and distinct elements in the two concepts, mainly because neither of the two concepts relies on what is said by the opponent to understand his real meanings and intention, therefore, to analyze it, we have to look into the social conditions, the life situation and character rather than the face value of the person or group who said it (Mannheim, 1954). The late Prof. Syed Hussein Alatas, for example, used Mannheim's theory to write his magnum opus entitled *Myth of the Lazy Native: A Study of the Image of the Malays, Filipinos and Javanese from the 16th to the 20th Century and its Function in the Ideology of Colonial Capitalism* (1977) which reveals colonial ideologies (a term used by Mannheim to refer to false knowledge or lies) in developing Southeast Asian nations. He also used SoK to clarify how educational systems could be ameliorated by specifying the roles of intellectuals in Asia, and how the intellectuals can develop their country.

Furthermore, the paper investigates a different perspective of knowledge where it will look into the questions of 'What makes Malaysia's intellectual and political environment so conducive to generating the IoK project?'

What were the main reasons for the government to engage in a project like IoK? What was the role of the Prime Minister of Malaysia, Mahathir Mohammad in promoting IoK and what was the reason for him in doing so? The paper presents the IoK project as the government's ideology and constructs based on critical reasoning (using Mannheim's perspective). This paper analyzed the ideological process of Islam in Malaysia and in doing so investigate how the Malay ruler used Islam as a medium to maintain Malay unity. This paper also shows how the ruling class in Malaysia, the Malay *raja* (King/Sultan) have played an important role even before independence. After independence, the Malay rulers were given a significant role as the beholder of Malay customs and the Islamic religion. Eventually, the role of the highest ruler was later assumed by the Prime Minister, thus playing a significant role in promoting the idea of IoK in Malaysia in later years. The main argument of this paper is Islam has played an important and significant role in the country where the highest ruler used Islam as a means of sustaining their power and control their subjects. It is within this scope, the ideology of such a ruler was explained in the early years and during the administration of Prime Minister, Mahathir Mohammad.

This paper also shows why Islam has played an important role in Malaysia's history by tracing the development of the Islamic religion its spread within the Malay community. Firstly, it looks at the history of the spread of Islam in Southeast Asia in general and Malaysia in particular. The first part, the historical part, looks at the roots of Islam in Malaysia as well as in other countries in Southeast Asia. It also looks at the theories on the arrival of Islam in Southeast Asia and explains how Western and local scholars looked at its impact on the people of Southeast Asia. The most important aspect of this is to look at the connection between the Middle East and Southeast Asia, as explained by many scholars who regarded it as the Middle East – Asia network. Then, I explain the early traditional Islamic education in Malaya, and how it features in the country. This is done by looking at the early schools known as *pondok* or hut schools that had been built by religious teachers from either the neighboring country such as Indonesia and Pattani, in southern Thailand or by early preachers of Islam that came from Central Asia or the Middle East until the arrival of the British. Under the British, a different system of education was introduced which later formed Western-educated politicians which formed different political parties with a different vision in mind on how to modernize the nation. For the second part, I explain the three stages of modern Malaysia, (the politics, social and educational aspects in Malaysia), which had been influenced by Islam, in order to look at how far Islam had played a major role in Malaysia. The whole discussion is done to facilitate the argument on IoK and how it came about as a result of government policies on Islam mainly to gain support from the people and ruling party the Barisan Nasional (BN) and United Malay National Organization (UMNO) which is the major Muslim Malay coalition in the country. In addition, the whole paper uses the approach that has been discussed in the previous paper.

SUNNI ISLAM: MAJOR SCHOOL OF THOUGHT IN MALAYSIA

Intellectual and religious development in pre-independence Malaysia is closely linked to the development of Islam in Southeast Asia which includes Indonesia, Singapore, and Brunei. It is similar in a way that the intellectual development of Southeast Asian has been characterized by a close connection with events in the Middle East, where Islam originates. This has resulted in the formation of what scholars described as a 'Middle East – Asia network' where ideas and religious thought have crossed international borders. The early background and Southeast Asia – Middle East network had been explained by scholars, such as Azra (2004) (2005) (2006) (Hasan, 2006) (Robinson, 2008) (Hooker, 2008) (Rudnycky, 2009) (Welch, 2011) (Laffan, 2007) (Rifai, 2006) (Barton, 2009) and (Kersten, 2009 and 2012). They have shown how the Middle Eastern network influenced intellectuals in Southeast Asia, especially regarding their thoughts and socio-political surroundings from the seventeenth century until the arrival of Europeans at the end of the nineteenth century. To look at the origin and effects of this network, an essential thing to do is to look back at the historical and socio-political aspects of the region in detail. There are three major theories regarding the spread of Islam to Southeast Asia, from the Middle East, India and China. Arguably, by indicating that Southeast Asia was Islamized by Indian and Chinese Muslim traders, Western scholars mainly try to undermine the role of the local people of Southeast Asia. This is primarily part of their ideology to promote false knowledge or lies to the local people thus justifying their colonial intention to exploit the economic resources of the country. The picture painted by the scholars is totally against the fact where the local people of Southeast Asia also played an important role in venturing as a seaman and mastering sea and trade routes from the start of the century. As Hall (2010) argues, based on Western and Chinese accounts, in early first century Malay seaman were shipbuilders and voyagers who were able to travel as far as the African coast, apart from India and China. It is through these trades and exploration activities, they were influenced and later accepted the Islamic religion. Even though the three theories had gained support from various scholars from all over the world, this, however, fails to explain the acceptance of the people in Malaya and the Malay Archipelago of Islam. Moreover, it only tells one side of the

story, for example where the people of Southeast Asia were only regarded as passive recipients of the Islamic religion brought to them by foreigners. Moreover, the Islamization of Southeast Asia is more complex than what early scholars had demonstrated in their theories (Farish Noor, 2002). Farish hailed scholars like Rudolf Kern, whose writings show that the Islamization of the Malay society is a long, complex and highly differentiated process that did not take Islam and Muslim identity as fixed and stable categories. Some scholars argue that the expansion of the Islamic religion in the area was accelerated by the coming of foreigners like the Portuguese and Dutch. B. Schreike, argues that the expansion of the Islamic religion was 'helped' by the act of proselytization by the Portuguese in the area, where Muslims started to intensify spreading the Islamic religion and led to the fall of Hindu kingdoms in Southeast Asia (Vlekke, 1959). Other scholars such as Johns (1993) (1975) argues that *Sufi tariqas* play an important role in the process of Islamization in Southeast Asia between the thirteenth to the nineteenth century, where the majority of *Sufi ulamā* who plays an important role in the establishment of Muslim communities had *Sufi* affiliations.

Before the coming of Islam, the Malay society was mostly non-theistic and most of them believed in pagan gods and animism, while the rulers mostly embraced Hindu/Buddhist deities. This situation changed after the coming of Islam when the belief in pagan gods and polytheism was replaced by the concept of monotheism, the one God, or Allah. In most cases, the conversion of the local people to Islam was smoothed after the rulers accepted the religion (Khairudin Aljunied, 2019). This is a result of imposing plus an impressive display of their magnificence and power by the king toward their subjects and other Malay kingdoms which eventually lead to their conversions. Khairudin explains, "Pasai rulers claimed to be descendants of great Abbasid kings in Baghdad, a great power recognized by Muslims and non-Muslims even after the devastating Mongol invasion in 1258" (2019: 36). The role of the Sultan significantly changed from the conception of 'God-King' to a conception of 'Caliph of God' (Vlekke, 1959). Starting with the concept of worshiping one God and the Islamic way of life, it had attracted the local community in embracing Islam (Wertheim, 1959). Since the advent of Islam, the daily life and customs of the Malays had changed totally, while the previous beliefs and rituals were gradually abandoned (Ruslan Zainuddin, 2004). What is imperative here is the point that ideology plays a vital role for the ruling class to maintain its relevancy despite changes in the belief of the local people. Rulers used the ideology of divinity and all-encompassing kingship drawn from other great kingdoms of the world. Besides the title of 'Sultan,' they adapted themselves as the 'vicegerent of God' whose commands were to be obeyed (Khairudin Aljunied, 2019). By using such Islamic terms, the Malay rulers try to show that their power and authority as an Islamic ruler is beyond the physical world but is also recognized by God while their commands need to be obeyed.

After the formation of Islamic kingdom such as Malacca, which became the center of trade in Southeast Asia in the 15th century, the process of Islamization in every aspect such as law, sociocultural and political, occurred incessantly. Changes in the sociocultural aspect were most important when the Malays adopted the Islamic moral values in everyday life, such as the Islamic dress code, Islamic manners, Islamic customs and language (Mohd Taib Osman, 1980). This is different from what some scholar such as Landon (1949) have claimed that Islam is like a 'thin veneer' over the indigenous Indonesian civilization. Furthermore, Landon's view was also repudiated by Roff (1985) and Keddie (1987). Roff (1985) described this in his criticism as "the extraordinary desire on the part of Western social science observers to diminish, conceptually, the place and role of the religion and culture of Islam, now, and in the past, in Southeast Asian societies" (Roff, 1985). Keddie, on the other hand, labeled the act as 'exaggeration' by scholars who believes that Muslims in the Middle East as 'good' and 'normative' Muslims, while Muslims in other areas which are later converted as 'bad', 'syncretic' or 'nominal' Muslims whose Islam is a 'veneer' over their previous belief and practices (Keddie, 1987:7). In addition, the existence of Islamic scholars such as Hamzah Fansuri, Shamsuddin al-Sumatrani, Abdul Rauf Singkel, Abdul Samad Palembang, Daud Abdullah al-Pattani and the various books written during the early times in the Malay language shows that Southeast Asian Islam is more than just a 'thin veneer'. A recent study by Daneshgar (2014) also showed that during the early years of Islam, various elements were brought in. Not only *Sunni* Islam was disseminated, but also elements of *Sufi tariqahs* and *Shi'ism*. Daneshgar's claim is based on his analysis of relevant figures and literary works published since the nineteenth century onwards in the Southeast Asian region which contains elements of Persian *Shi'ism*. According to Daneshgar, the earliest of these figures was the tomb of Na'inah Husam al-Din (d. 1432) in North Sumatra which contains a *ghazal* written by *Shi'a* scholar, Shaykh Muslih al-Din Sa'di Shirazi (d. 1291) which prompted him to accept Cowan's (1940) conclusion that the tomb was brought in from India which was under the influence of *Shi'ism* at the time. The diversity of these elements shows that at the time whether they are aware or not, Muslims in Southeast Asia are like an open book, ready to be written and patterned with suitable elements accepted by them. Moreover, the Islamic religion was not subjected to any governing bodies or political influence by the ruler at the time. The

Malay monarch, the sultans or rulers at the time have the freedom either to accept or reject such influences as he will without any objections. The introduction of Islam also brings forward the idea of the significance of education. In Islam, education is most important, and it signifies the importance of a person. It is through education, the awareness of the local people initiated which later transformed into the formation of organizations and political parties after the independence in 1957. The next part explains the formation of Islamic schools in pre-Independence Malay amidst the rise of Western educational elites.

ISLAMIC SCHOOLS VS WESTERN EDUCATION

The existence of diverse Islamic culture at the start of the nineteenth century can be explained from the perspective of education. Malay-Muslim traders and explorers brought with them the tradition of knowledge and education which was later practiced in Southeast Asia such as the formation of *madrasah* and *pondok* (hut) school. The existence of these educational and learning traditions exist in school education maintains a network of scholars between the Middle East, particularly from the Haramayn (Makkah and Medinah) where scholarly traditions led to the existence of *Sunni ulama*, scholars, and *Sufi* with Islamic scholars from other places including Southeast Asia (Azra, 2004). The existence of the network is important especially in maintaining the Sunni thought, traditions, and style of education in Islamic schools (*pondok*) in Southeast Asia. The existence of a major religious network based on a *Sunni* understanding of Islam was one of the major reasons why the *Sunni* school made up the majority of Muslims in Southeast Asia as compared to *Shiite* (Miller & Williams, 2008). The existence of the *Sunni* branch of Islam in Southeast Asia in general and Malaysia, in particular, is important in shaping the country's view of IoK. The maintenance of the *Sunni* tradition is done through education where elements of *Sunni* Islam are applied and consolidated with the arrival of *Sunni* scholars, not just from the Haramayn and the Middle East, but also from Southeast Asian scholars from India, Thailand, Brunei, and Indonesia. Of all the changes brought by the Islamic religion, education is the most important and significant contribution to the people of Asia.

At the end of the 19th century, especially after the Second World War, *pondok*, Arab schools and religious schools (*madrasah* or *sekolah agama*) appeared in many places throughout the peninsula, especially in Kelantan, Kedah, Perak, and Penang. Religious schools or '*madrasah*' became a suitable alternative to education for the community at the time (Abdullah Alwi Hassan, 1980). The level of education at these educational institutions was normally high.... where many of the students from these schools, for example, *Madrasah al-Masyhur* in Penang, *Madrasah Muhammadiyah* in Kota Bharu, Kelantan and *Maahad al-Ihya 'al-Sharif*, Gunung Semanggol in Perak still continue their education in the Middle East, especially in Makkah and the University of Al Azhar in Egypt. Even though the arrival of the British halted the advancement of the system in Malaysia, the traditional education system was able to produce leaders in both political parties-UMNO and Parti Islam Se-Malaysia (PAS).

Before we go on with the education system during the ruling of the British, I think it is best to explain a bit about Wahhabi and Salafi within the perspective of Malaysian Islam and compare it with Shiite. In comparison to Shiism, the influence of *Wahhabi* in the Southeast Asian region is minimal in the sense that it was regarded by the Department of Islamic Development in Malaysia (JAKIM) and the National *Fatwa* Council as not suitable to be practiced in Malaysia. The official portal of Malaysian *Fatwa* (ruling based on Islamic law), e-fatwa.gov.my in a response from public inquiries stated that *Wahhabism* is not suitable in regard to its understanding and practice of Islam in Malaysia. Among the reasons given was that *Wahhabi* uses a narrow approach and combines it with a literal translation of the *Qur'an* to justify their views on Islamic practice. Those who did not support their views were declared as non-Islamic, apostates while their practice was declared as *bid'ah* (heresy) including those which was already practiced a long time ago, such as prayers, recitals, recital of surah Yasin on Friday nights, (*maulud*) celebrating the Prophet's birthday was all regarded as misguided and heresy. In Malaysia, Negeri Sembilan was the only state to declare the movement as *haram* (prohibited) while other states have not made any declaration. In Malaysia, only the *Shafiite* school of jurisprudence was recognized by the government while the *Shiism* school, the second-largest branch of Islam was regarded as deviant.

Roff (1974), who was supported by Deliar Noer (1973) and Farish Noor (2004), argued that there were two major groups during the early years before the independence of Malaysia. These were the traditionalist (Kaum Tua) and the modernist (Kaum Muda) which tried to shape the people's views at the time, even though the comparison made by Roff and others, describing Kaum Muda as modernist is not fully accurate. Kaum Muda never tried to modernize Islam but rather to bring the people back to pure Islamic tradition from the *Qur'an*, *Hadith*, and *Sunnah*, while at the same time discarding traditional Malay practices (Roff, 1974), a major features of *Salafism*. Nevertheless, most scholars believe that the formation of these intellectual Muslim groups in the

early twentieth century sowed the seeds of nationalism, which later formed the early Malay political parties, UMNO and PAS in the coming years, leading to independence in 1957. Among the reasons is the formation of educated Malay elites, who obtained foreign education either in England or the Middle East (Samsul Amri Abu Bakar & Azmi Aziz, 2011). These Malay intellectuals were the earliest educated group of people who not only defy the bad treatment their families received during the colonization period but also struggled to obtain independence and change.

Even though the British introduction of new schools became one of the factors for the decline of traditional Islamic education, it also brought in a new and systematic system of education and new subjects to the local population. Before the arrival of the British, most Islamic schools taught the formal instruction of *Qur'ān* and *Hadith* and its branches such as *tawhīd* (theology), *fiqh* (jurisprudence), *tafsir* (Qur'ānic exegesis), *mustalah al-Hadith* (*Hadith* methodology) and *tajwid* (Qur'ānic recitation and Arabic grammar). The arrival of the British led to the introduction of new subjects such as mathematics, geometry, medicine, geography, metaphor, logic, and rhetoric. The new subject was also known as *fard kifayah*. During the colonial period, the role of *pondoks* in the educational system was extended due to the process of 'bureaucratization of the Islamic authority' introduced by the British (Roff, 2009). *Pondoks* became the major supplier of manpower to the religious bureaucracy in the society maintaining its role in educating the locals, especially after the introduction of printed media in Malaya. Most *pondok* and *madrasah* schools' graduates fill in the void created by the existence of religious bureaucracy and their demand for religious educated personnel. However, there are some who receive religious education from *pondoks* and went to the Middle East to study and later became leaders and members of the Islamic party in Malaysia after independence.

The encounter between the Islamic educational tradition (*pondoks*) and modern education introduced since the arrival of the British has created two groups of people in Malaya. The first group refers to those who were educated mainly in the *Sunni* Islamic religion, while the second group receives secular education from Western countries. The latter group of early educated Malays later became the administrative backbone of the country's government, a small group of Western-educated Malay elite who became Ministers and Prime Minister (after independence) while the former retains its Islamic values. Even though the country was ruled on the basis of a secular nation, a majority of the people still retains the Islamic value through informal medium such as *ceramah agama* (religious talks and lectures) which are often held either formally in the media (radio and television) or informally in mosques and *madrasahs* across the country. The spread of Islam was also assisted with the formation of Islamic political parties such as PAS and non-government organizations such as Angkatan Belia Islam Malaysia (ABIM), al-Arqam, and Aliran Kesedaran Nasional (ALIRAN) which helped to spread the word of Islam to the majority of the public. The existence of Islam influenced a majority in the country which was also the main factor why IoK was introduced it was done to gain the support of the Malays and to teach them to follow the authentic teaching of the Holy Qur'ān and the Sunnah according to the *Sunni* traditions. This is the basis of the IoK project in Malaysia where the government tries to gain support from the people by showing that they are the true supporter of Islam, the Islamic faith and religion by using education. The next part explains in detail on how this is done where the role of Islam in the socio-political scene is discussed.

ISLAM IN MALAYSIAN POLITICS

Malaysia achieved independence on 31 August 1957 in a venture of UMNO, headed by Tunku Abdul Rahman. UMNO tried to show his strength to the British authorities to incorporate the Chinese party (MCA) and the party of India (MIC) for the idea of "Alliance", to maintain the identity of each party in certain things. This alliance was founded based on the coalition of political power between ethnic Chinese, Indians, and Malays, however, UMNO still has the dominant political control of the government. UMNO's stance in using Islam as a religion is more liberal compared to PAS who wants to create an Islamic state and implement Islamic law. The two groups formed two distinct ideas on how to rule the country using Islam as a religion. I believe that the difference between the two groups is because of the way they reacted to Western colonization. The Islamic revival started because of pervasive anti-Western sentiment in most of the modern Muslim world, both in the obvious political sense and also in the form of a reaction to Western economic domination, against capitalism and materialism (Nagata, 1980). If we are to accept Nagata's argument, we must agree that the two groups reacted differently to the negative effect of colonization as explained by Nagata (economic domination, capitalism, and materialism). Furthermore, Islamic education was not a major priority in the educational policy of the British during their occupation.

When Malaysia obtained its independence in 1957, the scenario drastically changed where religion received special consideration in education, state expenditures and public protection of Muslim religious practices (Von Der Mehden, 1963). In the field of education, the federal government provided over six million Malayan dollars

(approximately US\$2,000,000) for Muslim education in 1962 exclusive of a fund of RM8, 500,000 for the national mosque (of which the government provided RM5, 000,000). Grants of RM7.00 per pupil plus RM863, 000 for teachers' salaries and training was provided for the teaching of Islam to 591,000 Muslim pupils in primary schools (Von Der Mehden, 1963). It is important to note, however, that the political, social and economic system that was based on the colonial system was not changed, especially by the secular Western-educated Prime Ministers of Malaysia. The educational system that was used since independence was still secular, while PAS still tried to gain sympathy from the local people to support their cause by using the idea of an Islamic state. These situations paved the way for the IoK project, which started in the 1980s when political leaders in the ruling party the BN tried to formulate an Islamic image amidst the call for Islamization. Moreover, Farish Noor (2009) believes that the discourse and expression of Islam in Malaysia were used to mobilize the masses against the combined threat of Western colonialism, foreign economic exploitation, and competition with non-indigenous and non-Muslim communities. However, Farish argued that different groups and political parties had different interpretations of Islam, as well as different visions for a postcolonial Malaysian state and society. It is interesting therefore to see how these groups in Malaysia tried to formulate their version of political Islam, and how intellectuals in Malaysia tried to blend in their idea of Islamization in the country as a form of utopia against secular ideology. Despite the different political views of the groups and political parties, Islam played an important part in the Malaysian Constitution. The next part explains the position of Islam in the Malaysian Constitution since independence in 1957.

ISLAM AND POLITICAL ORGANIZATION

Since its independence in 1957, the Malaysian leadership has given only moderate attention to Islam as a major force in its fight to win the heart of the local people. Before Malaya was given independence in 1957, people were trying to find an alternative to solving issues like racial gaps and racial tensions. It was at this time the BN was formed (in 1946) which later won the election of 1952 (Municipal Election) and 1955 (General Election). At the time, BN seemed to gain support from the local people due to its multi-ethnic composition which attracted the major races in Malaya, these being Malay, Indian and Chinese. Other parties such as the Malaysian Islamic Party (Parti Islam Se-Malaysia or PAS) had attracted fewer followers, and thus only won a single seat in the first general election of 1955. However, PAS's idea of forming an Islamic state little by little did influence the local people, especially the Malays, in later years. How did the local people's views toward PAS change over the years? This question can be answered if we look back at how PAS developed itself over the years. What follows are the factors leading to the IoK in Malaysia, where internal and external factors combined with the policies of two leading political parties in Malaysia, PAS and UMNO.

Formed in the 1950s before the independence of Malaya, PAS has played its role as one of the parties pushing toward the independence of Malaya, and from its starting point was able to cooperate with Malayan nationalists at the time to obtain Malaya's independence. It is important to note that PAS is the only political party in Malaysia that uses the word 'Islam' and used the Islamic religion as a symbol, as its aim is to form an Islamic state government. Many of PAS's presidents obtain their education in the Middle East, such as Yusof Rawa who was educated in Makkah, Saudi Arabia, while Fadzil Noor, Abdul Hadi Awang, and Nik Abdul Aziz were educated at Al Azhar University in Cairo, Egypt. Their educational background shaped their political persuasion thought throughout the years where they used the Middle Eastern state and government as a model of the state they wanted to form in the future. On the contrary, most of UMNO leaders obtained their higher education in Western countries, such as Tunku Abdul Rahman (the first Prime Minister) and Tun Abdul Razak (the second Prime Minister), who both got their law degrees in the United Kingdom. Other members include Tun Hussien Onn (the third Prime Minister) and Dr. Mahathir (the fourth Prime Minister), although neither was trained in Western countries; Tun Hussein Onn, who trained at the Indian Military Academy in British India, and Dr. Mahathir, who trained at a Medical College in Singapore, both areas which were occupied by the British preceding the independence.

Since independence in 1957, Malaysia was ruled by the BN which normally uses the mass media to gain the support of the local population (Shiozaki, 2007) and spread their political ideologies. Malaysia has been criticized many times because of the degree of regulation, it imposes upon its mass media. According to the Press Freedom Index, in 2010 Malaysia was ranked 141 out of 178 by Reporters Without Borders, while in 2012, Malaysia was ranked 122 out of 179. The situation calls for the opposition parties such as PAS to use other methods to spread their utopian views to the local population. Before the introduction of the internet in the late 1980s and early 1990s, PAS used all means and methods available to convey their message, including talking directly to the people. Other than its local newspaper 'Harakah', which was permitted to be published twice a month, PAS uses the method of *ceramah* or religious talks to the local people. PAS also used and created a 'public sphere' where they used a *pondok* style campaign to influence the local people (Shiozaki,

2007). This was done by using methods of *ceramah* which was popular in the 1970s and normally used by *da'wah* movements across the country. They used small groups of people to discuss and give advice to members, related to how things were done the Islamic way. The *ceramah*, *da'wah* and other methods of meetings held have become an alternative and counter-public sphere and occupy an important place in forming public opinion among Malay-Muslim (Shiozaki, 2007).

Here, we look back at the traditional system of education where such type of *ceramah* or *da'wah* is part of the system of instruction and the method of spreading a utopian view that is familiar to the Malay public. Such discourses disseminated in *ceramah* (talks) and other Islamic forums are familiar because they are taught in pondok and other religious schools and derive from discursive resources of traditional Malay society. Many believe that such familiarity cannot be created by a media controlled by the government or its bodies, or any other government-affiliated Islamic think tanks which emphasize economy and utilitarianism (Shiozaki, 2007). Generally, *ceramah* meets at a mosque, someone's home, a meeting hall, or in the open air, and it starts after nighttime prayer. People gather there to listen and to be entertained in a family setting, and there are stands selling food and drinks.

As a political party that had its higher-ranking members educated in Egypt and the Middle East, PAS maintains its relationship with the Islamic movement there. Since its formation in the 1950s, PAS was influenced by movements in the Middle East such as the Salafis movement, Muslim Brotherhood (*Ikhwanul Muslimin*) and ideas from thinkers such as Syed Qutb. PAS also sent students to Middle Eastern countries such as Iraq. The first batch of ten students was sent to Iraq in 1964 when PAS was under the leadership of Zulkifli Mohammad, the Deputy Head of PAS and an Egypt educated Professor. These students later became high ranking members of PAS. A year before, in 1963, PAS also sent envoys to the Middle East where the then President, Yusof Rawa, acknowledged its presence as an Islamic movement in Malaysia. When PAS joined UMNO from 1973 to 1977, Yusof Rawa was appointed as Malaysian envoy to Iran, Afghanistan, and Turkey. His first-hand experience seeing the Iranian Islamic revolution in 1979 motivated him to initiate what is called the 'leadership of clerics' or *Kepimpinan Ulama* when he was the President of PAS (1982 - 1988). PAS was influenced by the Islamic revolution in Iran, and later one of its utopian objectives was to form an Islamic state based on this revolution.

The influence of the Iranian revolution is evident in the speech of Yusof Rawa at the 29th PAS General Meeting held in 1983, where the success of the Iranian Islamic revolution became one of the main themes for the meeting. Regarding the Iranian Islamic revolution, he stressed that the revolution was successful in fighting and bringing down the *Mustakbirin* (the arrogant or ungrateful) because it depended on Islam and relied on Allah's assistance, while the arrogant relied on their material power and materialism to change human history. Hence, PAS should learn from the success of the Iranian Islamic revolution (Ibrahim Abu Bakar, 2010). It is important to note here that since its formation in the 1950s, under different type of leadership in the party; traditional religious, leftist (who demand independence) and rightist (who joined forces with UMNO) the main objective of PAS is mainly to uphold Malay nationalism and improving the socio-economic condition of the Malays. However, under Yusof Rawa, PAS changed its doctrine from nationalism to anti-nationalism introducing a new type of leadership of Islamic clerics (influenced by the Iranian revolution) and adopted Islamists and revolutionist's ideology (Ibrahim Abu Bakar, 2010). The move by Yusof Rawa shows that PAS had changed its strategy from a nationalist based party to a party based on '*ulama*' or clerics. This transformation, as scholars have noted, coincided with an increasing feeling among Malay-Muslim that as *Ad-Din* (a way of life), Islam in its utopian form had to be accorded greater prominence not only in the personal lives of Muslims but in the public sphere as well. The move taken by Rawa became fruitful when it later attracted more Malay intellectuals to join the party (Mohammad Hatta Ramli, 2000). Under Rawa's leadership, many graduates from universities in the US, the United Kingdom, and Australia were attracted to the party. The students became members of PAS and were also members of the Islamic student organization such as the Islamic Revolution Council and Islamic Voice in the United Kingdom (Mohammad Hatta Ramli 2000). Besides students, there were also many professionals and corporate leaders who joined PAS after the changes made by Rawa.

On the other hand, UMNO also tries to check PAS's development by enforcing new strategies to win the support of the local people. Under the first three Prime Ministers of Malaysia, the Malaysian Muslim public was denied the Islamic utopia that they wanted. Although Islam had a prominent feature for the nation due to its history, it only affected Malaysia's foreign policy and never had anything to do with the country's internal structure. For example, the first Prime Minister, Tunku Abdul Rahman, with the support of the British, has had a secular ideology in mind and totally opposed any Islamic ideals and visions (Lahiri, 2009). Among the reasons for this is because Rahman wanted to maintain peace and harmony among the multi-ethnic group in the country and failed to see the universal values of Islam that can be applied to the whole country. Under his

administration, he was opposed by PAS and other Islamic organizations in the country, but the making of Malaysia's domestic policy never featured Islam as a factor. During Tun Abdul Razak's administration, the policy was changed a little when he established the Islamic Center, which was a part of the Islamic Religious Affairs Section in the Prime Minister's Department (Lahiri, 2009).

When Mahathir Mohammad took office as the fourth Prime Minister of Malaysia in 1981, he introduced new measures to fight the growing wave of Islam in Malaysia, which was known to many scholars as the 'Islamization' period in Malaysia's history. What Mahathir did at the time is to fight Islam with the introduction of his version of Islam, which many scholars called 'state-sponsored' Islamization. The introduction of Mahathir's version of Islam was reflected in various aspects of Malaysian public life, societal relations, and economic transactions. Scholars like Valli Nasr (2001), Stauth (2002) and Nagata (1980), to name just a few, had written about Malaysia's Islamization period focusing on Mahathir's policy in detail. There were many factors leading to Malaysian Islamization, where internal and external factors combined had produced a need for Muslims in the country to participate in the Islamization movements. This is shown in the membership of Islamic parties like PAS, non-government organizations such as ABIM (Muslim Youth Movements of Malaysia), ALIRAN (a non-government organization led by Chandra Muzaffar) and Darul Arqam, as well as the number of people joining demonstrations against government policy at universities such as UKM, UPM, UM, and UTM. The role of such organizations like ABIM, ALIRAN and Darul Arqam is discussed in the next part.

The 1980s also saw an increased application of several amendments within the Islamic Criminal Enactments (*shari'ah* criminal laws) in most of the states of the Federation of Malaysia. An outstanding feature of this development was the prurient obsession with moral surveillance, enforcement and punitive measures against Muslims for such transgressions as eating during *Ramadhan* (the fasting month), consuming alcoholic beverages, and committing the 'sexual offense' of *khalwat* (improper covert association between the sexes). The latter is defined by JAKIM as 'close proximity between a male and female who are not *muhrim* (a relative or kin with whom one cannot marry) and not legally married. It is not necessary for both parties to be Muslim and many cases have been taken to court since 1985 where only one of the parties is. Under a 1987 amendment, the non-Muslim partner may be detained in police custody for questioning in order to enable the Islamic authorities to gather evidence against the accused Muslim party. The freedom of a non-Muslim from the jurisdiction of Islamic laws as guaranteed by the Malaysian Constitution is thus compromised (Norani Othman, 2003).

Another measure taken by Mahathir to check the advancement of PAS and to strengthen his ideology is by attracting well-known leaders who can encourage their supporters to join UMNO. One of the leaders is Anwar Ibrahim, the President of ABIM who later became the Deputy Prime Minister of Malaysia. Shortly after joining UMNO, in April 1982, Anwar contested and won a parliamentary seat and was named the deputy minister in charge of the Islamic Religious Affairs Section of the Prime Minister's Department. In September 1982, he was elected as President of UMNO Youth over the incumbent, thus making him one of UMNO's five vice-presidents; in June 1983 he was made a full minister. Anwar is clearly a rapidly rising star, and many predict that one day he will become Prime Minister (Mauzy & Milne, 1983). In September 1982, Mahathir announced that the government had three major projects; the Islamic Bank, the International Islamic University, and compulsory Islamic civilization studies at the tertiary level (all of which were scheduled to be implemented beginning in 1983).

Regarded by Abaza as the 'main brain' for the creation of Institute of Islamic Thought and Civilization (ISTAC), Anwar puts forth a moderate and inclusive vision of Islamism that embraced globalization and capitalism, along with cultural pluralism within Malaysia as well as the region, and deemphasized Islamic revival as understood in the Islamist ideological literature. He carefully distinguished between the 'Southeast Asian' view of Islam that is tolerant of minorities and is open to capitalist development and the West, and the Middle Eastern and South Asian views on Islam that are more exclusionist. He argued that Buddhism has imparted a psychological condition on Islam in Southeast Asia; namely, that salvation is generally a personal matter, and hence notions about the needs of an Islamic social order do not have cadence with Malay culture. Anwar's ideas soon found regional support, especially in the views of Indonesia's Abdurrahman Wahid, who also advocates an inclusive and pluralist view of Islam. Anwar later further embellished these ideas to produce a more comprehensive utopian vision for Malaysia's role in the region and the Islamic world in a book entitled *The Asian Renaissance* (1997).

Anwar Ibrahim argued that Islamic values and lessons of its history must be first rediscovered, and only then recovered—that is, incorporated into the basis of society and politics. This meant a gradualist approach to Islamization that would conveniently postpone full Islamization to a distant future. Anwar's line of reasoning

also meant that Islamic ideals, symbols, and thinkers would be appropriated and defined by the state to serve its own ends. In support of Anwar Ibrahim, Abaza (2001) stated that Anwar's book *The Asian Renaissance* should be read from the perspective of mirrors toward both the West and Singapore so that it might give a hint as to why there is a strong emphasis upon "the right to difference" in his utopian vision in comparing Asian with European Renaissance. The fundamental difference lies in that the Asian Renaissance 'has its foundations in religion and tradition - Islam, Confucianism, Buddhism, Hinduism, and Christianity being the major ones (Anwar Ibrahim, 1997). He furthermore stresses that the Asian man at heart is *persona religiosa*. Abaza (2001) stated that 'Anwar (Ibrahim) scores a point over Lee Kwan Yew by thus being aware of the Western critiques of Asian regimes and the cultural specificity of Asian values'. Many critics regarded Anwar Ibrahim's idea of 'Asian Renaissance' as embracing Mahathir's critique of democracy, but suggesting a way forward by taking precious ideas from the Western tradition and fusing them with various aspects of Asian heritage to form what he called 'Asian Renaissance' (Langlois, 2001).

Looking at Anwar's vision as an Islamic leader, nobody would expect that he would end up being one of the main contenders to Mahathir's administration. Anwar was later sacked by Mahathir in 1998 amidst the allegation that he had misused his power and had several sexually related charges. The question remains, did Anwar really commit those charges as was accused by Mahathir and his enemies? Some observers think that Anwar rose too fast and his ambition to become a Prime Minister was "too obvious" (Trowell, 2015). Before being appointed as the Deputy Prime Minister, Anwar Ibrahim had contested a senior UMNO member, Ghafar Baba who was Deputy Prime Minister and UMNO Deputy President at the time and later he was also accused of trying to topple the Prime Minister Dr. Mahathir using the same tactics he used to topple Ghafar, using 'money politics' (Cheah Boon Kheng, 2002). Anwar Ibrahim also accused Mahathir of cronyism, nepotism, and corruption but Mahathir, in turn, used the same charges against Anwar and in September 1998 dismissed him from the post of Deputy Prime Minister, Deputy President of UMNO and UMNO member after a Supreme Council meeting (Cheah Boon Kheng, 2002). Anwar was accused of acting immorally by being a philanderer and a homosexual and was declared unfit to be a Prime Minister. He was later charged in court for abuse of power and sodomizing his adopted brother, Sukma Darmawan and speechwriter Dr. Munawar Anees. He was jailed for six and nine years respectively for those charges. However, the charge for sodomy was later overturned on appeal in 2004. Thus, he only served six years for the charge of power abuse and was released the same year.

Arguably, the Islamization project, as an ideological construct that was introduced during Mahathir's era is also related to power where Mahathir tries to preserve his position as Prime Minister and gain support from Malay-Muslim to continue supporting him. On their 11th February 1993 issue, The Far Eastern Economic Review stated in their article that "in the Mahathir lexicon of politics, power must be absolute" (1993). Furthermore, they stated that Mahathir enjoyed greater power more than absolute, showing that Mahathir tries to control everything including the way religion works in the Islamization project. Thus, I argue that the control of the government is also one of the defining factors that define Islamization where the government tries to sustain power and develop its own version of Islamization against external threats. One of the ways for Mahathir and the ruling BN party to gain the support of the people is by attracting leaders of other Islamic organizations. These Islamic organizations such as the Malaysian Islamic Youth Movement in Malaysia (ABIM), Al-Arqam and ALIRAN also had their own utopian ideals.

IDEOLOGY AND EDUCATION

The defining factor in the Malaysian Islamic project lies within Islam and the ruling party BN in general or UMNO. In other words, Malaysian Islam is defined by UMNO and Prime Minister Mahathir Mohammad. In the previous part, I have already explained that the kind of Islam that is practiced by the Malaysian majority is *Sunni* Islam from the *Shafie* school of thought. During the rule of Mahathir Mohammad, the Prime Minister is aware that there are elements in the rival party PAS that could be manipulated in order to show that UMNO's version of Islam is purer and more based on true Islamic teaching. At the time PAS looks at the revolution in Iran as inspiration to form an Islamic government in Malaysia. Thus, Mahathir tries to show that his version of Islam is more acceptable to Malaysian multicultural society, against extremism, against *Shiism* and against deviated teachings based on deviated *Sufi tariqahs*. Mahathir's intention can clearly be seen in the way he treats extremists' groups either in *Shiite* influenced PAS and *Sufi* influenced al-Arqam. This fact is supported by Lemiere (2014) who labeled Islamization and IoK as part of the Malaysian government project to counter the spread of non-*Sunni* and extremists' elements in the country. This includes the influence of *Shiite* which was spread by political parties and non-government organizations such as al-Arqam which tried to promote a comprehensive version of Islam. In Malaysia, only *Sunni* Islam from the *Shafi'i* school of law is the only Islam promoted by the religious institutions in Malaysia. Lemiere stated, "shi'a and other non-*Sunni* and non-*shari'e*

school sects are forbidden and in some cases are considered as deviant by JAKIM which is in charge of regulating Islamic practice and implementing Islamic law and procedure". For Muslims, their behavior is governed by Islamic law, or *shari'ah* law which prohibits them from doing any wrongdoings in Islam such as drinking alcohol, close proximity, conversion to other faiths which are all regarded as a crime in Islamic law. However, the Islamic rule adopted by the Malaysian government is not totally based on the original Islamic law or called *hudud* which is used in Islamic nations such as Saudi Arabia. *Hudud* was an Islamic code of law that provides punishments such as whipping and stoning for offenses like theft, robbery, unlawful intercourse, drinking alcohol, etc. Even Mahathir himself did not agree to implement *hudud* in the country calling it unfair to apply these sorts of punishments only to Muslims/Malays. At the same time, he criticizes the requirements before the punishment of offenses such as rape which needs four witnesses on the basis that it is hard to obtain their testimonies (Mauzy & Milne, 1999).

Looking at the political scene at the time, I believe that even though Mahathir is against different standards of offenses against Muslim and non-Muslim, Mahathir is unaware that some of his actions also led to the emergence of different standards of punishments for people belonging to different religions in the country. It happens in 1984 when Mahathir announced that he would 'Islamize' government machinery to pursue the 'inculcation of Islamic values in government' (Islam, 2005). In 1988 the Prime Minister elevated the power of the *Shariah* Court over Muslims by adding clause 10 to the constitution providing that the 'Civil courts shall have no jurisdiction in respect of any matter within the jurisdiction of the *Shariah* Courts' (Kuppusamy, 2006) thus creating different punishment for Muslims and non-Muslims. For example, if a Muslim male was arrested for committing close proximity with a non-Muslim female, only the male will be brought to the *shari'ah* court to be judged and fined while his non-Muslim counterpart walks away. Mahathir's treatment of deviated Islamic groups, *Sufi tariqahs* and *Shiite* also shows that he is against what is provided in the country's constitution. To look closer into the politics of Islamization, it is better to look at how the Malaysian government's treatment to the case of al-Arqam, one of the non-government organization preaching the words of Islam to the Malaysian society. In their early days, especially in the 1980s, Darul Arqam enjoyed good relations with the government. However, it is becoming increasingly involved with mystical, spiritual activities and otherworldliness such as believing that the founder of Aurad Muhammadiyah (the *Sufi tariqah* teachings of al-Arqam), Shaykh Muhammad Abdullah was taught by Prophet Muhammad in a spiritual conversation, will return as Imam al-Mahdi and currently being kept by God in a spiritual world. In Islam, Imam Mahdi is the prophesied redeemer of Islam who will rule for seven, nine, or 19 years (according to differing interpretations) before Judgment Day and will rid the world of evil. Their belief in Shaykh Muhammad being kept alive after his death is also similar to the teachings of the Shiite, who also believe that the "occultation of al-Mahdi prior to his promised reappearance" (Ahmad Fauzi Abdul Hamid, 2006).

The increasing concern among government authorities with regards to Arqam's activities resulted in a ban by the National Council for Islamic Affairs against any contact between government agencies and Darul Arqam. Ashaari moved to Thailand together with their faithful followers, where he continued his activities. Their members grew to at least 10,000 members in the mid-1990s with branches and supporters in Indonesia, Thailand, and the southern Philippines. On 5th August 1994, the National Fatwa Council of Malaysia banned Darul Arqam altogether after its founder Ashaari Muhammad, claimed mystically to have met and spoken with the Prophet Muhammad and his companions, and Muhammad recognized the teachings of Darul Arqam. The charge against Darul Arqam is they contravened Islam and constituted a significant threat to state security (Riddell, 2005). Mahathir supported this decision and pointed out that similar actions had previously been taken against other groups involved in "deviant" teachings. His support against those who were accused to be deviant shows his ideology with regard to Islam and Islamization. In Mahathir's context, Islamization must have *Sunni* elements greater than any other element which are considered as deviant such as *Shiism* and *Sufism*.

Another of Mahathir's act of enforcing Islamic law in the country is by applying stricter Islamic rules on Malaysian Muslims who must conform to the norms that are defined and promoted by the Department of Religious Affairs, and thus in matters pertaining to Islam. The project is called ringfencing the Muslim subject where ringfencing is a result of a powerful Islamic legal bureaucracy controlled by the government (Maznah Mohamad, 2013). Individual rights to freedom of religion are subordinated to the dictates of the state. This distortion of legal interpretation emphasizes the vagueness of constitutional interpretation and the virtually unlimited power held by the state religious administration over Muslim citizens. Apostasy (*murtad*) laws as enforced in Malaysia go against fundamental liberties provided by the national constitution (articles 3, 8, 10, and 11). The fact that in most cases the civil courts refuse to opine on matters relating to Islamic belief and practice has directly expanded the power of Islamic courts, such that they can disregard the limitations of Islamic courts as stated in the constitution (Lemiere, 2014).

Even though Mahathir declared that Islam is the country's official religion and UMNO is an Islamic party but at the same time, Mahathir does not want to change the image of UMNO into an Islamic image. Mahathir still maintains the secular outlook of his party in the face of his Islamic standpoint. Thus, In Malaysia, the religious orientation of the country is neither totally Islamic nor totally secular but a 'hybrid' which includes both (Lemiere, 2014). Based on the explanation in the previous part, it is clear that Mahathir's turn to Islam is in response to PAS's campaign to Islamize the country using Islamic law if they succeeded to govern the country. Mahathir's counteraction against PAS is also done in the global scene where Malaysia took new priorities in foreign relations by becoming more focused on its membership of the Organization of the Islamic Conference rather than the Commonwealth (Abaza, 2003). Moreover, the Mahathir government established major new Islamic institutions such as the Islamic Banking and Finance Institute, the Institute of Islamic Understanding and the International Islamic University Malaysia (S.Y.Guan, 2005) just to show that his Islam is toward development as opposed to PAS.

The ideology of Mahathir with regards to his Islamization project is to help the Malays by using the Islamic religion and at the same time pursue his dream and vision to see Malaysia became a developed nation. However, Mahathir saw Islam and its culture in Malaysia became an obstacle to their advancement especially with regards to the interpretation of the Islamic doctrines (Wain, 2009). Among the problems that were recognized by Mahathir was the tradition of scholarly debates and disagreements in interpreting Islam, which according to him leads to confusion and unwise choices by Muslims (Wain, 2009). To change the situation Mahathir defined for Malaysian Muslims an interpretation of Islam that was meant not only to take care of their spiritual well-being but secure material benefits for them as well (Wain, 2009). Mahathir's ideology of Islam is linked to the government's NEP which tries to achieve national unity, socio-economic restructuring of the society and minimizes the level of poverty. Compared to a traditional interpretation of Islam, Mahathir's new perspective focused on modern Islam, which is much more open to foreign investment and technology and willing to learn from Western countries (Shanti Nair, 1997).

During the administration of Mahathir, the Islamic religion in Malaysia has changed from a religion exclusively for the Malays to a religion formed by the multi-ethnic society present in Malaysia (Osman Bakar, 2008a). Osman applauded Malaysian leaders such as former Deputy Prime Minister Anwar Ibrahim and Prime Minister Mahathir Mohammad in introducing more programs to attract non-Malays into understanding the Islamic religion. However, he argues that Malaysia's democratization process is 'still in the waiting' despite efforts to introduce a new form of political Islam within UMNO as the ruling party. Osman developed his argument by referring to Malaysian society and the leaders, in using Islam in everyday life. Malaysian society comprised of a majority of Sunni Muslims for centuries, making it impossible to start intra-religious conflicts. However, it has also resulted in Malay Muslims being unable to live together with their Muslim brothers from other schools of thought (*madhhabs*), particularly with *Shiites*. 'In fact, they do not tolerate any form of acknowledgment of a Shiite presence in the Malaysian public square' (Osman Bakar, 2008). Osman did not mention any cases pertaining to persecution or intolerance of the Shiite community in Malaysia, but I believe he was referring to the Naquib al-Attas and ISTAC case where, among the charges against Naquib when his contract was terminated, was promoting *Shiism* by appointing *Shiite* lecturers to teach in ISTAC. Another reason for the Malaysian government enmity toward *Shiism* is the fact that PAS was under the influence of the Iranian Islamic revolution, albeit in a Sunni context.

ISLAMIZATION IN MALAYSIA: A SOK PERSPECTIVE

This part analyzes the government's Islamization project using the three theories that explained previously. Firstly, it begins with the construction of reality based on Berger and Luckmann's (1967) theory where the explanation regarding Malaysia's background is taken into consideration for this part. In the next section, is the analysis of Islamization project using Mannheim's theory of ideology and utopia. However, since this paper focused on the role of political parties and the Malaysian government, it only discusses ideology. Finally, the project is analyzed using Foucault's theory of power/knowledge. This is essentially related since the question of power and its relation to knowledge is closely related.

As explained in the previous paper, Berger (1991) states that knowledge comes from the interaction of individual and social structures, such as a society. Therefore, the 'SoK' must analyze the process by which reality is socially constructed. He argues that theoretical knowledge is only a small portion of the conception of knowledge in a society and it is not important compared to "the sum total of what everybody knows' about a social world, an assemblage of maxims, morals, proverbial nuggets of wisdom, values and beliefs, myths, and so forth" (Berger, 1991:82-83). Accordingly, Berger seeks to redefine the scope of 'SoK' to what people know about 'reality' as opposed to simple ideas or ideology (Berger & Luckmann, 1991). Berger develops a

sociological theory of what he calls 'Society as Objective reality and as subjective reality'. Berger tries to explain the process of reality in the real world and inside the mind of a person based on everyday events while in 'objective reality' a society is responsible for shaping a person's knowledge through the process of socialization. The process of socialization happens in a social stock of knowledge which contains primary socialization, where 'general knowledge' is acquired, and secondary socialization, where 'specific knowledge' is acquired. His analysis of society as 'subjective reality' describes the process by which an individual's conception of reality is produced by his or her interaction with social structures. Berger & Luckmann also stressed the importance of language as a tool for socialization and religion as part of objective reality (Berger & Luckmann, 1991). The function of religion is to create some sort of curtain for a play where people are transported to another world with a different order than everyday life for a moment (Berger & Luckmann, 1991).

In the case of Malaysia, what happened in the past constructed the reality inside the minds of Malaysians. Firstly, if we look at the idea of a government, most Malaysian Muslims believe that Islam is mostly comprehensive in every aspect and it is important to have a government that used Islam as a basis of its political, economic and social administration of the country. This is clear in the aim and intention of non-government organizations and political parties such as PAS, ABIM and Darul Arqam where they prefer a total system based on Islam to be implemented. Their construction of reality is also based on the experience of living under the colonial rule since 1874. During the colonial period, the Malays maintained close liaison with the Middle East especially with regards to education.

Mannheim (1952) stated that ideology emerged from political conflict, where ruling groups become so intensively interest bound to a situation that they simply no longer able to see facts which would weaken their sense of domination. Mannheim argues that:

"there is implicit in the word ideology the insight that in certain situations the collective unconscious of certain groups obscures the real condition of society both to itself and to others and thereby stabilizes it" (Mannheim 1952:36).

In other words, ideology tries to stabilize or even out any real fact that threatens to destabilize the real condition thus making them unconscious or unaware of the real situation which they faced at the time. In the case of Malaysia, the group which is most significant to the discussion of ideology is the ruling party, the BN and its major component UMNO and its President at the time, Mahathir Mohamad. By trying to Islamize the country, Mahathir neglected the fact that the country is comprised of a multi-ethnic society where almost 40% of its population are non-Muslims (2010 Housing and Population Census of Malaysia). Mahathir never looks in detail the reaction of non-Muslim to Islam and their acceptance of the Islamization project as a whole.

Berger's idea of reality as it was perceived by Muslims led to the formation of two different entities in Malaysia, the Muslim traditionalists who wants to uphold Islamic law by aiming at the formation of an Islamic country, practicing Islamic law and Islamic constitution while the second group, the modernist, tries to create a multi-racial country based on modern secular law and constitution. The existence of the two groups also formed two different utopias according to Mannheim's theory where both aim at developing the country but had a different set of ideas on how to do it. As the group who hold the power in their hand, the BN/UMNO groups has the say in how to Islamize the country where they set their own rules on what defines Islamization if it was to be practiced in Malaysia. Among these are, it must have a *Sunni* element under the *Shafi'e* school of thought and not *Shiite* or other non-*Sunni* elements which are not accepted in Islam. Another important fact about the Malaysian Islamization project is the use of power by Mahathir to control knowledge. In the Malaysian case, the government control how knowledge is disseminated to the people using agencies like the JAKIM and educational institution like International Islamic University of Malaysia (IIUM) and ISTAC.

This led us to the discussion of power/knowledge as discussed by Michel Foucault. The theory of power/knowledge suggests that knowledge can be gained from power, where power produces knowledge and is forever connected to it. The power/knowledge theory also states that knowledge is always a form of power and "all knowledge, once applied in the real world, has effects, and in that sense at least, 'becomes true'". This is true in the case of Malaysia where the people always look at the government and its agents in determining what really the truth is. Government sources are always presenting themselves as the bearer of truth with regards to their information. This can clearly be seen in the formation of legal-bureaucratic government agencies such as JAKIM, JKM and the Prime Minister's department which tries to control information disseminated to the public and the type of Islamic religion the public needs to know and practiced.

CONCLUSION

I have explained the foundation of how reality is perceived by exploring the history of Malaysia from its early period of Islamization until its modern times. It is important to note that the basis of Malaysia's IoK project is based upon a *Sunni* Islam and a Shafi'e school of thought. The reason for the use of only *Sunni* Islam is related to how Malaysian perceived reality. Based on its history and development in Malaysia, the Malaysian Muslim public believe that only this type of Islam is acceptable and the real true Islamic teaching from Prophet Muhammad compared to other teachings.

Explanations were also given on the ideology on Islam based on BN, the ruling political party, and UMNO, the major political organization inside BN under the rule of its President, Mahathir Mohammad. The ideological aim of Mahathir's administration is to show that Islam can be used side by side with progress and development. Under Abdullah Ahmad Badawi, the slogan has been extended to 'Islam Hadhari' a civilizational Islam, a similar vision that was projected by Mahathir years before. The aim is still the same where both leaders wanted to gain support from the people to ensure the survival of UMNO and BN against its opponents, such as PAS. At the same time, we could see another wave of Islamism coming from the side of UMNO's opponent. Islamic political parties such as PAS and non-government organizations such as ABIM, JUST and al-Arqam also have their utopian vision of Islamizing the country using their own view of Islam. Thus, Mahathir invited leaders from ABIM such as Anwar Ibrahim to join him in the government to help strengthen his ideological vision of Islam.

Mahathir's Islamization project is also part of his bid to stay in power by controlling knowledge. Under Mahathir's rule, he tries to control the way knowledge is disseminated to the people by controlling Islamic institutions, strengthen Islamic law against the civil law of the country and formed Islamic based institution of higher learning promoting his way of Islam. This is very typical of a power/knowledge relation as explained by Michel Foucault.

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FOOT NOTES

1. The following is by no means an exhaustive list of works discussing the role of Alatas in uncovering colonial ideologies in Southeast Asia using Mannheim's SoK: Abaza (2002), Khondker (2006), Hoffstaedter (2009), Mohammad Kassim (2006), Siddiqi (2005), Turner (2002), Hirschman (1986), (1987), Siddique and Suryadinata (1981), Watson (1996) and Shah (2005).
2. Hall (2010) stated this in opposition to early West-prejudiced view that Indian seaman developed the Indian trade route by copying Persian ships who traded along the Indian coast.
3. See also J.C. Van Leur (1955), Indonesian Trade and Society, The Hague and Bandung, p. 169 where he regarded Islam and Hinduism were both like a 'thin, easily flaking glaze' in the body of the Indonesian civilization.
4. E-fatwa.gov.my accessed on December 8th, 2015.
5. These facts were also confirmed by the Chairman of the National Fatwa Committee, Emeritus Professor Dr Abdul Shukor Husin in an interview published in Sinar Harian newspaper on 1st March 2-15.

6. The original Kaum Muda and Kaum Tua represented a conflict over questions of reformist versus traditionalist religious ideology and over the qualifications of contemporary religious authorities, including that of the sultans. Much of Kaum Muda influence came directly from the Middle East, especially via Arab and Indian traders and intellectuals active in the urban areas of Malaya. See Nagata (1982: 56)
7. "Islamic state" means a system for implementing shari'ah within the framework of a modern sovereign nation-state. When PAS remarkably increased its seats in the Parliament in the 1999 general election and took the reins of government of Terengganu State, the Mahathir administration was regarded as losing support of Malay voters in the competition with PAS for Islamic legitimacy. In response, Prime Minister Mahathir asserted in 2001 that Malaysia was already an Islamic state, to display his opposition to PAS, which advocated establishment of an Islamic state. The competition with PAS for Islamic legitimacy heightened when PAS won the state administration of Kelantan (1990) and Terengganu (1999) in general elections during the Mahathir administration. In these states, PAS presented its own policy reflecting shari'ah in the penal code and taxation system, which added pressure to questioning the Islamic legitimacy of the federal central government.
8. A smaller score in the index corresponds to greater freedom of the press.
9. The "public sphere" is a concept used by Jürgen Habermas, the German sociologist, to analyze an open discussion arena created by educated citizens with the objective of forming agreement as a key to the creation of a civil society in West Europe after the 18th century (Shiozaki, 2007: pp. 102).
10. Usrah is a regular, small group study session and a gathering for friendly discussion, where people learn Qur'ān and Hadith and read texts in accordance with the philosophy of da'wah. In the case of ABIM, there are various kinds of meetings: usrah consisting of about five neighbors and held once a week, usrah held once a month at a regional level, and an annual national convention. Each meeting plays a more important role than can a mailing list or print organ in transmitting and sharing between different levels within the organization.
11. Two other themes are the leadership of Islamic clerics and the stance of PAS toward the plurality nature of the Malaysian nation.
12. A medical doctor by profession and one of the present leaders of PMIP at state and national levels, Mohamad Hatta Ramli himself probably joined PAS during the leadership of Yusof Rawa. Mohamad Hatta Ramli, Allahyarham Haji Yusof Rawa. In: *Memperingati Yusof Rawa, 2000*, pp. 13-17, Edited by Kamarudin Jaafar, Kuala Lumpur, IKAS.
13. Before the Mahathir administration, Malaysia is regarded as 'not an Islamic state' as the term is normally used, and neither the ruling Alliance Party nor the rulers of the states expressed strong support for its inception. Practical politics dictates that the multi-racial and religious alliance be bound by the necessity of maintaining its unity, while the rulers wish to retain the powers they now hold as "Head of the Muslim Religion," (except in Malacca and Penang). See also Von Der Mehden, Fred, 'Religion and Politics in Malaya' in *Asian Survey*, Vol 3, No. 12, 1963. pp. 609.
14. In the article Bakar looks back at Malaysia's political scene since Mahathir took office in 1981 and the effect of Islam on Malaysian politics and multi-ethnic society. The paper, written before the 2008 General Election, also looks at how far Malaysia's democratization process has been realized since Badawi assumed power in 2004 (Bakar, 2008a: 103).

REVIEW OF CURRENT LAND REGISTRATION SYSTEM AND ITS FUTURE DEVELOPMENTS

Akansha Shende, Neelam Thakur, Ankit Harjal, Latish Chambhare and Prof. Jolly Nikhade
 Department of Computer Science and Engineering, JD College of Engineering and Management, Nagpur,
 Maharashtra, India- 440013

ABSTRACT

The systems used in land registration in various countries relies on the centralized structures, connected, managed and operated by the sub-registrar offices or other governing parties, such systems are found to be robust but more vulnerable to carry out frauds, and consist of vital loop-holes which can be easily exploit by any malicious person to commit fraud and continuing doing it until the governing bodies finds legal evidence to stop it and exclude such property as a preventive measure. The review paper is a survey of land registration processes at sub-registrar offices in the state of Maharashtra in India, also discussing the solution of such corrupting activities with the help of reliable, transparent, distributed, tamper-proof medium for land registration.

Keywords: SARATHI, Property-fraud, Authentication, Interoperability, Aadhar, Blockchain.

1. INTRODUCTION

According to the report by SARATHI (Stamp and Registration Assistance Through Online Portal Information) the average number of properties registered per day is 9,000. And in the year of 2020, according an article published by Nisha Nambiar^[1] at The Times of India (TOI)^[2] reported that “Property registrations from Sept to Nov highest for these months in 4 years”^[3] which generated an overall revenue of 1642.3cr.



Figure 1: Monthly scenario of property registration and revenue generated in entire maharashtra by TOI

These numbers in terms of revenue generated and number of properties registered are enough to tell the robustness of the current system used for property registration. The whole system is divided in the levels of authority and their supervisory control as follows:

Sr. No	Office	Controlling and Supervisory Officer In that Office	Next Senior Controlling / Supervisory Officer
1.	Sub-Registrar	Concerned Sub-Registrar	Concerned Joint District Registrar
2.	Marriage Officer	Concerned Marriage Officer	Joint District Registrar of the Concerned district
3.	Joint District Registrar	Concerned Joint District Registrar	Concerned Deputy Inspector General of Registration
4.	Deputy Inspector General of Registration	Concerned Deputy Inspector General of Registration	Inspector General of Registration & Controller of Stamps
5.	Collector of Stamps	Collector of Stamps	Additional Controller of Stamps
6.	General Stamp Office	Additional Controller of Stamps	Inspector General of Registration & Controller of Stamps
7.	Government Photo Registry Office, Pune	Manager Government Photo Registry Office, Pune	Inspector General of Registration
8.	Deputy Director/ Assistant Director Town Planning (Valuation)	Deputy Director/Assistant Director Town Planning, (Valuation)	Joint Director Town Planning (Valuation), Pune
9.	Joint Director Town Planning (Valuation), Pune	Joint Director Town Planning (Valuation), Pune	Inspector General of Registration & Controller of Stamps
10.	Inspector General, of Registration	Inspector General of Registration	Secretary, Relief and Rehabilitation, Mantralaya, Mumbai

Figure 2: Supervisory and Controlling systems ^[4]

This paper focuses on the workings in sub-registrar offices, which uses *SARATHI Portal* which is a private network connected centrally through MPLS-VPN system ^[5], and provides the services to the people under e-governance:

Apart from the computerized registration process, the department has launched various e Governance initiatives like e-Search, e-Step in, PDE, e-Payment, e-Filing, e-Registration etc. These e-services have increased the speed, efficiency and transparency in provision of services by the department.

*-Revenue Minister, Eknath Khadse,
His foreword on SARATHI book*

The system is found to highly depend on proof of authority, which means that a legitimate authority needed to control the working and operations such as validating the documents for stamp registration, taking the proofs of buyer and seller. And the registrar office acts as an intermediary between the buyer and seller so that if anything goes wrong or any suspicion of fraud is found between the parties then it is taken care of by the authorities with a redressal mechanism under lawful practices.

But the flaws are not in the system that handles the property registration. They are in the process of buying the land. According to an article by Hookfish, “*Types of Property frauds & scams in Indian Real estate Investing*”, lists the fraud “*Selling the same piece of land to Multiple buyers*” under their top 10 scams of property frauds in India ^[6].

“These could happen if one is the owner of the property and another member has PoA power so both have sold the property by somehow to two different entities so again conflict occurred and you would face some kind of problems.”

-Types of Property frauds & scams in Indian Real estate Investing, Hookfish.in

If a scam like that happens then it is taken care by the laws (and other governing bodies such as *civil court*) that govern selling of the property, and the main element in the resolution of such case is the Agreement happens between the buyer and seller, A question asked by a person to resolve such double selling issue in the centralized system on lawrato.com ^[7]:

If same property is sold to two people who will be the real owner**Question:**

"I am from Nashik, Maharashtra. I have the below query. For e.g. A is a seller of NA Land (Non-Agriculture Land). He agrees to sell property to B at Rs.50 lacs. He takes token of Rs.25000 (25k) and do "Isaar pavati" (It is an agreement done after the buyer is interested in the property, it is a written document on stamp paper by mentioning that the buyer will pay few percentages of the agreed price of the land and do the agreement afterwards). In this document he agrees to sell said property at Rs.50 lacs provided B submit payment in 3 MONTHS. So here the time period is 3 Months. Now, A sells the same property to C and takes full payment from C and does registration to C. Now, what is the position of B and C?"

Answer by property lawyer:

"As per your query since the period of 3 months (Between A to B) have been collapsed the rightful owner of the property can sell the said property to the third party and in that case the third party will be the true buyer of the property. As per the agreement between the buyer and seller, either the token amount of Rs 25000 will be refunded to you or the rightful owner will forfeit the amount as you failed to make the payment within 3 months."

Selling the property to more than one buyer in digital terms knows as double spending, and one of the solutions to it, is isolate the transaction in such a way that whenever the seller try to sell the property which is already in transaction, then the new buyer can able to see that the property which he interest to buy is in transaction with someone or not. Additionally, if any contract terms get violated by the previous buyer or seller then also the new buyer must aware of it.^[8]

2.A The working of SARATHI Portal

SARATHI (*Stamp Registration Through Online Help Information*) is a proprietary system used by the Department of Lands and Revenue in Maharashtra. It is of centralised nature which uses MPLS-VPN network to store and retrieve the property documents which are operated by a human validator. The property information of any person is private in nature. If that person wants to acquire his copy of property documents from the sub registrar, then it would require some paperwork and time to know that a property belongs to that person.

2.1 How SARATHI registers land property

According to our survey done at one of the sub registrar offices in the district of Maharashtra. We came to know that the portal is highly dependent on the supervision of any officer who retrieves, manually analyses and upload the property data along with proofs to the server. The type of data stored in the database is Scanned Images of property documents like Stamp Paper which includes the amount of property, and terms of agreement between buyers and sellers. We came to know that all the necessary documents, stamp paper, No Encumbrances certificate, Chains of titles, Property Map are scanned in the scanner and then uploaded to the property database. Property Map, City Survey, NIT accreditation documents are in digital form while registering the property it is required to attach their photo copy stamped by city maintaining offices like districts Municipal Corporation.

2.2 Key finding regarding survey of registrar office

What is the significance of the Registrar office when dealing with fraud?

Registrar office relies on other department which is responsible for complaint for example if someone mortgage their property and then goes into default then the registrar office further waits for the bank to complaint, if the registrar office gets the complaint from the respective bank, only then it marks the property as default and take further action according to it.

Does the Registrar office store the "Legal-Copy" (Digitally on their server) or the original document is being kept by the user?

The Original paper is scanned and stored in the server, both the documents (*Original paper and scanned version of original paper*) are considered as legal-copy.

Does the Software used in the land registry, shows that a person sold land to multiple users?

No, it relies on FIR (First Information Report). When the FIR comes to the sub registrar office then they proceed further as per the complaint and such complaints require more time (*or years in some cases*) to resolve.

How can a person be able to do fraud at the time of taking advance payment of the property and still hidden by the registrar office?

Registrar office only stores the transaction done, and agreed by both parties. There is no involvement of the registrar office in the Pre-registration phase of the property. After taking an advance payment the seller did not make any agreement and didn't give any response to the buyer further.

Since most of the “Advance payment of land” is done in cash which makes the transaction **non-traceable**. That's why we need to make such transaction traceable by encouraging “**traceable- transaction* of money**”. *Transaction done through legitimate medium so that it can be traced by the buyer/seller or by any legal body. (Such as cheque payments, or online payments)

How does the current system resolve Loss of original Document?

In case of loss of original document, the owner of the property has to submit a written application to the sub registrar office, after the acceptance of application the owner will get a (legally) duplicate copy of the property documents.

What type of authentication system does the current portal use?

The current portal is storing the Aadhar number and its scanned copy. With the buyer/ seller Biometrics for only registration purposes, which means it doesn't have any mechanisms for identifying fake Aadhar cards. Hence fake details can be provided at the time of land registration.

2.3 Means of Authentication

While registering the property the officer takes the following, for authenticating the parties:

- Original and Photo-copy of Aadhar Card (National Authentication Card used in India)
- Biometrics
 - Biometrics of both hands and thumbs
- Live photo taken by the officer of sub-registrar office

2.4 Issues with Authentication

“Authentication” in this system only means convincing the officer that the information shown is correct, which can be manipulated by showing fake Aadhaar cards because the system only takes photos of Aadhaar cards to show that the party is what it claims to be. Hence, it does not authenticate whether the Aadhaar cards shown by the parties are fake or real.

As we came to know that the system only takes photos of the document, store it on the server that also includes biometrics of the parties. The biometrics should be taken for authenticating the biometric data of the person to check or to match with other previous system which already has its biometric data that is why we argue that taking biometrics of the parties and storing it on the server would be of no use as far as registration is concerned.

Photo can be taken live to check by the officer if the person is what it claims to be, but again it only stores the photo, we can make an imposture which claims that he belongs to one of the parties and it can easily register a document based on his fake identity.

2.5 Interoperability of the system

Due to the isolated environment of the portal, it severely lacks interoperability with other systems such as banks mortgage system and land criminal records to be able to deduce any fraudulent property while doing registration of it. We came to know in our survey that such system does not exist because:

- The bank mortgage data is also another private entity so if a person takes out a loan on his property, then the bank will carry out the task as per their terms by examining that property's document. The register office has no knowledge of loans taken on a property until they get any default loan notification from the banks.
- The criminal database is also a private entity handled by different departments. If any fraud happened regarding the property, it will not be considered as property fraud as property fraud will only be considered. If any property fraud happens then it goes to a structured legitimate process to know the root cause of the fraud after taking permission of legal bodies the property will get halted which means that further transaction of that property cannot be possible but again it requires a legal officer to go to the sub register office with all the proofs to convince the officer to halt the property. But it also means that if a property fraud happened to someone and he or she goes to the legal bodies late then in the period of time then the fraud property which has been sold already can be sold and registered and again legitimately by creating fake documents as discussed above and convince the officer who is operating the SARATHI portal.

3. FUTURE DEVELOPMENTS

3.1 Consent Based Aadhaar Authentication Mechanism

Over 93 crore Aadhaar numbers have been generated in the country so far and it is one of the easiest forms of proof of identity available to executants, it eliminates the inconvenience to the potential registrant of dipping his fingers in ink to provide ink-based fingerprints on hardcopy which are so far more difficult to verify. The use of this service in the future can enable the introduction of digitally signed documents which may be stored securely in digital lockers.^[9] However, this service can be beneficial to the Aadhaar holders only.^[10]

Authentication based on Aadhaar or any subsequent unique identification systems, with the attributes such as biometrics can be used to verify the users with the help of *Central Identities Data Repository (CIDR)* and the verified token can be stored instead of storing the biometrics of the buyer/seller. In order to apply the Aadhaar based authentication system, the registrar offices have to register themselves as Authentication User Agency (AUA): *An organization or an entity using Aadhaar authentication as part of its applications to provide services to Aadhaar holders. Examples include Government Departments, Banks, and other public or private organizations. All AUAs (Authentication User Agencies) must be registered within the Aadhaar authentication server to perform secure authentication.* The AUAs can able to make protocols to add other types of authentications such as combination of biometrics (such as fingerprints, iris impressions) and/or demographic information (such as Name, Date of birth, Address) and/or a secret PIN or OTP (One Time Pin).^[11]

3.2 Blockchain Based Land Registry System

The traditional land title records are maintained centrally due to which the assurance of property title and other necessary validation procedures results in delays in property acquisition. That is why incorporating a blockchain based land registry system results in transparent transaction, autonomous validation and efficient title search at low cost as compared to the traditional procedures.^[12]

Blockchain can be used as a storage for land registry and land title records in a decentralised manner.

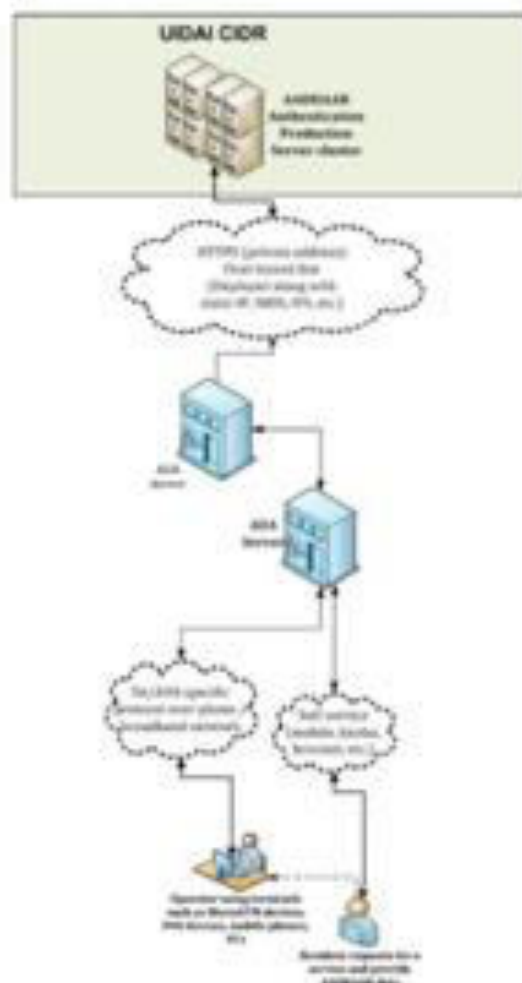


Figure 3.2: Flow of authentication based on Aadhaar,

Source: https://uidai.gov.in/images/FrontPageUpdates/aadhaar_authentication_api_2_0.pdf

In the implementation of such system depends on the level of control the interested government bodies want in their side as a validator of the transaction or choose which system can validate the transaction which can be achieved by permissioned/private blockchain or permissionless/public blockchain or some details can be shown to the public while the land is in process of transferring from seller to buyer and government nodes can be act as validator of the property records such as chain of title, current owner, mortgage details and others.

Currently in a blockchain based wallet, the ID of the owner is a hash value which helps to maintain anonymity of the user in the blockchain system. In terms of the property, the anonymity given by blockchain can result in purchase of the land by illegitimate or unethical means. This problem can be solved by relying on unique identification system such as Aadhar for authentication of the buyer/seller of the property.^[13] Blockchain integrated land registry can facilitate transactional operations and may even be a way to enforce the registration of rental agreements while connecting to the tax authorities, registries, courts and other administration.^[14] For land registration of tenants, tokens can be created based on smart contracts. Smart Contracts are the computer code which runs on a decentralised network when some logical conditions are met. A Token is a record of a particular transaction in a blockchain network. So, a transaction token integrated with smart contracts can be used for giving fractional ownership of the property while doing agreements with tenants.

4. CONCLUSION

Most information of Sarathi portal is available to the public, (so that they can do due diligence and title search on their own). But due to the closed nature of various system that somehow involved in property transaction is one of primary reason with the fact that the information while registering the property information can be manipulated and use to take loans, which can be prevented if we allow transparent registration of property using the discussed approach and authenticate the users based on their unique identity rather than storing biometrics in the property database. Mechanisms like Aadhaar based authentication and Blockchain based land registry system can be used to make the property acquisition process more transparent, secure and efficient by allowing third-party information validators and making the property transaction ecosystem more interoperable among various government authorities.

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A STUDY ON TEACHERS ABSENTEEISM AND ACADEMIC ACHIEVEMENT OF SECONDARY SCHOOL STUDENTS IN NAMSAI DISTRICT OF ARUNACHAL PRADESH**¹Priya Singh and ²Mejo Anson**¹Lecturer, Department of Education, Arunachal University of Studies²Student, Arunachal University of Studies**ABSTRACT**

This Paper aims to explore the causes of Teacher' absenteeism and its impact on students' achievement at Secondary level of schools of District Namsai, Arunachal Pradesh. No doubt, education plays a key role in the progress and prosperity of the country; however, the Teacher' absenteeism in schools has been a serious question. In order to find the causes of Teacher' absenteeism in schools, a sample was taken from the population of 50 Secondary School teachers (SST) and 10 headmasters of secondary school of the said District. In this research, questionnaire survey was used to collect data and were analysed through interview method. Findings of this study reveal that there are many factors which are causing Teacher' absenteeism in secondary school that includes personal factors, school-related factors, and environmental factors. In personal factors, married teachers, unsatisfied with their job, family conflict, higher qualification teachers, transportation problem, poor performance and drug addiction are the major causes of Teacher' absenteeism. Furthermore, lack of strong staff welfare in schools, Laissez-faire leadership style, poor supervision of teachers, extra duties on the teachers, poor salary, lack of in-service training programme, no check and balance on attendance are school factors which are causing Teacher' absenteeism. Thus, research findings indicate that high absenteeism ratio in schools affects the performance of the students at secondary school.

Keywords: Emergent, Absenteeism, Student, Significant

INTRODUCTION

Absenteeism is normally refers to staying away from school without providing genuine or any reason for not attending schools. It is defined in the study as any type of absence from classroom it is truant behavior that negative affect the performance of students. The term absenteeism is something used to refer to the problem of high level of absence among teacher it is extremely popular in the countries where the whole power is concentrated in the hands of a dictator and so on. In such totalitarian countries people are afraid of losing their life and they don't try to change the situation losing hope for progress and success. The process of absenteeism is a major problem forward achieving quality of education among the school children and teachers. A teacher is consider to be absent if the investigator could not find the teacher in the school during regular working hours. The current teacher absenteeism average between 8-10% as per the staffing industry report 1999. The additional research suggested that the economic disadvantages group students who desperately need continuity to get it the least. The current teacher absenteeism rate seriously disrupts the consistency of the class environment.

There is an absent of a responsive education system in India. School curriculum are inapt to meet divers learning needs of learner living in different contexts. Teacher are engaged in work such as election duty, preparation of voter list NRC duty, campaign against literacy and diseases , socio- economic survey . Teachers also remain absent from school due to their illness and for discharging their social responsibility etc. Further absence Rate are higher during rainy season extreme weather condition, towards the end of the calendar year festivals etc .moreover some personal reasons , illness , maternity leave, domestic work participation in marriage party , religious function .Increased the absent rate of teachers in secondary schools . Research tells us that when a teacher is absent from the classroom, student learning is disrupted. When that teacher is repeatedly absent, student performance can be significantly impacted in a negative way. The more days a teacher is out of the classroom, the lower their students tend to score on standardized tests. Recommendations to address this issue include better collection and monitoring of teacher absenteeism data, requiring teachers to make personal contact with the principal or other administrator when reporting absences, and implementing incentive programs to improve teachers' absenteeism. Academic performance of the teachers and the students may have short term or long term educational goals. Completion of educational benchmarks such as secondary school diplomas and bachelor degrees represent Academic achievement .academic achievement has become of an index of child future in the highly competitive world. It has been one of the most important goals of educational process. It has been one of the most important goals of educational process.it is also a major goals which every individual is expected to perform in all cultures. Academic achievement is a key mechanism through which adolescents learn about their talents, capabilities and competencies which are important part of developing career aspiration .crow and crow defined Academic achievement as the extent to which a learner profiting from infrastructure in a

given area of learning i.e. 'achievement is reflected by the extent to which skill or knowledge has been imparted to him'.

1.01 OPERATIONAL DEFINITION OF THE TERMS USED IN THE STUDY

The present study on "A study on teacher absenteeism and academic achievement of secondary school students in Namsai district of Arunachal Pradesh involve few terms this are explained as follow;

1.01.01 Teacher Absenteeism

Teacher absenteeism normally refers to teacher absence from the classroom. Teachers are not able to attend the duty and remain absence. Teacher absenteeism is one problematic issue for improving the quality of education and for creating a more positive learning environment in schools the term absenteeism is sometime used to refer to the problem of high levels of absence among teachers. Teachers are engaged in nonprofessional work such as election duty preparation of voter list, socio- economy survey, campaign against literacy and diseases etc. In present study data were collected for teachers a absenteeism in the Namsai block in the academic year 2021-2022

1.01.02 Academic Achievement

In general sense academic achievement is the current level of a students learning. It means knowledge attained and skill developed in the school subjects usually designated by marks assigned by teachers by both. Achievement can be measure with the help test-verbal or written of different kinds. The total marks of students obtained in the annual examinations conducted by the school and secondary board of education train the institution are considered as academic achievements. In the present study records were collected for academic achievement of the students in the Namsai district in the academic year of 2020-2021

1.01.03 Secondary School Students

The students of class 6 to 7 including boys and girls studying in government school, secondary school is the schooling period after the elementary level which follows the syllabus under the board of CBSE. In the present study data were collected from 6 to 7 students in the Namsai district in the academic year 2020-2021

1.02 SIGNIFICANCE OF THE STUDY

It is generally seen that teacher are not able to attend school for a number of reasons it is very much important to the study of teacher absenteeism and academic achievement of secondary school teacher are deployed for professional duties such as participation in election to local bodies, state legislature and parliament, disaster relief duties, polio drop campaigns, preparing the vote list, and literacy campaign etc. This reduces their teaching hour in schools. It is necessary to study reason for teacher absenteeism in the school and to find out some solution how to reduce problem of absenteeism. Therefore attempt had made for teacher absenteeism and academic achievement in Govt. secondary School.

1.03 STATEMENT OF PROBLEM

A study on teachers' absenteeism and academic achievement of Secondary School students in Namsai District of Arunachal Pradesh.

1.04 OBJECTIVE OF THE STUDY

The present study is aimed to achieve the following objectives;

- To find out the absenteeism of teacher of secondary school of Namsai district
- To study the academic achievement of students of secondary school of Namsai District
- To compare the teacher absenteeism of secondary school of Namsai district with respect to gender (male and female)
- To study the relationship between absenteeism of teachers and academic achievement of students of Namsai district

1.05 DELIMITATION OF THE STUDY

To study is limited to:

- 1) The present study is confined to Namsai district only
- 2) The present study is confined only Namsai and Chowkham secondary school of Namsai district
- 3) The present study is delimited only ten secondary school of Namsai block and Chowkham block.

2. REVIEW OF RELATED LITERATURE**2.01 Study Conducted In Abroad**

- Ameer, M Hassan M.(1989) in their study “impact of teacher absenteeism on student achievement A case of south Punjab district Muzaffargarh, Pakistan “ tried to examined the explore the factor behind the absenteeism , their of the student performance.
- Totakhali ,T (1996) In his study “ students absenteeism in afghan school reveals that despite higher absenteeism it is good indication that parents and teachers have taken up some strategies to reduce students absenteeism .Finding of the study showed there are various financial , environmental, cultural, and family related factors that hinders students attendance.
- Miller T. and Richard J. (1998) in their study “The impact of teacher absence on students’ achievement” showed the impact of teacher absence on the mathematics achievements of urban elementary school students.
- Kenzie, P. and Nugroho, D. (1999)in their study “study on teacher absenteeism in Indonesia” tried to examine the different causes of teacher absenteeism in various schools of Indonesia”.

2.02 STUDY CONDUCTED IN INDIA

- Ehrenberg, Rees and Ehrenberg ,N .(1991) in his study on school district leave policies , teacher absenteeism and student achievement reveals the term “Absenteeism” is sometimes used to refers to the problem of high level of absence among teachers.
- Unicomb, M. (1992) in the study on teacher absenteeism; A study of short term teacher were out more days in their thirties than at any other time in their teaching career .Absenteeism in nine nova schools which shows that teachers are absent significantly less than workers in other professions found out that gender and life stage plays an important role in determining the profile of teachers are absent significantly less than workers in other professions found out that gender and life stages play an important role in determining the profiles of teachers who are absent from instructional environment. It was discovered that female teachers tends to be absent more as they increased with age.
- Miller, k (2012) conducted a study on teacher absence as a leading indicator of student achievement tried to examine that teachers are the most important school- based determinate of student academic success .Its no surprise researchers find that teacher absence lowers students achievement.
- Jennifer and Aribol N.(2017) in his study Absenteeism 101; exploring the underlying causes of absenteeism tried to examine the underlying causes of absenteeism. Using the quantitative- case study design this research entails to gather information of the underlying causes of absenteeism tried to examine using the quantative - case study design this research entails to gather information of the underlying causes of absenteeism among the senior high school teacher of Daniel Aguinaldo national high school in Devao city.
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- Pitoff, E. (1993) in his study on teacher absenteeism what administration can do found out that teacher who received low performances making tend to miss a larger number of days than who received low performances marking tends to miss large number of days who did not Teachers with low marks do not feel a connection to the workplace and believe that they are ineffective in the classroom
- Jacobon,S. (1990) in his study on attendance incentives and teacher absenteeism .Planning and changing found that teachers who were nearing retirement were absent on a more frequent basis”

3. METHODOLOGY AND PROCEDURE OF THE STUDY

3.01 Method Used

The present study was primarily descriptive in nature. The information for the study was collected through open-ended interview interaction and consultation with the head of the school, subject teachers and some selected students in the schools. Beside the quantitative information was collected through a structured questionnaire administered to teachers and interview scheduled for Headmaster.

3.02 Population of the Study

The population for the present study consisted of all teachers and students in the Govt. Secondary schools of Namsai district. In this study total population covered 90 of secondary schools in Namsai district of Arunachal Pradesh.

3.03 Sample of the Study

Two educational blocks were randomly selected. The sample consisted of 10 Govt. middle school of Namsai urban blocks and Chowkham educational block of Namsai district of Arunachal Pradesh for achieving this purpose the investigator visited 5 Govt. secondary school in each block. From each school 5 teachers were selected and have given a questionnaire for data collection purpose. The Headmaster of each school were given an interview scheduled regarding the teacher absenteeism in their institution. From both Block following schools were selected for sample in the study.

Table 3.1 Number of Schools for Sample of the Study

NAMSAI URBAN	CHONGKHAM BLOCK
Gov. Hr. Sec School, Tinali road	Govt. Hr. Sec. School, Chokham
Govt. Sec. School, Namsai road	Govt. Sec School, Alubari
Govt.Hr. Sec. School, Lathaw	Govt. Middle School, kheram
Govt Middle School, Telbari	Govt. Middle School, Momong
Govt. Sec School, Jaipur road	Govt. Middle School, Alubari

3.04 Tools of the Study

The following tools were constructed by the investigator for collecting necessary information in relation to the study:

- a) Interview scheduled for headmaster
- b) Questionnaire for teachers
- c) Schedule for recording of teachers attendance
- d) Data for recording of academic achievement

3.05 Data Collection

For the study the primary data were collected by visiting sample secondary schools in both schools of Namsai districts of Arunachal Pradesh while visiting schools for data collection, data collection instrument which was designed to elicit information on the rate trends and of absenteeism of teachers and the Headmaster were also collected by the administering interview scheduled and questionnaire prepared for them. The secondary data were collected from school attendance register by checking teacher absenteeism. And other secondary data were obtained regarding the academic achievement of students of class 6 to 7.

4. ANALYSIS AND INTERPRETATION OF DATA

4.01 Analysis and Interpretation of Data

Data analysis is a process used to inspect, clean, transform and remodel data with a view to react to a certain conclusion and providing the hypothesis data analysis and interpretation are very important part of whole research procedure. The complete success of the research work in reliant on the methodical analysis and appropriate interpretation of data and so result and discussion is the most crucial part of research. As per the design of the present study of the data were collected by part of research. As per design of the present study the data were collected by visiting the sample secondary schools in both educational block of Namsai district of Arunachal Pradesh. The quantitative information were collected through a structured interview scheduled for Headmaster and questionnaire for teachers.

4.02 Data Analysis and Interpretation

Presents data regarding teacher absenteeism rate from schools. As mention above, the present study was conducted in the Namsai district of Arunachal Pradesh. Name of the district, blocks, and the number of school covered in the district are mention in the table 4.1.

Table 4.1: Number of Schools, Headmaster and Teachers

Sl. No	Name of the state	District	Block	No. of schools covered	No. of headmaster covered	No. of teachers covered
1	Arunachal Pradesh	Namsai	Namsai	5	5	25
			Chowkham	5	5	25
			Total	10	10	50

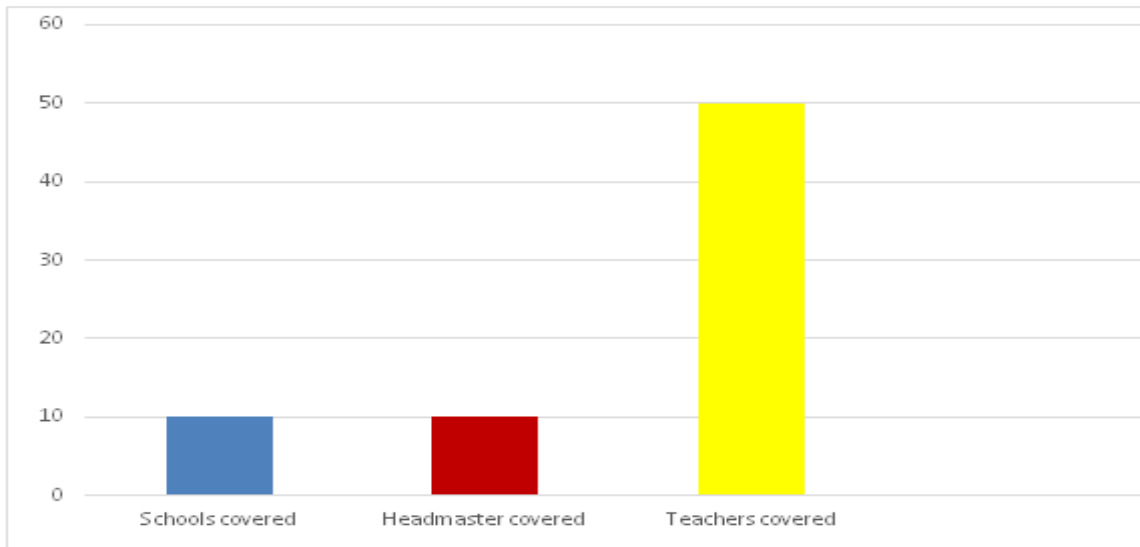


Figure. 4.1 Number of schools, Headmaster, and teachers covered.

For achieving this purpose the investigator visited 5 schools in each blocks. From each schools 5 teachers were selected and have given each block. From each school 5 teachers were selected and have given a questionnaire for data collection purpose. The headmaster of each school was given an interview scheduled regarding the teacher absenteeism in their institution. Objective wise analysis has been done. The objective 1 is to find out absenteeism of teacher of middle school of Namsai district.

4.2: Different type of absent in the two block of the Namsai District in the last academic year 2021-22.

Figure 4.2 Different Type of Absent In the Two Blocks

Sl. No.	Name of the block	No. of Teachers per school	No. of Medical leave	No. of Maternity leave	No. of Earned leave	No. of casual leave	No. of others leave	Total no. of leave
1	Namsai	5	15	13	15	20	10	73
2		5	16	12	14	18	12	72
3		5	11	14	13	17	14	69
4		5	16	12	14	15	11	68
5		5	15	11	13	20	12	71
6	Chokham	5	17	10	12	21	10	70
7		5	11	14	13	20	9	74
8		5	15	15	16	22	8	72
9		5	19	19	13	25	11	83
10		5	12	12	15	20	14	77

The figure 4.2 showed the different type of absent in the two blocks separately. Its reveals that different types of leave in the five teachers from a school in Namsai urban block reach 73 days. Similarly the leave of other teachers in each schools of the Namsai block is reaches 72, 79, 68 and 71 days respectively in an academic year.

On the other hand different type of leave in the five teachers from a school of the Chowkham block reaches 70 days. Similarly, the leave of other teachers in schools of the Chowkham block 74, 72, 83, and 77 days respectively in an academic year. Besides the data collected from both educational block reveals that teacher absenteeism rate of Chowkham block was slightly higher than the Namsai district.

Table 4.3 The Month That Teachers Take Leave

District	Block	No. of teacher	January to April	May to August	September to December	No fixed period
Namsai	Namsai Urban	25	4	7	6	8
		%	16%	28%	24%	32%
	Chowkham block	25	5	6	5	9
		%	20%	24%	20%	36%

From the above table 4.3 the researcher is found that the teachers from each block remain absent different times. This table reveals that in Namsai block, 16% teacher were in leave from the month of January to April 28% teachers remained were remained in leave from May to august 24% teachers were remain in leave from September to December. There was no fixed periods for 32% teacher who were in leave. Similarly the chowkham block 20% were in leave from the month of January to April,24% teacher in leave from the month of September to December . There is no fixed period for 36% teacher who were in leave. There are above table also reveals that from each block teachers were in leave where there was no fixed period.

Table 4:4 Total Numbers of Responses of Teachers on the Effect of Absenteeism

District	Block	Effect of absence	Total No. of Teachers responses	Percentage of teachers responses
Namsai	Namsai urban	1. Incomplete of the syllabus	6	24%
		2. students failure to concentrate in the classroom	8	32%
		3.Decreasing the achievement of students	7	28%
		4.others	4	16%
	Chowkham	1. Incomplete of the syllabus	8	32%
		2. students failure to concentrate in the classroom	7	28%
		3 Decreasing the achievement of students	4	16%
		4. others	6	24%

Table 4.4 showed the effect of teacher absenteeism in an academic year. It reveals that effect of teacher absenteeism is different from each other. In Namsai block 24% teachers were in their opinion that it hamper in the completion of syllabus. Similarly, regarding the effect of absenteeism 32% teachers in their opinion that absenteeism directly impact on student’s failure to concentrate in classroom. 28% teachers opinion that decreasing the achievement of students is the effect of teacher absenteeism. Similarly in chowkham block 32% teacher were in their opinion that it hamper in the completion of syllabus. Similarly regarding the effect of absenteeism 28% teacher were in their opinion that absenteeism directly impact students’ failure to concentrate in the classroom. 16% teacher were in their opinion that deceasing the achievement of students is the effect of teacher absenteeism.24% teachers responses were differently. Beside this table also reveals that in Namsai urban block most of the teacher in opinion that due to teacher absenteeism is badly effect in student’s failure to concentrate in classroom. Similarly in chokham block most of the teacher in their opinion that incompletion of syllabus was the main effect of teacher absenteeism.

Table 4.5 Responses towards condition of teacher absenteeism in secondary school of Namsai district and Chowkham block

District	Block	Conditions of teachers absenteeism	Total No. of Teachers responses	Percentage of teachers responses
Namsai	Namsai urban	1. High	5	20%
		2.Very high	4	16%
		3. Average	10	40%
		4. others	6	24%

	Chowkham	1. High	4	16%
		2. Very high	3	12%
		3. Average	11	44%
		4. others	7	28%

Table 4.5 showed that the condition of teachers absenteeism in each school of two blocks. The data collected from namsai district educational block reveals that 20% teachers were there in opinion that the condition of teacher’s absenteeism is high in the last academic year, 16% teacher in their opinion that the condition of teacher’s absenteeism is very high, 40% teachers in their opinion that the condition of the teacher absenteeism is average, 24% teachers make their opinion differently in other. Similarly the data collected from Chowkham block reveal that 16% were in their opinion that the condition of teachers of absenteeism is high in the last academic year, 12% teachers in their opinion that the condition of teacher is very high, 44% teachers in their opinion that the condition of the teachers absenteeism is average, 28% teachers opinion differently than others.

Objective wise analysis has been done. The objective 2 is to study the academic achievement of students of secondary school of Namsai district.

Table 4.6: Academic achievement in two educational blocks in the Namsai District in the Academic year 2020-2021

District	Block	School Name	Total no. of students appeared	Total no. of students passed	1st Division	2nd Division	3rd Division	Student failed	Passed %
Namsai	Namsai Urban Block	A	70	44	5	17	22	26	62.85%
		B	60	43	6	20	17	17	71.66%
		C	65	40	6	14	20	25	61.53%
		D	69	42	6	17	19	27	60.86%
		E	53	39	7	12	20	14	73.58%
	Chowkham Block	V	72	54	8	28	18	18	75%
		W	62	45	6	20	19	17	72.58%
		X	77	59	9	21	29	18	76.62%
		Y	60	43	5	18	20	17	71.66%
		Z	56	36	4	14	18	20	64.28%

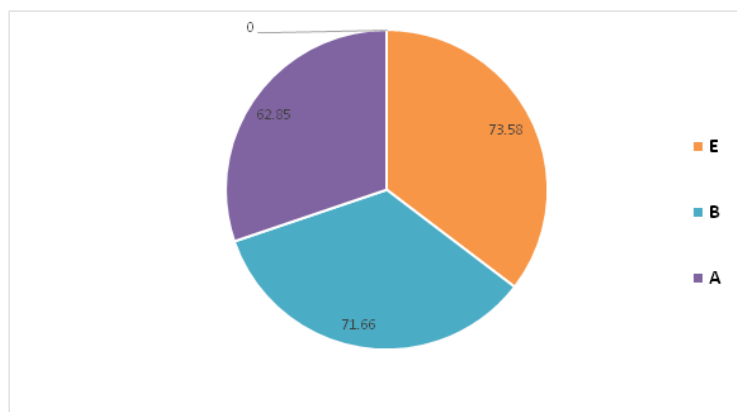


Figure 4.3 Namsai urban block Top three schools

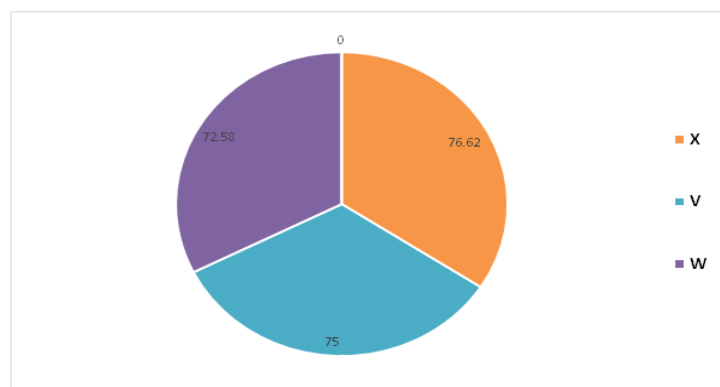


Figure 4.4 Chowkham block's Top three schools

Table 4.6 showed the academic achievement of the students in both educational block separately academic year 2019-20. The data collected from each school Namsai urban educational block reveals that the academic achievement of the students. In the school 'A' there was total 70 students appeared in the final examination where 44 students passed. Out of 44 passed students 5 secured 1st division, 17 secured 2nd division and 22 students passed in 3rd division. 26 failed in this examination. The passed percentages of the school 'A' was 62.85%. In the school B there was total 60 students appeared in the final examination. Where out of 43 students passed. Out of 43 passed students, 6 secured 1st division, 20 secured 2nd division and 17 students passed in 3rd division. 17 students failed in this examination. The passed percentage of school B there was total 71.66. In the school C there was total 65 students appeared in the final examination where 40 students passed. Out of 40 passed students, 6 secured 1st division, 14 secured second division and 20 students passed in 3rd division. 25 students failed in this examination. The passed percentage of the school 'C' was 61.53. In the school D there was total 69 students appeared in the final examination where 42 students passed. Out of 42 passed students 6 secured 1st division, 17 secured 2nd division, and the 19 students passed 3rd division 27 failed in the examination. The passed percentage of the school 'D' was 60.86. In the school E there was total 53 students appeared in the final examination where 39 passed. Out of 39 passed students 7 secured 1st division, 12 secured 2nd division and 20 students passed in 3rd division. 14 students failed in the examination. The passed percentage of the school 'E' was there was total 53 students appeared in final examination where 39 passed. Out of 39 passed students 7 secured 1st division, 12 secured 2nd division, and 20 students passed 3rd division. 14 students failed in the examination. The passed percentage of the school E' was 73.58.

Similarly, the data collected from each school Chowkham educational block reveals that the academic achievement of the students. In the school V there was total 72 students appeared in the final examination where 54 students passed. Out 54 students, 8 secured 1st division, 28 secured 2nd division and 18 students passed 3rd division. 18 students failed in the examination. The passed percentage of the school V was 75. In the school W there was total 62 students appeared in the final examination where 45 passed 6 secured 1st division, 20 secured 2nd division and 19 students passed 3rd division. 17 students failed in the examination. The passed percentage of the school W was 72.58. In the school X there was total 77 students appeared in the final examination where 59 students passed. Out of 59 passed students 9 secured 1st division 21 secured 2nd division and 29 students passed 3rd division. 17 students failed in this examination. The passed percentage y was 71.66 in the school z there was total 56 students appeared in the final examination where 36 passed students 4 secured 1st division 14 secured 2nd division and 18 secured passed 3rd division. 20 students failed in this examination. The passed percentage of the school z was 64.28. From the above table it also reveals that the passed percentage of students Chowkham block was higher than the Namsai urban block in the academic 2020-2021.

Besides figure 4.3 showed top three schools in the Namsai urban educational block in the academic year of 2020- 2021 with 73.58% school E hold the first position in the mention academic year. Similarly school B and school c hold second and third position with percentage 71.66% and 62.85% respectively in the academic year 2020 – 2021

Similarly figure 4.4 showed the top three school in the Chowkham block in the academic year 2020-2021. With 76.62% school W hold second and third position with the percentage of 75% and 72.58% respectively in the academic year of 2020-2021

Objective wise analysis has been done. The objective 3 is to compare the teacher absenteeism of middle school of Namsai district with respect to gender (male and female).

District	Namsai																			
Block	Namsai									Chowkham										
Name of the school	A		B		C		D		E		V		W		X		Y		Z	
No. of Male and Female Teachers	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
	31	42	28	44	26	43	41	27	39	32	24	46	44	30	29	43	38	45	36	41
Total no. of Teachers absenteeism	73		72		69		68		71		70		74		72		83		77	

Table 4.7 showed the comparative analysis between Male and Female teachers' absenteeism in an academic year. It reveals that the absenteeism of male and female teachers in each school separately. Five teachers were selected from each school. The data collected from Namsai Urban Educational block, in the school A reveals

that out of total 73 days in an academic year male teachers were in leave for 31 days while 42 were for female teacher absenteeism for the academic year 2020-202. Same way in the school B out of total 72 days of leave in an academic yerar, male teachers were in leave for 28 days while as 44 days for female teachers. In the school C out of total 69 days of leave in an academic year, male teachers in were in leave for 26 days while as 43 days for female teacher. In the school D out of total 68 days of leave in an academic year male teachers were in leave for 41 days while as 27 days for female teacher. In the the school E out of total 71 days of leave in an academic year male teachers were in leave for 39 days while as 32 days for female teacher.

Similarly the data collected from Chowkham educational block V reveals that out of total 70 days in academic year male teachers were in leave for 24 days while as 46 days were for female teachers absenteeism for the academic year of 2020-2021. Same way in the school W out of 74 days in an academic year, male teachers were in leave for 44 days while as 30 days for the female teachers. In the school acts out of total 72 days of leave in an academic year male teachers were in leave for 29 days while as 43 days for female teachers. In the school Y out of total 83 days of leave in an academic year male teachers were in leave for 38 days while as 45 days for female teacher. In the school Z out of total 77 days of leave in an academic year male teachers were in leave for 36 days while as 41 days for female teacher. From the above study is also reveals the rate of female teacher absenteeism in the both educational block comparatively higher than the absenteeism rate of male teacher.

Objective wise analysis has been done. The objective 4 is to study the relationship between absenteeism of teacher and academic achievement of students of Namsai District.

Table 4.8: Comparative analysis of teacher absenteeism and academic achievement of students in an academic year 2020-2021

District	Namsai									
Blocks	Namsai					Chowkham				
Name of the school	A	B	C	D	E	V	W	X	Y	Z
Total no.of Absence teacher	73	72	69	68	71	70	74	72	83	77
Students' academic achievement	62.85%	71.66%	61.53%	60.86%	73.58%	75%	72.58%	76.64%	71.66%	64.28%

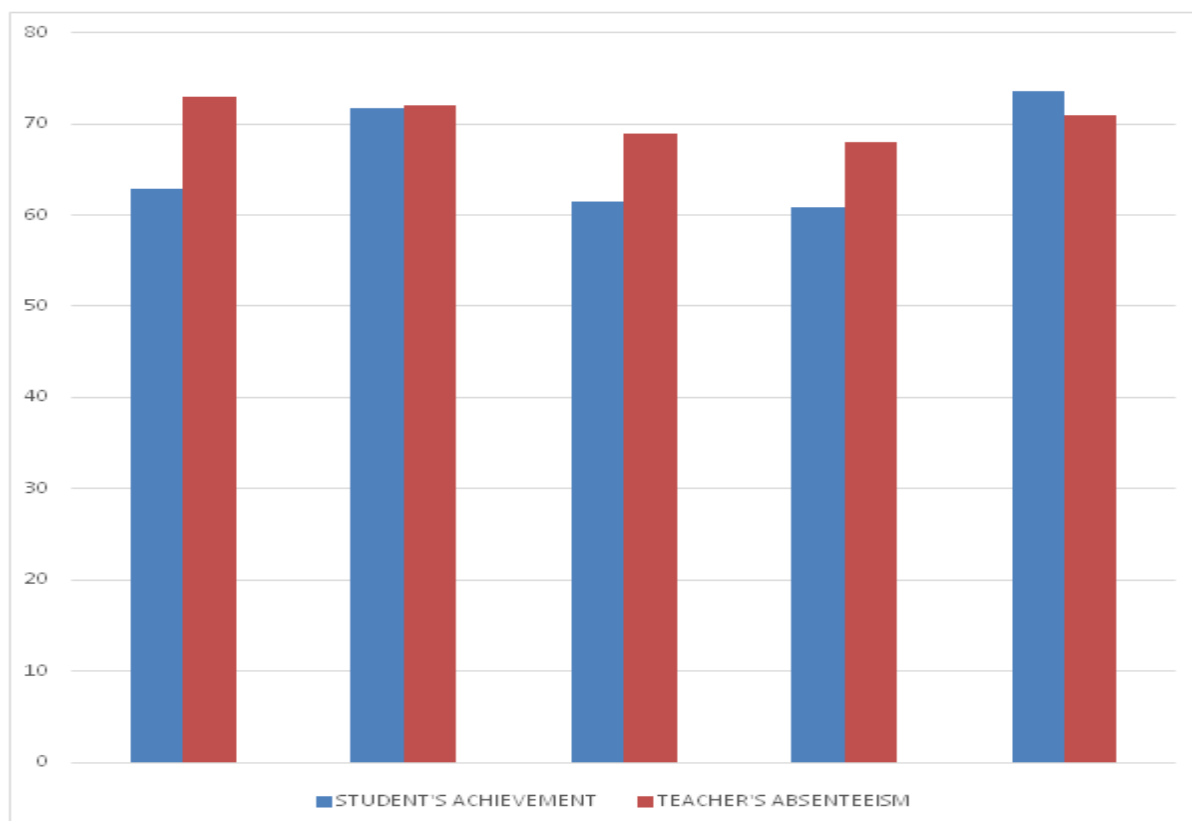


Figure 4.5: Students' achievement and teachers absenteeism of Namsai urban block

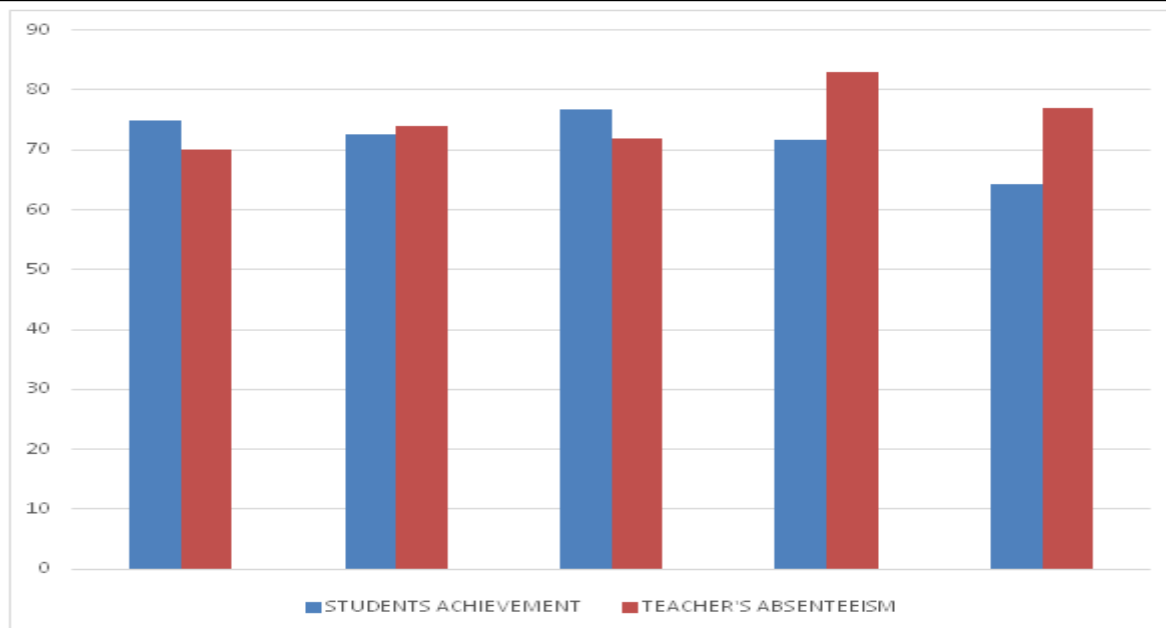


Figure4:6 Students achievement and teachers absenteeism of Chowkham block

Table 4.08 showed the comparative analysis of teacher absenteeism and academic achievement of students in the academic year 2020-2021. It reveals the academic achievement of the schools in both educational blocks separately and showed the teacher's absenteeism in both educational block in academic year 2020-2021. The data collected from Namsai block, each of the school presented data separately regarding teacher absenteeism and academic achievement. In the school it reveals that 62.85% students were passed in the academic year where 5 teachers were in leave for 73 days due to different reason. It also clearly reveals that teacher absenteeism adversely effected in academic achievement, where 37.15 students were failed in the examination. In the school B it reveals that 71.66% students were passed in academic year whereas 5 teachers were in leave for 72 days due to different reasons. In the school C it reveals 61.53% students were passed in academic year whereas 5 teachers were in leave for 69 days due to different reason. It reveals that 60.86% students were passed in the academic year. Whereas 5 teachers were in leave for 68 days due to different reasons. In this academic year whereas 5 teachers were in leave for 71 days due to different reasons.

The data collected forms chowkham block .each of the school presented data separately regarding teacher absenteeism and academic achievement. In school V it reveals that 75 % students were passed in this academic year whereas 5 teachers in leave for 70 days due to different reason. In the school W it reveals that 72.58% students were passed in the academic year whereas 5 teachers were in leave for 74days due to different reasons. In the school x it reveals that 76.64% students were passed in this academic year whereas 5 teachers were in leave due to different reason. In the school Z it reveals that 62.28% students were passed in this academic year whereas 5 teachers were in leave for 77 days due to different reason.

The data collected from each school from both educational blocks reveals that more or less teacher absenteeism effected in the academic Achievement of students. The failed percentage in some schools increasing due to irregular attendance of teacher.

5. FINDING OF THE STUDY

5.01 Introduction

To study the status of teacher absenteeism and academic achievement of secondary schools students in Namsai district of Arunachal Pradesh, data were collected from schools through questionnaire for teacher as well as interview scheduled for Headmaster. Similarly, secondary data were obtaining from other documents such as teacher attendance registers, record, of academic achievement etc.

5.02 Main Finding

1. The analysis of data collected through questioner, interview schedule and other relevant documents such as teacher's attendance registers showed that the different type of absence of teachers in two educational blocks. The data collected from different sources showed that in Namsai urban educational block different type of leave of five teachers in the school 'A' was 73 days. Similarly the leave of others teachers in each school of the Namsai urban block is reaches 72, 69, 68, & 71 respectively in the academic year. On the other hand, different type of leave of five teachers in each school of the Chowkham block the school of the Chowkham block is reach

74, 72, 83, & 77 respectively in an academic year. It reveals the teacher's absenteeism rate was different from one school to another in each block

2. The data collected from both educational blocks reveals that the teacher's absenteeism rate of Chowkham block was slightly higher than the Namsai urban block.

3. The data collected from educational block reveals the teachers absenteeism month separately. In Namsai urban educational block 16% teachers were in leave from of January to April, 28% teachers were remained in leave from May to August, 24% teachers remained in leave from September to December. There was no fixed period for 32% Teachers who were in leave. Similarly in the Chowkham block 20% were in leave from month of January to April, 24% were in leave from the month of September to December. There were no fixed period for 36% teachers who were in leave.

4. The data collected from both educational blocks showed the effect of teachers' absenteeism in an academic year; it reveals that the effect of teacher's absenteeism is different from each other. In Namsai urban block 24% teachers were in their opinion that it hampers in the completion of syllabus. Similarly, regarding the effect the effect of absenteeism 32% teacher in their opinion that absenteeism directly impact on students failure to concentrate in classroom. 28% Teachers were in their opinion that decreasing the achievement of students is the effect of teacher absenteeism. 16% teacher's responses were different from other teachers and they stayed the effect of absenteeism differently. Similarly, in Chowkham block 32% teachers were in their opinion their opinion that it hamper in completion of the syllabus. Similarly, regarding the effect of teacher's absenteeism 28% teachers were in their opinion that absenteeism directly impact on student's failure to concentrate in classroom. 16% teachers in their opinion say that decreasing the achievement of students in the effect of teachers' absenteeism. 24% teachers' responses were different from other teachers and they stated the effect of absenteeism differently. Besides, this table also reveals that in Namsai urban block most of the teachers in their opinion that due to teachers absenteeism it effect badly effect in student's failure to concentrate in classroom. Similarly in the Chowkham block most of the teachers in their opinion that incompleteness of the syllabus was the main effect of teachers absenteeism. It also reveals that the effect teacher's absenteeism hampers in the academic achievement of students.

5. The data collected from both educational block showed the conditions of teacher's absenteeism in each school of the two blocks. The data collected from Namsai urban educational block reveals that 20% teachers were in their opinion that the condition of teachers absenteeism is high in the last academic year, 16% teachers in their opinion that the condition of teacher absenteeism is very high, 40% teachers in their opinion that the condition of the teachers absenteeism is average, 24% teachers make in their opinion differently than the others. Similarly the data collected from Chowkham block reveals that the 16% teachers were in their opinion that the condition of teachers absenteeism is high in the last academic years, 12% teachers in their opinion that the condition of teachers absenteeism is very high, 44% teachers in their opinion that the condition of teachers absenteeism is average, 28% teachers make their opinion differently than others

6. The data collected from both educational block shoed academic achievement of the students in both educational blocks separately in the academic year 2020-2021 its reveals that the percentage of Namsai urban educational block in the academic was 65.61%. On the other hand the passed percentage of Chowkham educational block was 72.47% in the academic years it also reveals that the passed percentage of Chowkham block was better than the Namsai urban block.

7. The data collected from educational block showed the comparative analysis between male and female teacher absenteeism in an academic year 2020-2021.its reveals that the absenteeism of male and female teachers in each block. In the Namsai urban block the rate of male absenteeism was 46.74% while female absenteeism rate was 53.26% on the other hand, in the Chowkham block the rate of male absenteeism was 45.47% while female absenteeism rate was 54.53% .It also reveals that the rate of female teacher absenteeism in both educational block was higher than the rate of male teachers absenteeism.

8. The data collected from both educational blocks showed comparative analysis of teachers absenteeism and academic achievement of students in an academic Years 2020-2021 it reveals that the academic achievement of the schools in Namsai urban block 66.10% . On other hand, 72.03% in the academic achievement of the school in Chowkham block was 72.03% in the academic year -2020-2021 .besides it reveals that the due to different reason the absenteeism rate in Namsai urban block was 70.06% and in Chowkham block 75.02%. The data collected from Namsai urban educational block reveals that in spite of teacher's absenteeism rate 70.06% the academic achievement of students 66.10%. Similarly in the Chowkham block reveals that in spite of teacher's absenteeism rate 75.02% the academic achievement of the students was 73.03%

6. SUGGESTIONS AND CONCLUSION**6.01: SUGGESTION**

- 1) School authority establishes and attendance information data system know details of teachers attendance take some to teachers attendance take some decision to teachers problem solve in positive way.
- 2) The foremost suggestion would be installation of bio metrics attendance machine the traditional way of attendance sometimes allow some teachers to take opportunity of the situation as nobody knows when a teachers gives their attendance or not. In such situation bio metric machine is helpful.
- 3) School management committee can be developed to deals with the problems
- 4) As a result of the study showed that some teachers were unable to attend regularly in school because they are temporary in nature and their irregular salary. Therefore the government should make their post regular. So that they can get salary in time.
- 5) One of the key observations can be done most of the school now days researcher doesn't find office bearers separately. In many schools the only one or more teachers are appointed for four or more classes. In such a situation teachers are not able to focus on their prescribed job because it is generally seen that everyday teachers are called upon for some trainings or meetings or less teachers are not able to teach in all the classes. In such a situation government should appoint teachers to the vacant post and let teachers freely to teach students and not let them to do any work other than teaching Thus, as improved academic achievement can be seen in our students and teachers will also not remains absents from the schools
- 6) As a result showed that lack of control by head of the institution overs schools sometimes be responsible for teacher absenteeism so workshop can be organised for head of the school for development of their leadership quality.
- 7) Providing them an ideal working environment where they can collaborate with other teachers and improved upon their services
- 8) Qualified people from locality can be engaged in place of absent teacher so that absenteeism can be supplemented qualified people.
- 9) Reliever teacher should be sent to those absent classes as an alternative and he should try to manage the classroom and students of the absentee teacher
- 10) When a teacher absent the class the Headmaster ask the students to use library, engage them sports , music, dance etc
- 11) When the teacher will be absent in the school , he should provide some classwork to students in advance, so that students will be busy in doing that classwork
- 12) Good leadership and effective management inside the school is essential to control and reduce teacher absenteeism .Head teachers should explain attendance expectation to teachers at the beginning of the school years.
- 13) School should provide the facility of substitute teachers to overcome the problem of teacher absenteeism
- 14) Perform regular supervision in schools to monitor teacher attendance which will help reduce teacher absenteeism
- 15) Conduct workshops explaining to teacher effect their absenteeism rates on students performance
- 16) School should recognised and provide reward to those teacher who were good presence or those who not use more leave
- 17) Empower students, parents, and community members to report teacher's absence. Parents and local communities should be more involved to the extent that they would potentially provide an alternative source of monitoring
- 18) The school authority should provide their faculties with frequent and effective feedback , especially when they have done something well
- 19) .A sound and healthy working environment is utmost important to work in an environment. The managing authority should keep in mind the interest of the teachers while creating a school environment to promote job satisfaction.

20) There should be proper arrangement of time to time meeting in the school, so that the teachers can express their problem being faced by them and also immediate action should be taken to solve them.

6.02: CONCLUSION

By and large it's clear that teacher's absenteeism disturb the dynamic teaching- learning environment and its affect the overall well – being of the school. Teacher presence is very important for improving the quality of education and create a positive learning environment in school. No technology can replace teacher. Teachers are the pillars who can shape the society. They should be provided with more opportunity so that they are urge to do their work effectively. Thus teacher should be benefited so that they don't remained absent from school. And help in students' academic achievement . This will not only help in students developments but also help in developing a good teacher relationship .No doubt that teacher absenteeism have an adverse effect on the career achievement of the students but we can handle this problem depending upon the situation . All what we need to do mainly is to make the teacher aware about their role in moulding the shape of the career of a students, their duties and responsibility towards students as well as the society.

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LOSS LEARNING RECOVERY AFTER THE COVID-19 PANDEMIC OF STUDENTS IN SMALL - SIZED PRIMARY SCHOOLS, THAILAND

Sakarin Jantaramanee, Waranya Yodpradit, Wanwisa Pantong and Sakol Choochuay

Ban Pru Bour School, Nakhon Si Thammarat Primary Educational Service Area Office 3, 80180, Thailand

ABSTRACT

The COVID-19 pandemic affected educational systems. The traditional teaching style in Thailand has been changed to online but it affects children in poor families. All of these result in the loss learning of students. Halting the growth of academic, emotional, and social. This study focuses on Socio-demographic characteristics of students in small - sized primary schools that affects loss learning recovery. The respondents of this study were students in small - sized primary schools in Nakhon Si Thammarat Province. Questionnaires were distributed to 102 students selected systematically. The results from the independent- samples t-test, one-way analysis of variance (ANOVA) that marital status of parent and lower income's family are associated with loss learning. When we used a focus group interview to find quick solutions for loss learning recovery from the educational agencies, teachers and parents. The results showed that curriculum should be adjusted to an intensive program. Using active learning activities. Analyze individual learners. Measure and evaluate results based on actual practice. Integration of knowledge and learning process from activities. Reduce content duplication shorten study time. As a result, Education agencies should survey the readiness of student households and design methods of loss learning recovery for students with different deprivation conditions.

Keywords: Loss learning recovery, COVID-19

INTRODUCTION

The COVID-19 virus's spread It is a difficult situation that affects people all over the world¹. The urgent measures taken by governments in many countries to prevent the spread of the virus are semi-lockdown and social distancing. At the same time, it challenges the ability of all sectors to cope. Especially in education, the outbreak of the COVID-19 virus has greatly affected the education system. Schools need to be closed to reduce the potential for the spread of the virus. Because when students are together in school, it can be a good source of the virus outbreak. According to UNESCO in 2021, there are at least 1.6 billion students in the world or more than 90 percent of all learners who have been affected by the pandemic and had to stop teaching in schools. Many schools have moved from classroom teaching to distance teaching² (UNESCO,2021). For example, online teaching through Massive Open Online Courseware (MOOC) or applications that help teachers teach in a virtual classroom or use the broadcasting of teaching through television signals so that students can continue to study at home while school is closed. The World Bank expressed its concern that the situation of stopping teaching and learning in schools would result in the loss of learning opportunities for most students, especially students from poor families because there is not enough income to support their children's education³ (World Bank, 2021). And it could cause this group of students to drop out of the education system. This will cause negative effects on student's lives in the long run.

Thailand during the covid-19 pandemic, the Ministry of Education has established a form of distance learning. It consists of learning via television (On-air), electronic media (On-demand), broadcast (Online), delivery of documents at student's home (On-hand) and mixed forms⁵. However, some form of learning has affected some groups of student, especially student from poor families⁴ who are disadvantaged because they do not have digital devices at home. In addition to learning at the primary schools. Students need parental support⁶. If parents are not ready to help their children in their studies it may affect the student's learning loss⁷. Causing development in various fields, both academic, emotional and social to be stopped. It is urgently necessary to explore the factors affecting loss learning recovery of student and finding ways to recovery student learning through the cooperation of educational agencies, teachers and parents.

OBJECTIVE OF THE STUDY

1. To compare Socio-demographic characteristics of the students in small - sized primary schools with 4 aspects.
2. To find ways of loss learning recovery through the educational agencies, teachers and parents.

RESEARCH METHODOLOGY

A cross-sectional study were used. Students in small - sized primary schools aged between 7 to 12 years participated in the study. Students, Educational agencies, teachers and parents were selected systematically. The area of study is Nakhon Si Thammarat Primary Educational Service Area Office 3. Data were collected using

the questionnaire survey. The questionnaire of students contained two sections, A and B. Section A was designed to collect data on the socio-demographic variables of student such as sex, caregiver, marital status of parents, father's job, mother's job, father's educational level, mother's educational level and family income. Section B contained 4 aspects such as Lack of online learning tools, Lack of parental support, Unavailability of students' own learning and Unavailability of teaching style. that were designed to measure problem of loss learning. All aspects were organized on five-point Likert scale. For the focus group of the educational agencies, teachers and parents by asking open-ended questions about way to recovery loss learning.

DATA ANALYSIS AND RESULTS

Data analysis conducted using R programming language. Scale reliability was performed to ensure data consistency in 4 aspects such as Lack of online learning tools, Lack of parental support, Unavailability of students' own learning and Unavailability of teaching style. using Cronbach's alpha coefficient with total reliability of 0.74, indicating good consistency. Internal consistency showed significance <0.001 in the correlation between these components and all aspects. The frequencies of socio-demographic characteristics were presented in number and percentage. All aspects answers, along with descriptive statistics, were presented in mean \pm standard deviation. Socio-demographic characteristics of the students and All aspects scores were compared using independent- samples t-test, one-way analysis of variance (ANOVA).

Table 1: Socio-demographic characteristics of the students (n = 102)

Variable	Number	Percentage (%)
Sex		
Male	42	41.18
Female	60	58.82
Caregiver		
Parents	28	27.45
Not Parents	74	72.55
Marital status of parents		
Married	35	34.31
Divorced	69	67.65
Father's job		
Government officer	8	7.84
Merchant	16	15.69
Farmer	75	73.53
Other	3	2.94
Mother's job		
Government officer	5	4.90
Merchant	20	19.61
Farmer	60	58.82
Other	17	16.67
Father's educational level		
Less than a Bachelor's degree	74	72.55
Bachelor's degree or higher	28	27.45
Mother's educational level		
Less than a Bachelor's degree	65	63.73
Bachelor's degree or higher	37	36.27
Family income		
Low income (below 5000 bath)	81	79.41
Moderate income (between 5000-10000)	15	14.71
High income (over 10000 bath)	6	5.88

Table 1 showed that the 102 students who answered the questionnaire, the majority of students were female 58.82%, 72.55% Parents was not caregiver, 67.65% of students whose parents are divorced. 73.53% of father was a farmer and 58.82% of mother was a farmer. About 72.55% whose father's educational level had less than a bachelor's degree and 63.73% for mother. According to family income 79.41% had low income (below 5000 bath).

Table 2: Results of t-test /one-way ANOVA of Socio-demographic characteristics on Lack of online learning tools.

Variable	Mean ± SD	t/F	P-Value
Sex		1.05	0.27
Male	4.52 ± 0.18		
Female	4.78 ± 0.21		
Caregiver		2.58	0.32
Parents	4.12 ± 0.15		
Not Parents	4.57 ± 0.74		
Marital status of parents		2.99	0.02*
Married	4.01 ± 1.23		
Divorced	4.63 ± 0.57		
Father’s job		1.32	0.67
Government officer	3.72 ± 0.41		
Merchant	3.81 ± 0.20		
Farmer	4.31 ± 1.54		
Other	4.20 ± 1.18		
Mother’s job		2.14	0.13
Government officer	3.58 ± 0.74		
Merchant	3.74 ± 0.89		
Farmer	4.28 ± 1.21		
Other	4.01 ± 0.27		
Father’s educational level		1.12	0.45
Less than a Bachelor’s degree	4.51 ± 0.11		
Bachelor’s degree or higher	4.12 ± 0.75		
Mother’s educational level		1.03	0.26
Less than a Bachelor’s degree	4.64 ± 0.39		
Bachelor’s degree or higher	4.48 ± 1.05		
Family income		2.31	0.01*
Low income (below 5000 bath)	4.87 ± 0.27		
Moderate income (between 5000-10000)	4.42 ± 0.85		
High income (over 10000 bath)	3.87 ± 1.31		

* P-Value < 0.05

Table 2 showed that results of t-test /one-way ANOVA of Socio-demographic characteristics on Lack of online learning tools, a significant association across socio-demographic characteristics such as marital status of parents and family income (p <0.005).

The results indicated that females had a higher mean score of lack of online learning tools (4.78±0.21) than males (4.52±0.18). Students whose parents was not caregiver had a higher mean score (4.57±0.74) than parents were caregiver (4.12±0.15). Students whose father and mother were farmers having the highest score of lack of online learning tools compared with other job (4.31±1.54, 4.28±1.21). Students whose father and mother have educational level less than a bachelor’s degree had a higher mean score (4.51±0.11, 4.64±0.39) than bachelor’s degree or higher (4.12±0.75, 4.48±1.05). However, there were no significant differences in lack of online learning tools. Students whose parents was divorced had a higher mean score (4.63±0.57) than married (4.01±2.61). Students living in low-income families had the highest mean score (4.87±0.27) compared with other family income groups, but both of marital status of parents and family income had any significant differences in lack of online learning tools.

Table 3: Results of t-test /one-way ANOVA of Socio-demographic characteristics on Lack of parental support.

Variable	Mean	t/F	P-Value
Sex		1.14	0.27
Male	4.67 ± 1.13		
Female	4.21 ± 0.27		
Caregiver		1.58	0.21
Parents	4.28 ± 0.22		
Not Parents	4.85 ± 0.54		

Marital status of parents		2.81	0.04*
Married	4.18 ± 0.48		
Divorced	4.71 ± 1.20		
Father's job		1.35	0.71
Government officer	3.75 ± 0.85		
Merchant	3.80 ± 0.32		
Farmer	4.08 ± 1.21		
Other	4.01 ± 0.14		
Mother's job		2.24	0.13
Government officer	3.59 ± 0.45		
Merchant	4.21 ± 0.74		
Farmer	3.85 ± 1.52		
Other	3.74 ± 0.27		
Father's educational level		1.19	0.37
Less than a Bachelor's degree	4.58 ± 0.63		
Bachelor's degree or higher	4.22 ± 0.24		
Mother's educational level		2.03	0.24
Less than a Bachelor's degree	4.64 ± 1.01		
Bachelor's degree or higher	4.31 ± 0.56		
Family income		1.84	<0.01*
Low income (below 5000 bath)	4.82 ± 0.11		
Moderate income (between 5000-10000)	4.32 ± 0.84		
High income (over 10000 bath)	3.58 ± 0.16		

* P-Value < 0.05

Table 3 showed that results of t-test /one-way ANOVA of socio-demographic characteristics on lack of parental support, a significant association across socio-demographic characteristics such as marital status of parents and family income (p <0.005) same as the first aspect.

The results indicated that males had a higher mean score of lack of parental support (4.67±1.13) than females (4.21±0.27). Students whose parents was not caregiver had a higher mean score (4.85±0.54) than parents were caregiver (4.28±0.22). Students whose father was farmers had the highest score of lack of parental support compared with other job (4.08±1.21) but students whose mother was merchant had the highest score of parental support compared with other job (4.21±0.74). Students whose father and mother have educational level less than a bachelor's degree had a higher mean score (4.58±0.63, 4.64±1.01) than bachelor's degree or higher (4.22±0.24, 4.31±0.56). However, there were no significant differences in lack of parental support. Students whose parents was divorced had a higher mean score (4.71±1.20) than married (4.18±0.48). Students living in low-income families had the highest mean score (4.82±0.11) compared with other family income groups, but both of marital status of parents and family income had any significant differences in lack of parental support.

Table 4: Results of t-test /one-way ANOVA of Socio-demographic characteristics on Unavailability of students' own learning.

Variable	Mean	t/F	P-Value
Sex		2.84	0.17
Male	4.47 ± 0.52		
Female	4.54 ± 0.27		
Caregiver		2.01	0.25
Parents	4.57 ± 1.08		
Not Parents	4.63 ± 0.41		
Marital status of parents		2.42	0.01*
Married	4.12 ± 0.28		
Divorced	4.72 ± 0.21		
Father's job		1.32	0.54
Government officer	3.42 ± 1.27		
Merchant	3.51 ± 0.97		
Farmer	4.42 ± 0.68		
Other	4.00 ± 0.22		

Mother's job		2.10	0.26
Government officer	3.68 ± 0.56		
Merchant	4.14 ± 0.67		
Farmer	3.28 ± 1.86		
Other	4.00 ± 0.87		
Father's educational level		1.18	0.74
Less than a Bachelor's degree	4.51 ± 0.84		
Bachelor's degree or higher	4.25 ± 0.11		
Mother's educational level		1.84	0.36
Less than a Bachelor's degree	4.53 ± 0.76		
Bachelor's degree or higher	4.47 ± 0.42		
Family income		2.03	<0.01*
Low income (below 5000 bath)	4.57 ± 1.01		
Moderate income (between 5000-10000)	4.38 ± 0.29		
High income (over 10000 bath)	4.00 ± 0.54		

* P-Value < 0.05

Table 4 showed that results of t-test /one-way ANOVA of socio-demographic characteristics on unavailability of students' own learning, a significant association across socio-demographic characteristics such as marital status of parents and family income (p <0.005) same as the first and second aspects.

The results indicated that females had a higher mean score of unavailability of students' own learning (4.54±0.27) than males (4.47±0.52). Students whose parents was not caregiver had a higher mean score (4.63±0.41) than parents were caregiver (4.57±1.08). Students whose father was farmers had the highest score of unavailability of students' own learning compared with other job (4.42±0.68) but students whose mother was merchant had the highest score of unavailability of students' own learning compared with other job (4.14±0.67). Students whose father and mother have educational level less than a bachelor's degree had a higher mean score (4.51±0.84, 4.53±0.76) than bachelor's degree or higher (4.25±0.11, 4.47±0.42). However, there were no significant differences in unavailability of students' own learning. Students whose parents was divorced had a higher mean score (4.72±0.21) than married (4.12±0.28). Students living in low-income families had the highest mean score (4.57±1.01) compared with other family income groups, but both of marital status of parents and family income had any significant differences in unavailability of students' own learning.

Table 5: Results of t-test /one-way ANOVA of Socio-demographic characteristics on Unavailability of teaching style.

Variable	Mean	t/F	P-Value
Sex		1.05	0.15
Male	4.12 ± 1.21		
Female	4.08 ± 0.57		
Caregiver		2.58	0.37
Parents	4.25 ± 0.78		
Not Parents	4.41 ± 0.29		
Marital status of parents		2.99	<0.01*
Married	4.07 ± 0.85		
Divorced	4.16 ± 0.63		
Father's job		1.32	0.61
Government officer	3.27 ± 0.73		
Merchant	4.12 ± 0.28		
Farmer	4.01 ± 1.21		
Other	3.98 ± 0.99		
Mother's job		2.14	0.13
Government officer	3.34 ± 0.35		
Merchant	3.78 ± 1.27		
Farmer	4.21 ± 0.81		
Other	4.01 ± 1.31		
Father's educational level		1.12	0.45
Less than a Bachelor's degree	4.63 ± 0.86		

Bachelor's degree or higher	4.22 ± 0.21		
Mother's educational level		1.03	0.44
Less than a Bachelor's degree	4.61 ± 0.40		
Bachelor's degree or higher	4.18 ± 1.52		
Family income		2.31	0.01*
Low income (below 5000 bath)	4.74 ± 0.73		
Moderate income (between 5000-10000)	3.98 ± 0.89		
High income (over 10000 bath)	3.57 ± 1.01		

* P-Value < 0.05

Table 5 showed that results of t-test /one-way ANOVA of socio-demographic characteristics on unavailability of teaching style, a significant association across socio-demographic characteristics such as marital status of parents and family income ($p < 0.005$) same as the first, second and third aspects.

The results indicated that males had a higher mean score of unavailability of teaching style (4.12 ± 1.21) than females (4.08 ± 0.57). Students whose parents was not caregiver had a higher mean score (4.41 ± 0.29) than parents were caregiver (4.25 ± 0.78). Students whose father was merchant had the highest score of unavailability of teaching style compared with other job (4.12 ± 0.28) but students whose mother was farmer had the highest score of unavailability of teaching style compared with other job (4.21 ± 0.81). Students whose father and mother have educational level less than a bachelor's degree had a higher mean score (4.63 ± 0.86 , 4.61 ± 0.40) than bachelor's degree or higher (4.22 ± 0.21 , 4.18 ± 1.52). However, there were no significant differences in unavailability of teaching style. Students whose parents was divorced had a higher mean score (4.16 ± 0.63) than married (4.07 ± 0.85). Students living in low-income families had the highest mean score (4.74 ± 0.73) compared with other family income groups, but both of marital status of parents and family income had any significant differences in unavailability of teaching style.

Results from focus group interviews from the educational agencies, teachers and parents to find ways to recovery loss learning. It can be concluded that

1. THE ROLE OF THE EDUCATIONAL AGENCIES

1.1 Adjustments to teaching and learning: Improving the intensive school curriculum. Emphasis on essential learning content. Flexible appropriate to the situation and students.

1.2 Remedial Teaching: Create a curriculum with an emphasis on "repairing teaching" to achieve quality. The main goal is to enhance literacy. Using a variety of methods.

1.3 Mobile classroom: Develop a mobile classroom that allows students to learn from anywhere.

1.4 Environment suitable: Provide an environment suitable for learning both physical and mental health. Students feel at ease in learning and have good feelings leading to effective learning.

1.5 Interagency collaboration: Cooperation with relevant agencies such as sub-district health promoting hospitals in public health personnel or psychologists to educate and support the student mental health care system student social and emotional

1.6 Provide tools to be equal: provide tools for online learning for all students to be equal. Cover groups with special needs such as underprivileged children. children living in poor families.

2. THE ROLE OF TEACHERS

2.1 Classroom Assessment: Adjust the forms and methods of measurement and evaluation to be diverse according to the aptitude and potential of the students. Emphasis on measurements based on the facts. Emphasis on performance measurement and evaluation to develop students rather than judging academic performance. Reduce unnecessary testing.

2.2 Knowledge Management: Link the knowledge of the content in the lesson with the daily experiences of the students by learning from things close to students in real life as much as possible.

2.3 Individual student management: Use teaching techniques that focus on active learning. Encourage students to adapt and create motivation to learn. However, if there is still the covid-19 pandemic, activities should be designed to suit the safety of students.

2.4 Reduce stress and anxiety of student: Promote physical and mental health improvement activities for students to reduce stress and anxiety. Including inserting the learning of disaster prevention skills for students along with academic learning. To protect and create safety for the physical and mental health of students.

2.5 Teacher Development: Develop teachers to have skills knowledge and expertise in using digital technology as a professional. Use digital media as a learning tool. Ability to effectively transfer or expand knowledge to students through digital media.

3. THE ROLE OF PARENTS

3.1 Support and follow up: Support and follow up on children's learning regularly. Include using online learning tools and give advice when children has problems

3.2 Interagency collaboration: Collaborate with educational agencies and teachers. to coordinate information if your child has learning problems.

3.3 Home -based parental involvement: Make fun learning activities that you can do together at home. to reduce student stress and anxiety.

3.4 Encourage a positive attitude in learning and life: Develop a positive attitude in children's learning and self-improvement. Develop a growth mindset. Including instilling desirable values and virtues.

CONCLUSION

The COVID-19 pandemic has caused big problems in the education. Especially with students in small - sized primary schools, Students are missing out on opportunities to learn academically. The problems faced by students such as lack of online learning tools, lack of parental support, unavailability of students' own learning and unavailability of teaching. All aspects are associated with marital status of parent and lower income's family. The educational agencies, teachers and parents should be serious cooperation such as Emphasis on measurements based on the facts. Create a curriculum with an emphasis on "repairing teaching". Cooperation with relevant agencies to educate and support the student mental health care system, social and emotional. Provide tools for online learning for all students cover groups with special needs such as underprivileged children or children living in poor families. Use teaching techniques that focus on active learning. Support and follow up and give advice when students has problems both from study and life to reduce stress and anxiety and able to recover from loss learning as quickly as possible.

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DECONSTRUCTING GENDER IN INDIA'S STRUGGLE FOR INDEPENDENCE: READING MRS. HANSA MEHTA FOR INDIA'S FEMINIST FOREIGN POLICY

Mansi Malhotra

Ph.D. Scholar, Guru Ghasidas Vishwavidyalaya, Koni, Bilaspur, C.G- 495009

ABSTRACT

India and its struggle for Independence is a long drawn movement that turned into a revolution. A revolution that did not just bring independence but has set the fate of Indian society at large. Now, India has turned 75 and impression of freedom fighters, their ideology, vision and sacrifices are still visibly vibrant in national and international actions of India as a nation. In this paper we will understand the work of a Indian freedom fighter Mrs. Hansa Mehta who has transformed opportunities into challenge. Her idea of equality is beyond borders. This paper will evaluate her work as woman in the pre-independence era and to understand India on gender. Like foreign policies need a feminist lens and we need Mehta's vision for incorporating an Indian lens. This will help us to produce if it is viable for India to pursue feminist foreign policy in contemporary international scenario.

Keywords: Mrs. Hansa Mehta, Gender, Feminist Foreign Policy, India, Deconstruction.

MRS. HANSA MEHTA: LITERATURE REVIEW AND INTRODUCTION

Women have been subjugated and need upliftment has been felt by scholars like Raja Ram Mohan Roy to Gandhi. Gender bias has been a prevailing phenomenon, least questioned and less accepted. Mrs. Hansa Mehta became the pivot of India's representation of values distinctive in its approach. Indian woman remained carrier of patriarchy and has continued to accept it as an institution of relevance. Mrs. Hansa Mehta became the prime example of woman of action with words of high stature. Breaking ceiling and deconstructing the idea of women in India and women of India nationally and internationally.

History has not been kind with women. There persists discrimination having deep roots. Only a few women have yet been able to challenge and question existing gender inequalities. Hansa Mehta, an Indian feminist and a reformist, has deconstructed the concept of gender nationally and internationally. India, and the World is indebted to her for the vision that believes in restructuring historical wrongs and making struggle for Indian independence gender equal in at least providing equal opportunities. This Paper has tried to identify research gap in the understanding of gender induced foreign policy through the lens of Mrs. Hansa Mehta and her contribution. We will understand Mehta in her actions within the territorial bounds of India and abroad to pursue her Idea of Gender and Gender In foreign policy. This paper has identified that Women in international relations finds less mention of her. Women in Satyagraha by Aparna Basu, 2018 has identified Mehta's contribution along with Women Pioneers: In Indian Renaissance by Nayar and Mankekar has proven the struggle equivalent to enlightenment and Read out Hansa Mehta as a stand-out pioneer. Further Constituent Assembly debates has been read to develop upon her personality and her decision making on Gender nationally and its impacts at large. To develop further, Oxford library constituting of Mehta's original audio records to qualify the fact that Mehta is not merely a stand-tall figure on Women nationally but worldwide. Her Vision is a guiding light when world is in debates on Feminist Foreign Policy.

GENDER: A THEORETICAL DISCOURSE

The term deconstruction is defined as a method of opening up and deducing the already known meanings in order to bring unexplored meanings and its derivatives. Era of 20th century has brought new challenges that requires thinking beyond modern. Deconstruction derives its reference from post-modernist school of thought. Where J. Derrida gave an additional perspective to the understanding and interpretation of text determining principles like: Meaning is the result of an infinite series of differences; meaning is never fully present in a sign; and meaning is perpetually deferred. Derrida, in the essay *Différance*, has derived a new terminology 'différance', which is composed of two words difference and deferral. Post modernists have made this as the base of their understanding which derives to conclude that there exists plurality in understanding and all understandings are subjective. This has been revolutionary in its approach because it dismantles everything that has been understood till date as arbitrary and uncertain and put it out in open for furthermore interpretations.

For feminists deconstruction has brought more openness and helps them broaden beyond definite understanding of feminism too. Deconstruction has turned constructive for post colonialism, cultural studies, interdisciplinary studies and paved way for critical theory. Post-colonial countries have diversity where policies and actions need to accommodate that diversity for brining social harmony and peaceful co-existence. Where this phenomenon was widely applauded but still restrictive in its persuasion for actions. Where in the study of marginalized,

deconstruction is not the prevalent approach but mainstream dominant class continued to dominate this sphere of interpretation as their whims and fancies allow them to suit their interest. In which women have remained and marginalized of all, which are less understood subjectively but has continued to have remained objective in its interpretation and understanding.

Gender is a social construct. This is seen widely prevalent world around. This paper will use the theory of deconstruction to evaluate the concept of gender as a construct bound by society's patriarchal structure. Gender is a heavy and deep rooted discourse.

This narrative is used to deconstruct and deinstitutionalize the established notion of gender. The universal notion of woman and her attributes are put to question from bringing sameness and equality to deconstructing and deinstitutionalizing gender. This is beyond the traditional understanding of bringing equality and moving towards post modernism.

MRS. HANSA MEHTA: BREAKING CEILINGS

Feminists, around the globe, have been successful in theorizing the distinction between sex and gender. Where gender is social construct, established by existing masculine authoritative forces to suit their needs. Women have broken ceilings to deconstruct hegemonic realities and set forth pathway to instill change. Feminists in gender debate highlighted persisting inequality and underline the discrimination. India has been trying to shackle them but sex is widely seen through gendered lens in policies and actions. Before the discourse of deconstruction established its foot in the debates of analysis, Mrs. Hansa Mehta was already working towards reforming the notions of woman and its gendered attributes. Attributes like woman as weak, polite, sensitive, homemaker, less capable etc. She was running the international agenda of equality in institutions of prominence like United Nations and Charter of human rights. Breaking the ceilings of not just gender but also borders, ruling the world which can be understood when much after in 2015 Secretary General of the United Nations, Ban Ki-Moon stated "The world can thank a daughter of India, Dr Hansa Mehta, for replacing the phrase in the UDHR". Here, the phrase referred is Article 1 United nation declaration of human rights is said that changing of the words "All men are born free and equal" to "All human beings are born free and equal". This is a path breaking statement of setting definite words for equality.

TURNING TABLES: PROTAGONIST OF MANY FIRSTS

Our freedom struggle has numerous unsung warriors, and their contributions have been varied, varied enough to have made the cause of independence a reality.

Rethinking pre-independent for resolving upcoming challenges. This struggle for independence has been unconventional on many grounds. Where Mrs. Hansa Mehta chose a root less debatable and less understood by many societies in world. Her vision was strong enough to go borderless. Today in the era of globalization, everything is going jumping borders and Mrs. Mehta turned tables of gender far beyond her time.

National wins of Hansa Mehta has deconstructed many persisting gender stereotypes. Though, she was not the first choice for being the member of executive board of UNESCO. Dr. Zakir Hussain was chosen to be the member of UNESCO, for him to become the Governor of Bihar, it was later passed onto Mrs. Mehta as a second choice. She has turned this opportunity into success. This opportunity has re-affirmed this membership into a tool for further empowerment. An Indian woman has highlighted that UNESCO has neglected concerns of women; her membership has made the organization more inclusive. Her agenda on education has brought a new ray of hope through Initiatives like changing name of the curriculum from 'fundamental education' to 'Further education' to incorporate technical and vocational perspective to it. She had been proactively running literacy campaign with UNESCO under the theme 'fight for literacy'. United Nations has remained in debt to Mrs. Mehta on her utmost contribution in making universal declaration of human rights more inclusive and gender neutral. Where an Indian voice changed the very Article 1 of the charter from 'all men are born equal' to 'all human beings are born equal'. This contribution will bring light for many generations to come.

Hansa Mehta is one of the true feminists of the generation because she has continued vouching for equal rights, nothing more and nothing less. Constitution of India has not dealt with women reservation at the time of its formation, where its necessity was felt by AIWC members, where Mehta appreciated no reservation policy for women to be originating from the constitution of India. Her contribution has been varied like Fundamental right committee, V.P of harijan sevak sangh, Vice chancellor of Baroda, lead first batch of women desh sevika sangh, moving education beyond conventional norms to add unconventional subject of study like introducing vocational education and many more. She has been very firm with words and her words are not merely words but are the source of empowerment for example, Mehta while keeping flag high, on the eve of independence, in the constituent assembly of India has pledged to the nation that woman will work on furthering the progress of nation and will focus on nation building and its development.

Women have been constructed vaguely behind the walls which are full with stereotypical beliefs. National movement has broken many of it by the coming of mahatma Gandhi in the struggle for independence. His belief in women as equal shareholders for betterment of society at large. His idea of rights is equal, inclusive and accommodative for all sections of society, specially marginalized. Women are yet not participant of public sphere. According to Hannah Arendt, women are not a part of public sphere, they are yet to realize the power of acting in concert, the need to shift from *vita contemplativa* towards *vita active*. Arendt's view on human condition begins with public sphere and Hansa Mehta has set forth the example before the world. Who is a freedom fighter? There is no set definition of what constitutes a freedom fighter. Scholars, artists, writers, revolutionaries, active and passive supporters all are warriors. Their form and nature of contribution vary. Hansa Mehta contributed in a conventional form, a form that uses words and ideas as her sword, without any blood shed but brought a wave of empowerment that set forth examples for many generations to come.

Yet, it is a paradox that women in India were looking for a lead but be it Raja Ram mohan roy, Subhash Chandra Bose or Gandhi, women have made sure that they utilize every bit of it to prove their substantive contribution. India's struggle for independence broke many stereotypes out of which one such example came from initiatives of Hansa Mehta. She is the unsung warrior who needs to be studied to find resolutions for contemporary society. Her visions and actions are relevant for societies nationally and internationally. Initiatives like United Nations resolution 1325, Beijing declaration would find their objectives driving parallel and in rhythm.

FEMINIST FOREIGN POLICY AND MEHTA FOR CONTEMPORARY FOREIGN POLICY PARLANCE

International Relations is a cohesive discipline. Where cooperation and complex interdependence has been established as an accepted norm. There stands a clear agenda of development as a driving force, which has to be achieved through a cooperative world order. Role of state as a provider of security and empowerment discourse becomes blurring, blur enough to incorporate both as an essential condition for an overall development.

Women are the most neglected party to the discourse of empowerment despite being the most marginalized section of the society globally. Establishing sovereignty of state has put state a torch bearer of security and empowerment. Where empowerment is seen to have been the tool for political gain which has left women at the last of political agendas nationally and condition of missing women representation is seen treacherously in international relations.

What is feminist foreign policy is a question which is yet to be settled. It is an intersection of public policy, gender studies and international relations. In general understanding, international policies pursued through gendered lens is called as feminist foreign policy. The objective is to ascertain concerns of women in all domains of state affairs for example trade, defense, war, peace etc. Absence of women in decision making is the result of unequal policies and lately unequal actions. Feminist foreign policy is a tool for empowering women through states action in domestic and international sphere. Rights, representation and resources are the tools identified to actualize inclusion of women in decision and policy making.

Feminist foreign Policy has three prominent pillars i.e. Resources, Rights and Representation. These are seen to have been established parameters of ensuring women representation in policy and decision making.

India then and now has changed and evolved. Its process of growth has been on wheels. Through this we will interlink Mehta's vision with feminist foreign policy to incorporate Mehta's vision to justify need and significance of feminist foreign policy for India.

Today, after 75 years of independence, India stands at 135th rank out of 156 countries, where Sweden is the protagonist of feminist foreign policy bags 5th place in Gender Gap Report, World Economic Forum 2022. Female percentage of women in the Army and the Indian Air Force is 0.56 and 1.08 respectively.

This itself put the country in the purview to withstand a different approach towards achieving gender equality. But it doesn't establish the fact that developing countries are less capable of ensuing equal society and world order. As has been established that state's role is to define its national interest. Ever since, irrespective of developed or developing, countries have protected its borders and economies because it has been the decision taken keeping in mind that it is a national interest. Now is the time wheels shall turn towards making gender as a national interest. According to Morgenthau, National interests shape foreign policy, and hence decide the wind flow in shaping dynamics of international relations. Population other than men constitutes half of the labor force. According to 2016-15 report by the Labour Bureau reveals that Female Labor Force Participation Rate in India is 23.7%, where women constitute 48% of the population. Where homosexual constitutes 3% of the population, 9% identify themselves as bisexual, 1% as pansexual and 2% as asexual. Looking into the statistics

they lack both rights and representation. India suffers from child marriage, chronic poverty, sex selective abortion, girl child as a taboo, child marriage, dowry harassment etc. Issues which are less part of feminist policies chased worldwide. Hence, accepting third world and postcolonial concerns persisting in Indian society needs an additional lens that for feminist foreign policy to be holistic, comprehensive and viable.

India is a nation of acceptance. It is a discourse in progress. Aurobindo calls India as already a nation and S.N Banerjee calls it a nation in making. In short, it is a wheel in progress. Sweden, in 2016, calls for feminist foreign policy. This has been understood as a discourse of first world and has been hegemonised by developed countries with more adaptability like Canada, France, Germany, Spain, Luxembourg, Chile; where Mexico is an exception.

Mrs. Mehta has been a believer in learning from either North or south. She has encapsulated what is best understood as a fit for progress. Her flags on equal rights have lauded wins not just in UNCHR charter but also in Indian AIWC Hyderabad session has proposed Indian women charter of rights duties. Charter then calls for rights and demands which were way ahead of her time equal pay, equal property rights, equal marriage laws, equality and other civil and political rights.

She was ahead of time, but today, India is just on time for drafting feminist foreign policy. India will set forth examples which will become trademark for south Asia and an anthem of equal rights for developing countries at large.

India's drafting of foreign policy has followed the already taken path of west i.e. security and economy. Incorporating Mehta's vision and reading feminist foreign policy through her lens incorporates empowerment and equality. Considering the skewed gender ratio and unequal rights and representation it is the need of the hour for India to add feminist lens to its national and international policy decision making. As of 2021, 14.4% seats are held by women in Indian parliament, literacy rate stands at 64.63%, Periodic labor force survey indicates worker population of women in rural stands at 17.5% and in urban 14.2%, decrease in women representation in central council of ministers from 17.5% (2015) to 10.5% (2019), only 9% of judges are women in Indian supreme Court, Female police force stands at 7.02%.

This data is to embolden the need on pushing for feminist foreign policy. Where policy stands bring change and it begins with accommodating changes in national level perspective. A woman who kept her stand clear nationally and globally, Mehta's vision of feminist policy is an ideal example for India to look for dominating the globe as Mrs. Mehta did. Her views on immigrants and racial discrimination will become an essential part of India to instill post-colonial perspective to the understanding of feminist foreign policy. In micro analysis, gendered subjugation of women in society is broader than it is understood. Women in post-colonial societies have different ethnicity, class, caste, family, religion, occupational concerns which cannot be equated to being one type of gender discrimination. Gender has a complex and an intersectional understanding, that needs to be primarily deconstructed to elaborate gender concerns beyond universal and provide a larger perspective to an all-inclusive and all-accommodative perspective for women in post-colonial and post-conflictual society and specifically India.

CONCLUSION: TOWARDS INDIA'S FEMINIST FOREIGN POLICY

Hansa Mehta has fought for not instilling reservation and quotas. This paper will read feminist foreign policy through her vision of equality and not reservation, empowerment and not authority, deconstruction of hegemony and not establishing a new hegemon. Padmashree awardee has deconstructed the norms all throughout her life, a life that stands for equality. Feminist foreign policy for India will be equated with equal rights, resources and recognition but with a touch of India its uniqueness and diversity. Like foreign policies need a feminist lens and we need Mehta's vision for incorporating an Indian lens. Here Contextual realities are the pillar to any policy. Any state making a policy framework has to acknowledge that regional and civilizational realities make people aware in the process of making policies and people getting impacted through that policy. In other words, it impacts both agent and subject. Indian feminist foreign policy would need gender mainstreaming through official gendered sensitization (Elected and nominated) this will instill *vita Activa* (Arendt) participation, more female representation on all levels local, national and international: In diplomacy, trade and war. As Mehta has vouched for equality and merit, as has been quoted by her "World would have though very less of men if they have asked for protection against women in this constitution". But she never bowed down on breaking the unsaid ceiling of patriarchy and did everything to provide equal share in education, religion, or employment. In this case, Awareness would remain a key player in making Feminist foreign policy a success for Indians, south Asians and world at large. This move will help India embolden and enrich its heritage of democracy and entering the discourse on feminist foreign policy will high-flag India's tag of largest democracy and embrace an unconventional freedom fighter that turned every opportunity into empowerment. This era is to invest in empowering citizens and embracing heterogeneity and Feminist Foreign policy is India's answer towards that.

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A PRAGMATIC APPROACH FOR LEGAL EXPERT SYSTEM

Bhargav Vyas¹ and Dr. Jeegar Trivedi²¹Sardar Patel University, Anand, Gujarat, 388001, India²M. S. University, Vadodara. Gujarat, India**ABSTRACT**

The paper is all about using artificial intelligence technique for getting law-based solutions. The different technologies which can be easily clubbed with the law based expert system are discussed with the working architecture. Some experiments are carried out using the different discussed techniques by applying them for IPC. The findings are really interesting and different. There are many more techniques which can be used for the legal expert system which can give better results are also discussed.

Keywords: First Keyword, Second Keyword, Third Keyword.

1 INTRODUCTION

The focus is to show a general introduction to the use of Artificial Intelligence in solving the legal problems. More emphasis is given to the law based expert system and the architecture of it. The actual working of the system as well as the characterization of the expert system for law-based domain. There are many different legal domains for which different solutions are feasible. The theoretical problems are very easy to be solved but for solving real world problems needs different algorithms and strategies to be implemented. There are many cases awaiting for the legal solutions and an expert system in particular domain of law can help in disposing the same very easily. There are many viable solutions for designing and applying a system for such solutions which will be discussed in detail.

2 METHODS**2.1 Fuzzy Logic**

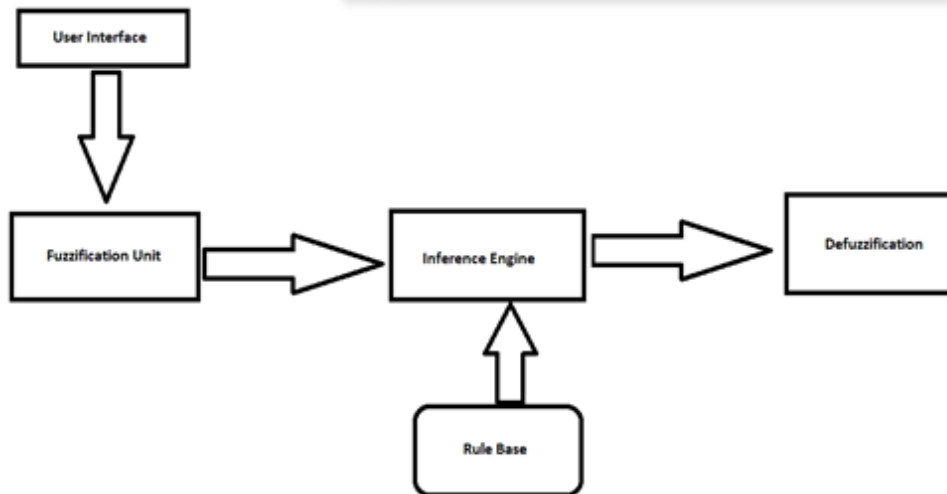
The concept of fuzzy logic was initiated by Lotfi A Zadeh while working at the Computer Science Department of California in Berkeley [1]. There were many problems in implementing the fuzzy logic in the beginning but with increase in knowledge and use, the technology is considered as best for controlling the complex systems [2] [3]. Many commercial and non-commercial systems are using fuzzy logic as it is the most profitable theory for execution. There is wide use of fuzzy logic but here we will consider it only for the legal expert system. The fuzzy sets are used for showing the degree of membership which is also known as fuzziness [4] [5]. The membership is measured to represent the relation to the knowledge using if-then rules [6]. Fuzzy logic is most convenient to use as it is similar to human language and also it can work with imperfect data of any domain [7]. The membership function is a curve which is able to show the exact membership of the input with the rules [8].

2.2 Fuzzy Expert System Based on Rules

The concepts of fuzzy logic when systematically applied to a system is known as fuzzy rule based expert system. The system developed using this has many components in common despite of the domain type it is used for. The common components are the fuzzification unit, defuzzification unit, inference engine and the rule base [9]. Any fuzzy expert system working with data of any domain need to have these components. Each of this component has a different functionality or role in overall working of the expert system. It is very easy for the system to symbolize the human language and map the input given in the system with the appropriate output [10]. The system now a days can be linked with a variety of database which can help in getting precise output. The online repositories, web-based content and different database can collaboratively work as a support to the rule base to cover all the aspects and provide with the best result [11] [12].

3 WORKING WITH FUZZY EXPERT SYSTEM

Initially, the investors and other people associated with the project were not convinced with the idea of legal expert system. They were not able to accept that there can be a system which can take input from the user and mold it into some reasonable output as advice [13].



In figure 1, the user interface will be used to take input in the system using different forms [14]. The input will be crisp data which will be transferred to the fuzzification unit for converting crisp values to fuzzy values. The fuzzy values then will be passed to the inference engine where the if-then rules will be used to get appropriate result. The mapping will then be transferred to the defuzzification unit for getting the crisp values again which will be again transferred to user interface as result [15] [16].

4 IMPLEMENTATION AND RESULTS

The lack in legal knowledge for a common person is always beneficial for the lawyers and so they take the benefit for the same. The legal expert system will also be helpful for the police officer’s, lawyers and many more. The legal expert system can consider a lot many points including the type of crime. The different aspects are also covered like if the crime is cognizable or not, the criminal will get a bail or not, the type of court in which the case can be registered and the type and intensity of punishment. All these aspects have multiple possible values and combinations. All of them are equally important and should be considered. All the crisp values included in the system are to be mapped to fuzzy linguistic variables which in turn will be mapped with fuzzy values. These values will show the exact applicable result and also help in finding all the possible solutions in terms of law. The triangular membership function is used for the implementation of fuzzy logic. All the different variables shown in the practical implementation like cognizable, punishment type, bailable and the court type are associated with exactly three fuzzy linguistic values. Using the triangular membership functions, the results obtained are precise and reliable.

The below are some cases which shows the input given by the police office to file a case and from the case severity the output from the system is given using simple fuzzy inference technique.



After the case definition is selected by the police office the other parameters are also set using the fuzzy inference like the case description, cognizable, bailable, court type and the punishment for the offence.

Case Definition:
Voluntarily causing hurt by a dangerous weapon

Case Description:
Causing hurt intentionally using a weapon

Cognizable: Cognizable
Bailable: Bailable
Court type: Session

Punishment:
3 Years Imprisonment/Fine/Both

save | logout

5 CONCLUSION AND FUTURE SCOPE

The experiments which are considered above are based on the Indian Penal Code. The law-based problems are increasing day by day which directly implies in latency for getting justice. The people also are unaware about the legal problems and the solutions which can also help the knowledge experts to misguide the novice people. As shown in the above experiments there are some values being taken from the user. The results will be dependent on the preciseness of the input. Giving more input will lead to better and more suitable solution for the problem.

Furthermore, the system result can be made more precise by using association rule mining in the system. The association rule mining can help in relating the previous solutions with the current problem statement. The database or rule-base may not always have relevant data to all the problems. It is always having huge amount of data generalized for all the possible problems. Under such scenario, the association rule mining can be considered as an effective way for filtering the database and getting interesting patterns which can be considered as one of the possibilities as a solution.

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STYLE OF PARENTING CULTURE AND ITS DETERMINANTS

Jarani Mao¹ and Fr. Prof Sunny Joseph PhD²Research Scholar¹ and Research Guide², Department of Education, St. Joseph University, Nagaland.**ABSTRACT**

Parenting culture differs ubiquitously, depending on the beliefs and traditions of various societies. There are different styles of parenting that a parent adopts for molding and shaping the life of their children. The specific patterns of behavior and beliefs embraced by the parents denote the parenting culture. Over the changing time, with the progression in virtually every field of life including education, the lifestyle in the modern era is quite different from the past. Education being the main agent for cultural change, parenting culture has been one of the zones that have undergone drastic change. This paper will make a humble attempt to investigate the changing parenting culture, with an objective to study the determinants of parenting culture in Kohima Town. The design of the research is descriptive, with a sample of 100 respondents, randomly selected from Kohima town. The researcher had used self-constructed Questionnaire as a tool for collecting data and was administered personally by the researcher. Deductive approach was applied for result discussion and interpretation. The successful completion of this piece of research has familiarized with the general determinants of changing aspects of parenting culture.

Keywords: Parenting style, Determinants, Parenting Culture, Kohima

INTRODUCTION

With the changing time, the concept of life itself has altered with new scope and priorities for all kinds of people belonging to different society, culture and nation. Over the years, these changes are seen almost everywhere in every field of human life. Parenting style and culture has been one of the unnoticed or researched areas, where one of the most drastic changes has taken place. It is a fact that every individual parent has his/her own techniques and styles of rearing or upbringing their children. Most often, the style of parenting culture is passed on down from generation to generation as according to the beliefs, culture and tradition to which one belongs. The parent themselves exhibits the same style of parenting they have received as a child from their own parents.

Generally, there are different techniques of parenting culture such as authoritative, permissive and uninvolved. The first type of parenting style denotes strict and rigid types of parenting. Adherence to discipline and rules and regulations is considered a must where children are bound to have strong respect and fear for parents. The second type of parenting refers to the friendly and warm type of parenting, where imposing rules and strict discipline is limited. It is a type of parenting culture where both children and parents share a friendly and approachable relationship. The third type of parenting refers to a style of parenting which involves freedom of children without any intervention from parents. Parents usually stay out of the business of their children and the children are kept independent to take or to make any decision on their own.

Research conducted in this field has yielded diverse results in different areas. Findings in studies related to this topic shows that the various types of parenting style has a different impact on the child's development and over all personality, and that there are numerous factors that determine the parenting style, Shahsavari, M. (2012), Sarwar, S. (2016), and Sanvictores, T. and Mendes, M.D. (2022). Very limited is known on this issue in the region, therefore it is necessary to explore and examine the existing types of parenting culture and to determine the determinants affecting the parenting culture. Findings in this study will help the parents to realize the merits and demerits of various styles and techniques of parenting, will help the parents to cope and adjust with their style of parenting for enhancing the proper development of their child's personality, further will also be familiarized with various factors determining their style of parenting and helps them to regulate the controllable factors.

OBJECTIVES

The objective of the present study is to find out the type of parenting culture most favored by parents in Kohima District. To examine what determines the parenting culture in the selected area.

METHODOLOGY

The design of the research is descriptive, with a sample of 100 respondents, randomly selected from Kohima town. The sample consists of both male and female parents in Kohima, the age of the sample were between 25-45 years. The researcher had used self-constructed Questionnaire as a tool for collecting data and was

administered personally by the researcher. Deductive approach was applied for result discussion and interpretation.

FINDINGS AND DISCUSSION

The reports of the finding of the research piece are presented in the form of both quantitative and qualitative technique. Quantitative symbol graph and tables are used along with qualitative elaboration of the given data for better and meaningful expression of the findings. The findings have been analysed as per the objectives of this study.

Objective.1: To find out the type of parenting culture most favored by parents in Kohima District.

For this objective, the researcher has used 10 items in the questionnaire focusing on aspects such as the parent’s views on idle children, expectations from their children, their perceived role in the life of their children, frequency and mode of approaching by their children with their problems and significance of their opinion and decisions in the life of their children.

Based on the responses favored by the parents on the above mentioned aspects, the study reveals that, 62% of parents are in favor of permissive type of parenting, while 29% of parents’ favored authoritative style and only 9% shows favor toward uninvolved style of parenting.

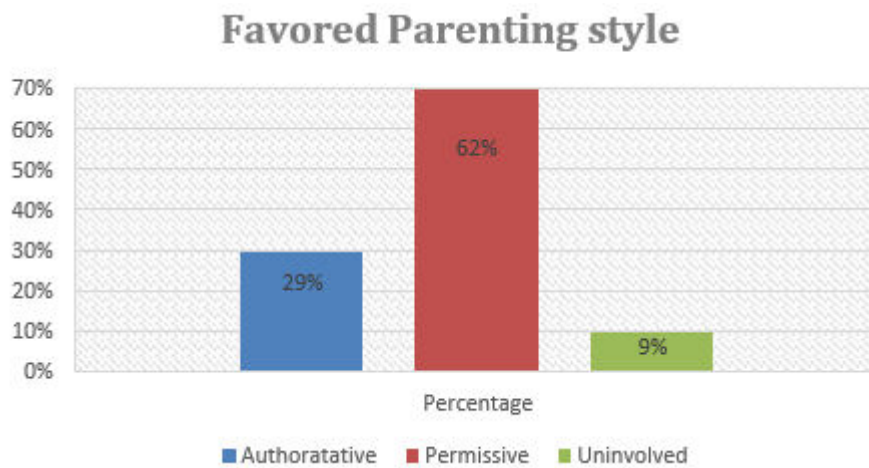


FIG.1. -Showing percentage breakdowns of responses of the parents favoring different style of parenting.

Objective.2: To examine the determining factors on parenting culture

For the second objective, the researcher has used 20 items in the questionnaire. The items were constructed using positive statements on identifying aspects such as differences in Gender, Age, Educational qualification and Socio-economic status of the parents.

GENDER: Out of the total sample (100 parents), the male parent constitute of 38% and female parent 62%. The breakdown of parent’s gender is represented below.

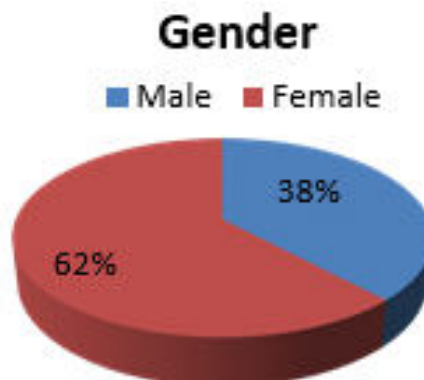


FIG.2. -Showing percentage breakdowns of parents as per Gender.

The study revealed that based on the gender difference, out of the total parents showing favor to authoritative style of parenting 72% were male and only 28% were female. Whereas, in permissive style 66% were female and 34% were male. It indicates that male parent are more in favor of authoritative style of parenting compared to female parents who are majority in favor of permissivestyle

Prefered types of parenting by Gender

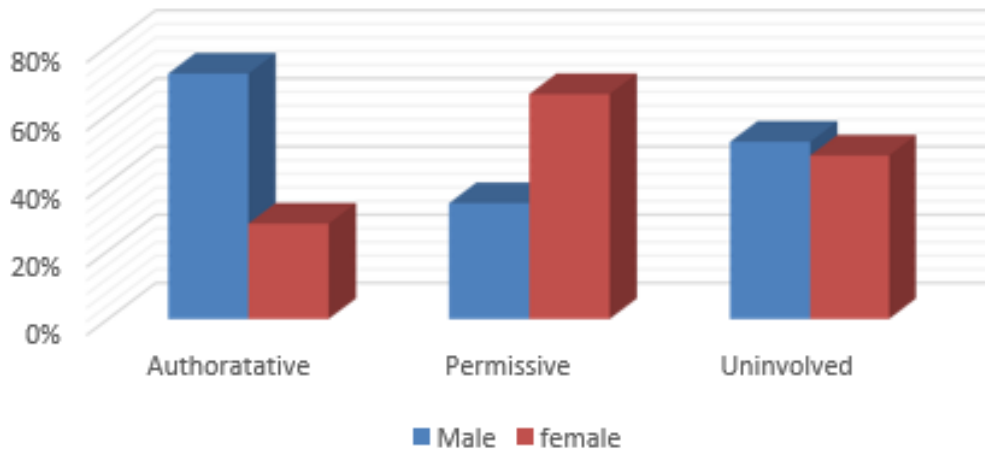


FIG.3. -Showing percentage breakdowns of responses of the parents favoring different style of parenting according to Gender.

EDUCATIONAL QUALIFICATION: The sample consists of 100 parents, out of which 56 have educational qualification above HSLC and 44 were below HSLC.

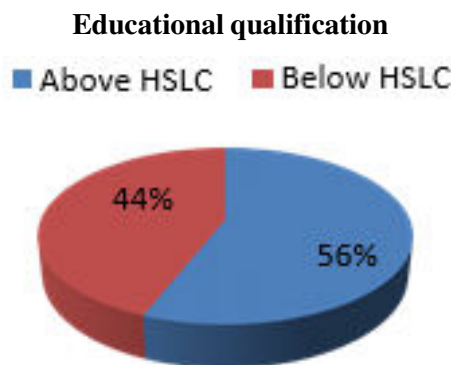


Fig.4.- Showing percentage breakdowns of parents on the basis of educational qualifications.

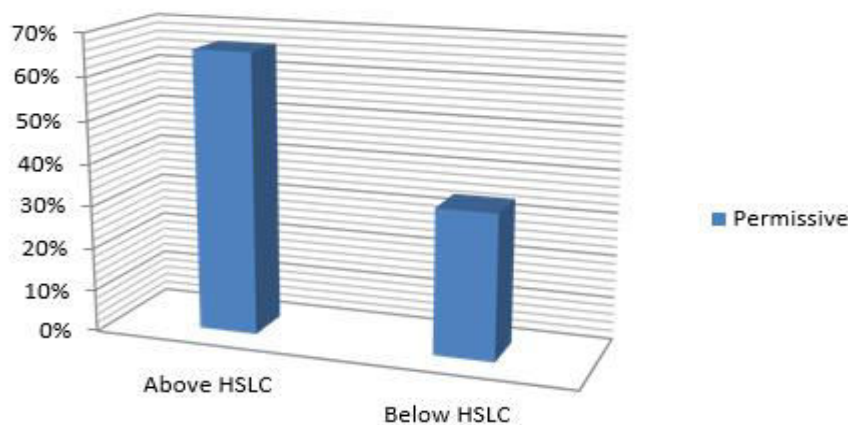


Fig.5.- Showing percentage breakdowns of parents responses on favoring parenting style on the basis of educational qualifications.

Out of the 62% of parents who favored permissive style of parenting, 66% were parents having educational qualification above HSLC and 58% of parents with below HSLC qualification. Hence, it can be concluded that both category of parents are more in favor of permissive style of parenting.

SOCIO-ECONOMIC STATUS: The total sample of the study consists of 100 parents. Out of the 29 respondents who have an economic status below average (annual income below one lakh), 44 were average with not less than 3 lakhs of annual income and 27 were above average with more than five lakhs of annual income.

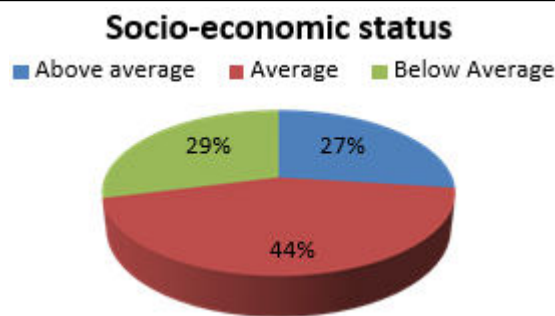


Fig.5.- Showing percentage breakdowns of parents on the basis of socio-economic status.

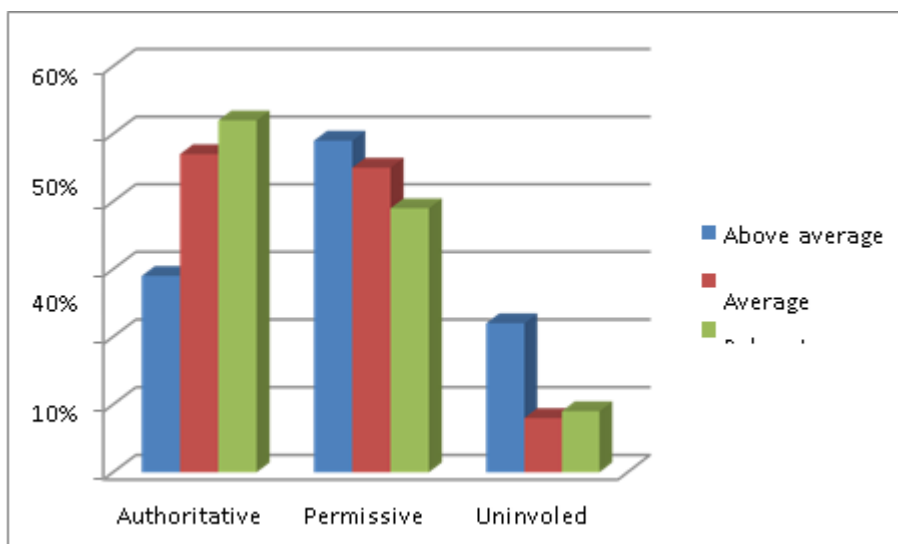


Fig.6.- Showing percentage breakdowns of parents responses in favor of parenting style on the basis of socio-economic status.

The findings revealed that out of the parents from above average economic status, 29% favored authoritative style, 49% permissive and 22% uninvolved. Parents belonging to average economic status, 47% favored authoritative, 45% permissive and 8% uninvolved. Whereas, among parents belonging to below average, 52% of them favored authoritative, 39% permissive and only 9% uninvolved style of parenting.

CONCLUSION

To conclude, the present study revealed that every individual parent has a different approach and style of parenting culture as per their own preferences and experiences in life. The findings of this study shows that majority of the parents in Kohima district favors permissive followed by authoritative style of parenting. Overall very few parents’ shows favor on uninvolved style of parenting. The study also reveals that out of the aspects examine to determine the factor attributing to the favor of the parents, much significant could be seen in terms of gender as compared to education and status. However, during investigation, the researcher could detect some other factors present in determining the preference of parents’ choice such as years of experience and time spent with their children, personality, locality, nature of the child and profession. As such, the researcher recommends further studies to be conducted on these aspects with larger scope covering other districts in the region or State. Several studies conducted related to this topic also shows that the style of parenting has an adverse effect on the child’s overall life and development. Hence further researcher can also be conducted on the impact of parenting culture on the child’s development.

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WORKING CAPITAL MANAGEMENT AND ITS IMPACT ON PROFITABILITY IN THE TIRE INDUSTRY: A STUDY ON SELECTED INDIAN COMPANIES

Archit Bansal¹, Anjali Shah², Ritu Rajput³ and Dr. Prashant Sharma⁴^{1,2,3}Students, MBA ITM, Gwalior⁴Assistant Professor, Department of Management**ABSTRACT**

Purpose: The main aim of this article is to find out the working capital management and its impact on profitability in the Indian Tyre Industry of selected companies that are listed on the stock exchange in India.

Approach/ Methodology/ Design: For the study, a period of Eight years from 2014-15 to 2021-22 is considered, based on it, any relation of net profit margin ratio and working capital components like Earning Retention Ratio, quick ratio, inventory turnover ratio, working capital ratio is considered. The sample is selected based on higher market capitalization during the study period. Regression analysis is also employed to investigate the impact of WCM on corporate profitability.

Findings: The major findings of this study indicate that the profitability of JK tyres was good compared to the other companies. There is no impact of Working capital management on profitability of tyre industry. These results were identified with the help of accounting tool as Ratio analysis and statistical tools as Regression analysis and ANOVA test for selected data.

Practical Implication: The study examines the scenario of the tyre industry with the help of working capital management in selected companies. The results of the study could be an indicator of the performance of the selected companies.

Originality/Value: This paper provides some key insights into the health and efficiency of the selected companies. The working capital ratios are indicative of good working capital management, leading to identifying the issue in financial management and eventually improving the performance of the tyre industry.

INTRODUCTION

Any person cannot ignore the necessity of funds in a business unit either a retail shop or a large manufacturing unit. Money is the only common factor in all units. Thus, money management is a must that is commonly known as financial management. Proper management of invested funds in business results in effective financial management. Every business unit needs funds. The uses of funds of concern can be divided into two parts: long-term and short-term funds.

The long-term investment may be termed a fixed investment. "A major part of the long-term funds is invested in the fixed assets. These fixed assets are retained in the business to earn profits during the life of the fixed assets. To run the business operations short-term assets are also required.

A manufacturing concern is sure to collapse without an adequate supply of working capital. Working capital is just like the heart of the business. Working capital management is significant in financial management because it plays a pivotal role in keeping the wheels of a business enterprise running. Working capital management is concerned with short-term financial decisions.

CURRENT ASSETS

It is rightly observed that "Current assets have a short life span. These types of assets are engaged in the current operation of a business and normally used for short-term operations of the firm during an accounting Period i.e. Within twelve months. The two important characteristics of Such assets are, (1) a short life span, and (2) swift transformation into another form of asset. Cash balance may be held idle for a week or two, Account receivable may have a life span of 30 to 60 days, and Inventories may be held for 30 to 100 days."

Fitzgerald defined current assets as, "cash and other assets which are expected to be converted into cash in the ordinary course of business within one year or within such longer period as constitutes the normal operating cycle of a business."

CURRENT LIABILITIES

The firm creates a Current Liability towards Creditors (sellers) from whom it has purchased raw materials on credit. This liability is also known as accounts payable and is shown in the balance sheet till the payment has been made to the Creditors

The claims or obligations which are normally expected to mature for payment within an accounting cycle are known as current liabilities. These can be defined as “those liabilities where liquidation is reasonably expected to require the use of existing resources properly classifiable as current assets, or the creation of other current assets, or the creation of other current liabilities.”

Meaning and definition of working capital

Working capital is the capital required for the day-to-day working of an enterprise. It is required for the purchase of raw materials and for meeting the day-to-day expenditure on salaries, wages, rents, advertising, etc. Working capital is needed for holding some convertible or current assets such as stock, cash, bills receivable, etc. The firm operates its business through these assets. These assets are convertible in the sense that these change from one form of asset to another. Cash is converted into raw materials, raw materials into work in progress, work in progress into finished goods, finished goods into book debts and bills receivable and then book debts and bills receivable into cash. Thus, the amount goes on circulating or revolving from cash to current asset and current asset to cash. Hence working capital is also called floating capital. In short working capital is concerned with the management of a firm’s current assets and current liabilities. It is the amount invested in current assets.

Ratio analysis

According to J Batty “The term accounting ratio is used to describe significant relationships between figures shown on a balance sheet, in a profit and loss account, in a budgetary control system or any part of the accounting organization.

Ratio analysis is a quantitative procedure of obtaining a look into a firm’s functional efficiency, liquidity, revenues, and profitability by analyzing its financial records and statements. It helps in interpreting the financial statements to make a decision. It analyses various pieces of financial information in the financial statements of a business. It can be used to determine whether a company’s financial health is on an upward or downward trend. However, ratio analysis is not an end in itself. It is only a means of better understanding of financial strength or weakness of a firm.

In our study we have taken the following ratios:

- ❶ Net Profit Margin Ratio
- ❷ Earning Retention Ratio
- ❸ Quick Ratio
- ❹ Inventory Turnover Ratio
- ❺ Working Capital Ratio

Net Profit Margin Ratio

Net profit margin is calculated by dividing earnings after taxes (EAT) by net revenue and multiplying the total by 100%. The higher the ratio, the more cash the company has available to distribute to shareholders or invest in new opportunities.

Earning Retention Ratio

The retention ratio is the proportion of earnings kept back in the business as retained earnings. The retention ratio refers to the percentage of net income that is retained to grow the business, rather than being paid out as dividends.

Quick Ratio

The quick ratio is a strict measure of liquidity. It is the ratio of liquid assets to current liabilities. All items of current assets are not equally liquid. Inventories and prepaid expenses are less liquid. Therefore, it is excluded from current assets. The balance of items of current assets is called liquid assets or quick assets. The quick ratio is also called the liquid ratio or acid test ratio. The standard quick ratio is 1:1.

Inventory Turnover Ratio

The inventory turnover ratio is the number of times a company has sold and replenished its inventory over a specific amount of time. The formula can also be used to calculate the number of days it will take to sell the inventory on hand.

Working capital ratio

The working capital ratio shows the ratio of assets to liabilities, i.e. how many times a company can pay off its current liabilities with its current assets. The working capital ratio calculation is Working capital ratio = current assets / current liabilities.

LITERATURE REVIEW**Ben Le (2019)**

Examined the effect of working capital management on firms' valuation, profitability, and risk using panel data methodology. He found a negative relationship between net working capital and firms' valuation, profitability, and risk. The results suggest that in managing working capital firms' managers must make a trade-off between their objectives for profitability and risk control.

Ajmera (2019)

In his study, analyzed the liquidity of 4 chosen tire corporations in the Republic of India for the period 2013-14 to 2017-18. For tackling the problems within the study, relevant ratios concerning liquidity, statistical tools, and techniques were used at appropriate places. The study discovered that the liquidity wasn't found to be satisfactory in any of the four chosen corporations during the period financial year study.

Baskar (2019)

His study, analyzed the gain of JK Tyre & Industries. Ltd. during the financial year 2008-09 to 2017-18 by using chosen profitability ratios and compounded Annual rate of growth (CAGR). The study discovered that the profitability of the corporate was sound enough during the amount under study.

Sivasankaran et. al (2019)

Their study examined the impact of corporate governance on the WCM of Indian corporations. The investigation was performed using balanced panel data procedures for a sample of 223 Indian non-financial corporations listed on the BSE for the financial year 2006-07 to 2016-17. the result derived from the study indicated that the chief executive officer duality, one of the 9 board indicators, played a noticeable comprehensive role in improving the WCM of the sample corporations during the financial year under study.

Sawarni KS, Narayanasamy S and Ayyalusamy K (2020)

Investigated the impact of the efficiency of working capital management on the performance of a sample of Indian companies and explore how the nature of the business firm influences the significance and direction of this impact. The data for this study were collected from 2012 to 2018 for 414 non-financial firms listed on the Bombay Stock Exchange. Working capital efficiency has a significant impact on the performance of the sample firms. Non-financial Indian firms deliver better financial performance by maintaining a lower Net Trade Cycle. The significance of the relationship varies depending on the nature of the firm's business.

Rameshbhai, Ajmera Tushar (2021)

The main aim of this analysis is to search out the working capital management and its impact on profit in the Tyre trade of chosen corporations that are listed on the stock exchange in the Republic of India. the most objective of the main management is to keep up the associated optimal balance between each of the working capital elements (Nazir & Afza, 2009). Corporations can reduce their funding costs and/or increase the funds offered for growth projects by minimizing the amount of investment tied up in current assets. The study covers the various aspects of working capital management and establishes a relation among 2 variables which are working capital management and gain of tire trade. The financial year of the study covers eight years; that is, 2011-12 to 2018-19. the information was in the main collected from related secondary sources.

METHODOLOGY AND PROCEDURES**Hypotheses**

The researcher formulated four null hypotheses as follows:

H₀ = There is no significant relationship between QR and NPM.

H₀ = There is no significant relationship between CR and NPM.

H₀ = There is no significant relationship between ITR and NPM.

H₀ = There is no significant relationship between WCTR and NPM.

Data Sources

The study covers the different aspects of working capital management and establishes a relationship between two variables which are working capital management and profitability of the Indian tire Industry. The period of

the study covers five years; that is, 2014-15 to 2021-22. The data was mainly collected from related secondary sources.

Sample Frame

The sample units of this study were selected from the companies in the tire industry as per market capitalization. Higher market capitalization companies were selected for the study. The sample includes five companies: MRF, JK, Apollo, Ceat, and TVS Srichakra ltd.

Empirical Model

For this study, an empirical model was developed to study the significance or relation and impact of the working capital management ratios and profitability of selected tire firms in India by using the panel data and multiple regression models:

$$Y_{it} = \beta_0 + \beta_1 A_{it} + \beta_2 A_{it} + \beta_3 A_{it} + \epsilon_{it}$$

RESULTS AND DISCUSSION

Calculation of Ratio:

$$NPMR = \text{Net profit after interest and tax} / \text{Net sales} \times 100$$

$$ERR = (\text{Net Income} - \text{Dividends Distributed}) / \text{Net Income}$$

$$QR = \text{Current Assets} - \text{Inventories} / \text{Current Liabilities}$$

$$ITR = \text{Net Sales} / \text{Inventories}$$

$$WCTR = \text{Net Sales} / \text{Working capital}$$

Table 1: NPMR and CR, QR, ITR, and WCTR of Selected Companies

MRF					
Year	NPMR	ERR	QR	ITR	WCR
2014-15	6.81	97.67	1.35	7.3	2.05
2015-16	12.43	99.16	1.1	10.62	1.56
2016-17	11.08	97.15	1.09	5.53	1.62
2017-18	7.54	97.76	1.23	6.83	1.71
2018-19	7.03	97.75	1.00	5.37	1.54
2019-20	8.76	98.22	1.00	5.59	1.55
2020-21	7.90	0.00	1.02	5.50	1.42
2021-22	3.46	90.50	0.87	3.79	1.46
Average	8.13	84.78	1.08	6.32	1.61
JK Tyres Industry LTD					
Year	NPMR	ERR	QR	ITR	WCR
2014-15	4.93	89.69	0.71	8.44	0.90
2015-16	6.62	92.73	0.66	7.91	0.97
2016-17	4.38	84.90	0.64	5.82	1.04
2017-18	9.16	14.15	0.58	7.21	0.95
2018-19	13.04	80.91	1.25	9.41	0.98
2019-20	15.30	75.51	0.91	6.14	0.88
2020-21	8.60	94.61	1.07	7.18	0.95
2021-22	13.70	76.55	1.16	3.21	0.84
Average	9.47	76.13	0.87	6.92	0.94
Apollo					
Year	NPMR	ERR	QR	ITR	WCR

2014-15	8.34	84.22	0.53	4.98	1.12
2015-16	9.50	89.85	0.77	6.11	1.33
2016-17	7.64	87.32	0.75	7.19	1.43
2017-18	4.87	75.47	0.80	5.04	1.05
2018-19	3.87	71.02	0.55	5.04	1.14
2019-20	2.91	29.71	0.40	5.09	0.95
2020-21	2.01	0.00	0.65	5.24	1.34
2021-22	3.04	0.00	0.50	3.28	1.39
Average	5.27	54.70	0.62	5.25	1.22
Ceat Tyres ltd.					
Year	NPMR	ERR	QR	ITR	WCR
2014-15	5.73	87.25	0.64	6.11	0.36
2015-16	7.28	80.13	0.69	8.57	0.32
2016-17	5.41	0.00	0.78	8.53	0.51
2017-18	3.34	80.46	0.56	8.01	0.98
2018-19	3.30	81.56	0.47	6.95	0.93
2019-20	3.13	58.02	0.39	7.32	0.79
2020-21	5.20	0.00	0.36	6.73	0.73
2021-22	0.44	-2.26	0.36	0.00	0.72
Average	4.23	48.15	0.53	6.53	0.67
TVS Srichakra ltd.					
Year	NPMR	ERR	QR	ITR	WCR
2014-15	7.63	74.03	0.41	4.76	1.02
2015-16	8.14	75.34	0.59	11.05	1.11
2016-17	4.49	0.00	0.56	8.24	1.11
2017-18	5.45	66.58	0.49	6.49	1.01
2018-19	4.24	70.25	0.48	4.88	1.05
2019-20	3.91	44.13	0.50	5.00	1.18
2020-21	3.80	0.00	0.53	4.56	1.27
2021-22	1.71	47.16	0.36	2.56	1.31
Average	4.92	47.186	0.49	5.94	1.13

The table above presents the net profit margin ratio as the dependent variable, whereas the Earning Retention Ratio, quick ratio, inventory turnover ratio, and working capital ratio as the independent variable for the study period of 2014-15 to 2021-22 respectively. The following are the averages of ratios:

- The average ratio NPMR of the MRF tyre industry was 8.13% for the study period. The average Earning Retention Ratio and quick ratio of the MRF tyre industry were 84.77 and 1.08.
- The average ratio NPMR of the JK Tyres Industry LTD was 9.47% for the study period. The average Earning Retention Ratio and quick ratio of JK Tyres Industry LTD were 76.13 and .87.
- The average ratio NPMR of the Apollo tyre industry was 5.27% for the study period. The average Earning Retention Ratio and quick ratio of the Apollo tyre industry were 54.69 and 0.62.
- The average ratio of Ceat Tyres ltd. was 4.23% for the study period. The average Earning Retention Ratio and quick ratio of Ceat Tyres ltd. Were 48.14 and 0.53.
- The average ratio NPMR of TVS Srichakra ltd. was 4.92% for the study period. The average Earning Retention Ratio and quick ratio of TVS Srichakra ltd Were 47.18 and 0.49.

Ceat Tyres ltd. has the lowest average NPMR of 4.23% and JK TYRE INDUSTRY Ltd. has Highest NPMR 9.47%.

From the Above ratios we are not satisfied.

RESEARCH METHODOLOGY:

Anova Test		
	F-Test	
	F	Signi F.
MRF	1.191	0.461
JK	2.226	2.68
CEAT	9.452	0.048
TVS	1.974	0.302
APOLLO	3.42	1.7

Based on Anova test for all the selected companies, the results show that only Ceat has the statistical evidence that there is an impact of Working capital on the profitability of the industry, and other companies do not have any impact on their profitability there is no relation or impact of selected ratios on net profit margin.

$$NPMR_{it} = \alpha + \beta_1 CR_{it} + \beta_2 QRA_{it} + \beta_3 ITRA_{it} + \beta_4 WCTRA_{it} + \epsilon_{it}$$

Regression Analysis					
	MRF	JK	Ceat	Tvs	Apollo
Multiple R	0.783	0.865	0.963	0.851	0.906
R Square	0.614	0.748	0.926	0.725	0.82
Adjusted R Square	0.098	0.412	0.828	0.357	0.58
Standard Error	2.6	3.176	0.873	1.69	1.83
Observations	8	8	8	8	8

RESULT

The Anova table and regression tables show that the model is not statistically significant for impact on profitability or prediction of net profit for selected ratios. In relation with R2 (coefficient of determination) with MRF, JK, Ceat, TVS, Apollo indicated 61.4%, 74.8%, 92.6%, 72.5%, 82% of net profit was explained by this model. The results of regressions suggest that managers can increase corporate profitability by reducing the number of days accounts receivable and inventories. An alternative explanation for the negative relation between accounts receivable and profitability could be that customers want more time to assess the quality of products they buy from firms with declining profitability. These results suggest that managers can create value for their shareholders by reducing the number of days accounts receivable and inventories to a reasonable minimum. The negative relation between accounts payable and profitability is consistent with the view that less profitable firms wait longer to pay their bills. A firm may adopt an aggressive working capital management policy with a low level of current assets as a percentage of total assets, or it may also be used for the financing decisions of the firm in the form of high level of current liabilities as a percentage of total liabilities (Nazir & Afza, 2009).

CONCLUSION

The major findings of this study indicate that the profitability of JK tyres was good compared to the other companies. In our research, we find that only Ceat has an impact on their profitability hence the other companies do not have any such impact of Working capital management on the profitability of the tyre industry. These results were identified with the help of accounting tools as Ratio analysis and statistical tools such as Regression analysis and ANOVA test for selected data.

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PREDICTION OF CUSTOMER'S BUYING BEHAVIOR USING SMOTE AND XGBOOST IN PYTHON

¹Subhash Chand, ²Dr. A.K. Shukla and ³Naresh Chandra
Research Scholar^{1,3} and Associate Professor², IFTM University, Moradabad

ABSTRACT

Success of any business who are selling products, services and others depends on customer's behavior with business. Prediction of customer's buying behavior is an important component of any business, which is very dynamic in nature and depends on many factors directly or indirectly related to customers like personal, seasonal, social and others. The prediction is based on the past activities performed by the customer's to purchase the products, services in on-line or off-line mode. Online customer's activities are automatically stored in digital form and later used to predict the customer's buying behaviors. Mostly this type of dataset are imbalance, therefore can't be used as it is. Before using XGBoost (eXtreme Gradient Boosting) first balance the dataset to get the best result. Dataset may converted to balanced dataset by using under sampling methods, over sampling methods, combinations of under and over sampling methods, ensemble methods, etc. In this paper SMOTE (Synthetic Minority Over-sampling Technique) is used to balance the data. The personal factors like gender, marital status, having children's or not, past activity like first and transaction was on occasion or not, offer was applied or not on first and last transaction, purchase was made or not on past festival considered and studies to predict the customer's buying behaviors. This dataset is related to an Indian festival diwali. Mostly data is of categorical type which is converted to binary data type as per the need of applied methods. XGBoost machine learning algorithms is used to solve the classification and regression type problems. SMOTE is used to balance the dataset and XGBoost is used to predict the customer buying behavior.

Key words: Business, Imbalance dataset, on-line/off-line mode, SMOTE, XGBoost, Python.

INTRODUCTION

Online customer's buying mode changes the business model and regularly the number of online customers increasing. It is because of facilities available to the online customers like purchase at any time and from anywhere, variety of products are available on one platform, easy comparisons between different products, easy and secure payment methods, no bargaining, easy return policies, and many more. The success or failure of any business is depending on customers behavior with the firms. Online purchasing websites like amazon.com, flipkart.com, ebay.com and many more are giving a platform to the online users to purchase the products after creating their login credentials on the site. This login credentials data are saved by the concern website and used to automatically store your all activities performed by concern user on website. This data later analyzed and used to motivate the customers for purchase by showing related advertisements with your login credentials, whenever you login to E-commerce website/webportal. Different machine learning techniques are used to predict the customer buying behavior. In this paper XGBoost machine learning technique is used to predict the future buying of the customers. The whole dataset is examine and related attributes are divided into two categories known as dependent variables and independent variables (y, X respectively). Later data of these variables are converted according to the need of algorithms by using different techniques available in python like one-hot encoding and label encoding. If data is imbalance, then first balance it by using the different methods like under sample, over sample, etc. then use the prediction methods to predict the customers buying.

A dataset related to diwali festival is used to predict the customers buying. This dataset is taken from GitHub website, this dataset contains more than one lakh thirty thousand records and more than forty attributes. Many attributes contains null values which is treated properly before using this dataset. After null values treatment, it is found that data belongs to imbalance data class. SMOTE (Synthetic Minority Over-sampling Technique), an over sampling technique is used to handle the imbalance dataset problem before using the XGBoost machine learning algorithms to predict the customers buying. The personal factors like gender, marital status, having children's or not, and past activity like first and last transaction was on occasion or not, offer was applied or not on first and last transaction, purchase was made or not on past festival, used to predict the customers buying behaviors. Followings are the attributes with their importance by using *importance_type = 'gain'* in prediction of buying behavior. Gender (2.2), Marital Status(0.4), Last Transaction on Occasion(2.8), Last Transaction with Offer(1.6), First Transaction on Occasion(0.9), First Transaction with Offer(2.2), Purchase on Last Diwali(42.4), Have Children(0.9), Birthday Product(1.7), Anniversary Product(1.1). Purchase on Last Diwali is more important attributes than Last Transaction on Occasion.

The performance of machine learning algorithms is depend on the balance and imbalance class of datasets. A dataset is called imbalanced when distribution of data values not normal i.e. quantity of some data values are relatively very high or very low than others. In this study the dependent variable y is imbalanced. SMOTE is used by using the following line of codes to balance the dataset.

```
from imblearn.over_sampling import SMOTE
smote = SMOTE(sampling_strategy='minority')
X_smote, y_smote = smote.fit_resample(X, y)
```

DATA USED:

A secondary dataset related to diwali purchase is taken from GitHub website that contains more than 1,30,000 records and more than 40 attributes. The attributes known as Gender, Marital Status, Last Transaction on Occasion, Last Transaction with Offer, First Transaction on Occasion, First Transaction with Offer, Purchase on Last Diwali, Have Children, Birthday Product, Anniversary Product are identified as independent variables(X) and attribute known as RESPONDERS is used as dependent variable (y). A complete initial one record before any change made to it is given in table 1.

Table 1

Attribute Names	Values	Attribute Names	Values
New_ID	392349	TOTAL_BIRTHDAY_PRODUCT	0
GENDER	MALE	PREMIUM_PRODUCT	5
MARITAL_STATUS	MARRIED	TOTAL_ANNIVERSARY_PRODUCT	2
NO_OF_CHILDREN	0	TOTAL_OCASSION_PRODUCT	4.0
CHILD1GENDER	NaN	FAV_DAY	4
CHILD2GENDER	NaN	FAV_MONTH	3
CHILD3GENDER	NaN	TIERNAME	ENCIRCLE GOLD
LTD_OCCASION	0	AGE	61.0
LTD_OFFER_APPLIED	0	CITY	LATUR
LTD_QUANTITY	2	STATE	MAHARASHTRA
LTD_AMOUNT	40927	SPOUSEAGE	NaN
FTD_OCCASION	0	REGENCY	486
FTD_QUANTITY	2	INACTIVITY_RATIO	9
FTD_OFFER_APPLIED	0	TENURE	243
FTD_AMOUNT	112057	ADGBT_BANDS	LT_61
TOTAL_TRANSACTIONS_OVERALL	3	DOB_DAYS_LEFT	332.0
CUSTOMER_LEVEL_OVERALL	Medium	ANNIVERSARY_DAYS_LEFT	355.0
ENGAGEMENT_DAYS_OVERALL	3	SPOUSE_DOB_DAYS_LEFT	NaN
ADGBT_OVERALL	54	TENURE_BANDS	LT290
TOTAL_TRANSACTION_AMOUNT_OVERALL	331879	DIWALI_TRANSACTIONS	0
TOTAL_QUANTITY_OVERALL	8	DIWALI_AMOUNT	0
TOTAL_DISCOUNT_OVERALL	0	DIWALI_DISCOUNT	0
AVERAGE_TRANSACTION_AMOUNT_OVERALL	110626	PAST_DIWALI_PURCHASER	0
AVERAGE_QUANTITY_OVERALL	2	RESPONDERS	0
AVERAGE_DISCOUNT_OVERALL	2		

The undesired attributes from table 1 are ignored and name of some useful attributes are changed to make the name short and more logical. LTD is converted to LT which is the short form of Last Transaction. FTD is converted to FT which is the short form of First Transaction. TOT is used in place of TOTAL, AVG is used in place of AVERAGE, FAV is used to indicate Favorite, etc. The rest of attributes names are self-exploratory.

METHOD

The whole method is divided into many steps like Data Collection, Data Preparation, Identify the Model, Training the Model, Testing the Model, Tune the Parameter for better result, and make the Prediction.

Step 1:- Data is collected from GitHub website. This is public data collected from single source and stored into a python data frame using *pandas.read_csv* method. This data is available in the comma separated values i.e., data file name having .csv extension.

Step 2:- Data preparation is an import step of deploying the machine learning algorithms and data is prepared as per the need of our model. During this step we must know about types of our data, missing value treatment, rename the columns, drop duplicate records, dropping irrelevant columns, dropping the null values, detecting the outliers, etc. After step 2 some columns are removed, some new columns are created. The categorical data are changed to binary data i.e. data having values 0 or 1 only. The one record of this ready to use dataset is given in table 2.

Table 2

Attribute Name	Value
gender	1
marital_status	0
lt_occasion	0
lt_offer_applied	0
ft_occasion	0
ft_offer_applied	0
past_diwali_purchaser	0
have_children	0
birthday_product	0
anniversary_product	1
diwali_transaction	0
RESPONDERS	0

The attribute name written in small letters are known as independent variables(X) and attribute written in capital letter is known as dependent variable(y).

Step 3: - A model based on XGBoost algorithms is prepared and used to predict the customer buying behavior. Model is prepared by first importing the xgboost algorithm by using the command *import xgboost as xgb* where xgb is the short name of xgboost. XGBoost algorithm works well with this data matrix, which is created by using the command *data_dmatrix=xgb.DMatrix(data=X,label=y)* where data_dmatrix is the name of data matrix. The independent variable X is defined as the collection / combination of eleven attributes identify from table 2 by using the following command.

```
X=df[['gender', 'marital_status', 'lt_occasion', 'lt_offer_applied', 'ft_occasion','ft_offer_applied', 'past_diwali_purchaser', 'have_children', 'birthday_product', 'anniversary_product','diwali_transaction']]
```

The dependent variables y is the 'RESPONDERS' attribute which is created as

$Y = df['RESPONDERS']$. Both X and y have more than 132000 records. The dependent variable y, is not equally distributed i.e. count of value (0) is 119348 and count of value (1) is 13066. It is known as imbalance dataset. The difference between these values are very high, therefore this imbalance data, needs to be convert to balance data by using different methods available in python to get the best results of our model. SMOTE method is used to balance the data.

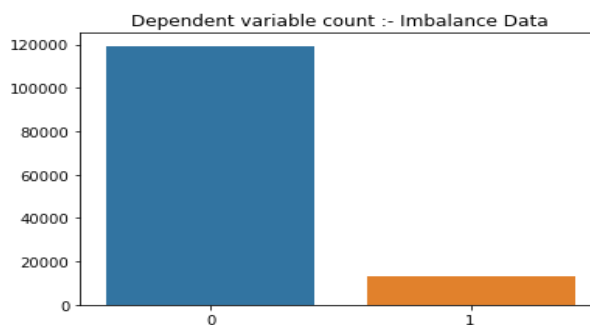


Figure 1

Figure 1 is the graphical representation of imbalance data of dependent variable y. This imbalance data is converted to balance data by using the following lines of code

```
from imblearn.over_sampling import SMOTE
```

```
smote = SMOTE(sampling_strategy='minority')
```

```
X_smote, y_smote = smote.fit_resample(X, y)
```

After SMOTE method is applied on imbalance data to balance the data the number of records are changed. The each independent variable X and dependent variable y have 238696 records. The dependent variable y have equal numbers of value (0) and (1), which is equal to 119348.

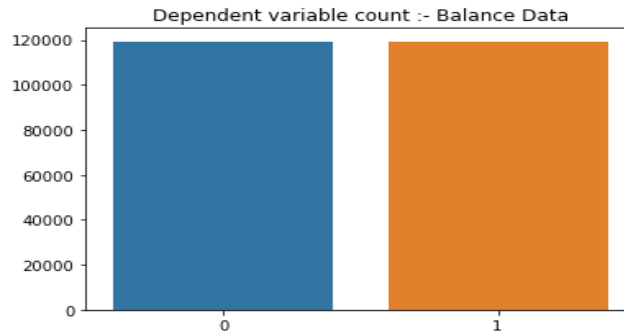


Figure 2

Figure 2 is the graphical representation of balance data of dependent variable y.

Step 4:- Before training and testing the model independent and dependent variables are divided into training and testing sets by using the `train_test_split` function. The following line of code is used to divide the data into training and test datasets.

```
from sklearn.model_selection import train_test_split
```

```
X_train, X_test, y_train, y_test = train_test_split(X, y, test_size = 0.2, random_state = 0, stratify=y)
```

Parameter `test_size = 0.2`, which indicates that 20 percent data will be used for testing the model and rest 80 percent data will be used for training of the model. The model is created by using the following lines of code:

```
model = XGBClassifier(alpha=10, base_score=0.5, booster='gbtree', callbacks=None,
colsample_bylevel=1, colsample_bynode=1, colsample_bytree=1, early_stopping_rounds=None,
enable_categorical=False, eval_metric=None, gamma=0, gpu_id=-1, grow_policy='depthwise',
importance_type=None, interaction_constraints="", learning_rate=0.7, max_bin=256,
max_cat_to_onehot=4, max_delta_step=0, max_depth=4, max_leaves=0, min_child_weight=1, missing=nan,
monotone_constraints=(), n_estimators=100, n_jobs=0, num_parallel_tree=1, predictor='auto',
random_state=0, reg_alpha=10)
```

The performance of the model is depend on the parameters values. Therefore, selection of the best parameter values is an important and challenging task. To identify the best parameter values we first define a space with boundaries. Each parameter in this space have a minimum and maximum value. The best value is exist within this limit. The space is define by using the following line of codes.

```
space = {
'learning_rate': hp.choice('learning_rate', [0.1,0.4, 0.6, 0.8, 1]),
'max_depth' : hp.choice('max_depth', range(3,21,3)),
'gamma' : hp.choice('gamma', [i/10.0 for i in range(0,5)]),
'colsample_bytree' : hp.choice('colsample_bytree', [i/10.0 for i in range(3,10)]),
'reg_alpha' : hp.choice('reg_alpha', [1e-5, 1e-2, 0.1, 1, 10, 100]),
'reg_lambda' : hp.choice('reg_lambda', [1e-5, 1e-2, 0.1, 1, 10, 100])
}
```

For imbalance dataset the best parameter values is identified as:

```
{'colsample_bytree': 0.8, 'gamma': 0.0, 'learning_rate': 1, 'max_depth': 18, 'reg_alpha': 0.1, 'reg_lambda': 1e-05}
```

Train the model for imbalance data using the best parameters

```
model_imbalance = XGBClassifier(seed=0, colsample_bytree=0.8, gamma=0, learning_rate=1,
max_depth=18, reg_alpha=.1, reg_lambda=1e-05 )
model_imbalance.fit(X_train_transformed, y_train)
```

The output of the model for imbalance data is given as below

1. Confusion matrix

```
[23897  10]
 [ 2575   1]
```

2. Precision, recall, f1-score and support for imbalance data

```
precision  recall  f1-score  support
0    0.90    1.00    0.95    23907
1    0.09    0.00    0.00    2576
accuracy                0.90    26483
macro avg    0.50    0.50    0.47    26483
weighted avg    0.82    0.90    0.86    26483
```

The XGBoost model accuracy for imbalance data is 90.24%. The bar graph between F-score and features / independent variables is shown in figure 1. The independent variables are arranged in descending order of features importance.

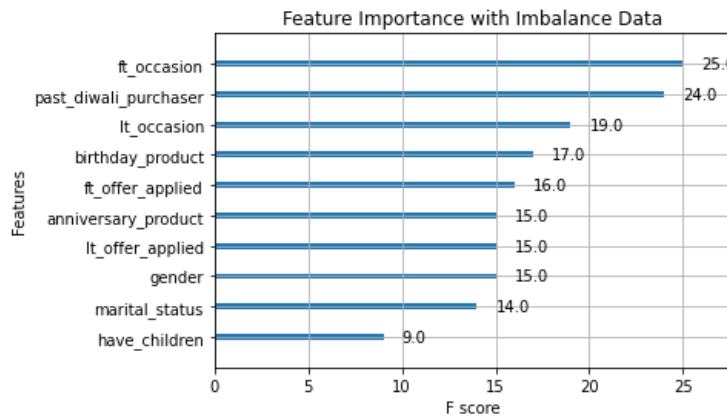


Figure 3

For balance data the best parameter values from space is identified as:

```
{'colsample_bytree': 0.7, 'gamma': 0.0, 'learning_rate': 0.8, 'max_depth': 6, 'reg_alpha': 1, 'reg_lambda': 1e-05}
```

Train model for balance data using the best parameters values

```
model_balance = XGBClassifier(seed=0, colsample_bytree=0.7, gamma=0, learning_rate=0.8,
max_depth=6, reg_alpha=1, reg_lambda=1e-05)
model_balance.fit(X_train_transformed, y_train)
```

The output of the model for balance data is also given as

1. Confusion matrix

```
[15927  7943]
 [11050 12820]
```

2. Precision, recall, f1-score and support for balance data

```
precision  recall  f1-score  support
```

0	0.59	0.67	0.63	23870
1	0.62	0.54	0.57	23870
accuracy		0.60		47740
macro avg	0.60	0.60	0.60	47740
weighted avg	0.60	0.60	0.60	47740

The XGBoost model accuracy for balance data is 60.34%. The bar graph between F-score and features / independent variables is shown in figure 2. The independent variables are arranged in descending order of features importance.

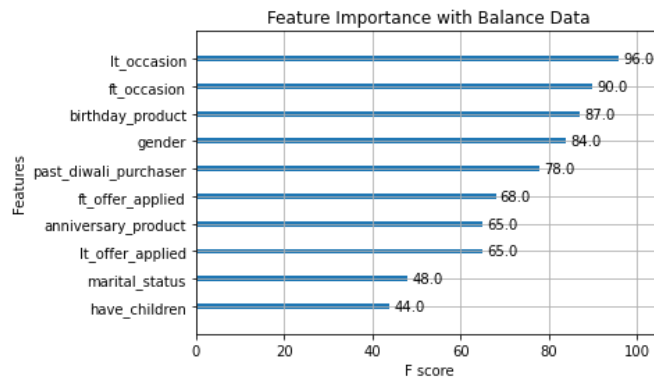


Figure 4

Using XGBoost algorithms we can examine the importance of each independent variable X within the model. The importance of variable is displayed using the bar graph. Feature having high importance score will be displayed on the top of bar graph. Using bar graph features are display in descending order of importance score. The x axis shows F-Score and features are display on y axis.

RESULT

Using XGBoost algorithm two models known as *model_imbalance* & *model_balance* are build. *model_imbalance* is used with imbalance data and *model_balance* is used with balance data. The output of these two models i.e., accuracy, confusion matrix, precision, recall, f1-score and support are given in table 3.

Table 3

	<i>model_imbalance</i>					<i>model_balance</i>				
Confusion matrix	[23897 10] [2575 1]					[15927 7943] [11050 12820]				
Precision, recall, f1-score and support		Precision	Recall	f1-score	support		Precision	Recall	f1-score	support
	0	0.90	1.0	0.95	23907	0	0.59	.67	0.63	23870
	1	0.09	0.0	0.00	2576	1	0.62	.54	0.57	23870
	accuracy			0.90	26483	accuracy			0.60	47740
	macro avg	0.50	0.5	0.47	26483	macro avg	0.60	0.6	0.60	47740
	Weighted avg	0.82	0.9	0.86	26483	Weighted avg	0.60	0.6	0.60	47740

The accuracy of the *model_imbalance* is 90.24% and the accuracy of the *model_balance* is 60.34%. This big difference in accuracy of both the models is due to imbalance and balance dataset used with the models. The *model_balance* have less accuracy but performs well to predict the customers buying behavior.

CONCLUSION

The dataset taken from GitHub website, is used to train and test the two different models i.e. model_imbalance and model_balance. After data preprocessing data is converted according to the need of models. These two models predict the future buying and gives different results. The best parameter values is different for these two models. By using the best parameter values model_imbalance shows accuracy 90.24%, which is high but model not performs well. On the other hand, model_balance shows accuracy 60.34%, which is low but model performs well. The performance of model depends on class of data i.e., imbalance class of data OR balance class of data. For better performance of the model use balance data to train and test the model. Accuracy not always be used to declare a model good or bad, other values like confusion matrix, precision, recall, f-score, etc. may also considered to evaluate a model.

For further study the set of independent variable X and dependent variable y may changed before training and testing the model. Study the all output of the model before declaring the merits and demerits of the model.

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IMPROVING SENTIMENT CLASSIFICATION BY A NOVEL HYBRID CLASSIFIER

Nuha Elamin¹, Samani A. Talab² and Ahmed Khalid³¹Faculty of Graduate Studies, Neelian University, Khartoum, Sudan²Faculty of Computer Science and Information Technology, Neelian University, Khartoum, Sudan³Department of Computer Science, Najran University, USA**ABSTRACT**

Academics and research institutions have recently given sentiment analysis a lot of attention. The worldwide, rapid digital transformation has assisted in the facilitation and dissemination of different viewpoints, which have an impact both positive and negative on the marketing of goods and services. This work addressed the issue of supervised sentiment classification's binary categorization of sentiment. To accomplish this, the Naive Bayes classification is improved by combining it with the Particle Swarm Optimization technique. The new classifier was put to the test using data from movie reviews, and studies revealed that its accuracy was 0.95 percent as opposed to 0.85 percent for the original NB classifier.

Keywords - Machine learning, Supervised learning, sentiment classification, Naïve Bays, NB-PSO.

1. INTRODUCTION

Here are two kinds for text information. The first category covers assertions or facts that are objectively true about diverse topics. The second category consists of expressions that convey a person's feelings, attitudes, and reactions to specific persons, things, events, topics, and qualities. User-generated content makes up the bulk of personal writings on the Internet, and this input is valuable since it helps advance services and raise the calibre of commodities and products [1]. Despite its immense significance, opinion analysis [2] can be quite challenging to conduct due to the daily publication of millions of evaluations [3, 4, 17]. One field of information retrieval and access to digital knowledge is opinion mining [2]. Readers' attitudes about numerous economic, political, and online purchasing issues can be significantly influenced by user opinions, which influence and are influenced by opinions of others on the web [3]. sentiment analysis defines as "The process of quantitative identification and classification of opinions stated in a piece of writing, especially to assess whether the writer's attitude toward a certain subject, product, etc., is positive, negative, or neutral," according to the Oxford Dictionary [1]. Sentiment analysis seeks to examine the text's emotional content before identifying its polarity, which may be positive, negative, or occasionally neutral. Sentiment analysis tries to uncover and excavate the emotions and attitudes that are expressed and imbedded in texts [5] in order to analyse them, determine their polarity, and use this information to aid in decision-making. The Naïve Bayes model is the simplest and easiest to build a classifier for text classification technique; is based on the Bayson theorem assuming independence among predictors. The Naive Bayes classifier assumes that no specific feature has any relationship to the existence of others. The simplicity of this assumption makes the computation of the Naive Bayes classifier far more efficient. Compared to other classifiers, Bayesian classifiers characterized by accuracy and speed, especially on large databases.

To classify as the most probable class c^* for a new feature x , it computes as Equation 1 bellow:

$$c^* = \operatorname{argmax}_c P(c|x) \quad (1)$$

According to Bayes' theorem, the probability that we want to compute $P(c|x)$ can be expressed in terms of probabilities $P(c)$, $P(x|c)$, and $P(x)$ as the following equations 2 and 3:

$$P(c|x) = \frac{P(x|c)P(c)}{P(x)} \quad (2)$$

$$P(c_1|x) = P(x_1|c) \times P(x_2|c) \times \dots \times P(x_n|c) \quad (3)$$

Above,

$P(c|x)$ is the posterior probability of class (c , target) given predictor (x , features).

$P(c)$ is the prior probability of class.

$P(x|c)$ is the likelihood, which is the probability of the predictor given class.

$P(x)$ is the prior probability of predictor.

$P(x)$ plays no role in selecting c^* . To estimate the term $P(x|c)$, Naive Bayes decomposes it by assuming the conditional independence of features f_i 's given x 's class:

$$P_{NB}(c|x) = \frac{P(c) \prod_{i=1}^m P(f_i|c)^{n_i(x)}}{P(x)} \quad (4)$$

2. RELATED WORK ON NAÏVE BAYES ML TECHNIQUES IN SA

Researchers conducted a comprehensive review and comparison between different classification models in several studies. Most of them included the Naïve Bayes classifier as one of the most common and used classifiers. Some of these studies stated in the following section:

NB assumes feature independence, study conducted by Rivera et al [6] aimed at reducing the impact of this assumption, the GA Genetic Algorithm combined with NP in order to give more weights to the features that are highly associated with class label. Study concluded that the weighted NB feature made a slight improvement over the standard NB model with an accuracy of 73.72%, compared to 73.55% in the standard NB. Poornima and Priya [7] are prepared a study that aimed to make comparisons of machine learning algorithms in sentiment analysis on Twitter data based on the frequency of the term. The algorithms that were compared are NB, SRM and logistic regression algorithms. The study concluded that the latter achieved the highest accuracy rate. when used with n-gram and bigram. A comparative study [8] conducted on five machine learning classifiers, which are Multinomial Naïve Bayes, Bernoulli Naïve Bayes, Support Vector Machine, Maximum Entropy and Decision Tree, study use movie reviews data for classification. The study showed the superiority of MNB classifier over other classes in accuracy, precision and F- score.

In a study conducted by Banik and Rahman [9] regarding to the determination of the polarity of reviews in the Bangladeshi language because sentiment analysis is highly influenced by the field, Support Vector Machines and Naive Bayes classifiers were used based on the unigram model. The study proved that the accuracy of the SVM algorithm was slightly better than the NP algorithm.

In 2013 Ashari et al [10]. use three classification models in searching for alternative designs by using WEKA is a data mining tool. Their experiments showed that the Decision Tree is the fastest and KNN is the slowest classification technique. They indicated that the reason is in the Decision Tree. There is no calculation involved. On the other hand, if the data size is more prominent, we must perform a more extensive distance calculation, making KNN extremely slow. They concluded that Naïve Bayes outperformed Decision Tree and KNN in accuracy, precision, recall, and F-measure.

Jotheeswaran et al [11] are suggested extracting the feature set of film reviews. Inverse document redundancy and feature set reduction calculated by using principal component analysis. Pretreatment efficacy evaluated using Naive Bayes and Linear Vector Quantization methods.

Vivek Narayanan and et al [12]. Explore methods for improving the accuracy of the Naive Bayes classifier for sentiment analysis to match the accuracy of classifying complex models in sentiment analysis by removing noise eliminating inappropriate features and selecting only appropriate features. Naive Bayes classifiers due to their conditional independence assumptions are extremely fast to train and can scale over large datasets.

In 2014, Kaur et al. used a hybrid technique for Punjabi text classification [13]. In this research, they used a combination of Naïve Bayesian and N-gram techniques. The N-gram model features were extracted and then used as a training dataset to train Naïve Bayes. Then, they tested the model by supplying testing data. They found that by comparing results from existing methods, the accuracy of the proposed method was adequate.

Dhande and Patnaik [14] proposed a system that combines the Naive Bayes classifier and a neural network to solve the dependency problem between input variables in the Naive Bayes classifier, which reduces classification accuracy in some cases. Combining the Naive Bayes classifier and the neural network classifier for training, the experimental results showed that accuracy increased to 80.65% when using the unigram feature in the movie review dataset.

Narayanan et al [15] conducted a study showing how the appropriate feature selection enhanced Naïve Bayes classifier accuracy in the related domain of movie review sentiment classification. The study mentioned that they achieved an accuracy of 88.80% on the popular IMDB movie reviews Dataset but only tested a single ranker mutual information.

Bilal et al [16] performed research that extracted training data that contains Roman-Urdu and English 150 positive and 150 negative opinions as labelled examples to train the machine. The results show that the Naive Bayes algorithm performed best in terms of higher accuracy, higher recall, and higher value of F-measure as compared to the Decision Tree and KNN.

3. PARTICLE SWARM OPTIMIZATION PSO

The PSO algorithm is one of the most common swarm-based algorithms due to its easy search ideas, low implementation costs [17]. It was first proposed by Kennedy and Eberhart in 1995. The particle swarm algorithm has many advantages such as robustness and flexibility in use as well as the ability to quickly distribute and converge with optimization value and can be hybridized with other algorithms to develop [18]. Ying Tan has pointed out some other PSO features such as the speed of convergence, the need for small populations, the ease of adaptation to new application domains, and the possibility of hybridization with other approaches. Dash et al [19] created two developmental hybrid models, respectively called CSPSO and ICSPSO. PSO and Cuckoo Search (CS) search strategies have been incorporated to boost local exploitation and the initial PSO algorithm's global exploration. Both techniques suggested allowed each particle to update its position using the initial PSO mechanism. They created a fresh nest to use the initial system for PSO. Then, they use the Levy flight operator in CS to generate a new nest from a present particle's position vector if this particle was ranked within the highest 4 percent of the population. In ICSPSO, Differential Evolution (DE) 's mutation and crossover activities were incorporated with CSPSO to improve each iteration's worldwide best solution further. Both algorithms were used to design linear multi-band stop filters and search for the filters' required impulse responses. For regression problems, Wang et al [19] proposed a novel strategy to feature selection based on extreme learning machine (ELM) and fractional-order Darwinian particle swarm optimization (FODPSO). By calculating the mean square error (MSE) obtained from ELM, the suggested technique builds a fitness function. And an enhanced particle swarm optimization, FODPSO, is searching for the ideal fitness function solution. Comparative studies with other related methods are performed in seven government datasets to assess the suggested technique's efficiency. The proposed method obtains among all comparison techniques six lowest MSE values. Experimental findings show that the recommended procedure has the advantage of lowering. MSE with the same subset of feature scale or requiring a narrower subset of features for comparable MSE. Most other algorithms are created based on PSO's primary search procedures directly or indirectly. In recent years, PSO variant models have been widely employed for solving diverse optimization problems. These works have emphasized PSO and its modified models because of their clarity, population-based, and fast convergence nature.

4. RESEARCH DESIGN

The main idea is to integrate the NB supervised machine learning classifier with the particle swarm algorithm to create a developer classifier. Then use the training data from the movie review database to train the new workbook and evaluate the developed model using the test data. Figure 3-1 specifies the model flow chart starting with the Data pre-processing to filter and remove punctuation, digit, punctuation, digit, URL, and stop words. The next step is feature selection and extraction, including the Tokenization, stemming, and n-gram. The third step is to apply Feature Weighting TF and TF-IDF feature space. Training the PSO-NB model came next and the last step is to evaluate the model using the test dataset. The following section described the research design methodology in more detail, as illustrated in Figure 1.

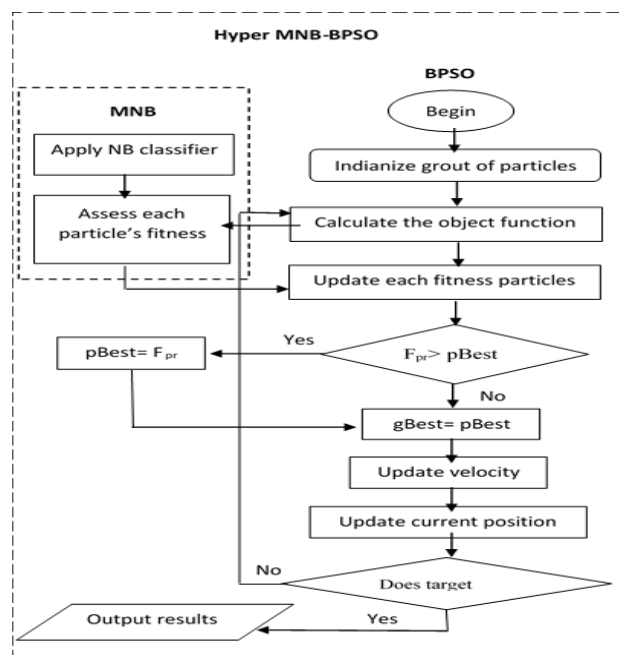


Fig. 1: The Hybrid approach (MNB-SSO) Flow chart

4.1. multinomial naïve Bayes

Naive Bayes considers a probabilistic classification algorithm for binary (two classes) or multiple classes. Naive Bayes based on Bayes' Theorem depends on the assumption of independence of the features. However, this assumption, in reality, is not verified, and hence it was called naïve. Sentiment classification is an instance of text classification. In our research, the multinomial naïve Bayes (MNB) classifier was used. It is one NB classifier form that is suitable for text classifications. MNB usually requires integer representation of feature counts or vectors of features such as TF and TFIDF.

4.2. Binary Particle Swarm Optimization BPSO

The concept of Binary Particle Swarm Optimization BPSO emerged in 1997 as Kennedy and Abrahart presented the success of the BPSO to solve a different binary problem. In the BPSO algorithm, the formula for the particle velocity equation remains unchanged as Equation 5,

$$v_i(t + 1) = wv_i(t) + c_1 r_1 [pbest(t) - x_i(t)] + c_2 r_2 [gbest(t) - x_i(t)] \tag{5}$$

Where: i is the index of a particle, w is the inertial coefficient usually between 0.8 and 1.2, c₁, c₂ are represented acceleration coefficients between 0 and 2, r₁, r₂ are random values in the rang (0, 1) and v_i(t), x_i(t) are velocity and position of particle i at time t. But the particle's location is represented by an integer vector variable in the range [0,1]. Thus, the particle position equation is the same like Equation 6:

$$x_i(t + 1) = \begin{cases} 1, & rand() \geq \frac{1}{1 + e^{-v_i(t+1)}} \\ 0, & Otherwise \end{cases} \tag{6}$$

Where: rand () is a random coefficient in the time period

BPSO feature selection is applied in this research to the reviews classification problem to get the best features with the most effectiveness in classification. All features are not equal in importance, so feature selection is choosing the most relevant features from others. For BPSO, the particles' position is represented by two values, 1.0 or (on and off). Figure 3 represents a novel approach MNB-BPSO flow chart.

A novel approach's flow chart starts with initializing two BPSO parameters position and velocity randomly within a permissible range. After initializing the individuals in the population, we need to calculate each particle individual's fitness value. Then flow chart move to calculate the objective function. We train each selected subgroup with their training instances. Then we assess their loss with the selected cases. A considerable loss value indicates low fitness, so particles or features with high fitness have a higher chance of being chosen for recombination. The most widely used method of calculating fitness is the rank-based fitness method. This method depends on the sorting loss determination for all particles. The fitness of each individual depends on its position in the individual's rank and not on the actual determination loss, so: The calculated fitness value of each particle using the ranking method as the Equation 7.

$$fitness(i) = \alpha * R(i) \text{ where } i = 1,2 \dots N \tag{7}$$

Alpha is a constant named selective pressure that takes a fixed value between 1 and 2. The purpose of selective pressure values is to make the fittest particles more capable of forming and reconstructing. After completing the fitness task, the selector selects the particles according to their fitness level. The highest fitness particles are chosen, which have the highest probability of survival and are more environmentally friendly. Often the number of particles selected is half of the total population. The allocation, selection, and reconfiguration processes are repeated until reaching the stopping criterion. It is expected that each new generation will be the best and most adapted to the environment of the previous generation. Here is the algorithm of approach:

Begin

function Fitness

for each particle, i do

calculate the classification accuracy and the rank

(accuracy, rank) =classification (training set, particle i)

Fitness calculation based on rank and accuracy

End for

return fitness

End

Algorithm 1: Function of fitness**Begin**For each particle i

For each dimension

Randomly initialize position x_i Randomly initialize velocity v_i

end for

end for

start iteration =1

For each particle i Assess the fitness value Fit_i (using fitness function F)If the Fit_i is better than $pbest_i$ Let $pbest_i = Fit_i$

End if

End for

Let $gbest$ equal the best $pbest_i$ for all particles i as:For each particle i If the $pbest_i > gbest$ Let $gbest = pbest_i$

End if

End for

Update the velocity and positions of all particles as:

For each particle i

For each dimension

Update velocity as equation (1)

Update position as equation (2)

End for

End for

While maximum iterations or minimum objective function are not met

End**Algorithm 2: MNB-BPSO Hybrid approach**

In the first iterative loop in Algorithm 1, the particles' initial values (position and velocity) are initialized with a random distribution within a permissible range. For each stage of iteration value, first, each particle's fitness is calculated by the fitness function F and compared with the best position $pbest$ for the specific particle. The best position of all particles $gbest$ is selected. The second velocity and position for all particles are updated where $v_i(k+1)$ represents the particle i velocity in the next iteration, w is the inertia weight that controls the "memory" of the swarm's previous position. r_1 and r_2 denote random values where $0 \leq r \leq 1$ and they control each value's effectiveness. $pbest$ is the best and $gbest$ is the best position of all the particles, and x_i is the current personal position equal to the last position plus the current velocity calculated in the previous step. Algorithm 4-2 displays how the objective function calculates the fitness of each particle in the sub-swarm. At each repeated value, the objective function receives several sub-particle swarms from BPSO and then categorizes using an MNB classifier, calculates the classification accuracy, and determines the sorting loss for all the particles. Each individual's validity depends on their position in the individual arrangement and not on the actual determination

loss as in equation (3). Finally, upon completion of the algorithm cycle, i.e., upon arrival, the check-fulfillment condition is achieved. The optimal features of the classification process have been extracted from the whole feature set. The features obtained from the proposed system are used to classify the reviews calculate the accuracy, and then compare them to the classification accuracy obtained using all TFIDF features. All results and comparisons obtained will be documented in the following section optimal features of the classification process have been extracted from the whole feature set.

5. THE RESULT

5.1 Feature Optimization by PSO

Feature selection is the process of finding the best-fit features for a model and excluding irrelevant, repetitive, and unnecessary features that do not contribute to the accuracy of the classifying model, the Particle Swarm Optimization PSO algorithm to optimize features. This algorithm resulted in 6627 PSO features Figure 2 out of 11,178 it is all dataset features

PSO features: 6627

(Review index, Word index)	TFIDF
(0, 6439)	0.1859993775938787
(0, 6376)	0.10857262281480287
(0, 6256)	0.1391255743430991
:	
(1999, 213)	0.17147104126224258
(1999, 210)	0.16681219600711444

Fig. 2: New features Optimized by BPSO

Table 1 show the best parameters values that obtained best classification results it in our experiments, we implemented the feature selection models using Pyswarms Version: 1.1.0 toolkit library (Miranda 2018):

Table 1: BPSO Parameters

Acceleration factors (C1 = C2)	2
Fixed inertia factor (w)	1
No. of Particles	70
Iterations (Stop Criteria)	200
Number of neighbors to be considered(k)	25
Parameter (p) (brought up to control the value of C1and C2)	2

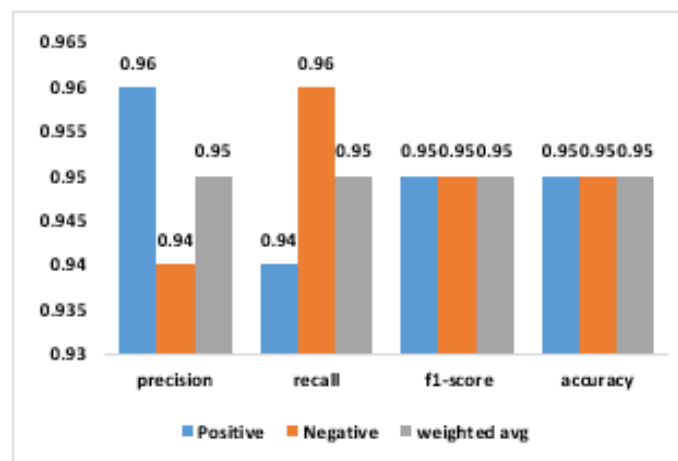


Fig 3: MNB-BPSO Classification chart

From the Figure 3 chart, we see that the precision scale in positive sentiments was higher than that precision of negative sentiments, while the value of the recall scale in reviews of negative sentiments is the highest. We also notice the magnificent improvement in the accuracy performance of the hybrid classifier where the accuracy of the MNB-BPSO classifier reached 0.95%. These results obtained from practical experiments confirm the initial hypotheses in the research where the performance of the hybrid classifier surpasses that of the Naïve Bayes classifier. The performance percentage increased from 0.84% in the NB classifier to 0.95% in the MNB-BPSO hybrid classifier

5.2 Feature Optimization by PSO

From Table 2, the features extracted from the PSO intelligence algorithm have the strongest effect on the accuracy of our hybrid classifier MNB-BPSO, it led to an increase in classification accuracy amounted to 0.95% for the hybrid developer classifier where the classification accuracy was 0.846% in the Naïve Bayes classifier as shown in Table 2

Table 2 Relation between accuracy and feature size of the two classifiers

Classifiers' accuracy and feature size		
	Accuracy	Feature size
TFIDF	0.847	11178
PSO	0.945	6477

The following Figure 4 and Table 3 are describing the comparison sentiment classification result obtain from NB and MNB-BPSO classifiers, the blue bar represents NB classifier and the green bar represents MNB-BPSO classifier. Based on this figure, the MNB-BPSO classifier is better solution for all measures, accuracy, precision and recall:

Table 3 The Comparison result of NB and MNB-BPSO classifiers

	NB	MNB-BPSO
Number of features	11178	6477
Accuracy	0.847	0.95
Precision	0.85	0.95
Recall	0.85	0.95
F1-score	0.85	0.95

6. CONCLUSION

Many applications that rely on audience thoughts and feelings use sentiment analysis as a key strategy. Sentiment research includes forecasting sales performance, using customer reviews to evaluate products and companies, determining public opinion trends, forecasting election outcomes, etc. The study dealt with the issue of classifying feelings into binary, positive and negative classification. By increasing the accuracy of the Naïve Bayes classifier, the study used a new approach based on feature dimensionality reduction and selection of the best features for the classifier and used PSO particle swarm optimization theory and combined this algorithm with the traditional Bayes classifier. The movie reviews data set was applied to test the accuracy of the developed classifier and the results showed a significant improvement in the accuracy and effectiveness of the hybrid classifier with the classifier accuracy reaching 0.95% versus 0.846%. by traditional classifier's

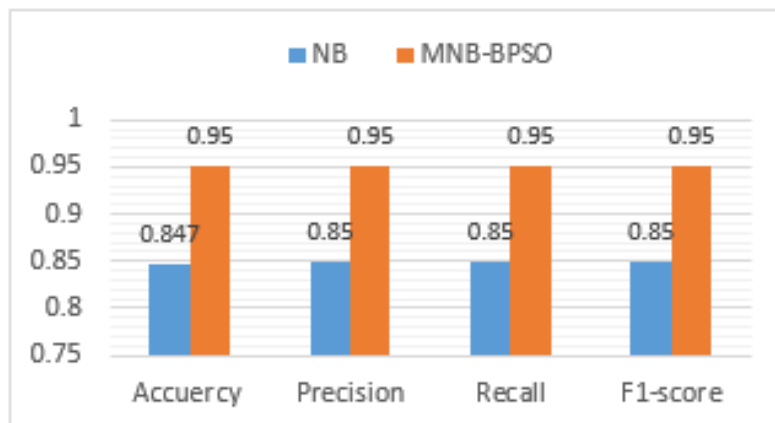


Fig 4: The Comparison result of NB and MNB-BPSO classifiers

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**INFLUENCE OF HOME ENVIRONMENT ON THE ACADEMIC ACHIEVEMENTS OF
SECONDARY SCHOOL CHILDREN IN NAGALAND****Sungjemmenla Aier¹ and Prof. Fr. Sunny Joseph PhD²**¹Research Scholar and ²Professor, Department of Education, St Joseph University, Dimapur Nagaland**ABSTRACT**

The study, "Influence of home environment on the academic achievements of secondary school children in Nagaland" was carried out with the objective to investigate the amount of parental influence on the academic achievements of the high achievers of secondary school children in Nagaland. The study adopted descriptive method of educational research. By employing stratified random sampling techniques 442 samples were drawn from 43 secondary schools in Mokokchung and Mon districts of Nagaland, India. The samples consisted of 228 Girls and 214 Boys. A self-constructed questionnaire was used as research tool. The research tool was constructed basing on the research objectives. The study revealed that the home environment of the focused group of children was congenial for their education. Another finding of the study revealed substantial dynamics between the parents and children. Further findings indicated that the parental expectations were not in attunement with the children. Basing on the findings, the researcher recommended that the parental expectations should be based on children's capabilities as it may have negative psychological impact on the children. The researcher suggested conducting similar study on different levels of education without any stratification on achievements.

Key words: Home environment, Academic Achievement, Secondary School, Children, Nagaland

INTRODUCTION

Education is a shared obligation between the home and school. Along with the highly qualified trained teachers, attractive curriculum, comprehensive syllabus and school with the best possible facilities, what children need to succeed is a supporting and stimulating home environment. A home environment that is motivating and stimulating fosters greater achievement.

Parental influence in the form of provision of stable environment, intellectual stimulation, parent – child communication, parental aspiration etc. contributes significantly in helping children overcome different plateaus of learning resulting in greater achievement and brighter future prospect. The more families support their children's learning and educational progress, the more their children tend to do well in school and continue their education (Henderson, Anne T.; Mapp, Karen L. 2002).

The purpose of this study therefore, is to find out the impact of home environment on the academic achievements of the secondary school children in Nagaland. The findings could help enlighten, educate and create awareness among students, teachers, school administrators and community in general, and parents' population in particular, about the significance of parents' role in children's education.

NEED OF THE STUDY

- ❖ Continuously increasing dropout rate in the state
- ❖ Under performance of children in the NBSE, HSLC examinations

OBJECTIVE OF THE STUDY

Home environment is a primary source of children's motivation, an academically and intellectually motivated home environment is sure to enhance the achievement level of children. Academic achievement of children is directly linked to how parents motivate and encourage the children at home. Children learn better only when the environment around their study area is pleasant and motivating. As such, the study aims to find out the extent of the influence of home environment on the academic achievements of high achievers of secondary school children in Nagaland.

MEANING AND DEFINITIONS

- Home environment:- The physical, mental and emotional aspects of a person's domestic life that contributes to their living conditions.
- Academic Achievement: - Academic achievement means the amount of proficiency that a student has achieved in a given course of study. Proficiency being the amount of clarity of concepts and topics of a given syllabus and the ability to achieve both short-term and long-term educational goals. The short – term education goal is the ability to scale or reach the set cutoff in standardized tests or any other form of

educational assessment tools. Long-term goal is the ability to apply the learning to solve the day-to-day problems and meet life's challenges.

Academic achievement in this study refers to a more curricular-based criterion, such as grades or marks obtained in different subjects by the sample children on an educational achievement test.

- Secondary School: - The stage or level of schooling following elementary education. Secondary school comprises of Classes 9th – 10th with children at the age group between 14 – 16 years.
- Children: - The dictionary defines the word child/children in a number of different ways, a young person especially between infancy and puberty, a person not the age of majority, a son or daughter of a human parent, one strongly influenced by another or by a place or state of affair etc.

In this study, 'children' refers to persons studying in classes 9th and 10th standards covering the age group of approximately 14 to 16 years of age.

- Nagaland: - Nagaland is a state in North-eastern India. The state of Nagaland was formally inaugurated on December 1st, 1963, as the 16th state of the Indian Union. It is bounded by Assam in the West, Myanmar (Burma) on the east, Arunachal Pradesh and part of Assam on the North and Manipur in the South. It has an area of 16,579 square kilometres (6,401 sq mi) with population of 1,980,602 (2011 census of India) making it one of the smallest state of India. The State consists of 16 (Sixteen) Administrative Districts, inhabited by 17 major tribes along with other sub-tribes. Each tribe is distinct in character from the other in terms of customs, language and dress.

REVIEW OF RELATED LITERATURE

Review of literature was done by the researcher in order to get better overview of the topic and get updated with the research that has been done so far on the subject to be studied. It helped the researcher to lay the foundation of research by familiarizing with the extent of data already available, appropriate research methodology, research tools, data interpretations etc. It also helped the researcher to identify research gaps that would function as the base for the research and justify the necessity of the research to be undertaken.

REVIEWS DONE IN INTERNATIONAL LEVEL

J.M. Muolai (2010) – A study of the relationship between academic achievement motivation and home environment among standard eight pupils. The objective of the study was to investigate the relationship between academic achievement motivation and home environment among standard eight students of Machakor district in Kenya. The study revealed that there was significant relationship between the pupils' scores in academic achievement motivation and six home environment factors:-

- Father's Occupation
- Mother's Occupation
- Father's Education
- Mother's Education
- Family Size
- Learning facilities at home.

The study further found that an academically favorable home environment enhances child's motivation for academic success and good school performance. Recommendation was made to create awareness among parents on the importance of home environment on children's academic achievement.

Henry M. Codjoe (2007) conducted a study on the importance of Home Environment and Parental Encouragement in the Academic Achievement of African – Canadian Youth. The main emphasis of the research was to study the factors that contribute to academic success of the Black students. The sample of the study included four students born in continental Africa, four in Caribbean region and four born in Canada. Interview method was used as tool for collection of data. Findings from the study indicated that the factors that contribute to students' academic success were parental aspiration, encouragement and home support. Another important finding of the research revealed the importance of the availability / access to educational facilities, which is crucial for higher academic achievement.

Adele Eskeler Gottfried, et al., (1998) conducted a longitudinal study on the Role of Cognitively stimulating Home Environment in children's Academic Intrinsic motivation, the objective was to analyse the short and long

direct and indirect relation between cognitively stimulating home environment and intrinsic academic motivation. The findings revealed that the home environment motivates children's academic achievement. Children whose families have given importance to educational activities and learning opportunities are more motivated in learning. The researchers suggest the necessity for provision of intellectual stimulation and motivation as it was found to be crucial for children's academic motivation.

REVIEWS DONE IN NATIONAL LEVEL

K. Kaur Toor (2018), "Parent – child Relationship and Students' Academic Achievement. The study was conducted to study the parent child relationship on the basis on gender, type of school and academic achievement of Sidhwan Belt Block of Ludhiana District. The study found that high achieves have better and warmer relationship with parents than low achieves. It was suggested that the parents, school authorities and teachers alike should understand the importance of parent – child relation and its impact on children's performance.

Ramandeep (2015) conducted a research on the achievement motivation among secondary school students, in relation to parental encouragement. The objective of the research was to explore the achievement motivation of the secondary school students in relation to the parent's motivation. The research findings revealed that parental motivation and achievement of the children are correlated to each other. The children who are motivated by their parents are internally motivated to perform better. It was recommended that self – confidence is the most important ingredient in children's achievement motivation, parents should encourage their children to develop the same.

Jayanthi J. and Srinivasen K. (2005) investigated how home environment effects the academic achievement of 10th standard children in mathematics. The sample for the study consisted of 1007 children of 10th standard chosen randomly from eleven sample schools of different management in Chennai and Thiruvallur districts of India. A Home Inventory for Mathematics (HEIM) questionnaire was used as tool for the collection of data. An achievement test prepared by the researcher based on the 10th standard mathematics syllabus was also conducted for the sample students to measure the influence of home environment on the students' performance. It was concluded through the research that there was positive correlation between home environment and performance of children in mathematics. It further revealed that positive home environment influenced children's academic performance not only in mathematics but also in all the area of academics. Suggestions were made for the parents to be aware of the importance of positive home environment on children's academic achievements. The researcher further added that parental encouragement, assistance and provision of educational facilities at home were crucial for children's better performance and thus the parents need to be well informed about the same.

REVIEWS DONE IN REGIONAL LEVEL

Bahniman B (2021) conducted a study on, 'the impact of parents' involvement in education level on secondary school students' academic achievement'. The sample comprised of 500 children drawn from 12 schools of Sivasagar District of Assam. The study revealed that the parents were highly involved in their children's academics, and as such it was found that majority of the children were above average performers at school. Based on the findings, the researcher concluded that parental involvement and children's academic achievements were positively related to each other. The researcher suggested that the parents should endeavor to provide positive home environment for their children in terms of support, guidance and motivation to enhance children's educational achievements.

Kharnaor, Ibahunrina (2017) studied the relationship between home environment and academic achievements of higher secondary school children of East Khasi Hills District, Meghalaya, India. It was found that there was a positive relationship between home environment and academic achievements of children. One of the major causes of poor academic achievements as indicated by the study was the absence of parent-child interaction. In view of the findings, the researcher suggested that there was a need for further improvement in the field of study between parent- child interactions.

J. Saru (2018) studied the effects of home and school environment on the academic achievements of school going children in the Ribhoi district of Meghalaya, India. The objective of the study was to find out the relationship between various dimensions of home environment and academic achievement of Class – X Students. The result of the study indicated that home environment of children have major impact on their academic achievements. It was suggested that children should be given full support and commitment from the family and that they should be given full freedom to express their feelings directly to the family.

Many related researches have been conducted both in International and national level but there are limited available literature in the regional level. Findings of the researches from the literature review indicate the

importance of maintaining cordial home environment for better school achievements of children. Through the available literatures it can be inferred that - the importance of parental educational achievements, home – school communication, parent – child communication, availability of educational facilities at home etc. are the indicators of children’s educational achievement.

Design of the study

Considering the nature of the study, the present study adopted the Descriptive method of educational research.

Delimitations of the study

- The research is limited to high achievers of secondary school children only.
- The research covers Mokokchung and Mon districts of Nagaland only.

Population of the study

The Population for the study covers the secondary school children.

Sampling technique

The samples for the study were collected by using stratified random sampling method.

Sample of the study

Altogether, a sample size of 442 subjects was drawn for the study. The samples consisted of 228 Girls and 214 Boys from both Government and Private secondary schools of the study area.

Research tools

A self-constructed questionnaire consisting of 20 close-ended questions was employed for the collection of primary data.

Validation procedure

Prior to the full-scale study, a pilot study was conducted in three schools in the study areas in order to determine the feasibility of the study.

DATA ANALYSIS AND INTERPRETATION

Table 1

Serial No	Parameter	Responses	
		Yes%	No%
1.	Parents are good listeners	94%	6%
2.	Parents verbally appreciates the children	81%	19%
3.	Parents compare children’s achievements	65%	35%
4.	Parents maintain consistency in disciplining	90%	10%
5.	Parental expectations are clearly communicated	89%	11%
6.	Parents inquires children’s day at school	70%	30%
7.	Children makes their own study decision	77%	23%
8.	Children share their study problems with parents	85%	15%
9.	Parents know their children’s strength and weaknesses	80%	20%
10.	Parental expectations are achievable	48%	52%

From the above Table 1, it is seen that 94% of the participants responded that their parents were good listeners. 9% responded that their parents do not possess good listening skill. 81% responded that they are verbally appreciated by their parents whenever they achieve good grades at school. 19% responded that they are not verbally appreciated for their achievements at home. 65% responded that their parents compare their academics with their friends’ academics. 35% stated that their parents do not compare their academics. Consistency of disciplining system both at home and at school is important for building good characters and habits among the children. 90% responded that the disciplining system at home was consistent. 10% responded there was inconsistency of disciplining at home. 89% responded that their parents make their expectations clear to them. 11% responded that their parents’ expectations are not clearly communicated. 70% responded that their parents ask about their daily school learning and activities. 30% responded that their parents do not discuss their school day at home. 77% of the children are allowed to make their own choices regarding their studies at home. 23% are not provided with the freedom to decide on their studies at home. The data shows that 85% of the children feel comfortable to share their academic problems with their parents. 15% of the children feel uncomfortable to share their academic problems with their parents. 80% responded that their parents know their strength and weakness, and 20% responded that their parents are not aware of it. 52% responded that their parent’s

expectation towards them is beyond them and 48% responded that the expectation their parents put on them were not beyond them to achieve.

Table: 2

Serial No	Parameter	Responses	
		Yes%	No%
1.	Parents and children discuss classroom learning	66%	34%
2.	The children are provided with separate study room	59%	41%
3.	The children follows regular study routine	80%	20%
4.	There is free internet access at home	57%	43%
5.	Mobile phone usage is regulated by parents	77%	23%
6.	The parents talk about importance of learning	97%	3%
7.	Fun reading is encouraged at home	36%	64%
8.	The children are provided with private tuitions	68%	32%
9.	The parents help in school work	57%	43%
10.	The parents have knowledge about their children's subject matter	76%	24%

Table 2, indicates the pedagogical environment of home. According to the data collected, 66% of the parents give time to discuss the day's classroom learning of their children and 34% do not discuss about their day's learning with their children. This indicates that majority of the parents are concerned about their children's day-to-day learning at the school. With regard to the provision of a separate study room, 59% responded that they have separate study rooms at home, while 41% responded that they are not provided with separate study room. 80% of the respondents stated that they have regular study routine, while 20% stated that they do not follow regular study routine at home. With regard to the easy access to internet services for educational purpose, 57% were found to have free access to the internet while 43% did not have free internet accessibility. The data further indicates that for 77% of the respondents, the usage of mobile phones at home are strictly monitored by the parents, while 23% did not have strict rules regarding mobile phone usage at home. With regard to parent-child discussion about the importance of learning, 97% of the children stated that their parents constantly talks to them about the significance of learning, while 3% stated that their parents do not speak to them about the importance of learning. From the data collected, it is further indicated that only 36% of the parents encourage their children to read for fun, while 64% do not encourage fun reading to their children. This can be an indication that the parents may not be well informed about the significance of fun reading on children's education. The provision of private tuition is a common practice among the students in Nagaland, through the data it in indicated that 68% of the children were availing private tuitions, while 32% were not availing any kind of private tutoring services in any of the subjects. The data further indicated that 57% of the parents were able to help the children in all the school related activities and work, while 43% were not involve in helping the children in their school work and activities. It was also found that 76% of the parents were aware about the different subject matters that their children studies at school, while 24% were not aware about the different subject matters that their children study at school.

FINDINGS AND DISCUSSION

Main findings

- The study shows that the home environment of the focused children is conducive for education.
- There is good emotional support from the parents.
- Children are provided with liberty to make their own decisions.
- There is good dynamics between the parents and children, indicated by the fact that the parent-child communication is clear, comprehensive and constant.
- Parents know and understand their children well.
- There is constant parental encouragement.
- Parents are ambitious about their children's academic achievements.
- Parental expectations are beyond the children.
- Regular study routine is followed at home.

- Fun reading is not encouraged at home.
- Strict rules for usage of electronic gadgets like mobile phones were maintained.

The result of the study revealed that the home environment of this group of children was congenial. It was found that the parents were highly attentive towards their children's emotional well-being at home. The home environment of the children was democratic where the children were allowed to make decisions regarding their life as well as their study. It was found that the parents knew their children's strengths and weaknesses and were continually encouraging the children in their endeavors. There was clear and constant communication between the children and their parents. Parental expectations and appreciations were clearly communicated to the children. However, the result also indicated that the majority of children felt that their parents' expectations towards them were beyond them to achieve.

Children were given continuous advice and motivation regarding healthy work ethics and persistence. Regular home study routines were maintained, however, children were not encouraged to read for fun apart from their school related books. The study shows that the children maintain regular study routine at home. Regular study routine is not only helpful for children to finish their study on time, but it also lessens stress, helps learn discipline and time management, which are potent factors of success. Mobile phone dependency and addiction has become a common factor that acts as a strong contributor towards children's procrastination and failure to succeed. Although the study shows that many of the focused children did not own personal mobile phones, the time they spend on the phones was strictly monitored by the parents. Despite the parents' lack of educational achievements, the study revealed strong zeal among the parents to enhance their children's academics.

RECOMMENDATIONS

Basing on the results the researcher forwarded the following recommendations-

- Parental expectations serves as a strong motivator for children to strive for better academic performances, however, these expectations should be based on thorough understanding of the children as it can have negative impact of children's learning.
- Too much emphasis on textbook learning can have negative psychological impact on children; therefore, reading for pleasure out of the classroom should be given importance.
- The schools need to take responsibility to timely sensitize the parents regarding the changing pattern of the modern education system. This could lead to better-informed participation on the part of the parents.
- Parental influence is a shared responsibility of both the parents; therefore, Fathers should also actively participate in their children's education.

SUGGESTIONS

- The study can be carried out on the general students without any categorization.
- The study can be carried out in other levels of education apart from the level covered by this study.
- Comparative study of rural/ urban and Government/ Private can be done.

CONCLUSION

Home environment strongly influences the intellectual development of the children. Educational process does not only begin from schools with teachers, it also occurs at home where home environment and parents have influenced children's education (Bhalkani & Sindh, 2009). Parental responsiveness, care, disciplining style, involvement in the child, availability of appropriate learning materials etc. are strong indicators of children's school success.

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A STUDY ON ICT AWARENESS AMONG STUDENT-TRAINEES IN B.ED COLLEGES OF NAGALAND

Ms. Rokuonuo Usou and Fr. Prof. Sunny Joseph, Phd

Research Scholar and Research Guide, Department of Education, St. Joseph University, Chumoukedim, Nagaland

Abstract

Nagaland is a state of India lying in the hills and mountains of the northeastern part of the country. About 79.6% of the literacy rate in Nagaland as per the 2011 census data. For taking the initiative to bring quality education in the state, At present, there are 8 B.Ed. colleges in Nagaland to impart quality and value based teacher education. Rapid advancement of ICT has contributed to the overall development among learners in the field of education. With the use of ICT, it will boost up the level of confidence of the teachers and lighten the workload for smooth transaction of the curriculum. The effective use of ICT in teaching encourages a move away from the teacher-centered approach. The present B.Ed curriculum needs to emphasize more on ICT based classroom transaction as it is very important and useful in teacher's professional development in the present education system. There is a need to provide teachers with enough ICT access to educational programs that includes techniques to motivate and encourage to use it effectively and to manage the classroom problems. Teacher education curriculum needs to be interlinked and integrated ICT to match with the trends and challenges that the teachers are facing today. In this context, the study was conducted to find out the awareness of ICT among student teachers in B.Ed colleges of Nagaland. The sample consists of 516 student teachers. The awareness of ICT scale was prepared by the investigator. The statistical technique 't' test and ANOVA was used. The educational implications and suggestions for further study are also given based on the findings of the study.

Keywords: Teacher education, professional development, awareness of ICT, student teachers.

INTRODUCTION

Information and communication technologies are combined to create a multifaceted instructional delivery system. It is defined as a diverse set of technological tools and resources used to communicate, and to create, disseminate, store and manage information. Professional training demands acquisition of knowledge, professional skills, positive attitude towards the profession and commitment on the part of the student teachers. Intervention of ICT in the curriculum can add quality to teaching learning. With its application to the core of teaching can accelerate and improve learning in a number of aspects from basic skills to problem solving, information management, work habits, motivation, lifelong learning habits etc. The knowledge of ICT skills is very much needed for the student teachers during their course of training as that may help in transforming the present isolated, teacher-centered and text-bound classrooms into rich, student-focused, interactive knowledge environment. David Warlick (2006) stated that we need technology in every classroom and in every student and teacher's hand, because it is the pen and paper of our time, and it is the lens through which we experience much of our world.

SIGNIFICANCE OF THE STUDY

Constructivism learning theory suggests that a teacher must understand what learners bring to the learning situation and to begin to help students to construct their own knowledge. ICT facilitates students' thinking processes which assist them by applying their existing knowledge and real- world experience learning which eventually can draw conclusions from their findings. In order to take advantage of ICT as a teaching tool, there is an urgent need for the professional development of teachers, to construct professional knowledge about pedagogy, content, and technology as well as strategies for managing the changing classroom environment brought about with the creating of constructivist learning environments supported by ICT. The quality in producing efficient and competent in utilizing ICT is greatly depends on the level of ICT awareness which can enhance the utility of ICT in the teaching learning process effectively. Hence, in this circumstance, there is an urgent need to find out the level of ICT awareness among student teachers in B.Ed colleges of Nagaland. Therefore, the investigator is attempting to find out the awareness of ICT among student teachers in the state.

REVIEW OF RELATED LITERATURE

There are few studies conducted in this area, those of the literature studies is given below,

- Arul Sekar J. Mekelle university, Ethiopia (2016) conducted study on 'Awareness of B.Ed. students towards Information and Communication Technology (ICT).
- S. Amaladoss Xavier, S.J (2016) conducted study on 'Awareness towards computer among B.Ed. trainees

- Ms.T.Yolila Sangtam & Dr. M.S. Talawar (2012) conducted study on ‘ ICT awareness of prospective Teacher Educators studying in Bangalore University-A case study.
- Ms.T.Yolila Sangtam & Dr. M.S Talawar (2012) conducted study on ‘ A study of Relationship between utilization and awareness of ICT among B.Ed. Trainees of Nagaland.
- Manoj Kunar Sinha (2011) made a study on ‘Information and Communication Technology (ICT) awareness amongst University and College Teachers of North Eastern Region of India.’
- Manoj Kunar Sinha (2008) conducted on ‘Information Communication Teachnology (ICT) and internet awareness amongst the college and university teachers.

Therefore, it is clear that no study on B.Ed. student teachers of Nagaland has been attempted to find out the awareness towards ICT among in B.Ed. colleges of Nagaland.

METHODOLOGY

Statement of the problem

The study undertaken for the research is stated as, A study on ICT awareness among student teachers in B.Ed. Colleges of Nagaland.

Objectives of the study

- To find out the level of awareness towards the use of ICT among student teachers in B.Ed. colleges of Nagaland.
- To find out the significance difference in awareness of ICT among student teachers in concerning of gender, type of management, locality, computer literacy and area of specialization in B.Ed. colleges of Nagaland.

Hypotheses

The following hypotheses were formulated to test the objectives stated above:

H1. - There is no significant difference between male and female among student teachers towards the level of ICT awareness in B.Ed. colleges of Nagaland.

H2. - There is no significant difference between types of management towards the level of ICT awareness among student teachers in B.Ed. colleges of Nagaland.

H3 – There is no significant difference between types of trainees among student teachers in B.Ed. colleges of Nagaland.

H4 - There is no significant difference between the types of locality towards the level of ICT awareness among student teachers in B.Ed. colleges of Nagaland.

H5. – There is no significant difference between computer literacy towards the level of ICT awareness among student teachers in B.Ed. colleges of Nagaland.

H6. - There is no significant difference between areas of specializations towards the level of ICT awareness among student teachers in B.Ed. colleges of Nagaland.

Tools used for the collection of Data

Self developed questionnaires was used for the collection of research data.

Sample

A total of 516 B.Ed. student teachers constitutes of both the private and the government B.Ed. colleges of Nagaland were drawn by using Simple purposive sampling Technique.

Variables

The variables considered in the present study are:

Independent Variables

Awareness of ICT

Moderate variables:

- Gender
- Types of management

- Types of trainees
- Locality
- Computer literacy
- Area of specialization

Statistical Technique employed

Used SPSS and ANOVA

DATA ANALYSIS

H1- There is no significant difference between male and female among student teachers towards the level of ICT awareness in B.Ed. colleges of Nagaland.

Table 1. Group Statistics						
	Gender	N	Mean	Std. Deviation	Std. Error Mean	T-VALUE
Total Score in AWARENESS TOWARDS THE USE OF ICT	Female	382	62.53	5.038	.258	2.101S
	Male	134	61.47	5.065	.438	

From the above table, it is evident that calculated t- test is 2.101S greater than table t-value 1.96 for 514 df at 0.05 level of significant, therefore null hypotheses is rejected. There is a significant difference between male and female among student-teachers on the level of awareness towards ICT in B.Ed colleges of Nagaland.

H2- There is no significant difference between types of management towards the level of ICT awareness among student teachers in B.Ed. colleges of Nagaland.

Table 2 Group Statistics						
	Type of Management	N	Mean	Std. Deviation	Std. Error Mean	T-VALUE
Total Score in AWARENESS TOWARDS THE USE OF ICT	Government	120	62.35	5.246	.479	
	Private	396	62.23	5.010	.252	0.228NS

From the above table, it is evident that calculated t-test is 0.228NS lesser than the table t-value 1.96 for 514 df at 0.05 level of significant, therefore null hypotheses is accepted. Therefore, there is no significant difference between Government and Private B.Ed colleges among Student-Teachers towards the level of ICT awareness in B.Ed colleges of Nagaland.

H3 – There is no significant difference between types of trainees among student teachers in B.Ed. colleges of Nagaland.

Table 3. Group Statistics						
	Type of trainees	N	Mean	Std. Deviation	Std. Error Mean	T-VALUE
Total Score in AWARENESS TOWARDS THE USE OF ICT	In-Service	75	62.85	4.528	.523	
	Pre-Service	441	62.16	5.144	.245	1.103NS

From the above table, it is evident that calculated t-test is 1.103NS is lesser than the table t-value 1.96 for 514 df at 0.05 level of significant, thus the null hypotheses is accepted. Therefore, there is no significant difference between in-service and pre-service student-teachers towards the level of ICT awareness in respect to their type of trainees in B.Ed colleges of Nagaland.

H4 - There is no significant difference between the types of locality towards the level of ICT awareness among student teachers in B.Ed. colleges of Nagaland.

Table 4. Group Statistics						
	Locality	N	Mean	Std. Deviation	Std. Error Mean	T-VALUE
Total Score in AWARENESS TOWARDS THE USE OF ICT	Rural	2	66.50	.707	.500	
	Urban	514	62.24	5.064	.223	1.188NS

From the above table, it is evident that calculated t-test is 1.188NS is lesser than the table t-value 1.96 for 514 df at 0.05 level of significant. Thus the null hypothesis is accepted. Therefore there is no significant difference between rural and urban B.Ed colleges among student-teachers towards the level of ICT awareness in B.Ed colleges of Nagaland.

Hypothesis 5: There is no significant difference in AWARENESS TOWARDS THE USE OF ICT among student teachers in B.Ed colleges of Nagaland with regard to Computer literacy.

Table 5: AWARENESS TOWARDS THE USE OF ICT scores of Student-Teachers with regard to Computer literacy

Areas	Age	N	Mean	SD	Source of variation	Sum of square	df	Mean of square	F-value
AWARENESS TOWARDS THE USE OF ICT	Certificate	79	61.38	5.189	Between Groups	261.001	3	87.000	3.445 @
	Diploma	312	62.01	4.843	Within Groups	12931.718	512	25.257	
	Degree	8	62.63	6.567					
	No Formal Education	117	63.50	5.281					
	Total	516	62.26	5.061	Total	13192.719	515		

Note: “@”: significant at 0.05 level.

It is found from the above table, there is no significant difference in AWARENESS TOWARDS THE USE OF ICT of Teachers trainees with regard to Computer literacy as the calculated F-value (3.445) is lesser than the table value of ‘F’ (8.53) for 3 and 512 df at 0.05 level of significance. Hence, Hypothesis-5 stated that “There is no significant difference in AWARENESS TOWARDS THE USE OF ICT of Student-Teachers with regard to Computer literacy” is accepted.

H6. - There is no significant difference between areas of specializations towards the level of ICT awareness among student teachers in B.Ed. colleges of Nagaland.

Table 6: AWARENESS TOWARDS THE USE OF ICT scores among student-teachers with regard to Area of Specialization.

Areas	Age	N	Mean	SD	Source of variation	Sum of square	df	Mean of square	F-value
AWARENESS TOWARDS THE USE OF ICT	Social Science	107	61.49	4.934	Between Groups	125.892	4	31.473	1.231 @
	Science	48	62.19	4.845	Within Groups	7.527	511	25.571	
	Math	268	62.53	5.409		49.855			
	English	85	62.59	4.190		76.036			
	Others	8	60.25	3.694		13066.827			
	Total	516	62.26	5.061	Total	13192.719	515		

Note: “@”: significant at 0.05 level.

It is found from the above table, there is no significant differences in AWARENESS THE USE OF ICT among Student-Teachers with respect to the area of Specialization as the calculated F-Value (1.231) is lesser than the table value of ‘F’ (8.53) for 4 and 511 df at 0.05 level of significance. Hence, Hypothesis-6 stated that there is no significant difference in AWARENESS TOWARDS THE USE OF ICT among Student-Teachers with regards to Area of Specialization is accepted.

MAJOR FINDINGS AND DISCUSSIONS

The following are the major findings of the study:

1. There is no significant difference between male and female on the level of ICT awareness among student teachers in B.Ed colleges of Nagaland. While comparing their mean scores of male and female, the female are better than the male in awareness of ICT. This may be due to the level of enthusiastic of learning new things and the love of profession among female than the male the study reveal that women have high interest in teaching than men.
2. There is no significant difference between private and Government B.Ed. colleges on the level of ICT awareness among student teachers in B.Ed. colleges of Nagaland.

3. There is no significant difference between types of trainees on the level of ICT awareness among student teachers in B.Ed. colleges of Nagaland.
4. There is no significant difference between Rural and Urban on the level of ICT awareness among student teachers in B.Ed. colleges of Nagaland.
5. There is no significant difference between computer literacy on the level of ICT awareness among student teachers in B.Ed. colleges of Nagaland.
6. There is no significant difference between area of specialization on the level of ICT awareness among student teachers in B.Ed. colleges of Nagaland.

EDUCATIONAL IMPLICATIONS

The following implications are drawn on the basis of major findings of the study:

1. Student teachers should be broadening their knowledge towards the use of ICT and should be well equipped with all the digital equipments and to motivates them using ICTs skills in the classroom during their training.
2. Provide proper resources and funding in developing software and hardware facilities in both the rural and urban areas in the teacher education institutions.
3. Student teachers should be insisted in utilizing ICT equipments in their assignment, seminar, lesson planning, etc, by browsing to referring different sources available in the internet.
4. Institutions authorities should appoint competent teacher educator who can deal with ICT as a separate subject in the B.Ed. course in all teacher education institutions.
5. Provide proper digital infrastructure in the teacher training institutions such as printers, desktops, laptops, tablets, etc,. Software tools such as Google Meet, Google spreadsheets, Google classroom, video conferencing, e-mail etc.
6. Organized regular activities on hands- on practice with the use of ICT equipments that will enhance their interest in using ICT in the classroom and can also update them with the latest electronic equipments.

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IMPACT OF CUSTOMER PROFILE ON BRAND LOYALTY

Ms. Neha S. Nikam

L. S. Raheja College of Arts and Commerce

ABSTRACT

“If you do not know who your customer is, you do not know what brand loyalty is.”

Designing and understanding your customer profile will give you an insight about customers' interest, pain point, demographic data, buying patterns and more. Elise Dopson mentioned that 50 % of the marketing budget is wasted on unqualified traffic and leads. You can reduce the wasted spend by being more focused on who you target?

If you really take an effort in knowing the characteristics and behavioral pattern of your customers, you will be able to craft marketing messages that address their challenges and needs, and attract them to your business. Once your customers understand your customer centricity approach, they will become a brand loyal customer for you.

A 2020 Customer Contact Week research suggests that 88% of customers will switch to a competitor if a company is not customer-centric. Such a statistic indicates that when customers feel valued, and their needs are met, they are more likely to stay loyal to a company.

Companies need to prioritize their customer needs and desires to stay competitive. In today's business landscape, customer centricity is essential to the success of many brands. Businesses can achieve this by creating a customer profile, customer vision, promises, and goals shared across the enterprise. Yet, it also requires a culture change, where the company empowers employees to base decisions on what is best for the customer. (Zendesk Customer Experience Trends Report 2021).

The researcher has considered secondary data and ensured to refer only latest facts and statistics. This research paper shows:

How brand loyalty is connected with customer profiling? Also it explains what elements one should consider while making customer profile?

How customer segmentation and brand building plays an important role in profiling?

Keywords: Customer profile, brand loyalty, customer demographic data, brand building, customer segmentation

INTRODUCTION

Ever have promotional mail delivered to you that just didn't make sense? Like a discounted family vacation membership when you're single. Or maybe an email sent to you that was more geared toward someone your parents' age? What about surfing the web and you start to see banner ads that would interest you—if only you lived in another state?

Well, folks, these are examples of marketing research and data analytics that went wrong. More specifically, how profiling, segmentation, and research probably weren't done to reach you with the most relevant messaging or products. In simple language, you were not the right customer for what they were trying to market to you.

To have a better sense of how profiling of customer works as a methodology, we should understand it in detail.

OBJECTIVE OF THE STUDY

1. To understand the relationship between customer profiling and brand loyalty.
2. To analyze whether customer profiling lead to customer satisfaction.

What is Customer Profiling?

Any sales and marketing plan starts with knowing who the customer is. Profiling results in customer profiles that describe your customers based on a set of attributes. You can group similar profiles by shared characteristics such as demographic, geographic, psychographic and behavioral characteristics. Your customers can be the general public or businesses. In either case, profiling starts with data such as location, purchases, spending volume, etc. These are then grouped into segments that share similar characteristics.

Customer profiles are often referred to as buyer personas or user profiles. Each term essentially means the same thing: A single document that lists key demographics, interests, and behaviors of your target customers.

A B2C customer profile includes common details they tend to share, such as their:

- Age
- Location
- Hobbies
- Job title
- Income
- Purchasing habits
- Goals or motivations
- Challenges or pain points

A B2B customer profile should also include the firmographic data of their targets—such as their company size, employee count, or annual turnover. (Elise Dopson, SuperOffice.com, 2022)

Customer profiling ultimately becomes all about consumer's experience and their level of satisfaction. Marketers know that the competition and customer awareness has increased tremendously along with the advancement in technology and hence customers are very careful about what is getting promoted to them. And therefore personalization and tailor marketing efforts to their relevant customers is very important. Because of the upgraded technology, marketers have access to a lot of customer data which they can use to bring relevancy in their marketing. For marketers, a huge part of utilizing this data is the ability to connect it to consumers and group those consumers effectively- using common traits, characteristics and behaviors.

Why Use Customer Profiling?

In today's competitive market, every small and big business desires to have a competitive edge over their competitors. Each venture is competing for market share, customer acquisition, and customer retention. To gain this advantage, to find more customers and to increase customer loyalty, businesses need to target the right prospects with the right offering at the right time. But then there raise more questions, like: How can businesses understand who might be most interested in their product or services? When consumers are ready to purchase and how to provide a service that makes the customer feel valued and engaged?

If customer profiling is undertaken correctly, it can help address all of the above concerns to increase sales and gain market share. If you want to hit the bull's eye, Customer profiling is the strategy. It will help the business in getting a better overview of your customer's behavior, their taste, preferences, and choices concerning various products and services. You can have a better understanding of "who they are", "what they want" and "what is that which interest them?" This then provides a more in-depth and robust look at your customer base and what drives and motivates them when making purchasing decisions. Once you will get to know about all these traits, you can then create better communication with your targeted customer base.

REVIEW OF LITERATURE

A lot of previous studies are done to understand the importance of relevant customer profiling and its importance with respect to brand loyalty. A study conducted by Rana Muhammad Shahid Yakub on Customer Profile (Stayers and Switchers), it has been confirmed that psychological state and behavior of one customer segment is totally diverse from the psychological state and behavior of customers from other segments. If company can rightly identify the behavioral and attitudinal differences among the diverse groups of customers, service provider can easily utilize this information in customer acquisition and more particularly in devising of suitable loyalty strategies.

In a study of Impact of brand loyalty on customer satisfaction, Foujia Mannan Keya states that satisfied customers make repeat purchase from the same brand, and recommend the brand to others. Brand loyal customers are likely to choose the brand even if the price was increased.

What is the Role of Customer Segmentation in Profiling?

Understanding similar traits amongst your customer base enables you to segment them into similar groups by shared characteristics and traits. The benefit of customer segmentation is that you can target each customer segment with a bespoke approach rather than a one size fits all technique. Targeting by specific segments makes it easier to communicate with your customers with a message relevant to them, providing a more personalized approach with appropriate marketing communications.

Though 'customer segmentation' and 'profiling' are two sides of the same coin, there's a subtle difference between them. While customer segmentation is all about dividing a company's customer base into different groups that share specific characteristics based on demographics, geographies, buying behavior, and interests; customer profiling aims to know customers better and describe their types (persona). Simply put, the main idea behind profiling and customer segmentation is to know your customers better and then break them into specific groups that share unique characteristics. Having a full understanding of customers and knowing their transaction/behavior patterns will help businesses make informed decisions. Eventually, this helps businesses to deliver enhanced customer service and boost customer satisfaction. Now that we have fairly decoded customer profiling and incongruity between profiling and segmentation, let us move forward and understand the influence of good profiling on brand loyalty. One must realize that brand loyalty is the result of customer satisfaction, trust and brand experiences.

Customer Profiling and Brand Loyalty

A) Concept of a BRAND

Kapferer (2008) defined that brand to be a tangible and intangible, realistic and emblematic, visible and invisible under the conditions that are economically feasible for the company. According to the American Marketing Association (AMA) brand may be defined as a name, term, design, symbol, or a combination of these elements, intended to recognize the goods or services of a particular seller or groups, and to distinguish them from the competitors. A brand makes a promise that reflects key differentiated benefits. Brand is a type of product which is manufactured by a company bearing a specific name, bearing a designed logo of distinct shape and color (Aaker and Joachimsthaler, 2007).

B) Brand Loyalty and Brand Experience

The journey of the customer from being a prospect to the brand loyal is based on the feelings, sensory experiences, cognitions and behavioral responses that is a part of the Stimulus Response theory (Brakus et al. 2009). The stimulus of the brand attributes which evokes a single or cluster of responses from an individual therefore defines the engagement of the brand experience (Heding et al. 2009).

According to Chaudhuri & Hoibrook (2001) brand loyalty can be defined as deeply held commitment that a customer has towards a preferred product and/or service, time and again, in the future, and makes repeat purchase. The customer has strong commitment regardless of situational influences and key marketing attempts that have the potential to cause switching intentions. Brand experience generally leads to brand loyalty through by way of emotional association with the brand that the customer forms through engagement and trust (Kim et al. 2008).

Nam et al. (2011) explains brand loyalty to be an important part of the communication and customer-relationship building process. A well-organized communication that a brand has with the consumers is the stepping stone towards creating a strong customer relationship (Mao, 2010). Brakus et al. (2009) view the idea from a different perspective, and claims that the capability to create a strong brand loyalty is replicated in the company's values that provide barriers to entry for new rivals and augment the ability to respond to upcoming markets threats, increase the customer base, and sales revenues. Loyalty is identified to be a multi-dimensional construct, and reflects customers repeat purchase and advocacy for product/service even after price increase (Kotler and Pfoertsch, 2010). Customers, loyal to a brand, apart from having low switchover intention, also recommend the brand to others through verbal or non-verbal communications (Romaniuk & Nenycz-Thiel, 2013).

A brand act as a mechanism that engages the marketer and the buyer to build a relationship. Brand loyalty is an association created by consumers in favor of a particular brand. A brand loyal consumer behavior pattern commits to one brand and conducts repeated purchases from the same brand over time irrespective of the marketing pressure generated by the competing brands.

A brand that takes efforts to understand its audience and is profiling its customers is capable of tailoring its offerings to suit the customers. This includes the ability to personalize communications and marketing across all channels to make them more relevant to the people receiving them. Customer profiling and the creation of these audiences via segmentation enables brands to create campaigns tailored to each group. These can be messaging a brand's most valuable customers, attempting to attract customers similar to those best customers or creating bespoke campaigns for segments that might require a different message.

Every marketer should understand that the customer segmentation will include types of brand-loyal customers.

One, customers who are indifferent towards what brands they are using. These customers do not bother because they are more interested in the price of the product, accessibility, convenience, and availability of the product.

Two, the customers who tend to buy or continue to buy a product, even when superior options exist. This is called consumer inertia. These customers buy a particular brand out of habit. Also, these repeated purchases are due to some sort of attachment with the brand. For instance, an estimated 60 percent of retail gasoline customers return to the same gas station to refuel, without comparison shopping, according to a recent study. Driven by factors such as habit, brand loyalty, switching costs, and search (which often leaves consumers unaware of cheaper options), these motorists represent the prevalence of “consumer inertia” in the retail gas market.

And three, when the customer feels proud to associate him with a particular brand and also happily becomes a vocal advocate of the brand. This is known as premium loyalty. It happens when the customer has the highest form of attachment with the brand and would like to share knowledge of that brand to his loved ones.

Customer Profiling and Gaining a Competitive Edge

A business will have to keep on strategizing in order to retain its existing customers and attract new ones. A competitive business will take a lot of efforts to capture bigger market share. And therefore they understand the significance of targeting the appropriate prospects with the right product at the right time to acquire the competitive edge over its competitors. A business should deliver a service that make customers feel appreciated and engaged when they are ready to buy.

So, Customer profiling can not only help you with customer satisfaction but it can also help you to understand where your customers are coming from and how they interact with your brand. For instance, if you are trying to sell a product that is not widely available in your area, customer profiling can help you figure out how to target customers who would be interested in buying your product. You may also want to focus on specific demographics or companies interested in your product. This will help you build better relationships with them and ensure their experience with you is as positive as possible.

Today’s consumer data generated through several devices and touch points, including mobiles, tablets, and desktops, is the silver lining of our modern era. By profiling and analyzing this data, businesses may learn not just what interests consumers but also how to reach them and when they might be ready to make a purchase. Then, companies may utilize this information—often referred to as customer insight—to inform the company’s future marketing strategy, enhance targeting, and enhance the customer experience. With so many options available in the marketplace today, it’s crucial for companies to have a good grasp on exactly who their consumers are before they start targeting them with advertising campaigns or other forms of marketing efforts. Customer profiling allows companies to identify these people early on to begin focusing their resources on them instead of figuring out what makes each person tick!

CONCLUSION

It’s a big deal for a business to have a concrete answer for who are the ideal customers for the business or what are the traits of customers that they would focus upon. Because all the strategies will revolve around the expectations and profile of the customer. Customer profiling also broadens the scope of analyzing the detailed needs, buying behavior and demand of the customers. A well-researched customer profile can help you to expand your business if you can locate the same trait customer in other geographical areas. By identifying and understanding the customers in the clusters where you have the highest penetration, you can target marketing or business activities to those who are most likely to purchase your products. You can improve response rates and ROI by precisely marketing to prospects with offers that will appeal specifically to them. When you are targeting a specific set or type of audience, you know their geographical boundaries, their income status, their education, their willingness to spend, their stage of life, their preferences, their purchasing pattern, etc and hence you can draw and customize a better marketing mix which will help in retention of the loyal customers and add the new ones. And voila! That is our objective to build a good brand image, to stand out in the crowd of hundreds of brands. Investing in a marketing tool makes more sense only if those are directed towards the right customer and this we discussed at the very start of the article.

For example, we all know how CRM is one of the best techniques to keep people aware of your brand’s existence. So because of customer profiling, the chances of failure of CRM reduces with a good number. And therefore, if you are a regular/not so regular customer of Domino’s Pizza (for instance) but you are still receiving birthdays and anniversary wishes by Domino’s, they have done their job as they just wanted to mark their presence in your mind.

As a future course of action, it would be interesting to find out whether the right customer profiling keeps on influencing the brand loyalty of customers.

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SUSTAINABLE FASHION AND SUSTAINABLE CONSUMPTION

Mrs. Shruti Shouche

Assistant Professor, VPM's R.Z. Shah College of Arts, Science and Commerce, Mulund (E)

ABSTRACT

'Clothes and manners do not make the man, but when he is made, they greatly improve his appearance', Henry Ward Beecher. Another idiom says 'Good clothes open all doors', Thomas Fuller.

Following these idioms has made everyone big spender on clothes. Clothing now is not only a basic necessity but also a style icon. One way this trend has proved fruitful into growth of textile industry, ultimately leading to economic development. While it has made people to overlook the other side of it. Increase in consumerism involving the massive purchase and throw away of clothes by people has given rise to disposal issues and the awful or horrible impact on environment when they consist of manmade, synthetic or inorganic fibers and colours.

Fashion and textile industry has been causing environmental pollution since invention of manmade or inorganic or synthetic fibers. Human activities making deep intervention in nature has given hits to the world in last two decades, breaking the shoulders' of economies. Now it is the time to peep out of self and think about the surroundings. 'Sustainable development applies to all aspects of human's life and thus also breaks into 'Sustainable Fashion', 'Sustainable Consumption' etc. Sustainable fashion which means fashion with environment concern and further bothering about interest of all stakeholders in the society. It should be remembered that the ecosystem can survive without man, however man cannot survive without it. Sustainable consumption is related to the responsible behaviour of consumers towards purchases, use and disposal of materialistic things.

This research paper is an effort to highlight the unfavorable impact of manmade fibers and colours in clothes on environment and need of sustainable fashion as well as sustainable consumption by people.

Keywords: sustainable, fashion, consumption, clothes

OBJECTIVES OF THE STUDY

- 1) To understand the unfavorable impact of artificial fiber on environment.
- 2) To know the disposal methods used for clothes.
- 3) To understand the need of sustainable fashion and sustainable consumption.

RESEARCH METHODOLOGY

The paper is entirely based on secondary data and researchers' observations and own experiences. The bibliography and webliography mentions about the references.

INTRODUCTION

In 2022, Indian textile and apparel exports reached to US \$44.4 billion. Exports of readymade garments including cotton accessories reached to US\$ 6.19 billion (Source: India Brand Equity Foundation www.ibef.org). These figures show that textile industry in India is performing well and also has good scope to perform in future.

Today the term fashion is buzzing amongst all age people from old to gen next, across all types of genders, professions and across all geographical markets. It has touched the life aspects of all people and everyone wants to be unique and attention seeker in clothing. Comfort, durability, suitability etc. also are some of the dimensions of clothing, along with aesthetics. While this trend is there, it is also necessary to see the other dark side of it, which is really disappointing. Man always has made use of all available resources around him for his benefit, whether it is living or nonliving towards the objective of own development. However the interest of other components in nature's cycle are given secondary priority in the process of growth and development, which is totally not according to ethics.

One day this will backfire to human being in a ridiculous way. It can be said that it is already being started. The world has recently come out of the Covid 19 Pandemic, which is not yet still fully vanished. Further the effects due to ignorance towards environment can also be seen in the form of climate change, heat waves, city floods etc. The financial and life losses occurring out of such disasters are tremendous, hitting the economies badly especially of small and developing countries. The kind of situation the world has, people should realize the importance of sustainability. A social and environmental concern by mankind for sustainable development now

is the need at the top taken up by governing bodies of all nations. The same is at the center of the discussions coming up in the **UN Climate Change Conference (UNFCCC COP 27)**, 6 - 18 November 2022 at Sharm el-Sheikh International Convention Centre, Egypt. Thus it can be sentenced that all causes of pollution are required to be reduced and slowly eradicated. Substitutes to artificial material, awareness amongst people and efforts from Governing Bodies and Social Organisations can help mankind to sustain in the long run.

Environmental Aspects of Textile and Fashion Industry -

The Sector is classified into Two Parts –

- 1) Natural fiber
- 2) Man-made fiber

Problems Due to Manmade Fibers -

- 1) Natural fibers include all those which get decompose of easily in the environment without harming it. Cotton, Silk, Wool, Jute etc. are the natural fibers made from plants, animals or mineral sources.
- 2) Disposal of Manmade fibers is the troublesome area where the environment harm does occur because most of them are made of inorganic material. They cause micro plastic pollution from laundry machines. They also are not good for the human skin if used for long duration, as they do not absorb that much moisturizer as compared to natural fibers.

Reasons Why Textile and Fashion Industry Becoming a Source of Environmental Pollution -

- 1) Replacement of natural fibers with manmade or artificial fibers is one of the reasons causing environment pollution.
- 2) Second reason is increase in population and purchase of more clothes instead of reusing it. Earlier in a family younger siblings would wear elders' clothes. People would not mind if used things however in good condition given to them, inspite would use by them happily with respect. Women in family too would use cloth of old clothes, however in good condition for making quilts and other utility items like shopping cloth bags, purses, door mats etc. These practices would harm environment to the lowest level and also make the bonding between people more strong. Now such practices have been vanished.
- 3) Frequent washing of dresses, outfits, costumes and outer clothes even worn once, which are not that dusty and spoiled. Giving unnecessary and over importance to hygiene, leading to micro plastic pollution.
- 4) Unsustainable consumption behaviour setting wrong approach amongst people that only fashion and style gives them weightage in boosting confidence and building a good career. No doubt clothing adds value to the personality of an individual. However many people ignore the need of inculcating qualities like intelligence, academics, knowledge, humbleness, punctuality, maturity, ethics and concentrate only on developing outer appearance. Generation today in the corporate world believes in not to repeat clothes. A person repeating clothes at occasions is considered as outdated and uncompetitive. It leads to frequent purchases and over shopping. Examples can be highlighted in the society which prove that even sufficient, clean and neat clothing do make a person presentable and successful too. Society adores their qualities and not only clothing. Unfortunately this belief is rare.
- 5) Life style changes have influenced people to visit shopping malls and purchase clothes. It is considered as a status symbol and acts as a status –quo factor. It is also used as one of the stress buster strategies. 'Want to relax and refresh yourself – Go to a mall and do shopping' is the mantra followed by.
- 6) Higher purchasing capacity of consumers.
- 7) Lowering trust in the belief of 'Simple living High thinking'.
- 8) Fast fashion by textile companies. In fast fashion, patterns of clothes are made available only once in the market. Once the slot gets exhausted, it is not introduced again. Therefore people buy such patterns and keep in stock even they do not need them. Example given 'ZARA' brand. Promotion of fast fashion by media adds to the people's shopping crave.
- 9) Social media exposure.
- 10) Easy availability of designer clothes at malls as well as at shopping portals at affordable rates to common people. This has helped common people to enjoy fashion trends. Earlier this was out of their reach and they could see them only in fashion shows.
- 11) Impact of glamour in advertising and filmy world.

- 12) More attraction to materialistic world and lowering down the plinth of strong base or foundation of morals and values in life. 'Use and Throw' policy adoption by consumers.
- 13) Increase in E – commerce companies and their attractive offers tempt to purchase more clothes.
- 14) Micro plastic is a type of pollution which involves fragments of any type of plastic less than 5mm in length, entering into natural ecosystems. This adversely affects aquatic and marine ecosystems. It has been stated that 35% of all ocean micro plastic comes from manmade/synthetic textile/clothing, during its washing process. Micro plastic also gets into air to harm human as well as terrestrial ecosystem. It has also entered into bodies and tissues of many aquatic animals, thus proving its existence into the food chain.

Methods to Dispose of Clothes and Fabric -

- 1) As mentioned in the above paragraph, **reuse of clothes** which was very frequent in earlier days should be brought back. Clothes which are thrown out of size problem, outdated fashion or boredom can be given or donated to poor and needy for reuse. Fabric should be used to its optimum level. This process takes the fabric to recycling point.
- 2) **Upcycling of clothes** i.e. making use of old good condition clothes for making utility accessories like aprons, bags, covers, pouches baby clothes, baby wrappers, dusters etc. Embroidery patches, buttons and belts would fit into new clothes. The process of upcycling is economic as compared to recycling. It is also comparatively shorter and therefore more feasible.
- 3) **Recycling** of clothes whereby used garments are collected and sorted as natural, synthetic and blended fabrics. Damaged, very old and torn clothes are sent to wiping and flocking industry. Fibers of old clothes are reclaimed to make new garments. Sometimes the material is shredded into fibers known as shoddy. Other fibers are blended with shoddy. The blended mixture is used for weaving and knitting. Shredded material is also used as stuffing in furniture, car insulation, soft toys etc. Cotton clothes are recycled and are used in paper manufacturing, automobile and other industries. Fibers made from recycled plastic bottles are used in sports industry. However recycling process needs space, specific machinery and devoted time, leading to the price hike.

Advantages of Recycling –

- a) After reuse and upcycling of clothes, they go into landfills as a wastage. The rainwater getting over to such landfilled clothes takes out hazardous chemicals and bleaches from them, making the water toxic. Recycling method reduces cloth wastages going to landfills.
- b) Cost effective to textile companies.
- c) Lessens requirement of synthetic fibers ultimately reducing production efforts and also the related activities involving use of chemicals and dyes.
- d) Helps to minimize micro plastic pollution

Need of Sustainable Fashion and Sustainable Consumption-

- 1) Solvents and by products of inorganic fiber production like polyester, are let out in the waste water coming out of factories causing water pollution. Sustainable fashion will help to reduce harm to environment due to production and consumption of inorganic fibers.
- 2) It will also reduce harm to human body. Workers working in textile industry many a times suffer from respiratory problems due to emissions from chemicals and dyes.
- 3) It will aid to protect interest of all stakeholders in the society. Purchasing fewer and more durable organic garments by consumers will help them to increase savings and use it in a right way for better life. More purchases need more money which lead individuals to live a very competitive, stressful and fast life. Individuals have lost peace of mind out of the rat race to earn more money. **Sustainable fashion and Sustainable consumption** go hand in hand. Adoption to sustainable fashion and sustainable consumption can certainly result into increase in happiness index of people. It is an indirect and long term benefit. It can prove as the trouble shooter solving many problems in humans' life.

The implementation of following ethical exercises can enable world to reduce environmental pollution due to textile and fashion industry activities –

- 1) CSR initiatives by textile companies leading to holistic approach towards policy making, production, marketing and other activities.

- 2) More research and development activities to discover cheap, durable however organic fabric affordable to common people, replacing synthetic fabrics.
- 3) Establishment of more number of textile recycling firms.
- 4) Awareness amongst people about recycling methods.
- 5) Introducing content related to the topic in the curriculum at school level and higher education level.
- 6) 'Going back to roots' policy by fashion designers.

Recent Lakme Fashion Week conducted in the month of October 2022, at Jio World Convention Centre in Mumbai, India was focused on introducing all fashion samples based on 'Sustainability'.

- 7) Innovation in sustainable way by fashion companies.
- 8) Use of organic fibers involving use of handloom, silk and other natural fibers for making garments.
- 9) Getting Assessments and Accreditations like ISO 14000 (takes companies towards environmental management), ISO 26000 (takes companies towards social responsibilities) by companies.
- 10) Moral practices by companies.

Some companies have started with schemes such as give back old clothes and purchase new with discount. Such initiatives will help to reduce landfills.

- 11) Endorsement of organic fashion by celebrities.
- 12) Organic fashion movement by Social activists or Government.
- 13) Media to cover sustainable fashion and sustainable consumption.
- 14) Use of mild detergents by consumers while washing clothes will help to preserve life of clothes for more years. Long lasting clothes can definitely lessen frequent purchase of new clothes.
- 15) Promotion of recycled clothes.
- 16) Use of artificial fiber is inevitable in some products where more durability, elasticity, no shrinkage, water resistant, stain resistant, good fall etc. all these dimensions are required. Use of artificial fibers cannot be avoided in such cases. Nevertheless the use can be restricted only wherever the requirement is utmost.
- 17) Producing wall hangings, door hanging toran, artifacts, lampshades, hair accessories, decorative material or innovative utility articles from old clothes and scrap pieces dropping out of production process of readymade garments.

CONCLUSION

The consumer behavior towards clothing play an important role in adopting sustainable fashion. There is a need to spread awareness among people about sustainable fashion and proper disposal of clothes. Promotional, motivational or inspirational efforts are required to be taken to reduce unsustainable consumption by people. Change in attitude of people towards eco fashion, reuse and other recycling methods can be undertaken as a step forward. Establishment and development of more cloth recycling units is also a requirement towards achievement of the sustainable fashion objectives. Developing sustainable clothes with attractive aesthetics is a challenge in front of fashion designers. However efforts taken by generation next fashion designers in Lakme Fashion Week October 2022 to bring sustainability in fashion by using recycling and upcycling methods, use of organic and natural fibers in wedding collection show that the picture is changing to bright.

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USE OF SOCIAL MEDIA AND ITS IMPACT ON CONSUMER BUYING BEHAVIOUR

Dr. Seema Manoj Somani¹ and Ms. Sayali Sudhir Raje^{2*}

¹Research Guide, Associate Professor in Commerce, Department, Mahatma Education Society's, Pillai College of Arts, Commerce and Science, (Autonomous)

²Research Scholar, Mahatma Education Society's, Pillai College of Arts, Commerce and Science (Autonomous)

ABSTRACT

Businesses are making increased efforts to use social media to influence customer buying habits. In the age of technological growth, businesses using the internet to reach a wide audience.

Social media platforms like Facebook, YouTube, Instagram, Twitter, and others are crucial for disseminating information about upcoming brands and new items. It has been noted that consumers who conduct online product research learn about the brand or the product on various social networking sites. Customers that are always engaged on social media are aware of product reviews and learn more about the business they are buying from. Businesses may monitor feedback, suggestions, and recommendations made by customers via social media, which also helps them keep track of market information about the entire industry. Social media does, however, have certain drawbacks for businesses.

It would be feasible to learn about the benefits and drawbacks of social media and how they affect company with the help of this research. Finding out how the company uses social media will also be helpful. Additionally, why do businesses like to advertise their products on social media, as well as what kinds of risks do they face when doing so?

The research study is focusing on the influence of social media on consumers buying behaviour. The objective of this study is to know how frequently consumers are using social media to purchase various types of products.

Keywords: social media, Consumer behaviour.

INTRODUCTION

Social media has changed throughout time, and its user base has grown even faster than some countries' populations. Newspapers and magazines were the dominant media during the 1930s. The first corporation to employ print media for advertising was P&G. The 1950s are referred to as the "TV commercial age," which causes marketers to favour electronic media advertisements. The idea of corporate social responsibility first emerged in the 1960s. The first computers appeared in the 1970s, and applications for logos, credit cards, direct marketing, media research, payroll, visa cards, and master cards, among others, may be found today. The introduction of cable TV in the 1980s altered the landscape of advertising media. AT&T was the first firm to employ contemporary media for marketing with the introduction of the World Wide Web, or www.

Nowadays, social media plays a crucial role in every aspect of a person's life, including shopping, electronic mail, training, education, and commercial use. Social media has a significant impact on how people live their lives. Social media includes websites and person-to-person communication platforms that make it easy for people to connect with one another. Columnists, journalists, and their associations have engaged in a challenging exercise ever since social networking platforms like Twitter and Facebook became important news tools. These websites have become part of peoples' daily routines. People can explore and discuss their concerns and emotions on social media.

Without social media, it's difficult to think where brands would be today. Social media enables businesses to develop stronger relationships with their customers. Here are a few key performance indicators that marketers employ to gauge the influence on their company's bottom line.

People should be aware of what social media is before learning about its features. Social media are computer tools that let people communicate with one another over a particular network to share or exchange information, ideas, photographs, recordings, videos, and much more. The main definition of social media is "the many commonly accessible, reasonably inexpensive electronic tools that encourage and allow anyone to publish and access data, collaborate on routine tasks, or create and build relationships." The explosion of social media services over the past few years has had a significant impact on advertising. As customers' reliance on word-of-mouth advertising in the selection process, whether from friends or strangers online, has increased significantly. Social media is no longer just a platform for making social relationships. Or perhaps it is altering how businesses operate. Social media will completely alter business & marketing media going forward.

Social media	Benefits
Brand Building	1. Increased brand awareness 2. Humanize your brand 3. Established your brand through leader 4. Stay top of mind
Growth	1. Increase website traffic 2. Boost sales 3. Partner with influence
Content creation and distribution	1. Promote content 2. Go viral 3. Source content
Communication	1. Reputation management 2. Crisis communication 3. Customer and audience engagement 4. Customer service and support
Gaining insight	1. Learn more about your customers 2. Gauge sentiment around your brand 3. Keep an eye on the competition 4. Stay on top of industry 5. Targeted advertising

Sr No.	Negative effect of social media
1.	Cyber crime
2.	Hacking
3.	Addiction
4.	Fraud and scam
5.	Reputation
6.	Accidental release of confidential informality
7.	Unauthorised speaking on company behalf

OBJECTIVES

1. Determine the extent to which social media influences consumer decision-making.
2. To examine the gap between consumer expectations and the performance of products purchased through social media platforms.
3. Determine the important criteria that influence the choice of social media for business development.
4. Consider how businesses have successfully incorporated social media into their operations.

REVIEW OF LITERATURE

1. R. Venkateswaran, Bernard Ugalde, Rogelio T. Gutierrez (2019) This study examines the main variables, benefits, and drawbacks of social media that affect business people's decisions to use it in their operations, Performance and development. Due to time restrictions, interview mail forms have not yet been completed; however, observed that the majority of businesses use a combination of traditional and social media to communicate with their consumers. It has been observed that using social media applications and technologies has aided businesses in better branding their products, expanding their consumer base, and meeting those consumers' needs. Utilizing social media has helped businesses improve their brand recognition and brand image. According to researcher, there are a lot of benefits and few drawbacks, but businesses may make greater use of social media by communicating clearly, minimising confusion, and making sure that their online image is consistent with their brand image. Marketers view social media, where many of their customers congregate, as a gold mine for establishing brands and growing businesses.
2. Slim and Hafedh (2019) has shown in their research that Facebook might be a useful tool for language learning. Pre- and post-tests were given to the two groups to assess their vocabulary acquisition, and they also participated in an interview to learn more about their opinions on the teaching strategies that were employed. Despite the enthusiastic response and high degree of satisfaction the students receiving Facebook tutoring displayed towards the use of such a platform, no discernible difference between the two groups' accomplishment levels was discovered.

3. Kurnia & Suharjito (2018) It was made clear that social media is a platform for information sharing that is quite popular in today's society due to some of the features that make it simpler for us to contact with one another, share documents, talk, and even build communities. Additionally, we may use a variety of data mining techniques to examine social media content in order to obtain fresh data that will help us make decisions that will be advantageous to both people and businesses. Making a business intelligence dashboard to track the performance of each topic or channel of news posted to social media accounts like Facebook and Twitter was the aim of this study. current social performance. Media is the quantity of topics in social media articles that receive likes, shares, comments, etc. The topic of a news article on social media could be determined by using text classification algorithms like Naive Bayes, SVM, and Decision Tree. For later application in the data warehouse, the algorithm with the best accuracy among the comparison results is SVM. The data source for the business intelligence dashboard, however, will come from previously created data warehouses.
4. Rajiv Kaushik (2012) According to research, social media is becoming more and more popular, and there is no stopping it. It appears that social media will largely replace other functional areas of marketing. Social media aims to bridge the gap between businesses and consumers by fostering constant communication, creating a sense of trust, and quickly engaging the appropriate audience.

RESEARCH METHODOLOGY

This research is based on survey method, in which by taking help of questionnaire the data has been collected and analysed. In this study both primary and secondary data is used.

Primary data were collected from respondents with the help of Questionnaire. The survey research was done by distributing Questionnaire among the employees of the bank and using convenience sampling method.

Secondary data was also used to understand in detail about the concept of online payment mode by using books, magazines, reference books, etc.

Hypothesis: -

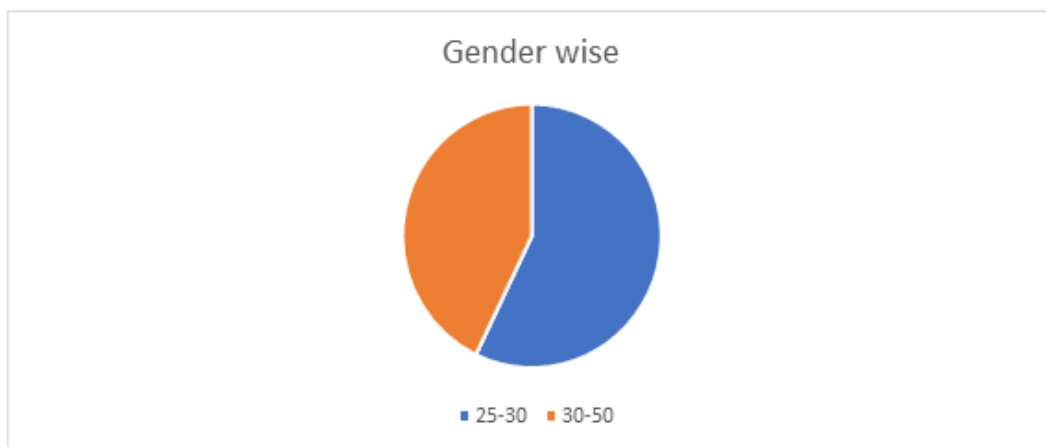
H₀ There is no significant relationship between the social media and the customer buying the product.

H₁ There is significant relationship between the social media and the customer buying the product.

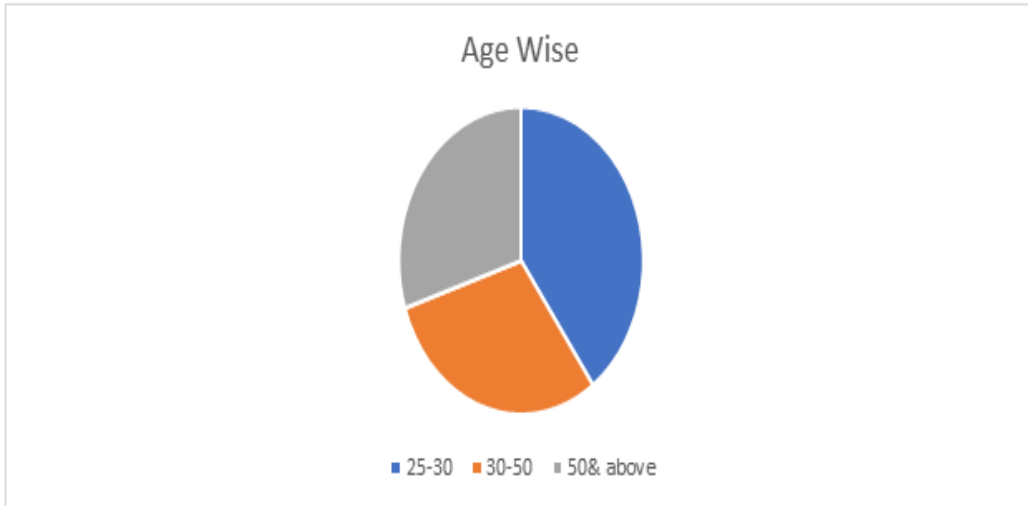
H₀ There is no significant relationship between the social media and its influence on buying behaviour of customer.

H₁ There is significant relationship between the social media and its influence on buying behaviour of customer.

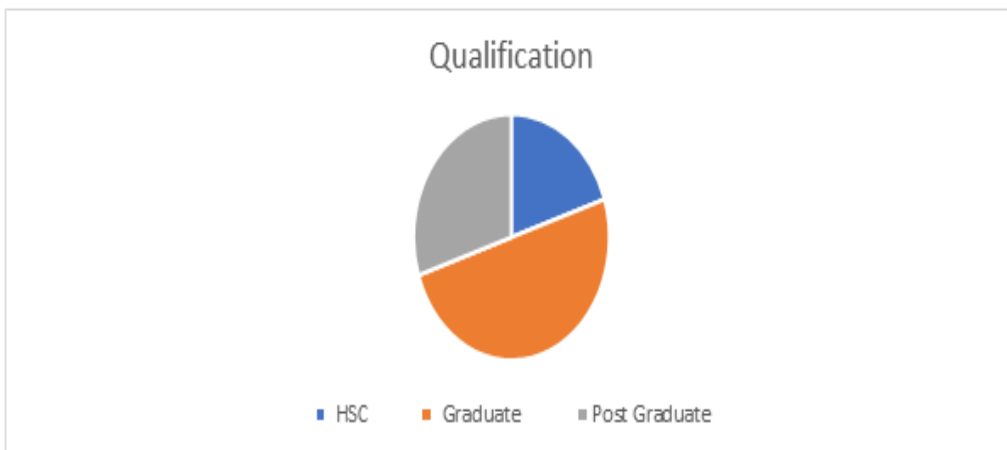
Gender	No. of respondents
Male	15
Female	35
Total	50



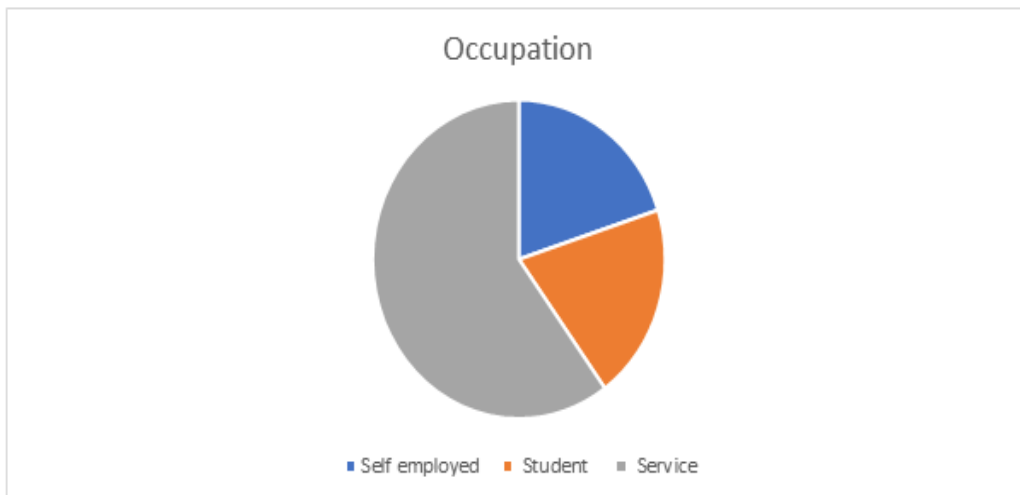
Age Group	No. of respondents
25-30	20
30-50	15
50& above	15
Total	50



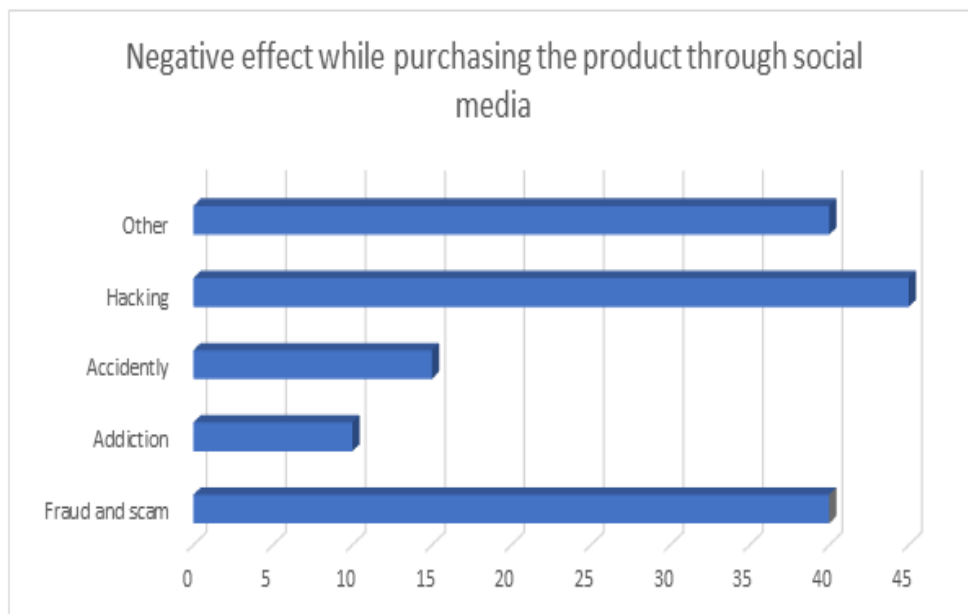
Qualification	No. of respondents
HSC	10
Graduate	25
Post Graduate	15
Total	50



Occupation	No. of respondents
Self Employed	10
Student	10
Service	30
Total	50



Negative effect while purchasing the product through social media	No. of Respondents
Fraud and scam	40
Addiction	10
Accidently	15
Hacking	45
Other	40

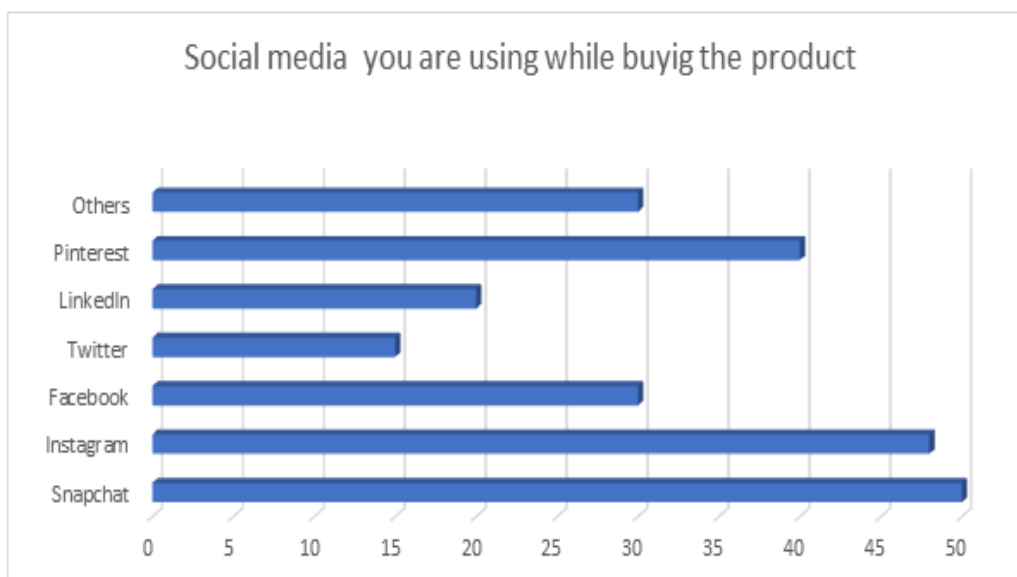


Testing of Hypothesis:

H₀ There is no significant relationship between the social media and the customer buying the product.

H₁ There is significant relationship between the social media and the customer buying the product.

Social media you are using while buying the product	No. of Respondents
Snapchat	50
Instagram	48
Facebook	30
Twitter	15
LinkedIn	20
Pinterest	40
Others	30



CALCULATION

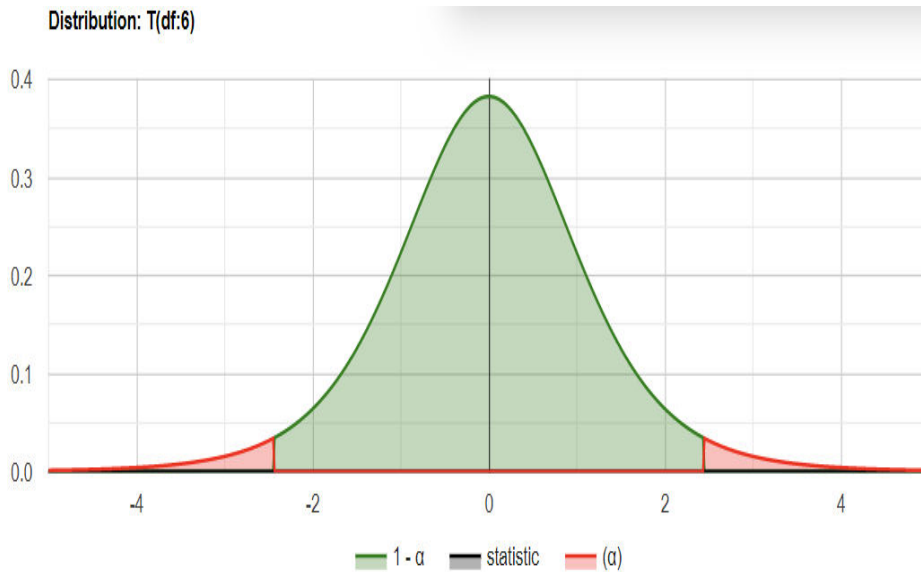
$$t = \frac{\bar{x} - \mu_0}{S/\sqrt{n}}$$

$$S.E = S/\sqrt{n} = 13.375528/\sqrt{7} = 5.0555$$

$$t = \frac{33.2857 - 90}{5.0555} = -11.2184$$

$$P = p(x \leq -11.2184) = 0.00001498$$

$$P\text{-value} = 2 * \text{Min} (p, 1 - p) = 2 * \text{Min} (0.00001498, 1) = 0.00002996$$



INTERPRETATION

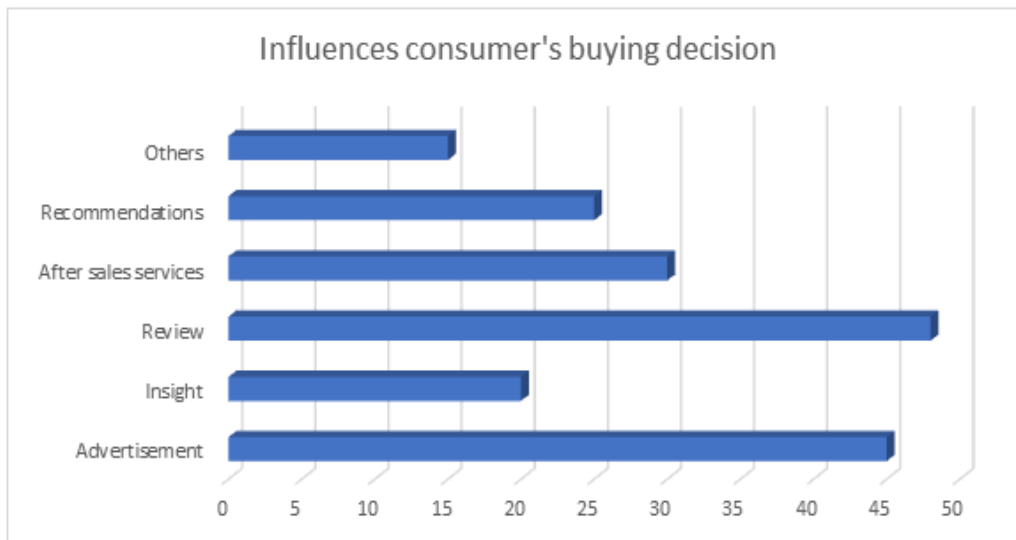
H₀ hypothesis Since the p-value < α, H₀ is rejected. The social media you are using while buying the product population's average is considered to be not equal to the expected average (90). In other words, the sample difference between the average of Social media you are using while buying the product and the expected average is big enough to be statistically significant.

P-value: - The p-value equals 0.00002996, (P(x≤-11.2184) = 0.00001498). It means that the chance of type I error (rejecting a correct H₀) is small: 0.00002996 (0.003%). The smaller the p-value the more it supports H₁.

H₀ There is no significant relationship between the social media and its influence on buying behaviour of customer.

H₁ There is significant relationship between the social media and its influence on buying behaviour of customer.

Influences consumer's buying decision	No. of Respondents
Advertisement	45
Insight	20
Review	48
After sales services	30
Recommendations	25
Others	15



Calculation

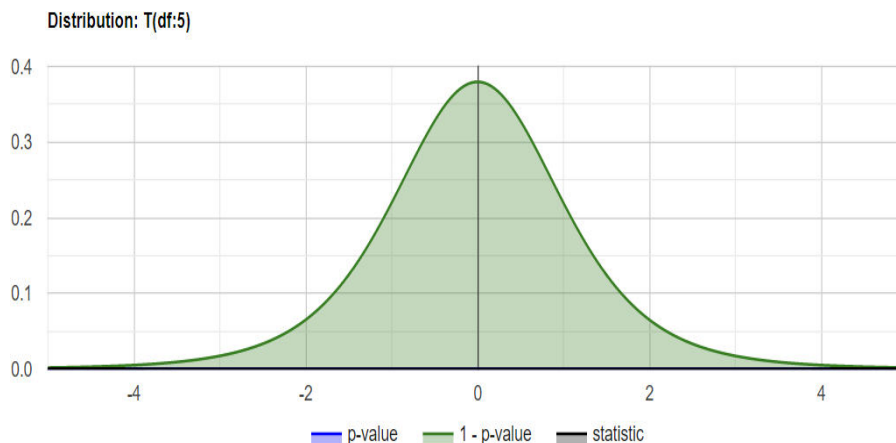
$$t = \frac{\bar{x} - \mu_0}{S/\sqrt{n}}$$

$$S.E = S/\sqrt{n} = 13.397761/\sqrt{6} = 5.4696$$

$$t = \frac{30.5 - 90}{5.4696} = -10.8783$$

$$p = p(x \leq -10.8783) = 0.00005701$$

$$p\text{-value} = 2 * \text{Min}(p, 1 - p) = 2 * \text{Min}(0.00005701, 0.9999) = 0.000114$$



INTERPRETATION

H₀ Hypothesis: - Since the p-value < α, H₀ is rejected. The Influences consumer's buying decision population's average is considered to be not equal to the expected average (90). In other words, the sample difference between the average of Influences consumer's buying decision and the expected average is big enough to be statistically significant.

P-Value: - The p-value equals 0.000114, (P(x≤-10.8783) = 0.00005701). It means that the chance of type I error (rejecting a correct H₀) is small: 0.000114 (0.011%). The smaller the p-value the more it supports H₁.

FINDINGS

1. Through this research it is noted that customer is aware about social media and products and services sold to them.
2. Customer buying decision is influenced by the mostly by advertisement, recommendation and review given by the customer.

3. Even though the customer knows about scams he still buys product from the social media.
4. Even though the customer is influenced by social media for buying products he only buys branded products.

SUGGESTIONS

1. The local products are also sold through social media, so it is the responsibility of that business to increase customers.
2. If customer is not cheated by the marketer, then his faith in social media would increase.

CONCLUSION

The conclusion drawn from his this research is people groups are increasingly perceived as dependant on these innovations as technology advances and social media becomes a part of everyone's daily routine. Its effects on people vary depending on the field. Online media has improved the calibre and speed of student collaboration. Businesses use social media to increase an organization's visibility in a variety of ways, such as to meet corporate objectives, boost annual sales, and close more deals. Every day, young people come into contact with various media. Social media offers many benefits, but it also has some drawbacks that have the opposite effect on people.

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THE PANDEMIC COVID-19 – BOON OR BANE**Mrs. Suchandana Dutta¹ and Mr. Mangesh Bhambu Kutekar²**¹Assistant Professor, Department of Statistics, Thakur College of Science and Commerce, Mumbai²Assistant Professor, Department of Statistics, St. Xavier's Autonomous College, Mumbai**ABSTRACT**

The Pandemic, Covid-19 was unprecedented. There was no backup or reserve available for this pandemic for any countries of the world. The one who could live, and work service in this pandemic could only sustain. There was a huge change in the lifestyle of the people.

Many businesses and industries went bankrupt. But in spite of this many of the industries showed flourishing business. In this paper, we are trying to show that though the pandemic hit the sea economy rock bottom, many of the industries showed an upswing. Data from ten sectors or industries were taken and using paired t-test was done on the data of these companies which were taken from pre- Covid-19 period to post Covid-19 period. The result showed that many of the companies/sectors showed a better results during the Covid-19 period.

Keywords: Covid-19, pandemic, sectors, paired t-test.

SECTION I: INTRODUCTION

The impact of the pandemic Covid-19 caused by the wide spread of the dreadful Coronavirus was huge. The entire globe came to a partial standstill condition, resulting in a sharp drop in the global economic graph. There was a huge loss of wage workers, counting millions of people working in the unorganized sector aside, as lockdown measures were implemented by the state as well as the central government to cure the spread of the dreadful virus.

A major section of commercial establishments such as malls, cinema halls, restaurants, bars, and showrooms of various sizes, and public transport systems such as public buses, metros, railways and airways were completely shut.

Service sectors such as IT, ITES companies and banks entailed their on-site functions by allowing their maximum number of employees to work from home. Most of the banks, State & Central Government offices run with skeletal staff. The maintenance staff and those employees whose physical presence was inevitable had to work from the site or from the office.

Due to the shutdown of so many establishments, millions of people lost their jobs or had to compromise on their salaries. It had been a significance or bane for them.

On the other hand, the lockdown or the widespread of the coronavirus was a boon for many. Many retail vendors of groceries, vegetables, and needs of daily life made a fast buck by hiking the prices of the basic commodities. The IT and the pharmaceutical / healthcare industries witnessed a boom in their sector. Due to the phases of lockdown implemented over that period, companies had moved into digitization in order to sustain their business. A report by Practo revealed that at least five crore Indians opted for online healthcare between March 2020 to May 2020 during the nationwide lockdown, which resulted in a growth of 500% in online healthcare consultations. Moreover, there had been a dip in road-crash fatalities (reduction of 77.9%) due to the suspension of transport. Hence, the general or average life expectancy increased in such cases. In this paper, we would like to prove that though the pandemic Covid-19 was a bane for most industries, it turned out to be a boon for some.

This paper is a study on the stock prices of 10 random stocks of the Bombay Stock Exchange (BSE) studied from the period of 2018-2020 (pre- covid period) and March 2018 to March 2022 (during the covid period). The closing prices are taken into consideration for our analysis.

This paper is divided into the following sections: Section 1 consists of the introduction of the paper, section 2 represents the literature review, section 3 describes the source and methodology, section 4 depicts the result and the conclusion is given in section 5.

SECTION II: LITERATURE REVIEW

The coronavirus disease (Covid-19) has caused major economic stock. In this paper we explore the impact of covid -19 on 10 random stocks from the period of 2018 to 2022 of the Bombay Stock Exchange (BSE), keeping in mind if these stocks or the Revenue of the stocks or the companies moved in the positive or negative direction. In short , we aimed to show that not all industries were affected due to the pandemic. Many industries

fares well and the pandemic was a boon for them. Many of the industries were partially or fully closed due to the pandemic. But here we brought forward that in spite of this, there were many industries or companies which have a positive upward trend in their business graph. Many businesses reported a reduction in demand and hence the supply also reduced to a great extent which shows that there was a reduction in employment by 39% since January 2019. But in spite of all the odds, we tried to bring to the fore that many industries were not affected by the adverse effect of the pandemic. Our survey shows that some of the Banks and Pharmaceutical companies showed an upward trend and positive returns are depicted during covid 19 period. Other companies showed a sharp decline in their share prices (Economics times 2019-20) not affected by the adverse pandemic.

It is noted that various literature are available on the impact of covid-19 in various business sectors in India such as Agriculture, Health-care industry, trade and commerce, education, tourism, banking and finance to name a few. We attempted to throw light on companies that faced well during the covid 19 period using 10 random stock prices from BSE and treating them with different statistical tools and tests during these two periods.

SECTION III: METHODOLOGY

Bank of Baroda:

Paired Sample T-Test

H_0 : mean Revenue of pre covid 19 (u_0) is equal to the mean Revenue during covid 19 (u_1)

H_1 : mean Revenue of pre covid 19 (u_0) is not equal to the mean Revenue during covid 19 (u_1)

Level of significance (α) = 5%

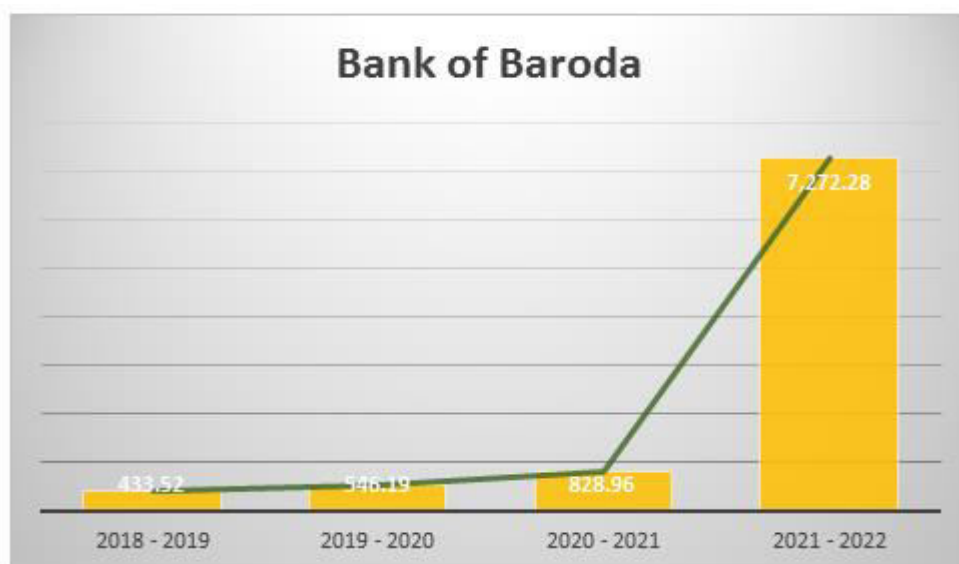
$t = -1.1249$

P-value = 0.4626

Conclusion:

Since $p\text{-value} > \text{level of significance}$

Hence we accept H_0 which means the mean Revenue of pre covid 19 (u_0) is equal to the mean Revenue during covid 19.



Birla

Paired Sample T-Test

H_0 : mean Revenue of pre covid 19 (u_0) is equal to the mean Revenue during covid 19 (u_1)

H_1 : mean Revenue of pre covid 19 (u_0) is not equal to the mean Revenue during covid 19 (u_1)

Level of significance (α) = 5%

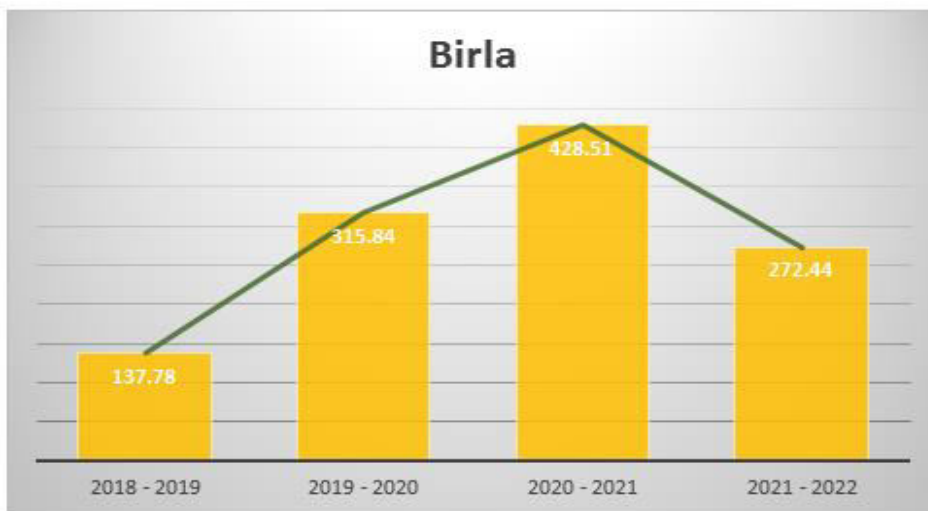
$t = -0.74022$

p-value = 0.5943

Conclusion:

Since $p\text{-value} > \text{level of significance}$

Hence we accept H_0 which means the mean Revenue of pre covid 19 (u_0) is equal to the mean Revenue during covid 19.



Infosys:

Paired sample t-test

H_0 : mean Revenue of pre covid 19 (u_0) is equal to the mean Revenue during covid 19 (u_1)

H_1 : mean Revenue of pre covid 19 (u_0) is not equal to the mean Revenue during covid 19 (u_1)

Level of significance (α) = 5%

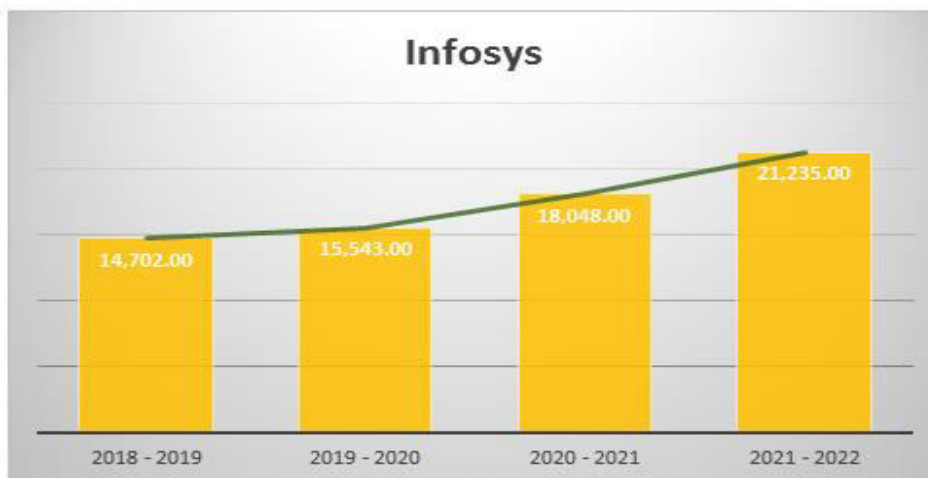
$t = -3.8525$

P-value = 0.1617

Conclusion:

Since $p\text{-value} > \text{level of significance}$

Hence we accept H_0 which means the mean Revenue of pre covid 19 (u_0) is equal to the mean Revenue during covid 19.



Thomas Cook:

Paired sample t-test

H_0 : mean Revenue of pre covid 19 (u_0) is equal to the mean Revenue during covid 19 (u_1)

H_1 : mean Revenue of pre covid 19 (u_0) is not equal to the mean Revenue during covid 19 (u_1)

Level of significance (alpha) = 5%

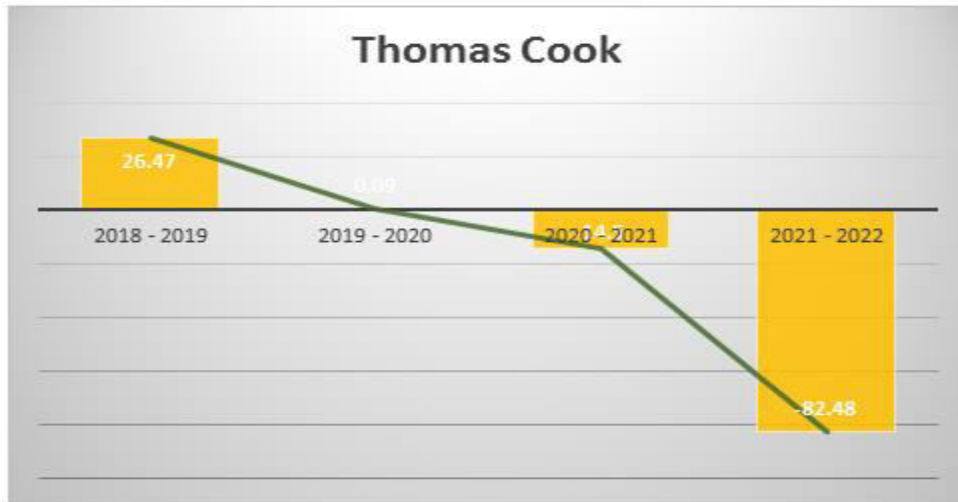
t = 2.9697

p-value = 0.2068

Conclusion:

Since p-value > level of significance

Hence we accept H_0 which means the mean Revenue of pre covid 19 (u_0) is equal to the mean Revenue during covid 19.



State bank of India:

Paired sample t-test

H_0 : mean Revenue of pre covid 19 (u_0) is equal to the mean Revenue during covid 19 (u_1)

H_1 : mean Revenue of pre covid 19 (u_0) is not equal to the mean Revenue during covid 19 (u_1)

Level of significance (alpha) = 5%

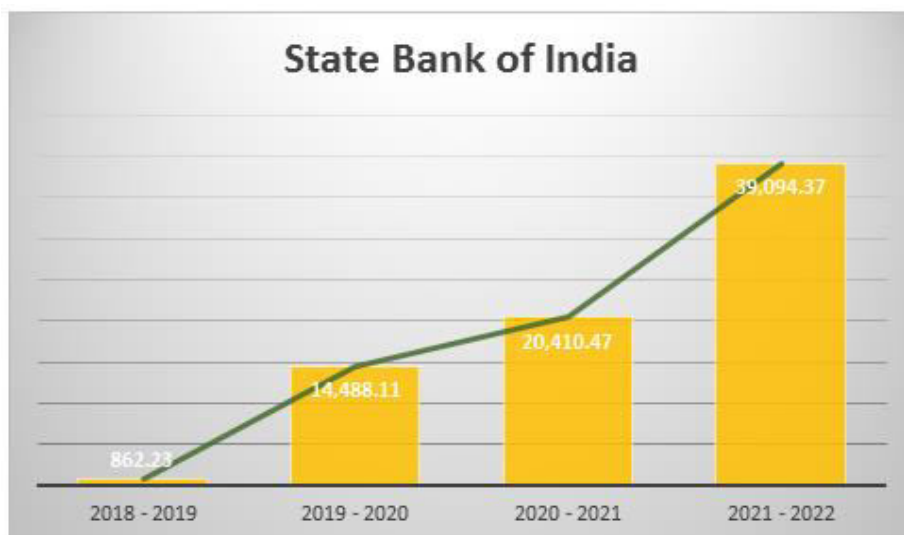
t = -8.7296

p-value = 0.07261

Conclusion:

Since p-value > level of significance

Hence we accept H_0 which means the mean Revenue of pre covid 19 (u_0) is equal to the mean Revenue during covid 19.



TCS:

Paired sample t-test

H_0 : mean Revenue of pre covid 19 (u_0) is equal to the mean Revenue during covid 19 (u_1)

H_1 : mean Revenue of pre covid 19 (u_0) is not equal to the mean Revenue during covid 19 (u_1)

Level of significance (α) = 5%

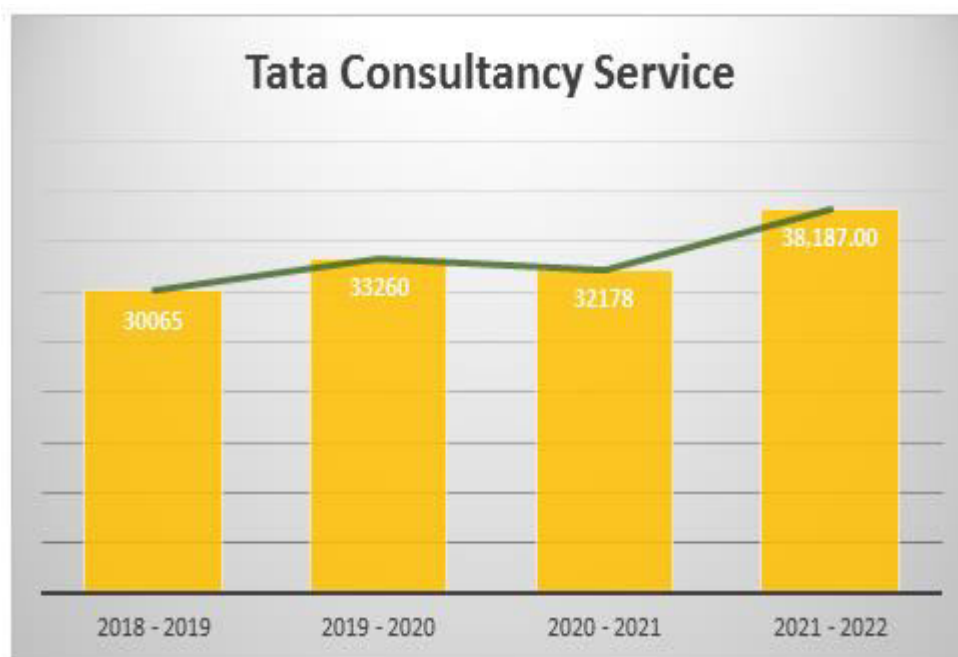
t = -2.5018

p-value = 0.2421

Conclusion:

Since p-value > level of significance

Hence we accept H_0 which means the mean Revenue of pre covid 19 (u_0) is equal to the mean Revenue during covid 19.



Tech Mahindra:

Paired Sample T-Test

H_0 : mean Revenue of pre covid 19 (u_0) is equal to the mean Revenue during covid 19 (u_1)

H_1 : mean Revenue of pre covid 19 (u_0) is not equal to the mean Revenue during covid 19 (u_1)

Level of significance (α) = 5%

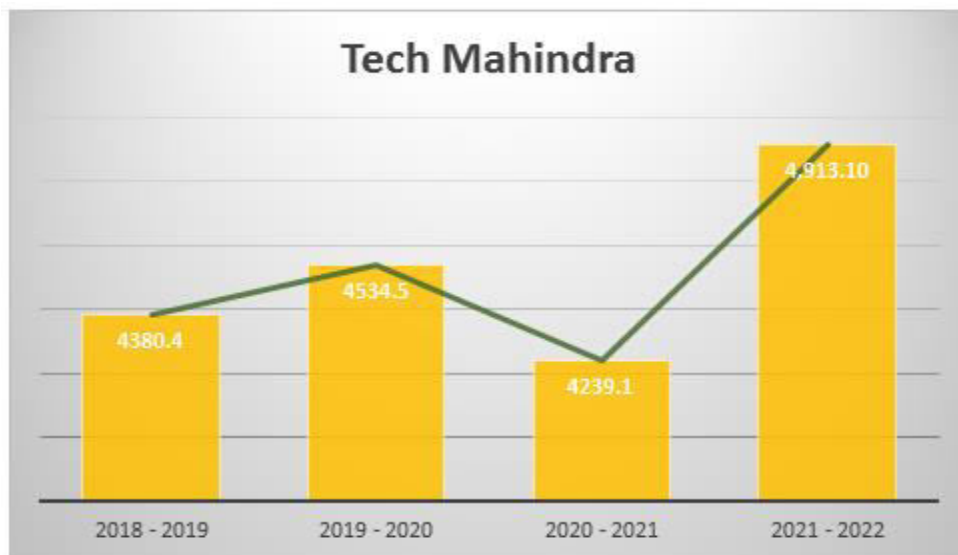
t = -0.45643

p-value = 0.7274

Conclusion:

Since p-value > level of significance

Hence we accept H_0 which means the mean Revenue of pre covid 19 (u_0) is equal to the mean Revenue during covid 19.



Biocom:

Paired Sample T-Test

H₀: mean Revenue of pre covid 19 (u_0) is equal to the mean Revenue during covid 19 (u_1)

H₁: mean Revenue of pre covid 19 (u_0) is not equal to the mean Revenue during covid 19 (u_1)

Level of significance (alpha) = 5%

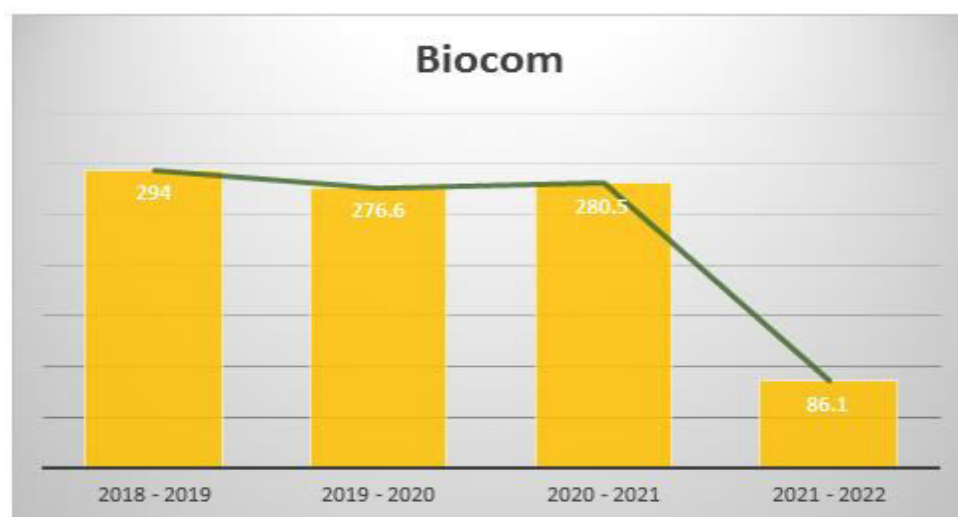
t = 1.1525

p-value = 0.455

Conclusion:

Since p-value > level of significance

Hence we accept H₀ which means the mean Revenue of pre covid 19 (u_0) is equal to the mean Revenue during covid 19.



Pfizer:

Paired sample t-test

H₀: mean Revenue of pre covid 19 (u_0) is equal to the mean Revenue during covid 19 (u_1)

H₁: mean Revenue of pre covid 19 (u_0) is not equal to the mean Revenue during covid 19 (u_1)

Level of significance (alpha) = 5%

t = -4.9323

p-value = 0.1273

Conclusion:

Since $p\text{-value} > \text{level of significance}$

Hence we accept H_0 which means the mean Revenue of pre covid 19 (u_0) is equal to the mean Revenue during covid 19.



Cipla:

Paired sample t-test

H_0 : mean Revenue of pre covid 19 (u_0) is equal to the mean Revenue during covid 19 (u_1)

H_1 : mean Revenue of pre covid 19 (u_0) is not equal to the mean Revenue during covid 19 (u_1)

Level of significance (α) = 5%

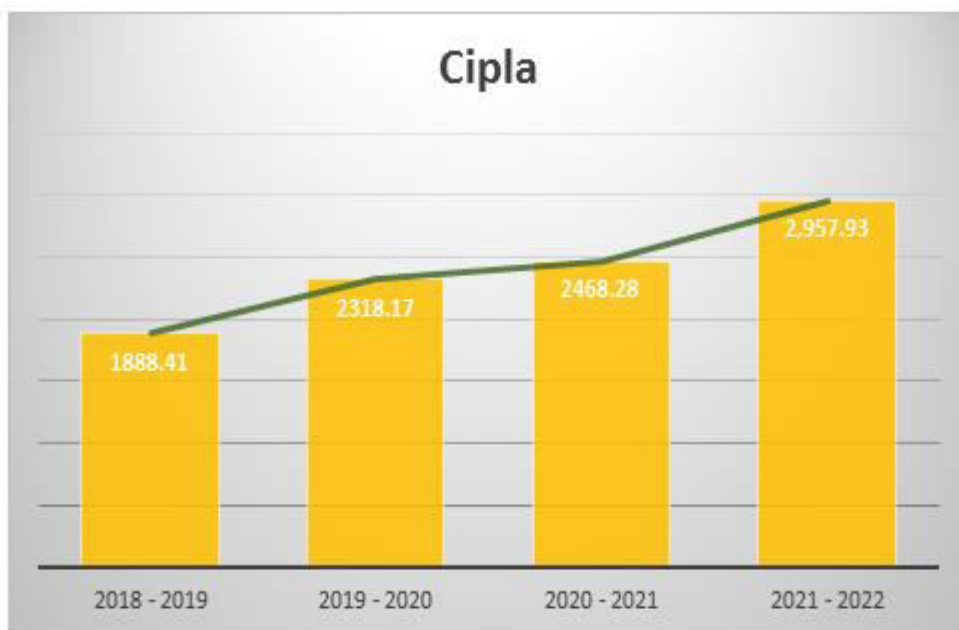
$t = -20.365$

$p\text{-value} = 0.03124$

Conclusion:

Since $p\text{-value} < \text{level of significance}$

Hence we reject H_0 which means the mean Revenue of pre covid 19 (u_0) is not equal to the mean Revenue during covid 19.



Bank of India:**Paired sample t-test**

H_0 : mean Revenue of pre covid 19 (u_0) is equal to the mean Revenue during covid 19 (u_1)

H_1 : mean Revenue of pre covid 19 (u_0) is not equal to the mean Revenue during covid 19 (u_1)

Level of significance (α) = 5%

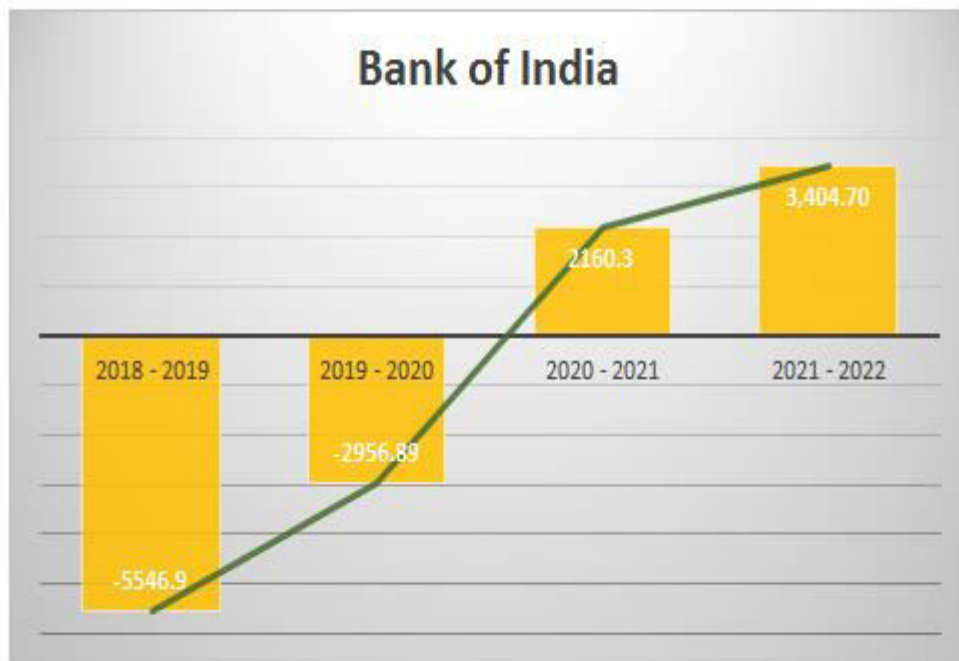
t = -10.455

p-value = 0.0607

Conclusion:

Since p-value > level of significance

Hence we accept H_0 which means the mean Revenue of pre covid 19 (u_0) is equal to the mean Revenue during covid 19.

**Oyo:****Paired sample t-test**

H_0 : mean Revenue of pre covid 19 (u_0) is equal to the mean Revenue during covid 19 (u_1)

H_1 : mean Revenue of pre covid 19 (u_0) is not equal to the mean Revenue during covid 19 (u_1)

Level of significance (α) = 5%

t = 1.5715

p-value = 0.3608

Conclusion:

Since p-value > level of significance

Hence we accept H_0 which means the mean Revenue of pre covid 19 (u_0) is equal to the mean Revenue during covid 19.



Indian Hotels:

Paired sample t-test

H₀: mean Revenue of pre covid 19 (u_0) is equal to the mean Revenue during covid 19 (u_1)

H₁: mean Revenue of pre covid 19 (u_0) is not equal to the mean Revenue during covid 19 (u_1)

Level of significance (alpha) = 5%

t = 4.5391

p-value = 0.138

Conclusion:

Since p-value > level of significance

Hence we accept H₀ which means the mean Revenue of pre covid 19 (u_0) is equal to the mean Revenue during covid 19.



GKB Ophthalmics:

Paired Sample T-Test

H₀: mean Revenue of pre covid 19 (u_0) is equal to the mean Revenue during covid 19 (u_1)

H₁: mean Revenue of pre covid 19 (u_0) is not equal to the mean Revenue during covid 19 (u_1)

Level of significance (alpha) = 5%

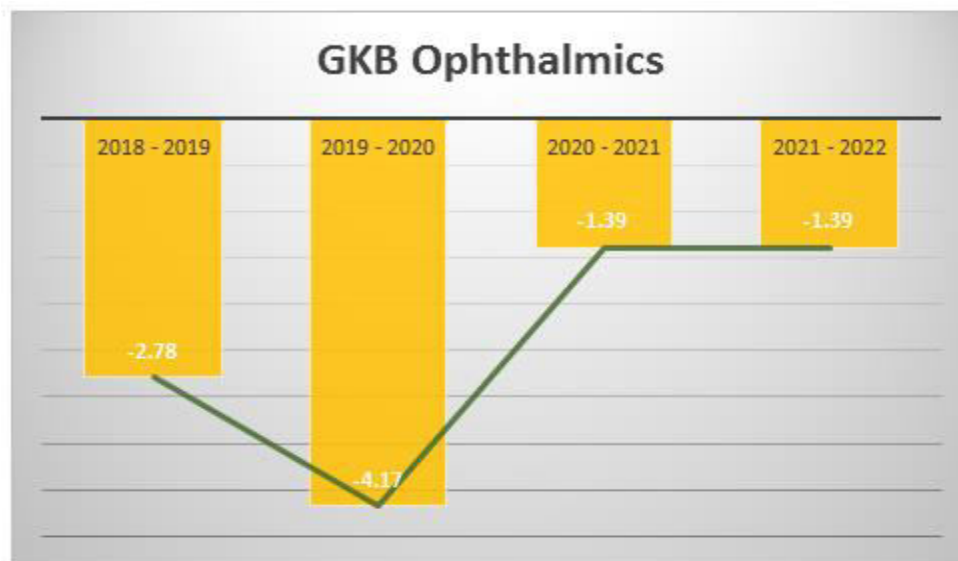
t = -2.5618

p-value = 0.2369

Conclusion:

Since $p\text{-value} > \text{level of significance}$

Hence we accept H_0 which means the mean Revenue of pre covid 19 (μ_0) is equal to the mean Revenue during covid 19.

**SECTION IV: CONCLUSION**

On carrying out various tests and comparative studies of 10 stocks of BSE and doing a comparative study, we come to the conclusion that not all share prices have fallen down during covid 19 period as compared to pre-covid 19 period. The stock market was very sluggish with very less movements in most of the stocks. But in spite of that, there were many stocks that show great movements in their sales and prices. Some of these extraordinary shares were pharmaceutical companies, IT companies, telecom industries, and FMCG. Their prices showed a boost in these adverse situation. So we were able to prove that covid 19 was not only bane but also a boom for many. Though the entire global economy was in black-swan mode, yet many industries were able to sustain this situation and showed an upward trend. The entire globe depended on the virtual world as all the offline business modes shifted to online business modes or virtual mode of business which helped the telecom as well as the IT industries to earn their buck in the situation. Since people were scared of the scarcity of basic necessities, the procurement of these items increased manifold and it gave an upward swing in the business of FMCG.

So in a nutshell, we can say that during the covid 19 period though the Indian economy was showing a downward trend and a massive fall in most of the share prices, many of the share prices showed an upward trend. Hence, we conclude that covid 19 was not only a bane, but it was also a boon for many.

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- <https://economictimes.indiatimes.com/bank-of-india/yearly/companyid-11964.cms>
- Economic Times

A REVIEW ON DISTRIBUTED DENIAL-OF-SERVICE ATTACK ON INTERNET OF THINGS

Nikita Bahaley^{1*} and Dr. Avinash Sharma²¹ Research Scholar and ²Professor, Madhyanchal Professional University, Bhopal, India**ABSTRACT**

The term IoT (Internet of Things) refers to physical things or objects having different types of sensors, ability to process, software and other technologies that helps to connect and exchange data with other systems over the internet. Whether it comes to simple coffee machine or big things like car or health care, agriculture, smart cities etc., IoT has developed a person's living with his minimal involvement. Since, these IoT devices and other components used with it are having less memory, less computational capability makes them vulnerable to many types of attacks. The most common type of attack that takes place on it is DoS/DDoS, where an authorized user is restricted from accessing some service on internet. This paper focuses on security requirements at different IoT layers, issues related to DDoS attack and provides review on its countermeasures.

Keywords: Internet of Things, DoS, DDoS, Security

INTRODUCTION

Internet of Things (IoT) paradigm became particularly popular in the last couple of years in such a way that the devices are present almost everywhere across the globe. One can use cheap components and connect to any device to the internet and enables information collection from the environment. Though it brings multiple advantages to the table, at the same time it has certain challenges and vulnerabilities that need to be addressed. Internet of Things as a term was firstly introduced in 1999 by Kevin Ashton [1], which represents a network of devices that has ability to connect and provide communication for billions of things simultaneously. The Internet of Things is the next step in the path to the fourth industrial revolution, where the Internet is extended to include more of the physical world, introducing both more intelligence to everyday objects and hence more control over the physical world. The I in IoT refers to the universal interconnectivity between all perceivable objects, including the traditional computing objects such as computers and smartphones, and the new generation of smart objects (T in IoT) enabled by sensors, actuators, and all embedded computers into everyday objects, from toys and wearables to home appliances, manufacturing equipment, vehicles and up to buildings, power grids and the entire urban city.

Since IoT has become so much popular and so it is used by large amount of population, makes it an attraction for hackers to launch attacks on it. Apart from other vulnerabilities, the most common type of attack that an attacker launches on IoT devices is DDoS. These devices have all the type of private data of individual person or organizations. In Denial-of-service attack, attacker prevents legitimate user from accessing some service, data or any kind of resource connected to internet; and when such kinds of attacks are launched from various compromised nodes then it is called as Distributed Denial-of-Service attack. Some of most common DoS attacks are SYN flood, DNS flood, Ping flood, UDP flood, ICMP broadcast etc. [20]

The security services that are necessary for IoT are:

- **Confidentiality:** The principle of confidentiality states that the data should be kept private from unauthorized access. Only authorized person should be able to access the data.
- **Integrity:** According to this principle, only authorized person should be able to make any modifications to the data.
- **Availability:** As per principle of availability, the data or resources should be available all the time to legitimate users.
- **Authentication:** As per this principle, end users should be able to identify each other's identity to ensure that they are interacting with same entities that who they claim.

In this DDoS attack, mainly the principle of availability is affected as hacker makes service providers/servers so busy with fake requests or unnecessary traffic which results in unavailability of data or services required to legitimate people.

Related Work

In their work, Farooq et al [2] make a review on the Internet of Things and the security concerns behind it. The main security concerns are for data confidentiality, data integrity and data availability. Authors also talk about the security challenges and issues regarding each of the layers, and which security measures could be

applicable. Authors [3] have touched upon the analysis of the security challenges and features of Internet of Things. Their work talks about the strategies that could be used in the design and deploy of security mechanisms for IoT. One of those strategies is to group things by location and implement security system based off the needs of group, while other strategy can be to focus more on the interaction of human users with the Internet of Things. Authors [1] talked about the security of Internet of Things and possible countermeasures. They discussed about the attacks on Wireless Sensor Networks (WSN) and Radio Frequency Identification (RFID), and the countermeasures available against each of the attacks possible. In the paper, one of the mentioned attacks was jamming, one of the oldest and most famous attacks on the WSN that targets specific packets in each layer, and some of the proposed measures are to regulate transmitted power and frequency hopping spread spectrum (FHSS), which is a way of transmitting radio signal.

Ning et al [4] talk about the future of security architecture of Internet of Things, where they proposed a model for heterogeneous IoT system, which consists of three essential security perspectives, such as information, physical and management. This model is three-dimensional information security model that introduces social layer, intelligence and compatibility for security considerations. Dao et al [5] discussed about the heterogeneous IoT networks, which are characterized by multiple access technologies and mobile edge computing capabilities and securing them from the intelligent DDoS attacks. The solution they propose as a prevention of DDoS attacks is called MECshield, a framework consisted of central controller and multiple agents located at the edge of each local network, which enables the network to defend against malicious traffic.

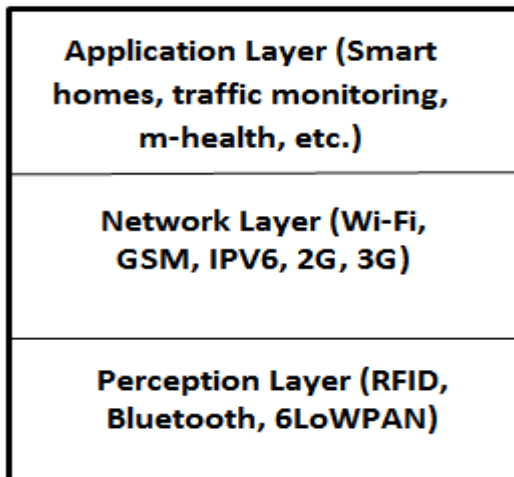
In their paper, authors Peraković et al [6] analyze data that they collected from the domestic company regarding the trends in DDoS attacks. Through their research, it is stated that the Simple Service Discovery Protocol (SSDP) is the most common when it comes to conducting DDoS attacks. They also analyzed the amount of these attacks happening in regarding IoT, and concluded that the rise in IoT devices also mean rise in the DDoS attacks. Simple study on handling DDoS attacks has been conducted by the Oh et al, where they presented four major approaches that can be considered in order to defend against these attacks. Given approaches for defense against DDoS attacks are by rate limit framework, defense by offense, by active filtering and by IP traceback. In the research conducted by Khalil [7], the main topic was the security of Internet of things against DDoS attacks, where he talked about the security measures by using machine learning algorithms. Author provides algorithm that helps in monitoring, analyzing and recognizing attack patterns.

In the paper, authors [8] touched upon the malwares in IoT with DDoS capabilities. The malwares, such as Linux Hydra, PsybOt, Chuck Norris, Tsunami, Aidra, Spike, Mirai, show the growth in popularity and are able to hit the targets with much more attacks than in past. This research is conducted in order to raise the awareness for the researchers to look more into the higher security measures in this field. Authors Bhardwaj et al [9] explore the option of DDoS attacks prevention in IoT using edge computing, where the edge computing, by their definition, is usage of computing resources near the end devices. They develop a solution called ShadowNet, which serves as the defense against DDoS attacks by making the edge computing a first line of defense. Solution is based on the edge functions that establish fast path between networks that send packets with information about the traffic in IoT to their main service. The authors Hallman et al [10] discussed about the details behind IoT security vulnerabilities and IoT-based botnets and botnet malware used in DDoS attacks. They mentioned some of the cyber security vulnerabilities of Internet of Things. This paper also talks about Mirai botnet malware, which is a part of Trojan malware family that serves as a DDoS attack on the IoT devices. After the analysis, authors showed that this newly released malware has a soft spot that can be research into much deeper, which is regarding the SQL injection attack, where the counterattack is possible to be implemented. Tamanna [11] discussed about the cloud computing, the form of IoT, that has taken the computing from the desktop to the Internet, and the DDoS attacks that happen in this cloud environment. This author proposes a solution against the DDoS attacks in the form of Software Defined Networks (SDN) features, since SDN is flow based concept with standardized API and support for IDSs and Intrusion Prevention Systems (IPSS). Javaid et al [12] conducted a research in the field of DDoS attacks on the IoT devices, and their prevention using blockchain technology, a technology that serves as online distributed ledger consisted of list of blocks. For the proposed model online software platform called Ethereum was used, that helps with the generation of addresses of devices, as well as the customized smart contract that enabled the defense mechanism against DDoS attacks. Authors have conducted experiments to prove that their model is capable of better detection and prevention of DDoS attacks.

Authors Kasinathan et al [13] proposed a solution for detection of DoS attacks in Internet of Things, specifically in 6LoWPAN based networks. The most important components of their solution were IDS Probe, which operates with custom firmware and is used to detect the incoming packets with incriminating properties, and

IDS, which provides many benefits, such as multithreading and intrusion prevention system. This proposed method was tested by making the simulation of five different IPv6 UDP flooding attacks on a targeted 6LoWPAN node. Results and graphs that they came up with showed that their solution can detect DoS attacks in IoT structures with 6LoWPAN protocol. Authors [19] have shown how one can use Graph Based Outliner Detection method to detect DoS attack on IoT devices.

Architecture of IoT



IoT is divided mainly into 3 layers as Application Layer, Network Layer and Perception Layer.

Perception Layer collects data from environment like temperature, pressure, moisture etc with the help of sensors and hence it is sometimes also called as Sensor/Sensing layer. It uses several sensing technologies and devices to sense the physical phenomenon [4].

Famous types of attacks on this layer are RF jamming attack and Eavesdropping. In RF jamming attack, the RF signals are jammed with stronger signals. The attacker intercepts and denies communication between the sensor, or tag, and the reader of transmitted data [14][15]. Eavesdropping mainly affects confidentiality of IoT devices. Here, attacker can read and collect private information and misuse it [16][15].

As the name given, network layer has networking devices used for sending data, receiving data, processing data etc. The most common types of attack launched at this layer are Flooding attacks (UDP Flood, ICMP Flood etc.), Reflection based flooding attacks (Smurf Attack), Protocol Exploitation flooding attacks (SYN Flood, TCP SYN-ACK flood, ACK PUSH flood etc.) and Amplification based Flooding attacks, where BOTNET is widely used for amplification and reflection purpose.

The third layer, that is Application layer consists of business logic, user interface etc. Common types of attacks launched on this layer are: Reprogramming attack and Path based DoS attack. In reprogramming attack, attacker may change program code if they have unauthorized access, which tends to leakage of data. It can also cause exhaustion of the Server resources [17]. The path based DoS attack is launched by flooding multi-hop end to end communication paths with data packets [18].

CONCLUSION

IoT is rapidly developing and becoming part of our lives as it serves tremendous advantages to an individual and organizations. This paper discusses mainly about DDoS attacks on IoT devices with respect to each layer in IoT, apart from other malicious activities at IoT layers. Each layer has different vulnerabilities. So, accordingly preventive measures should be taken in order to avoid the different attacks on different layers. There have been multiple researches done in this field for providing security against different attacks. Also, end users of various applications must be aware of these attacks and so about importance of using strong credentials and updating software.

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A STUDY ON WAYS TO SUPPORT FEMALE ENTREPRENEURS IN THEIR QUEST FOR BUSINESS SUCCESS**Mrs Riddhi Gada Satra**

Assistant Professor, Department of Banking & Insurance, Vidyalankar School of Information Technology, Wadala

ABSTRACT

Due to the enormous contribution that entrepreneurs make, whether it is by creating new employment possibilities or advancing the growth and development of a country, they are seen as more of a national asset. Through their creative endeavors, they have the capacity to change both how we live and how we work. Since more and more students are becoming interested in comprehending its drawbacks, entrepreneurship has emerged as a dominant discipline in the modern world. Having said that, Women who are regarded as the most powerful entity in the universe, entering entrepreneurship have created wonders. One such area of expertise in this field is entrepreneurial development, which helps aspiring business owners improve their current aptitudes and talents so they can manage their enterprises more expertly. Women have lately realized the importance of being independent and multi-tasking at the same time. There have been tremendous women entrepreneurs who have evolved as vibrant examples of success.

Keywords: entrepreneurs, multi-tasking, women, independence

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INTRODUCTION

Entrepreneurship development is a process that improves an entrepreneur's knowledge and skill set related to the creation, administration, and management of a business venture while taking into consideration the risks involved. This is accomplished through training sessions and programmes that highlight entrepreneurial skill. If you decide to work in this profession, you will be helping aspiring business owners develop their skills and overcome obstacles to starting their own enterprises.

The process of increasing an entrepreneur's knowledge and skills through various classroom coaching, programmes, and training is known as entrepreneurship development. The fundamental goal of the development process is to support and grow the entrepreneurial community.

This method of entrepreneur development aids new businesses or enterprises in better attaining their objectives, boosting trade and the economy of the country. Enhancing the ability to establish, manage, and build a company operation while keeping in mind the risks associated with it is another crucial component of this process.

The entrepreneurship development process, put simply, involves assisting entrepreneurs in developing their abilities through coaching and training sessions. It motivates people to make wise decisions and better judgments in all business-related activities.

Women are generally regarded as the strongest pillar, Majority of the women who were once under estimated and their family considered them

OBJECTIVES

1. To analyze the growth of women in business
2. To study the development of various small size businesses and their development pattern
3. To inculcate the feeling of being independent among women

REVIEW OF LITERATURE

Terangpi and Chanu (2016) conducted a study on women entrepreneurs in Assam. They found a close relationship between the economic development and economic contribution of women entrepreneurship. They found that economic contribution of women helps in increasing employment, promoting savings, decreasing poverty, and also helps in capital formation. G. Yoganandan T. Vignesh (2016) suggested that there is a need for efficient support organisations to monitor the activities of Agro entrepreneurs. Predictions of future demand, introduction of modern technology, cost control and business expansions are the important areas, where Agro entrepreneurs need regular support.

Sonu Garg and Parul Aggarwal (2017) studied problems and prospects of women entrepreneurship; they mentioned that a suitable environment with the support of their family, society and from the government can solve major problems in promoting women entrepreneurship.

Rekha Melwani (2017) studied contribution in the development of the economy in the country. She mentions that economic development and development in entrepreneurship are interconnected.

Arun Kumar and N. Kishore Babu (2018) suggested that it is the entrepreneurial development programme by which the entrepreneurs learn the required knowledge and ability to run the enterprise efficiently which comes up with economic progress. Entrepreneurial development programmes help in removal of industrial slums as in these programmes they are providing the entrepreneurs with various plans, strategies, incentives, subsidies and facilitates them with infrastructural solutions to setup their own ventures.

Guoxin Ma and Olaleye Oluwabunmi Olayinka (2018) studied the contribution of entrepreneurship in certain aspects of well-being. They further suggested it is definitely injudicious to call any entrepreneur by a fixed tag (e.g., social entrepreneur, economic entrepreneur, etc.) that implicit a rather stagnant perception of his/her entrepreneurial journey.

Shruti Mohapatra, Girija Shankar Khadanga and Sujhitmajhi (2018) studied social entrepreneurship for agricultural development and he mentioned that India is a nation of ancestor in the production of agricultural activities with manifold cultural and environmental environment so agricultural development with respect to social development balance the development of our economy.

Ravi Kathuria, Mahesh Kumar P. Joshi, Sidhartha Das (2018) affirmed that to survive and thrive, firms must adapt to changes which are coming in the outside environment of the firms because of development of the technological age.

Financial assistance to the women entrepreneurs can motivate women in India to detain the considerable share in the GDP of the nation.

Gunjan Kumar and Saundarjya Borbora (2019) contributed in comprehension of the fact why the contribution of entrepreneurship varies across different states. They showed a distinctive impact of the local institutional environment on operations of entrepreneurship at a regional level in India.

Olawole A Adetayo (2019) stated that the forces of innovation, technology and entrepreneurship produce synergies of business transformation. With the evolution of internet, technology played a very important role in developing the growth of the business. If organisations are able to use the technology in a good way, then it can help organisations to grow and make the world smaller for all the consumers.

Olena Krylova and Kostiantyn Shaposhnykov (2020) suggested that in order to intensify innovative entrepreneurship in the near future, it is advisable to implement a number of measures which are clear awareness of the national economy's ability to innovate, create conditions for new products, increase its competitiveness; ensuring diversification of sources of financing of innovative activity of enterprises in order to reduce the costs of acquisition and use of innovative products; establishing close and productive interaction of main participants of innovative entrepreneurship .

Mohd Abass Bhat and Arfat Ahmad (2020) found that youth across the Kashmir valley perceive considerable threat in starting entrepreneurship. The ontogeny of this entrepreneurship threat was assessed by four composite dimensions – economic, social, educational and personal. Among the select independent factors, personal factors were found considerably more influencing in determining the youth's attitude towards starting their own business unit.

R. Duraipandian Rajib Kumar Roy (2021) suggested some factors regarding entrepreneurial development which has significant impact on business profitability over other factors for example entrepreneurial competencies,

competitive advantage of different offerings in the organisations, entrepreneur’s education and suppliers’ availability etc.[6-20].

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RESEARCH METHODOLOGY

The study tries to focus on women development and increasing the main focus is to find out about the innovative mindset, expertise, income generation and most importantly the need to do business. A primary survey was conducted by the researcher for this study.

Sample Size

The sample size for the survey were 10 women who have initiated the business and are carrying out successful business along with timely up gradation , expansion and expertise from Mumbai region.

Sampling Technique

Interview Method was used to collect responses, the researcher has physically managed to meet the women entrepreneurs and ask them various questions.

DATA COLLECTION

Data was collected through Interview method by physically meeting them and a structured questionnaire circulated through google form. The link for the questionnaire was sent to all the target audience using social media platforms like WhatsApp and Instagram.

Limitations

1. The sample size is small i.e. 10 respondents (women entrepreneurs) from Mumbai region.
2. The analysis is based on the perception and opinions of a limited number of respondents.

DATA ANALYSIS

ENTERPRISE NAME	Kalp Mukhwas
OWNER NAME	Kalpana Dharod
NO YEARS IN INDUSTRY	16 years
PRODUCT	Home made Mouth Freshners
INSPIRATION	Self motivated , need for money
EVOLUTION OF THOUGHT	Started small scale by selling door to door , among relatives etc
EXPANSION STRATEGIES	Products are supplied now all over Mumbai, Maharashtra, India . Products are now sold through Stalls, Goodwill.
PROFIT MARGINS	200% profit

FAMILY SUPPORT	Not initially , but now house entirely runs on business , husband left job and joined business
WORK LIFE BALANCE	Initially found it difficult , now very smooth , almost 50 women are working under me today .
BARRIERS	Health Stress Mental torchure from family Financial issues

ENTERPRISE NAME	Samruddhi sweets
OWNER NAME	Pragna Maru
NO YEARS IN INDUSTRY	20 years
PRODUCT	Home made Sweets , Snacks , papads etc .
INSPIRATION	Self motivated , need for money
EVOLUTION OF THOUGHT	Started small scale by selling door to door , among relatives etc
EXPANSION STRATEGIES	Products are supplied now all over Mumbai , Maharashtra , India . Products are now sold through Stalls , Goodwill .
PROFIT MARGINS	100% profit
FAMILY SUPPORT	Not initially , but now house entirely runs on business , husband left job and joined business
WORK LIFE BALANCE	Initially found it difficult, now very smooth , almost 50 women are working under me today .
BARRIERS	Health Stress Mental torchure from family Financial issues

ENTERPRISE NAME	Smita's Corner
OWNER NAME	Smita Bhalekar
NO YEARS IN INDUSTRY	15 YEARS
PRODUCT	Fast food and Soft drinks
INSPIRATION	No one
EVOLUTION OF THOUGHT	Her own students demand
EXPANSION STRATEGIES	Expansion through concentration & cooking skills
PROFIT MARGINS	1000 rs. Per day
FAMILY SUPPORT	Family is very supportive
WORK LIFE BALANCE	Very Easy to maintain
BARRIERS	Stock , Packaging , Perishable items , unpredictable demand

ENTERPRISE NAME	Sejals's Designer Boutique
OWNER NAME	Vandana Parab
NO YEARS IN INDUSTRY	8 years
PRODUCT	Clothes, Sarees, etc.
INSPIRATION	Her Parents who always supported and were very kind during her hard times.
EVOLUTION OF THOUGHT	When she started her business, she never thought of getting such a genuine response from her customers and then she further decided to get more involved in her business to earn profit
EXPANSION STRATEGIES	<ul style="list-style-type: none"> • New branches placement • Investing in various designs • Search of franchise Spreading news about the business more through social media.
PROFIT MARGINS	She was always positive in her life and hence she always thought of achieving high profit of around (Max 1,00,000-

	1,50,000 per month) as she was the only responsible parents in her house, she targeted the goal.
FAMILY SUPPORT	When she was a child studying in Higher Secondary Section told her parents that she wants to become a businesswoman and her Parents never stopped her from doing things and then she finally started her own Tailor shop by her daughter's name 'Sejal Tailor'.
WORK LIFE BALANCE	Being a woman, she always had big responsibility towards her family, the time she gives to her business as compared to that she gives more time to her family as she feels happy being with her family.
BARRIERS	There are problems in everyone's life but when I asked her this question, she was totally opposite of what I thought. She in her life never faced any issues because she did not let any issues faced by her being a polite and patient woman, she only focused on her work and achieve her goals

ENTERPRISE NAME	Deliure
OWNER NAME	Puja Kamble
NO YEARS IN INDUSTRY	3 years
PRODUCT	Software
INSPIRATION	I think what inspires me the most are our customers. I specifically set aside time to read customer chats, reading the positive comments of course is awesome, but I also get a lot of value from the things that we can improve on. I read those conversations and get inspired to do things better, change things and develop products based on that feedback. That inspires me every day.
EVOLUTION OF THOUGHT	The realisation that finance is very important , to earn the finance being very different is very essential .
EXPANSION STRATEGIES	Targeted the right audience
PROFIT MARGINS	Family support has been helpful throughout the journey , 20-40%
FAMILY SUPPORT	She has very good support from family then she handle everything easily.
WORK LIFE BALANCE	The software product development landscape is more overcrowded than ever before. In order to succeed, start-ups need to differentiate themselves from the competition. They must offer a unique value proposition that meets a specific customer's needs.
BARRIERS / STRENGTH	<ul style="list-style-type: none"> • Knowledge of the full stack. • Ability to learn, adapt and grow. • Business acumen. • Time management. • Interpersonal skills.

ENTERPRISE NAME	DAS TOURISM AND TRAVEL INDUSTRY
OWNER NAME	Urmila Das
NO YEARS IN INDUSTRY	5 years
PRODUCT	Ticket Booking
INSPIRATION	Parents , Other women who evolved to be successful entrepreneurs
EVOLUTION OF THOUGHT	Financial independence was required
EXPANSION STRATEGIES	First started with neighbours , friends Slowly informed family Took help of social media
PROFIT MARGINS	15% per ticket

FAMILY SUPPORT	Family has always been very supportive
WORK LIFE BALANCE	Easily manageable
BARRIERS	Delayed payments from clients Family members frequently ask for concessional rates Lack of professionalism.

ENTERPRISE NAME	Rita’s Financial Plans
OWNER NAME	Rita Maru
NO YEARS IN INDUSTRY	08
PRODUCT	Financial Products – LIC , MEDICLAIM
INSPIRATION	Other Women Financial Agents
EVOLUTION OF THOUGHT	Husband was not successful , increasing need of children in house
EXPANSION STRATEGIES	Started communicating with each and every person she met and explaining the importance of investing
PROFIT MARGINS	Commission basis , clients are actual goodwill
FAMILY SUPPORT	Very well support received
WORK LIFE BALANCE	Easy to maintain
BARRIERS	People judge you , Underestimated .

ENTERPRISE NAME	Your Dost
OWNER NAME	Richa Singh
NO YEARS IN INDUSTRY	8 years
PRODUCT	A company that revolves around bringing emotional wellness solutions to users who can seek support from psychologists and other experts while staying completely anonymous.
INSPIRATION	The idea took birth out of a personal experience. When I was at IIT Guwahati, my hostel mate committed suicide due to anticipation of bad placement. None of us had any clue of her suffering before she took such a drastic step. Even though we had counsellors, psychologists in the campus but hardly anyone was seeking their support/help. When I started working, people around me were stressed due to job pressures and relationship issues. However again, most of these people were not willing to talk about their problems fearing social implications and for the fear of being called mentally ill. I started researching in this field to find answers. I spoke to a lot of them and also many counsellors and psychologists in the field, and got a lot of insights into this. The main problem people had was to be anonymous. They did not want anyone to know, even if they approached psychologists and this itself stopped them from seeking help. That’s when I conceptualised a system YourDost- an online emotional wellness coach where people can anonymously seek support. Initially I shared this idea with satyajeet, our Co-Founder and he loved the idea. He also believed that through YourDost, we will be able to help a lot of people. The day I shared the idea with satyajeet, he started coding to make the YourDost website, and within 24 hours we had it up! That is how the idea started shaping up into a technology product
EVOLUTION OF THOUGHT	
EXPANSION STRATEGIES	<ul style="list-style-type: none"> • We rely on both online and on-ground marketing and advertising mean to increase awareness about the importance of mental health and benefits of seeking counselling and guidance. Over the course of 1.5 years of our journey, over 2,00,000 people have sought guidance and support using our website/ platform. We handle 600+ conversations everyday.
PROFIT MARGINS	<ul style="list-style-type: none"> • The profit margin is around \$126K.
FAMILY SUPPORT	-
WORK LIFE BALANCE	It wasn’t easy in the start but with time flowing it has normalised my life. I can now manage it eventually working here as well as helping mom and dad with their work and helping mom in the kitchen was one of my favourite

	things to do whenever I am free I always try to help her.
BARRIERS	<ul style="list-style-type: none"> • The main barrier was people around me were stressed due to job pressures and and relationship issues. However again, most of these people were not willing to talk about their problems fearing social implications and for the fear of being called mentally ill. • My friend and Co-Founder & CTO of YourDost Mr. Prakhar Verma, Co-Founder & CTS Mr. Puneet Manuja, and Co-Founder Paula Mariwala. And especially my family, in the start they didn't like that we were from a small family, we couldn't do business. We are just a normal people with decent pay and life. But I stood up and didn't backdown and through a lot of hardships I have now achieved my dream.

ENTERPRISE NAME	Sparkle Scentyy
OWNER NAME	Rajvi Vira
NO YEARS IN INDUSTRY	2 years
PRODUCT	
INSPIRATION	Self motivated , need for money
EVOLUTION OF THOUGHT	Started small scale by selling door to door , among relatives etc
EXPANSION STRATEGIES	Products are supplied now all over Mumbai, Maharashtra, India. Products are now sold through Stalls, Goodwill.
PROFIT MARGINS	100% profit
FAMILY SUPPORT	Not initially , but now house entirely runs on business , husband left job and joined business
WORK LIFE BALANCE	Initially found it difficult , now very smooth , almost 50 women are working under me today .
BARRIERS	Health Stress Mental torchure from family Financial issues

ENTERPRISE NAME	Sheetal's Food Magic
OWNER NAME	Sheetal Shah
NO YEARS IN INDUSTRY	18 years
PRODUCT	Home made food tiffin
INSPIRATION	Self motivated , need for money
EVOLUTION OF THOUGHT	Started small scale by selling door to door , among relatives etc
EXPANSION STRATEGIES	Products are supplied now all over Mumbai, Maharashtra, India. Products are now sold through Stalls, Goodwill.
PROFIT MARGINS	100% profit
FAMILY SUPPORT	Not initially , but now house entirely runs on business , husband left job and joined business
WORK LIFE BALANCE	Initially found it difficult, now very smooth, almost 50 women are working under me today.
BARRIERS	Health Stress Mental torchure from family Financial issues

CONCLUSION

- We can conclude that , over the past 2 decades there has been a drastic change and increase in the number of women entrepreneurs .
- Women have started being more independent , reasons could have been various but each women has realised the need to be financially independent .
- It is also the need of the hour that women realise their worthiness and take up a stand for themselves in their family and society.

- An additional income is always better than one individual being the sole earner .
- Expenses being on the increasing side there is a high demand for increase in income that has been felt .
- Women entrepreneurs are essential to societal and economic development. Despite making up over half of India's population, women have extremely little economic engagement. India's female entrepreneurs are gradually becoming more prominent in non-traditional industries.
- Women entrepreneurs make up a varied population with a range of socioeconomic, educational, and demographic characteristics. Policies and programmes must be tailored to meet the specific requirements of each segment. It is clear that women confront a variety of difficulties as they pursue their entrepreneurial careers. To address these issues, a thorough action plan is required. Five states, namely Tamil Nadu, Kerala, Andhra Pradesh, West Bengal, and Maharashtra, have a high concentration of female entrepreneurs. These states' interventions and policy must be dynamic
- First off, this study significantly advances our understanding of female entrepreneurship and its theoretical underpinnings, particularly in regard to the fast-paced societal change to which it is currently subject.
- An important foundation for understanding the structure and underlying causes of female entrepreneurs' circumstances is provided by earlier study in the field.
- To gain a greater knowledge of its complexity, this study helps to transform the perspective on female entrepreneurs from existing as an independent entity to coexisting with other influences including social structures and societal developments.
- Since various big developments have had a substantial impact on the conditions during the past few decades, the research's goal has been to investigate the how and why of these developments in society.

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**A THEMATIC FOCUS FOR COMPREHENSION AND ACTION IN FOOD AND HEALTH-
NUTRITIONAL SECURITY: DOMESTIC AND INTERNATIONAL IMPLICATIONS FROM LEGAL
AND SOCIAL STANDPOINT**

Dr. Bahrullah Safi¹, Dr. Bhupinder Singh², Aksh Chahal³ and Dr. Saumyabrata Nath⁴¹Vice President International, Acacia University, Arizona, USA²Associate Professor, SVKM'S NMIMS Deemed to be University, Chandigarh Campus³Maharishi Markandeshwar Institute of Physiotherapy and Rehabilitation, Maharishi Markandeshwar (Deemed to be University), Mullana, Ambala, District, Haryana 133207, India⁴Assistant Professor & Research Scholar, Vivekananda Global University, Jaipur**ABSTRACT**

Food, with its primal connotations of nurturance and sustenance, carries powerful psychological, economic, physiological and political meaning. It is a significant marker of ethnicity and migrants. In fact, indulgence in food habits serve as a cohesive and stabilising force in a potentially threatening environment. In the industrialized world, food security is taken for granted where stable political and social structures ensure that everyone has access to safe and nutritious food sufficient to maintain a healthy and active lifestyle. The picture in developing world could not be more different almost one billion people are chronically undernourished, regularly consuming less than 2000 calories per day (FAO, 2006). There are also further two billion people who, despite having access to an adequate source of calories, nevertheless lack essential nutrients. This means that up to half of the world's population at any movement of time may suffer from malnutrition. Fortification of food with vitamins and minerals provides an excellent basis to compare conventional and biotechnology-based approaches to improve nutrition. In fact, the maintenance of food habits may serve as a cohesive and stabilising force in a potentially threatening environment.

Keywords: Food, Health, Nutrition, Human Rights, Legal Implementation

INTRODUCTION

International human rights law lays down obligations of Governments to act in specific mode or refrain from acts to promote and protect human rights and fundamental freedoms from its individuals or groups. Basic human rights are inherent to all as irrespective of nationality, gender, ethnic origin, colour, religion, language social and financial status, all individuals of the respective nation are entitled to our human rights. These rights are interrelated, interdependent and indivisible. Universal human rights are often expressed and guaranteed by law, in the forms of treaties, customary international law, general principles and other sources of international law (1). All human rights are indivisible be it civil and political rights, such as the right to life, equality before the law and freedom of expression; economic, social and cultural rights, such as the rights to work, social security and education, or collective rights, such as the rights to development and self-determination, are indivisible, interrelated and interdependent. Improvement of one right facilitates advancement of others. Likewise, deprivation of one right adversely affects the others (2).

INTERNATIONAL PERSPECTIVES

Context shows a powerful light on authors of 1948 Universal Declaration of Human Rights (UDHR) to recognize definitive and universal first modern statement of human rights. This is particularly important when one come's to examine later human rights documents derived from and codify the rights expounded in the UDHR. Science of human nutrition deals with effects of food on people. It starts with the physiological and biochemical processes involved in nourishment focusing how substances in the food provide energy or are converted into body tissues and the diseases that result from insufficiency or excess of essential nutrients (malnutrition). In today's world, the role of food components in development of chronic degenerative disease like coronary heart disease, cancers, dental caries, etc., are major targets of research activity (3). Scope of nutrition extends to any effect of food on human function such as fetal health and development, resistance to infection, mental function and athletic performance. There is growing interaction between nutritional science and molecular biology which may help to explain action of food components at cellular level and diversity of human biochemical responses (4). Nutrition also deals in context to why people to eat specific foods, even after being advised as being unhealthy. The study of food habits thus, overlaps with social sciences of psychology, anthropology, sociology and economics. Dietetics and community nutrition is application of nutritional knowledge to promote health and wellbeing. Dietitians advise people in what, when, how much to eat to restore or maintain optimal health, and to help in the treatment of disease.

People expect to enjoy eating the foods that promote these things; and the production, preparation and distribution of foods provides many people with employment (5).

The World Health Organization (WHO) states health to be “a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity”. Configuring the same, mental well-being to the spirit. Social wellbeing is the role. The definition specifies health to be ideal must be complete in all forms. Good health is one of the many good things that they would like to have. Health is an area of life where outcomes are often conceptualised as inputs. Health is an elusive concept, and environmental change is leading to monitor new health risks and exposure to new forms of danger. Development, in its many facets is inputs can have very positive but also negative effects on physical and mental health (6).

RELEVANCY OF FOOD

Food, with its primal connotations of nurturance and sustenance, carries powerful psychological, economic, physiological and political meaning. It is a significant marker of ethnicity and migrants. In fact, indulgence in food habits serve as a cohesive and stabilising force in a potentially threatening environment (7). The sharing of a food culture is a basis of collective identity and commensality and also a means of expressing both inclusion and otherness. A healthy diet means different to diverse people (8).

In the industrialized world, food security is taken for granted where stable political and social structures ensure that everyone has access to safe and nutritious food sufficient to maintain a healthy and active lifestyle. The picture in developing world could not be more different almost one billion people are chronically undernourished, regularly consuming less than 2000 calories per day (FAO, 2006). There are also further two billion people who, despite having access to an adequate source of calories, nevertheless lack essential nutrients. This means that up to half of the world's population at any movement of time may suffer from malnutrition. Fortification of food with vitamins and minerals provides an excellent basis to compare conventional and biotechnology-based approaches to improve nutrition (9).

Fortification has been successful in the developed world where in it has significantly reduced the incidence of deficiency diseases. Many processed foods, including bread, packaged cereals, milk and soft drinks are fortified with vitamins and minerals so the average diet contains micronutrients well in excess of requirements. In developing countries, the less robust and reliable food distribution infrastructure, poor governance and the lack of funding renders such programs inefficient and unsustainable, especially when trying to reach remote areas are the major hurdles. Only iodine fortification and, to a lesser extent, vitamin A supplementation has met degree of success, but other programs failed, especially at the local level when dealing with small and remote villages (10).

PROBLEMS CONCERNING FOOD AND HEALTH CARE

Poverty continues to afflict third world countries. Its increasing number in the world, while macroeconomic policies, recession in the west, debt servicing in the third world and the impacts of structural adjustment policies often mean cutbacks in already poor health services and increases in differential access to resources and health care. Yet people are living longer, their lifestyles are changing and so too are the diseases from which they suffer (11). Relationship and interactions between health and development have become complex. It is by no means clear that health status automatically improves with rising levels of development in any given country, and this certainly cannot be said for all inhabitants. Both concepts of ‘health’ and ‘development’ are, in any case, notoriously difficult to define and almost impossible to quantify in a way that all would find acceptable. Nevertheless, health care professionals, researchers and policy-makers are all aware that health status is changing with development, and it is not invariably changing for the better then people are living longer but, the question over quality of life years added remain standing. The large numbers of people in many countries for whom development has not led to health improvements suffer the most. For example, many people, especially among the poor and particularly in the so-called third world, are experiencing twin threats from infectious and chronic/degenerative diseases. The problems are not confined solely to poor countries, and retrenchment in public-sector and private expenditure on health and health care is now commonplace, meaning that publicly provided healthcare is often diminishing and overstretched (12).

In other areas of social life, there is a greater willingness to assume that increased spending is a good proxy for real success. Perhaps it is wishful thinking that makes people assume that more means more but still it is a common assumption in the field of health. This also makes resourcing a sacred cow. To sacrifice health inputs for transportation inputs at the margin is to condemn the population to an increase in coughs and sneezes. Any list of inputs into the health care production-function will usefully begin with medical care, narrowly defined. The candidates on the side of personnel will be its general practitioner's/ hospital doctors/ radiographers/

physiotherapists/ pharmacists/ hospital nurses/ district nurses/ health visitors/ dentists and other health care professionals (13).

To this must be added capital stock such as hospital beds, diagnostic equipment, therapeutic facilities, medical supplies stored up (drugs, clean sheets, surgical gloves), medical complements on offer (wheelchairs, dentures, walking-frames). The figures are normally expressed as a ratio ('per 100 000 of population') so as to obtain an indication of their significance. Often they are disaggregated by area, region or other subgrouping lest national data conceal local disparities. Occasionally they will be presented not as simple numbers (say, of ambulances or of scanners) but as an economic measure. The measure might be the cost of technology in a general practitioner's clinic or the market value of the referrals made to a top-notch specialist. Utilisation is important as well as brute availability (14).

SPECIFIC ASPECTS FOR HEALTH PROMOTION AND CARE

Thus, data should be collected on patient consultations and outpatient visits, medical tests performed and vaccinations administered, prescriptions written and dressings changed. In case of hospitals, relevant statistics would be patient's treatments delivered, bed occupancy census. Although patient built bed is a piece of rusting metal that gathers dust. It is not a medical input until it is filled. A doctor watching television during duty hours is not different from a unskilled individual. Doctor hours committed to patient care would be a better statistic (15). To obtain a consistent series, numbers should reflect comparable standards. Statisticians should ensure that treatments are quality-constant. Otherwise quality will be sacrificed to contain the cost. The task of adjustment is not an easy one. Quality is difficult to define. Not everyone agrees on what quality really means. It is more difficult still to measure. There is no central agency that collects and processes the data: 'We have no mandatory national system and few local systems to track the quality of care delivered to the American people. Despite the lack of consensus, policy-relevant proxies must nonetheless be found. There are three approaches that can be employed in the reconstruction of information that is not accessible to the naked eye.

One approach is to use input as a measure of standards. Relevant indicators would include capital equipment per staffed bed, staff member's time per patient visit, doctor/patient or nurse/patient ratios, vintage of capital, specialists on the hospital's panel, computerised record-keeping. Other indicators will have an educational element. An inference of investment in high-level proficiency may be drawn from involvement in research, decennial recertification, in-service training per hospital professional, 'conspicuous production' in the form of staff educated in the high-prestige 'ivy league'. Other statistics will concentrate on the thrust of the encounter. Group practices might be used as a quality indicator since they allow general practitioners to fine-tune and focus their skills. Preventive medicine might be taken to suggest that the doctor is improving the stock of health through introducing the patient to exercise, weight loss and a nutritious diet. Another approach is to use goal attainment to track the attributes of the service. The proof of the pudding is in the eating. If the patients return speedily to work, experience less-than-average cross-infection, do not report an allergic reaction or an addiction, do not come back with complications or a relapse, express satisfaction with the product supplied, enjoy longer life-expectancy because the disease is gone, one inference might be that the quality of the attention provided was high (16).

Over the last three decades, close scrutiny has been done in issues of health care financing in countries focusing all levels of economic development. Desire for alternative/ complementary ways to generate financial resources for health care has in part been driven by need, namely resource shortages and rapidly rising costs. At the same time, however, policy choices have been influenced by particular ideas and values concerning the role of the state, and its perceived responsibilities to finance and provide health care (17).

The 41st session of the Committee on Food Security (CFS) rendered opportunities for countries like - El Salvador, India and Jordan to share national experiences in implementing the Right to Food Guidelines, and for all CFS Member Countries, to reaffirm their commitment to implement the Right to Food Guidelines and strive for realization of the right to adequate food for all (18).

NATIONAL PROVISIONS RELATING TO FOOD AND HEALTH CARE

The primary responsibility for ensuring right to food and freedom from hunger rests with national governments. It is acknowledged that hunger is both a violation of human dignity and obstacle to social, political and economic progress, and a number of countries have enshrined the right to food in their constitutions. Yet to date, no country has adopted national legislation to specifically realize this right. Right to food does not mean that the state's duty is to distribute food to all its citizens. It does, however, have an obligation to respect the right to food by not interfering with individuals' efforts to provide for themselves. It must also protect people from infringement of their rights by others. It should help those who do not already enjoy the right to food by creating

opportunities for them to provide for themselves. If these three safeguards fail to secure adequate food for all as a response the state should provide, especially to those who because of age, disability, unemployment or other disadvantages cannot fend for themselves (19).

Food safety implies absence or safe levels of contaminants, bacteria, naturally occurring toxins or any other substance that may make food injurious to health. Agricultural development is not only the key to increasing food availability, but as a major employer in most developing countries. It helps to bring rural people out of poverty, but the right to food comprises more than just food production. Markets full of food are useless if people do not have access to them. Efficient national food supply systems must be accompanied by appropriate marketing facilities, equitable rural development policies and adequate opportunities to produce food or earn enough money to buy it. Development of the transportation and communications infrastructures is essential.

Facilitating enjoyment of the right to food does not necessarily mean it's the duty of the state in all aspects of the food system. But the state to take steps ensuring that private markets to able to perform well. There are measures governments take to promote private food markets without resorting to inefficient and costly price control and direct food assistance. By reducing barriers to obtaining trade licences, they can make it cheaper and easier for companies to enter the market. They can also encourage trade and keep food prices affordable by reducing value-added taxes on food commodities and by enacting legislation prohibiting monopolies. Public access to price data, through radio broadcasts or other means, can also be an effective way to ensure that small traders have the information they need to enter the food business.

According to the Food and Agriculture Organization of the United Nations (FAO), more than one billion people are undernourished. **Till date**, FAO has supported number of publicly operated food price information systems in developing countries to make data more readily available.

In today's world, over two billion individuals suffer from a lack of essential vitamins and minerals in their food. Nearly six million children die every year from malnutrition or related diseases, that is about half of all preventable deaths. The majority of those suffering from hunger and malnutrition are smallholders or landless people, mostly women and girls living in rural areas without access to productive resources. Although, many people might imagine that deaths from hunger generally occur in times of famine and conflict, the fact is that only about 10 percent of these deaths are the result of armed conflicts, natural catastrophes or exceptional climatic conditions. The other 90 percent are victims of long-term, chronic lack of access to adequate food. Combating hunger and malnutrition is more than a moral duty or a policy choice. In many countries, it is a legally binding human rights obligation.

The right to food has been recognized in the 1948 Universal Declaration of Human Rights as part of the right to an adequate standard of living and enshrined in the 1966 International Covenant on Economic, Social and Cultural Rights. It is also protected by regional treaties and national constitutions. Furthermore, the right to food of specific groups has been recognized in several international conventions. All human beings, regardless of their race, colour, gender, language religion, political or other opinion, national or social origin, property, birth or other status have the right to adequate food and the right to be free from hunger (20).

At the World Food Summit organized by FAO in 1996, States agreed to halve the number of undernourished people by 2015. They also called for the obligations arising from the right to food as provided for under international human rights law to be clarified. In response, the Committee on Economic, Social and Social Rights issued its general comment No. 12 (1999), which defines the right to food. In the United Nations Millennium Declaration, adopted by the General Assembly in 2000, States committed themselves to halving the proportion of people suffering from hunger by 2015. In 2004, FAO adopted the Voluntary Guidelines to Support the Progressive Realization of the Right to Adequate Food in the Context of National Food Security, providing practical guidance to States in their implementation of the right to adequate food.

CONCLUSION

The concluding remarks of this article is that healthcare is a combination of different aspects belongs to food, diet pattern, nutrition, implementation of laws and policies at international and national level. Universal Declaration of Human Rights (UDHR) recognized as definitive and universal during framing that crucial first modern statement of human rights. This is particularly important when one come's to examine later human rights documents derived from and codify the rights expounded in the UDHR. Science of human nutrition deals with effects of food on people. It starts with the physiological and biochemical processes involved in nourishment focusing how substances in the food provide energy or are converted into body tissues and the diseases that result from insufficiency or excess of essential nutrients (malnutrition). In today's world, the role of food components in development of chronic degenerative disease like coronary heart disease, cancers, dental

caries, etc., are major targets of research activity. The scope of nutrition extends to effect of food on human function such as fetal health and development, resistance to infection, mental function and athletic performance, etc. There is a growing interaction between nutritional science and molecular biology which may help to explain action of food components at cellular level and diversity of human biochemical responses.

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ICT-BASED TEACHING LEARNING RESOURCES AND PLATFORMS IN SCHOOLS AND HIGHER EDUCATIONAL INSTITUTIONS

Dr. Mandira Gupta

Principal, Department of Education, Institute of Vocational Studies (GGSIPU), New Delhi, India

ABSTRACT

Information and Communication Technologies are playing important role in teaching-learning process, with the development of technology and the need of the society, the integration of ICT-based teaching-learning resources for effective teaching-learning process are the requirement of the day. Educational Institutions equipped with digital resources have an advantage to provide e-learning to the learners and they are benefitted by the use of different virtual platforms such as Learning Management System. This paper explains the Digital Initiatives in Higher Education and ICT-based teaching learning resources, challenges in using ICT based teaching learning resources and measures for teachers and learners to overcome these challenges for effective teaching learning process so that instructional objectives can be achieved efficiently by using digital technologies.

Keywords: Information and Communication Technologies, Learning Management System, Teaching learning resources, Virtual Classes, Digital Resources.

Introduction

In this 21st Century, the term ICT is an important integration in many fields including Education. National Policy on Education 1986, which was modified in 1992, emphasized the requirement of educational technology for improvement of quality of education. The important role of ICT in school education has been highlighted by the National Curriculum Framework 2005. ICTs is playing significant role in teaching-learning process. With the development of technology and need of the society, the integration of ICT-based teaching-learning resources for effective teaching-learning process are the requirement of the day.

Information and Communication Technologies (ICTs)- ICTs are all devices, tools, resources, services which are digital and those which can be delivered through digital forms, and can be used for achieving the goals of education.

These include such as hardware devices connected to computers, different software applications, digital contents, internet, radio and Television services, Learning Management System and many more.

ICT supported learning: Various technological tools and resources which are used to transmit, to store, to create, to share the information in ICT supported learning.

These technological tools include computers, internet, radio, television and many more. ICT supported learning can be beneficial for inclusive classrooms where different kinds of needs are fulfilled by using them.

Digital Resources: ICT based learning resources should be integrated as required by the curriculum and it. Use of ICT resources for teaching-learning process, such as web-enabled laboratories for Physics, Chemistry, and Biology subjects should be promoted in schools as well as higher educational institution. Developed digital teaching-learning resources in the form of e-books or flip books for different subjects should be available.

Animated lessons, interactive games, presentation slides or graphics involvement of these can enhance the learning. Use of Audio-visual aids such as simulations, videos or different combinations of the above should be included in the classroom instructions whenever required. Digital resources can help to teach abstract concepts.

Virtual Labs- It is an initiative of Ministry of Education under the National Mission on Education through Information and Communication Technology. Virtual Labs benefits of all the learners and faculty members of Engineering and Science institutes who lacks of good labs facility or instruments. It provides an interactive simulation environment for performing experiments, collecting data and assessing it in any time anywhere.

Virtual Labs uses simulation technology for creating real world environment and problem-solving skill. It has over hundred virtual labs and approximately seven hundred web-based experiments to give remote access in Science and Engineering institutions. Learners are benefitted due to no requirements of any kind of infrastructure because it can be accessed through internet.

OLabs- The basic idea behind Olabs is that experiments can be taught by using internet. It provides experiments in Physical, Biological, Chemical Sciences of the learners of 9th -12th grades. Alignment of content is to NCERT/ CBSE and State Boards Syllabus. Website for the Olabs can be accessed at

<https://www.olabs.edu.in/> , and access to Olabs is free for schools upon registration. Features of Olabs also include simulation, lab videos, animations for better understanding of the practical or experiments. They provide personalized experience for learners by providing the ability to perform and record the experiment anytime.

National Digital Library of India: NDLI is a virtual repository for learning resources. It is a digital library that stores information of different digital contents such as different kinds of books, various articles, audio-video resources, thesis and many more types of educational materials for their respective users. NDLI provides learning resources with a single-window search facility and various contents are available in different languages. It is sponsored and mentored by Ministry of Education, Government of India by its National Mission on Education through Information and Communication Technology (NMEICT).

Educational Institutions equipped with digital resources have advantages to provide e-learning to the learners and they are benefitted by the use of different virtual platforms such as Learning Management System.

Learning Management System (LMS)- LMS is an online integrated software which is designed to create, to manage the delivery, for tracking of the educational content and courses. LMS can be hosted as a stand-alone product on the company server. LMS can be a cloud-based platform that is hosted by a software firm.

Schools and Higher educational institutions use LMS platform to plan, implement, facilitate, assess and monitor students' learning.

Features of Education Learning Management System: Some of the important features of LMS used for educational institutions are:

- **User Management:** User Management feature allows teachers for adding and editing users, assigning them their roles, and combine students into various subject groups and organizations.
- **Content Creation:** Most of the e-learning platforms have a built-in editor that allows teachers to create test and course content.
- **Classroom and College Announcements:** In the Announcements, classroom and institute information can be updated and it is available on Learning Management System.
- **Curriculum Planning:** Learning Management System can be used to design the course plan and scheduling of lecture.
- **Course Management:** Course management feature delivers learning materials according to requirement of the learners.
- **Report Generation:** Report generation provides reporting tools with different types of options available for customizing the learners' progress reports.
- **Communication and Collaboration:** For effective communication and collaboration, usually LMS provides forum, chat to use as communication tools and blog, wiki, glossary to use as collaborative tools.
- **Progress Tracking:** Progress tracking is the feature which is used for assessment of learners' performance. Teachers can assess learners' progress at different time period. Assignments also submitted online and tests and quizzes can be graded quickly.

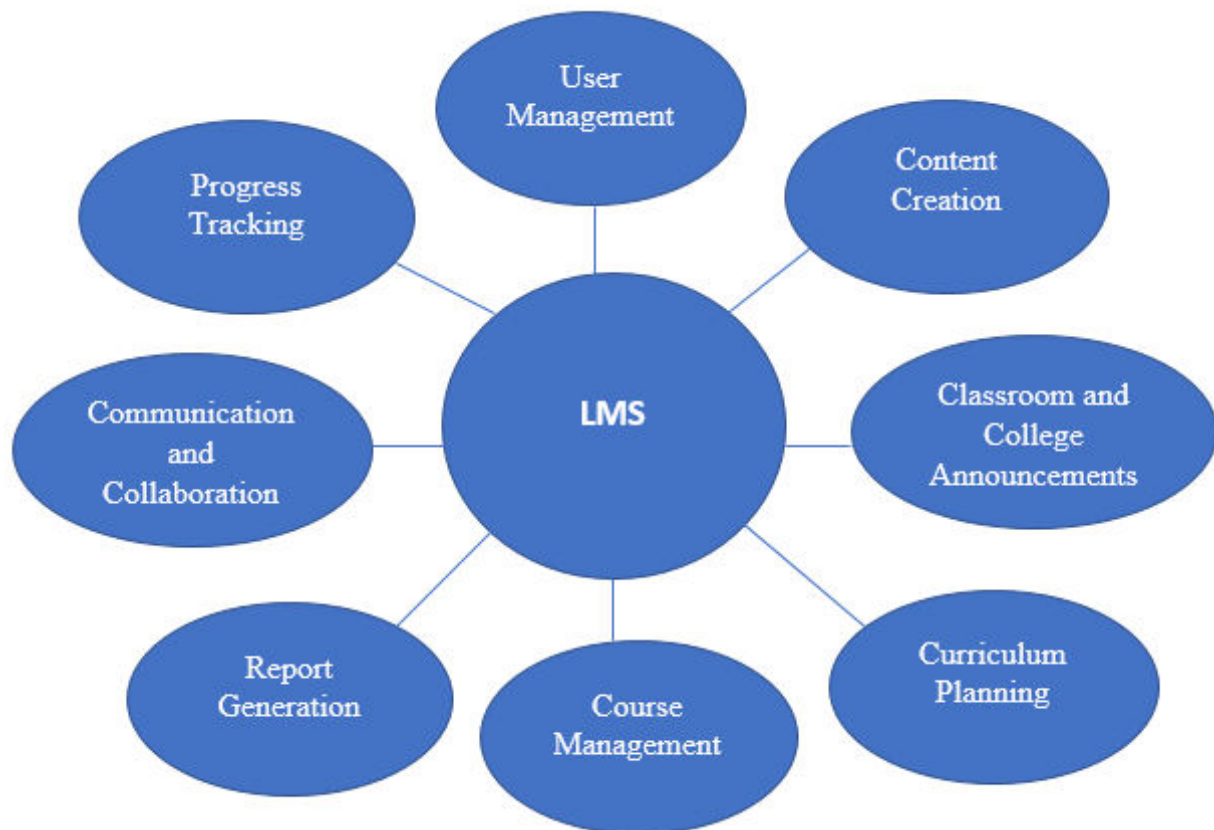


Figure 1: Common Features of an LMS for Education

Major Learning Management Systems: Some of the major Learning Management Systems are Moodle, Schoology, Blackboard, Edmodo, Google Classroom, Sakai.

Benefits of Learning Management System: Institutes can safely organize and store data, teachers can share learning materials according to requirement of the courses. Teachers can track the learners' progress and performance. LMS allows teachers and administrators to easily integrate other added tools.

Challenges in Using ICT Based Resources: The following are some of the major challenges teachers facing during the use of ICT resources in teaching learning process. Learners also face some of the difficulties in ICT integrated learning.

- **Accessibility-** The basic need for ICT integration in classroom teaching learning process is requirement of sufficient number of Computer systems, Smart phones, smart boards in classrooms, projectors for fulfilment of the capacity required for classes.
- **Poor Network Connectivity-** Use of Internet is the most important aspect in online learning. Poor Internet connectivity adversely affects the online classes and the access of learning materials.
- **Lack of Training-** Training for how to use different applications in e-learning is important for teachers, administrators and learners. Lack of familiarity of digital resources for example, new applications can adversely affect the learning process.
- **Lack of Motivation-** Lack of motivation of the learners towards online/e-learning is a big obstacle in teaching learning process.
- **Lack of Technical Support-** Teachers may face some technical problems while conducting online classes, for this assistance is required. If proper technical support is not provided, it may affect the effective teaching learning process.

Measures to Overcome Challenges in ICT Integration: Teachers and administrators can take practical steps towards integration of digital resources.

- Learn basic Digital Skills such as data entry, word processing, social media, use of different applications which can apply in e-learning.

- Integration of digital tools which are already available. With this, some innovative ways can be developed for effective learning.
- Use of Open Educational Resources (OERs), teachers and learners can access OERs as these are learning resources available in the public domain.

CONCLUSION

The significant role of Information and Communication Technologies in education of school has been highlighted in the National Curriculum Framework 2005. Integrating of Information and Communication Technologies based teaching learning resources are the requirement for the effective teaching learning process. Digital content should be made available in different regional languages so that teachers and learners are benefitted by use of these learning materials. Teachers' training for effective use of digital resources is also important. Accessibility to the digital resources in the schools and higher educational institutions should be prioritized. National Education Policy, 2020 mentioned that the National Educational Technology Forum will be created for providing a platform for the free exchange of ideas using technology effective planning, learning, administration, and so on, both for schools and higher education. The National Educational Technology Forum will have an important function to build in the educational technology, the intellectual and institutional capacities and will provide new directions for research and innovation.

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BLOOM'S TAXONOMY AND THE TEACHERS**Chitra Suraj Ashtekar**

Assistant Professor, Shri P.L. Shroff College of Arts & Commerce, Chinchani

ABSTRACT

Blooms Taxonomy named after Benjamin Bloom classifies the different layers of learning processes that a student goes through when the learning objectives are set for them in a teaching program. In an educational environment where an array of programs and modules are taught by different teachers with differing learning objectives, the consistency of assessment across all modules also become a major task. This paper explores the elements of Blooms Taxonomy in examination assessment system in this college. Further, the methodology adopted by the assessment office of the College, in testing the students' cognition levels (applying Blooms Taxonomy principles) and the questions for mapping the cognitive levels are illustrated. It is also felt that the application of Blooms Taxonomy system has enabled the teachers to set examination papers that are well balanced, testing the different cognitive skills without a tilt towards a tough or easy paper perception.

INTRODUCTION

Taxonomy is the science of organizing things and classifying them according to various criteria. In brief, Bloom's taxonomy is a series of cognitive skills and learning objectives arranged in a hierarchical model. Originally, Bloom's taxonomy was designed as a way of gauging competence by placing a students knowledge on one of 6 levels which are often represented visually in the form of a pyramid.

Each step of the pyramid from bottom to top represents a move from a lower order thinking skill to a higher order one; from straightforward concrete cognition to a more abstract, conceptual understanding.

This taxonomy of educational objectives gets its name from its creator, Benjamin Bloom. Bloom was an American educational psychologist who is best remembered for his significant contributions to the theory of mastery learning, as well as this renowned and widely used taxonomy.

Back in the 1940's, Bloom and his colleagues devised his taxonomy by categorizing a range of educational goals and arranging them into a hierarchy. Bloom believed that by classifying goals in this manner, it would make it easier for educators to more accurately assess student performance.

This work went through countless revisions and reviews before a finalized version was published in 1956 as The Taxonomy of Educational Objectives. The document described a path towards educational attainment that passed through 6 orders of learning.

While Bloom's taxonomy can be divided into 3 domains of educational objectives cognitive, psycho motor, and effective, it is the cognitive domain where our 6 levels are focused.

OBJECTIVES OF THE STUDY

1. To study Bloom's Taxonomy
2. To study why should teachers use Bloom's Taxonomy
3. To study how teacher can use in framing question paper

The Application of Bloom's Taxonomy

Though the original intention of the taxonomy was to serve as an assessment tool, it's use quickly spread into other areas of teaching. It became a very effective tool to help educators identify clear learning objectives, build curricula, as well as to create purposeful learning activities in the classroom.

Despite its dry, academic sounding title, Bloom's taxonomy has had concrete and measurable positive impact in classrooms worldwide, from kindergarten to college and beyond.

Revised Bloom's Taxonomy

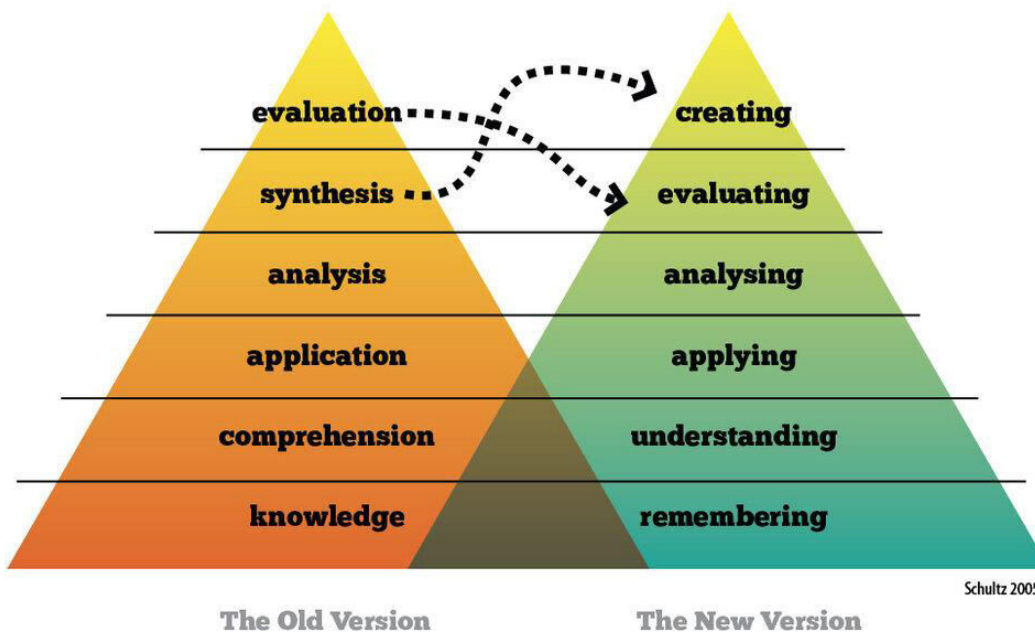
As educators became more experienced in using the taxonomy, they utilized it with ever-increasing flexibility. It became apparent that some revision of the original tool would be beneficial. So, in 2001 a group of stakeholders collaborated to revise the original tool to make it better-suited for modern demands.

The group was made up of educators, psychologists, assessment specialists, and researchers, and they achieved a number of important improvements.

They worked to make the tool more dynamic conceptually, moving away from the one dimensional levels of educational objectives. They did this primarily through a change in language.

Bloom’s Taxonomy Levels

As any good copywriter will tell verbs are more powerful than nouns. Those charged with revising Bloom’s Taxonomy were well aware of this fact and it is apparent in the many nouns in the old version were subsequently substituted by verbs. Nouns were replaced by much more action-oriented verbs to reflect the idea that learning is not just passive acquisition, but an engaged, active participation.



In the revised version it can see that evaluating is no longer the highest level, instead synthesis has been replaced by create and now represents the highest expression of learning.

for example, where the original version talked of knowledge, the revised bloom’s taxonomy referred to the much more active remember. it is helpful here to take a look at the full list of 6 levels in the above table for ease of comparison.

Why Should Teachers Use Bloom’s Taxonomy?

Bloom’s taxonomy is a great tool for helping teachers to develop higher order critical thinking abilities in students. Referring to the taxonomy’s concepts during the planning process helps teachers to focus in on appropriate objectives for groups and individuals and to plan for their progression in the short, medium, and longer term.

The taxonomy provides a clear framework or system of organization for classifying lesson objectives, as well as a coherent starting point to build lessons from.

How Can Teachers Use Bloom’s Taxonomy?

The starting point of any planning process should be the consideration of the level of the students. Luckily, Bloom’s provides a very convenient framework within which to begin this process.

When creating objectives you can move from the simple to complex, the concrete to abstract, according to the ability of your students through reference to the taxonomy.

For example, knowing that Remember refers to the lowest level of cognitive rigor means you can design your objectives with this in mind.

Likewise, Create references the highest level of cognitive rigor and this will inform the objectives you create for the most sophisticated of your students.



Bloom’s Taxonomy Verbs

The knowledge above provides a good starting point, but it doesn’t mean that every objective you write for Level 1 students must begin with the word ‘remember’.

Conveniently, Bloom’s Taxonomy provides lots of related verbs that provide a helpful way for educators to plan lessons. Verb tables have been created to align with each of these levels.

Now, let’s take a look at these levels and some corresponding verbs.

Bloom’s Taxonomy Levels and Corresponding Verb Lists

The cognitive processes dimension — categories, cognitive processes (and alternative names)

Lower order thinking skills —————> Higher order thinking

Table 2: Cognitive levels of thinking

Remember	Understand	Apply	Analyse	Evaluate	Create
recognizing (identifying) recalling	Interpreting Clarifying, Paraphrasing Representing, Translating Illustrating Classifying Categorizing Summarizing Concluding, , Interpolating, Predicting Comparing Explaining	executing carrying out implementing using	differentiating discriminating, distinguishing, focusing, selecting organizing finding coherence, integrating, outlining, parsing, structuring attributing deconstructing	checking coordinating, detecting, monitoring, testing critiquing judging	generating hypothesizing planning designing producing construct

Clearly, the verbs listed above do not represent a comprehensive list of all the possibilities of verbs and verbal phrases available at each level, but they certainly provide a good starting point.

It should also note that some verbs and phrases will work at more than one level, just be sure to refer to the stated aim of each level to assess what the purpose is in that particular context.

A useful way to employ verb lists such as those above is to incorporate them into your learning objectives for lessons, or for longer range planning such as term plans or writing a curriculum or scheme of work.

One can easily differentiate the learning objectives set by moving up and down levels and by using simpler verb synonyms in those objectives. Using a thesaurus is a great way to achieve this quickly.

Mapping Question Paper as per Bloom’s Taxonomy

Illustrating The Application:-

Course Outcomes (COs) for Assessment in the Examination:

(The number of COs can be increased depending on the number of Course Outcomes as per requirement)

SR.NO.	Course Outcomes
CO1	The learner understand the concept , Role of IMC & the evolution of Advertising & Benefits of Advertising,
CO2	The learner get knowledge Ad Agency, Careers in advertising & Agency selection criteria.
CO3	The learners can create ideas for career in advertising industry.
CO4	The student evaluates the impact of Advertising on Production Cost/ Distribution Cost & Consumer Price
CO5	The learners understand positive and negative effect of advertising on cultural of India.
CO6	The learner evaluates the recent trends in Social Advertising & the Role of Self Regulatory
CO7	The learners can design public service advertising

The Number of Sections and Number of Questions can be changed as per need and requirement of the concerned paper

Question Number	Questions	Marks	Mapping COs	Blooms Taxonomy Level's
Part A: Short Question				
1	Define Advertising. State its features.	5	CO1	<u>Level 1:</u> Remember
2	Write the career opportunities available in advertising Agency.	5	CO2	<u>Level 1:</u> Remember
3	For regional advertising which media is suitable? Give reasons.	5	CO1	<u>Level 2</u> Understand
4	Express your opinion on any unethical advertising.	5	CO3	<u>Level 3:</u> Apply
Part B: Long Question				
5	Identify the benefits of advertising to firm and consumers.	10	CO1	<u>Level 4:</u> Analyze
6	Distinguish between National and International advertising	10	CO4	<u>Level 4:</u> Analyze
7	Explain the services offered by advertising Agency	10	CO1	<u>Level 2</u> Understand
Part C: Very Long Questions				
8	‘Advertising degrade our cultural values’Justify	15	CO6	<u>Level 5:</u> Evaluate
9	Design a Public Service Advertising	15	CO7	<u>Level 6:</u> Create
10	Who paid for advertising manufacturer or consumer? Produce necessary example.	20	Co4	<u>Level 4:</u> Analyze

Balancing the Examination Paper

Assessment Pattern as per Bloom’s Taxonomy:

Blooms Taxonomy Level’s	Remember (Level 1)	Understand (Level 2)	Apply (Level 3)	Analyze (Level 4)	Evaluate (Level 5)	Create (Level 6)	Total
No. of Question in the Category	2	2	1	3	1	1	10
Total Number of Marks in the Category	10	15	5	40	15	15	100

Cognitive Level	Lower Order Cognitive Questions (Remember, Understand)	Intermediate Order Cognitive Questions (Apply, Analyze)	Higher Order Cognitive Questions (Evaluate, Create)
Percentage Distribution of Questions	25	45	30

It was also recommended to the teachers that they can arrive at a balance by setting a question paper that tests both lower order thinking skills as well as higher order thinking skills of the students. Further the assessment office introduced

Following model (LO/IO/HO) for the teachers to apply the concepts while setting the question papers:

- LO – LOCQ – Lower order cognitive questions – covering questions for testing the remembering and understanding of the concepts by the students.
- IO – IOCQ – Intermediate order cognitive questions Covering questions that test the applying and analyzing skills of students
- HO – HOCQ-Higher order cognitive questions-To test the evaluating and creating abilities of the students with respect to their knowledge.

Blooms Taxonomy in setting a few typical questions are given:

Table 1: The classification Example

Sr.No.	Question	Classification as per Blooms Taxonomy	Marks
1(a)		LO(LOC)	Marks are apportioned based on the total marks allotted far a question
(b)		LO(LOCQ)	
(c)		IO(IOCQ)	
(d)		HO(HOCQ)	

Table 2: Balancing the Exam Paper

Cognition level	LOCQ	IOCQ	HOCQ
Percentage distribution recommended	20-30%	40-50%	30-40%

It is observed that the teachers generally gives a blend of LO/IO/HO questions in the paper so that the students get an evenly balanced paper in the exam. The author (Piontek, 2008), in a publication by the the students should feel that the assessment paper is fair and meaningful and the assessment data, reflecting the students achievement, should support this fact. Application of Blooms Taxonomy, is one of the instruments to achieve this objective.

In the process of setting the question papers with the components of LO/IO and HO, the teacher is also advised to provide details of total marks distribution among the LO/IO/HO questions of the paper. The above Table 2: Balancing the Exam Paper shows as an example, the percentage marks distribution in a possible case. The question of balancing the marks distribution among LO/IO/HO is normally left to the staff, setting the question paper.

In this method, it is believed, that the questions test the students’ analyzing, designing and critical thinking skills in **addition to their basic understanding of the topic.**

CONCLUSIONS

It is necessary to mention here that application of Blooms Taxonomy should cover the learning outcomes of the module being tested. This is emphatically stated by the author (Nusche, 2008) that learning outcomes should form the basis for any type of assessment. The distribution of marks over LO/IO/HO classification also depends on the level (year of study) for which the question paper is being set. In addition, the type of module (analytical/theoretical) also plays a role in the appropriate distribution of the questions across the different cognition levels. It must also be mentioned here that the Blooms Taxonomy principles serve as guide lines to the teachers framing the question paper but it is largely left to them to bring out a balanced paper as the final outcome. It is fair to conclude here by saying that the comments from the external examiners have become more positive on the question papers sent to them for review, after the introduction of Blooms Taxonomy in the college.

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**FINANCIAL CUM TAX PLANNING FOR INCOMES EARNED FROM DIFFERENT SOURCES:
REVIEWS OF SELECTED INDIAN STUDIES****¹Dr. Paresh Bora and CA Prasad Bhandari²**¹Assistant Professor and ²Research Student, BPHE Society's, Ahmednagar College, Station Road, Ahmednagar.**ABSTRACT**

Financial Planning for an individual simply indicates the process of setting-up and defining his / her financial goals and making investments in order to attain these goals. One of the prime purposes of financial planning is to offer financial security in long term. Tax Planning is a crucial element of financial planning. The prime objective of tax planning is to save money through minimizing the tax liability by simultaneously complying with legal obligations and requirements of Income Tax Act. Methodology used for research was descriptive in nature. Study comprised of literature review of selected researches in India. These studies were carried out regarding financial planning cum tax planning for incomes earned from different sources in India. Data was collected through secondary sources including research papers and articles published in various journals and publications.

Keywords: Financial Planning, Tax Planning, Individuals, Income Earned, India

A) INTRODUCTION

Financial Planning for an individual simply indicates the process of setting-up and defining his / her financial goals and making investments in order to attain these goals. One of the prime purposes of financial planning is to offer financial security in long term. Some of the common financial goals include buying and / or construction of house, education of children, marriage of children, retirement planning, etc. Financial Planning is a comprehensive and systematic approach through which individual maximizes the available monetary resources with the help of suitable management of finances for attaining the financial objectives.

Tax Planning is a crucial element of financial planning. The prime objective of tax planning is to save money through minimizing the tax liability by simultaneously complying with legal obligations and requirements of Income Tax Act. Tax Planning is all about decreasing the tax liabilities by investing money in right securities / instruments at the right time with an overall aim to achieve the set financial goals in long term. Tax Planning is a legal strategy to be used by person for minimizing tax liability with the help of rebates, benefits and exemptions.

B) RESEARCH DESIGN

- Methodology used for research was descriptive in nature.
- Study comprised of literature review of selected researches in India.
- These studies were carried out regarding financial planning cum tax planning for incomes earned from different sources.
- Data was collected through secondary sources including research papers and articles published in various journals and publications.

C) REVIEW OF SELECTED INDIAN STUDIES

- Uma K. and Lingaperumal G. (2012) investigated into the level of awareness mainly among government employees with respect to tax planning and deductions allowed from taxable income earned during a financial year. Study examined into relationship existing between age of government employees and their magnitude of awareness. Data was collected from both primary data and secondary data. Primary data was collected with the help of questionnaire (schedule) from fifty government employees located in Madurai city. Sample respondents were selected using convenience sampling method. Study found that large numbers of individuals were aware and conscious about investments in recognized provident fund, life insurance policies, National Saving Certificate, tuition fees paid to educational institutions and long term infrastructure bonds. It was inferred that investment pattern and tax planning approach differed from individual to individual. This investment pattern and tax planning approach was dependent on and got influenced by diverse variables including age, nature of employment, income source, family background and amount of income. Female employees possessed lower level of awareness compared to male employees. Investment pattern that was appropriate to one person may not be suitable to another individual because of numerous reasons. Individuals were highly dependent on chartered accountants for determination and payment of tax

liabilities. Research suggested chartered accountants to educate employees regarding different deductions and exemptions available under Income Tax Act to minimize their tax liability.

- Bhide Shilpa (2013) studied the awareness regarding income tax planning and numerous provisions related to income tax mainly among salaried assesseees. Primary data was collected from fifty working / salaried professionals who were selected on random basis. These employees earned incomes from other sources including rent, dividend, interest, royalties and share trading. Study covered individuals who paid taxes on their incomes and were located in Pune city. A questionnaire consisting of 21 questions was drafted and administered. Research found that selected respondents were aware of basic provisions regarding taxation including tax rates, exemptions limits, terms like previous year and assessment year. Selected salaried employees carried out tax planning through self-study or took assistance from friends and relatives. Number of salaried employees availing help from professional was very less. Individuals gathered information from various sources such as friends, relatives, insurance agents, agents of post office, tax consultants, newspapers, television, etc. Study indicated that employees perceived going to tax consultant involved heavy cost and also it was not necessary to consult the tax consultants. Salaried assesseees had basic knowledge about tax provisions, but were not satisfied with their tax planning.
- Saravanan K. and Muthu Lakshmi K. (2017) explored the most familiar, well-known, suitable and largely preferred instrument for saving tax liability. Study examined the amount of money saved by tax payers by using such tax saving instruments. The income tax planning executed by individuals was mainly focused. Descriptive study was carried out to scrutinize into relationship between income earned by assessee and income level on saving of taxes. Data was gathered from both primary and secondary sources. Primary data was collected from one hundred assesseees from Trichy city through conducting surveys using questionnaire and personal interviews. These assesseees were selected using stratified random sampling. Study revealed that assesseees ranked different tax saving instruments on the basis of their preferences and priorities towards tax saving. Most of the assesseees preferred, adopted and invested their money in provident funds for saving taxes on their incomes. This was followed by investments made in life insurance policies, payment of principal and interest on housing loans and payment of tuition fees for children for saving the tax liability.
- Varghese Blessy (2019) explored the awareness of tax planning measures among the salaried individuals located at Chengannur taluka in Alappuzha District. Primary data was collected from fifty individuals by carrying out survey using research instrument as questionnaire. Respondents were selected using convenient sampling. Study focused on reviewing tax related reforms implemented and executed by the Government in context to taxation laws. Research evaluated the measures taken by salaried assesseees regarding the income tax planning. Research tried to assess efficiency of administrative machinery for collection of and management of taxes in India. Research emphasized on determining consciousness among salaried individuals about tax planning measures available under the provisions of Income Tax Act. It was found that assesseees rarely depended on and rarely availed services offered by professional experts and financial advisors for making investment decisions. Assesseees mainly invested in insurance policies and fixed deposits schemes as tool of tax planning. Assesseees formulated tax plans at the end of financial year. The tax consultants updated and informed assesseees regarding changes and modifications in income tax mainly about income tax filing returns and provisions for rebates. Assesseees formed opinion that services of tax practitioners were not important for filing income tax returns. These assesseees not experienced payment of penalties or fines about income tax. Assesseees indicated there was need for having tax planning education to be provided by government for minimizing problems and difficulties faced at the time of filing tax returns. Study suggested comparative research to be conducted on tax planning of salaried assesseees and other types of assesseees.
- Pimple Sachin and Peshori Kishore (2019) examined the perceptions and understandings of young and dynamic people towards tax planning. Study aimed to appraise the impact and influence of personal factors (such as age, gender and education) on tax planning of individual tax payers. A combination of descriptive research and explanatory research was conducted. Study was based on primary data collected from 210 respondents located in Mumbai city using a structured questionnaire. Sample respondents were selected using convenience sampling method. The young and vibrant citizens indicated future of country as well as they were prospective tax payers who contributed towards economic growth and development of India. Research found there was relationship existing between age of individuals and tax planning. However, education and gender of individuals had relationship with tax planning. Study concluded that respondents understood their responsibility about payment of taxes, but were not aware regarding processes, rules and regulations of taxation.

D) CONCLUSION

The paper is based on review of existing research studies carried regarding financial cum tax planning by individuals in Indian context. Studied identified and reviewed five researches carried out in India. All selected pointed out meaning, significance, essence, awareness, measures used and investment instruments used by individuals while carrying out financial cum tax planning.

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SUSTAINABLE STRATEGIES: A KEY FOR SURVIVAL

Anusuya Yadava and Yash Mahadik

Vivekanand Education Society’s College of Arts, Science and Commerce

ABSTRACT

Over the past decade technology and its use outside of the USA has risen up and largely benefiting countries like India in a large manner, in this technological upbring there are large efforts devoted for innovations, differentiation, upbringing of product and services thus concluding into a new era of business and exchange. To keep in the market and to gain competitive edge firms have to bear on new strategies and campaigns although some work some may not and they have to occur losses if not gains in exchange, there should have a set of business strategies that helps the business to stay uprooted and keep them sustained in future. This paper aims towards addressing the problems with current strategies adopted by firms and how dynamism-based strategies can assist the firms to adapt and sustain in concrete technological atmosphere. Methodology adopted is qualitative wherein 12 semi -structured in depth interviews have been conducted and opinions and reviews from business community and social media platforms have been considered. Content analysis has been used to draw inferences and authors have demonstrated at the end an escape plan which can be served as a blueprint to ensure survival and growth in market.

Keywords: Sustainable business strategies, cash flow, margin, growth

I INTRODUCTION

Over the past decade technology and its use outside of the USA has risen up and largely benefiting countries like India in a large manner, in this technological upbring there are large efforts devoted for innovations, differentiation, upbringing of product and services thus concluding into a new era of business and exchange. To keep in the market and to gain competitive edge firms have to bear on new strategies and campaigns although some work some may not and they have to occur losses if not gains in exchange, there should have a set of business strategies that helps the business to stay uprooted and keep them sustained in future. Strategies based upon consumer behaviour pattern, and a calculated risk pattern that has benefited firms in the past and would carry on benefiting in future too. Business need a positive cash flow to sustain in the competitive market.

Throughout the years of prosperity evidences shows successful business strategies that could positively impact a firm to generate revenue. It's not only a once event, change is constant in the business. There is a need of continuity

To run a business. 60% of businesses fail within the first 3 years due to money problems, lack of vision, wrong market research and bad marketing of the product.

Table 1 : Businesses failure rate in early stages

Within their first	Failure Rate
1 year	20%
2 year	30%
3 years	60%
10 years	70%

Strategies tried and tested by world's renowned business persons who have built gigantic companies that are now worth in trillions of dollars would eventually aid the new businesses to achieve growth via giving them vision, marketing strategies, free to collaborate, adding value to the business, benefit of positive cash flow and great leadership shall eventually benefit the firms to run in profit.

This paper aims towards addressing the problems with current strategies adopted by firms and how dynamism-based strategies can assist the firms to adapt and sustain in concrete technological atmosphere. This paper also demonstrates at the end an escape plan which can be served as a blueprint to ensure survival and growth in market.

II OBJECTIVES OF THE STUDY

- To put forth the need for sustainability in dynamic market

- To understand what are sustainable strategies
- To understand the reasons for failure of business
- To put forth how sustainable strategies can assist businesses for long term survival
- To propose strategy for sustainability

III METHODOLOGY

The paper is qualitative in nature where primary data has been extracted from in depth semi structured interviews of 5 banking professionals and 2 Politicians and 5 business leaders along including comments and opinions of respondents on business community platforms and networks like reddit. The secondary data has been collected from research papers, blogs and various social media platforms to support true initiative and ideals for the Paper. Content analysis has been used to draw conclusions.

IV LITERATURE REVIEW

Organizations must adapt their long-term strategies and incorporate environmental and social aspects into their product offerings and decision-making to meet changing societal demands. Companies must, however, satisfy both short-term profitability interests and shareholder demands (Haessler, P., 2020). The combination of sustainability-oriented collaboration and business model change is strongly associated with profits based on sustainability. Companies that change their business models as a result of sustainability and make sustainability a permanent part of top management's agenda appear to profit more from their sustainability efforts than companies that make sustainability-related changes without that level of top management support (Kiron, D., et.al ,2012). Innovative business models have given organisations a competitive advantage in terms of improving their sustainability performance (Nosratabadi, S., et.al , 2019).

V RESULTS AND DISCUSSION

Following are the questions that were resorted to gain insights and draw conclusions

1 - Are businesses run by emotions ?

- consumers tend to have an emotional connect with the product and product they are purchasing so having that emotional connect with your consumer will obviously gonna increase your sales and tend to make your consumers come back to you again and again like the example of starbucks but it tends to depend on business to business (Gajendra Barsagade - senior manager/Banker at IOB)

2 - When you start business you need that emotional personal connect with your consumer but when you become a large company you don't need that cause you will have the people who will do it for you (Nilesh Dhage- A business owner in Nagpur)

3-Why should businesses focus on developing an Ecosystem?

- big businesses always have an ecosystem to run along with like in the banking sector that i work in have all types of services that we provide to our consumers and an ecosystem really helps with the customer choosing you over your competitor.

4-First when you start your business you shouldn't focus on developing an ecosystem, you should focus on providing the best service with the the product youre selling and giving the best out of it or whether you lose.

5-Does distinguishing help in any way from the competition?

- yes it does, but you need to be careful around it , if you think what were selling and what citibank is selling

is different, we are focusing on different kind of people and they are targeting TOP 1% so i would agree it helps , citibank and others would not bother about a project of 1 or 2 cr, they would be entertained if a big 100 or 200 cr project comes.

- yeah, but not too much, it depends on the targeted market like if you're selling a product that needs to be identical so a minor differentiation would help.

6-Selling an experience along with a product would help in any way? (starbucks example given)

- Yes , in every financial sector and consumed sector along with product if people like your product with the attention they get it really makes a difference but again if you are at big scale you have people to do it

- First at starting you should focus on business itself. if people don't like what you're making then they won't

come to you again and experience matters too but with a good quality product.

7-Does a business need distinguished exclusivity?

- yes again giving you an example of the citybank they have focused on high class as it makes their depiction on the mind is very high value brand.

- yes but not at the start as i said, after you make yourself as a brand then you can go on and differentiate.

8-Rather than discounting would making a cult for your product that people would buy in recession?

-fair to say businesses are focusing on top earners already have the cult and they wouldn't be bothered cause the targeted consumer is different so they don't give discounts that much cause they know their consumer could afford that.

-Yes but it is hard to make that cult at first. First you need to give discounts.

-For my first customers i give 30% off but after that i charge them and my clients wont hesitate to pay that.

9. Is speed needed for business?

-ofcourse if board members are gonna sit around and argue about a business strategy then it's going to take unnecessary amount of time if a business have an entity that would make decisions then its faster always nor to be say time is money too.

VI FINDINGS

Based on the above responses and content analysis the following interpretations are drawn.

Reasons for Failure of Business

Poor Cash flow: The Indian consumer is very clever and spoiled. He wants the best quality product cheap very quickly, still asking for an extra discount at the side. In the market, firms should have cash flow to keep up. That's the reason 60% of new businesses go bankrupt in 3 years due to lack of understanding of the consumer behaviour.

Lack of emotional connect with customers: Businesses are run by emotions so the firms need to emotionally connect with their consumers to build an ecosystem and a culture that their consumers could celebrate and enjoy upon. Psychological standpoint is a pillar of running a successful business strategies should be assisted by that and should be developed in the way around behaviour could get consideration.

Failure to understand consumer needs: Businesses fail as the product does not meets the expectations of the consumers thus businesses have to do consumer need analysis with strong research and survey so as to offer need based products.

Poor leadership: Today it is not just product but the captain of the ship who leads the voyage to destination. Businesses have failed due to delay in decision making and poor leaders who are not dynamic and lack speed leadership qualities.

Failure to deliver experience: Today customer buys product not for consumption b ut sometimes the emotional connect and status and experiences play a crucial role. Sellers have to understand the purpose and understand consumer behaviour for purchase of different kinds of goods.

VII RECOMMENDATIONS AND CONCLUSION

Based on the responses following are the suggestions and recommendations titled as "Escape Plan: Sustainability strategies".

THE ESCAPE PLAN: SUSTAINABILITY STRATEGIES

1. Conservative margin strategy

Used and proven methods by Sony, NPCI and many others, selling main product with low margins and making profit with complementary product but with attractive price results in conservative cash flow revenue for long terms.

2. Innovative market keeping

Keeping up with market current trends but also distinguishing to make customers think you're better and different.

3. Cash is king

Rather than discounting, making a cult for the product that would get purchased even in a recession.

4. No freebies

Rather than giving freebies like refer and earn build a software that customer would willing to play even if competitor is offering for free (should be qualitative)

5. Distinguished exclusivity

Apple is competing in the smartphone market along with many competitors but what makes anyone choose apple over them even with a premium price is the exclusivity of software, ecosystem of apple products, along with many benefits that exclusivity makes and differs them to a better choice.

6. Selling an experience/status

At Starbucks they are not selling you coffee, they're selling an experience that consumers would love to come up with again and again with their distinguished exclusivity from other chains.

7. Sudden price drop strategy

Consumers have high expectations from a premium product and if they think that the image of the product in their mind would be built as an expensive deal thus speculating as a premium cost. But if introduced at a discounted price of their expectation it would be concluded as a bargain and thus would be bought out at a much faster rate. Here the psychological factor comes in like when apple announced iPad they announced at price of 1000 dollars but suddenly reduced the price at 500 dollars thus increasing sale, revenue, profit and margins

8. The base

Being the infrastructure that other infrastructure would be built upon would let you be in a monopolistic competition when competing with your own product.

E.g when reliance launched jio it became a hub of internet traffic upon which the firms started/expanded their products/services that everyone was able to use because they had the basic infrastructure.

9. Speed is the key to progress

Business decisions has to be quick considering the volatility and dynamism in current market.

CONCLUSION

Competing in a market that is surrounded with a bunch of competitors, strategies would need to be changed from time to time but core business idea vision should never change. Strategies like 'The Loss Leading' have been researched and reframed by us. businesses should focus on the strategies that they could use and be profitable for a long amount of time. After studying the business model of trillion-dollar companies, we have concluded a culture around your product is the asset you have for your lifetime, even if you don't give discounts for a long amount of time these repetitive consumers tend to buy your product just because of the culture around the product you have e.g Nike Air Jordans. The cult makes them your repetitive consumer, your marketer, your advertiser at the same so this qualitative approach is considered the better approach than just marketing and selling.

Discounting do play a big part if customer is thinking he's getting it, in case of apple it doesn't take huge money per module to produce but the depiction of the brand in mind of people has become like whenever they announce a product and drop price of previous models people think its a bargain even if the product itself worth 3X lower than selling price. The exclusivity the brand has to offer makes up for any other absence. But this distinguished exclusivity should not be too much, the product should be identical to the market or else it can create a new market that no one's ever heard about nor familiar to. If the company becomes the base on the other infrastructure would be built upon it itself become a monopoly or monopolistic competition e.g. Reliance has always chosen to be the base of the infrastructure that other infrastructure would be built upon. These could benefit any company in many ways. Businesses are the integration of finance, marketing, management, customer service so there should be an entity strong enough to know and have a hand in all along with people who are scholars in each field. That makes everything included in business like taking decisions, strategy in speed and speed itself is the key.

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CRYPTOCURRENCIES: PAST, PRESENT & FUTURE FOR INDIAN ECONOMY

Prof. V. S. Sontakke

Associate Professor, D.E. Society's Kirti M. Doongursee College, Dadar West, Mumbai- 400028

ABSTRACT

Cryptocurrency is cutting-edge decentralised virtual currency. India's latest gold-like investment product. India's government outlaws the acquisition and selling of cryptocurrencies like bitcoin, litcoin, etc. while having no regulatory authorities or legislation addressing cryptocurrency trading and transactions. In India, cryptocurrencies are restricted. This paper examines cryptocurrency and the Indian economy. The research also discusses cryptocurrencies in India and its future.

Keywords: Cryptocurrency, Blockchain technology, impact on Indian Economy.

1.0 INTRODUCTION

Cryptography secures virtual currency like bitcoin. It's a digital currency used like ordinary money. It employs cryptography and block chain technology to protect its exchanges, limit the development of a certain coin, and track each transaction across the network. Virtual worlds, peer-to-peer networks, online social networks, online social games, and other electronic applications and networks use cryptocurrencies to represent intangible things. Many systems now employ virtual currency. The fast rise of information and communication technology has digitised many of our daily tasks, making them more adaptive and efficient. After the Corona pandemic, online users increased, enabling virtual world notions and a new commercial phenomenon in India: cryptocurrency. This technology enables buying, selling, and trading.

In a time when using virtual currency is not fully overseen and controlled, it is crucial to look at users' expectations for cryptocurrencies' future and their trust in conducting business with them. Practically, it is also important to measure bitcoin's growth. Many nations have passed cryptocurrency laws.

2.0 REVIEW OF LITERATURE**Akshay A., Shivashankarachar Y. –**

A Study on Security Issues in Bitcoin and Cryptocurrency Investments and Transactions This report revealed other bitcoin risks, such as India's lack of transaction legislation. Bitcoin complaints are unfounded.

Everett J. & Team, US Treasury, -"Risks and Vulnerabilities of Virtual Currency- Cryptocurrency as a Payment Method" This study examines the risks and problems of consumers, corporations, government agencies, and financial institutions embracing cryptocurrencies as a substitute for fiat money.**Jeffrey Mazer, USA, "Demystifying Cryptocurrencies, Blockchain, and ICOs"** Freelance financial consultant Jeffrey Mazer works in the US. He helps organisations and institutions with financial analyses. In this essay, he describes cryptocurrencies and its technology, such as blockchain and cryptography.**MIT Expert "Blockchain, Explained"** The author of this blog (MIT Digital) explains Blockchain Technology and how it became linked to cryptocurrency. He said blockchain technology gave Bitcoin minimum networking and verification expenses, anonymity, and security.**WCI (Cryptocurrency Guide, News and Reviews)**

This website gives in-depth bitcoin information and daily updates. It also tracks the bitcoin market's performance. This article explains how cryptography makes bitcoins the most secure payment option.

Sudhir Khatwani (CoinSutra) – "Bitcoin's Future in India After RBI Ban" This article examines how Bitcoin and other cryptocurrencies are faring in the Indian market after the RBI banned the exchange of these digital currencies for fiat money through its own institutions, including banks and other financial organisations.**Peter De DeVries, "Cryptocurrency, Bitcoin, and the Future"** In this study, the author did a SWOT analysis of Bitcoins and other cryptocurrencies to predict their future. Bitcoins' unique design and low production volume make them inflation-proof.**Shailak Jani- "The Growth of Cryptocurrency in India: Challenges & Legislation"** This study paper shows how technology has led to the growth of cryptocurrencies, their appeal on the international market, and their application in Indian trade.

3.0 THE PROBLEM OF THE STUDY

Cryptocurrencies can be used for transactions like traditional money, but regulators and the government are sceptical. Despite being existing for almost a decade, it's still unknown if cryptocurrencies will become a genuine means of payment or just an investment. Most individuals consider cryptocurrencies illegal because of their unknown worth.

3.1 Objectives of the study

1. To Study the evolution of Cryptocurrencies in financial world.
2. To focus on past & present status of Cryptocurrencies trading in India.
3. To Study various emerging approaches of Government for Cryptocurrencies.
4. To analyse the trends in growth of cryptocurrencies trading.
5. To explore the future challenges of cryptocurrencies to Indian economy.

3.2 Methodology & Plan of Work:

This study's research design is largely qualitative exploratory research. It's simple and ill-defined. Primary data was collected via a survey questionnaire. Each question includes options. To evaluate awareness and perception of cryptocurrencies, a Google Survey Form was circulated in Mumbai. The questionnaire was intended to include all demographics, including male and female, 18-year-olds and older, working (in public, private, or educational institutions), businesspeople, non-workers, students, and non-working persons. There are even annual income categories.

4.0 AN EVOLUTION OF CRYPTOCURRENCIES IN FINANCIAL WORLD.

Bitcoin, established in 2008 by Satoshi Nakamoto, is the most popular cryptocurrency wallet. Bitcoin is digital money. It is a decentralised peer-to-peer digital currency transmitted from user to user. The anonymous Bitcoin network's no-middleman transactions are facilitated through the block chain. Bitcoin has been the most popular digital currency since its 2009 inception.

Bitcoin transactions are cheaper than traditional online payments. Bitcoins are digital money meant to stand-alone. Banks do not move or store money. A public cloud wallet only stores balances, not bitcoins. Each Bitcoin transaction requires a lot of calculation. Wallet is a private database you may maintain on your computer, smartphone, tablet, or in the cloud. Bitcoins transfer between wallets.

- **Cryptocurrency:** Digital currency, it is safer than real money.
- **Cryptography** encodes data in hard-to-decipher codes. Cryptography protects data from theft and misuse. Data is encrypted as cypher text and then decoded for the user.
- **Block Chain** - A chain of linked blocks from most recent to Genesis Block. Blockchain transactions are recorded chronologically, establishing an immutable chain, and can be private or anonymous. The ledger is dispersed across multiple network users; it has not centralised.

4.1 Features of Bitcoin

It is not simply about transmitting money from one person to another when using the Bitcoin system. It stands apart from other crypto-currencies thanks to a variety of features.

- 1) It protects users from scams like chargebacks and illegal purchases. Encrypting wallets gives users complete financial autonomy. No fraud is possible.
- 2) Bitcoin allows any bank, corporation, or person to securely send and receive payments in minutes. Worldwide, all payments are accepted.
- 3) Bitcoin allows direct, middleman-free transactions. Comparatively, transaction time and cost are lower.
- 4) All Bitcoin transactions are transparent. Block chain stores transaction details. A place to check.

4.2 Types of Cryptocurrencies

Over 1600 cryptocurrencies are online and growing. When a new cryptocurrency appears. Bitcoin leads Ripple, Ethereum, and Litecoin in market capitalization.

Bitcoin: Market cap: \$846 billion: Bitcoin's price rose as it gained popularity. May 2016 Bitcoins cost \$500. On March 1, 2022, one Bitcoin cost \$44,000. It's up 7,800%.

Litecoin (LTC) \$9 billion market cap: Charlie Lee, a former Coinbase software developer, founded Litecoin (LTC) in 2011. Its programming copied Bitcoin's. 84 million Litecoins are available. It hit \$413.47 in May 2021, then plummeted more than 50%. Litecoin acceptance grows.

Ethereum Market cap: \$361 billion: Vitalik Buterin, a researcher and programmer, founded Ethereum in July 2015. Open source blockchain platform. Ethereum grew quickly, too. Between April 2016 and March 2022, its price rose from \$11 to nearly \$3,000.

Tether (usdt) \$79 billion market cap: Tether is a stablecoin, which means it's backed by fiat currencies like the U.S. dollar and the Euro and supposedly retains their value. Investors wary of the volatility of other coins pick Tether because its value is presumably more steady.

Over \$68 billion for Binance (BNB): Binance, one of the world's largest cryptocurrency exchanges, accepts Binance Coin for trading and fees. Since it was released in 2017, Binance Coin has expanded beyond enabling exchange transactions. BNB was \$0.10 in 2017. By March 2022, its price reached \$413, a 410% rise.

There are many other cryptocurrencies like Terra (Luna) Over \$34 billion market cap, Cardano (ADA) Over \$33 billion market cap, Solana (SOL) Over \$33 billion market cap, Polkadot (DOT) Over \$22 billion market cap.

5.0 PAST & PRESENT STATUS OF CRYPTOCURRENCIES TRADING IN INDIA

Bitcoin investments have increased in India since 2020. 1.5 to 2 crore Indians invested in cryptocurrency in November. Bitcoin adoption is growing in a country famed for investing in gold and other safe assets. Let's look at the virtual asset's history before the bill's introduction.

2008: Bitcoin debut

Satoshi Nakamoto's 2008 paper "Bitcoin: A Peer-to-Peer Electronic Cash System" created cryptocurrencies.

2010: ICO

10,000 Bitcoin were exchanged for two pizzas two years later. Cryptocurrencies had value. Litecoin, Namecoin, and Swiftcoin followed Bitcoin.

RBI issues first cryptocircular

The Reserve Bank of India (RBI) warned clients about virtual currency security threats in 2013 as crypto investments surged in India and exchanges like Zebpay, Pocket Bits, Coinsecure, Koinex, and Unocoin formed.

Demonetization, 2016-2018; RBI crypto ban

Demonetisation boosted digital payments, attracting tech-savvy customers to cryptocurrencies. As long as Indian banks allow cryptocurrency trades, the RBI will issue another circular in 2017 to highlight its worries. RBI and finance ministry cautioned in 2017 that virtual currencies aren't legal money.

March 2018: CBDT proposed outlawing virtual currency. The RBI banned banks, NBFCs, and payment system providers from using virtual currencies a month later. Cryptocurrency trade volumes dropped 99%.

Nischal Shetty, founder of WazirX, launched #IndiaWantsCrypto on November 1, 2018, ten years after Nakamoto's article. Rajya Sabha MP Rajeev Chandrashekar supported it.

DJ Nikhil Chinapa, Unocoin's Sathvik Vishwanath, and Polygon's Jaynti Kanani subsequently joined. Nischal's comments assisted the campaign, and the hashtag trended on Twitter in February. #IndiaWantsCrypto reached 1000 days in July 2021 thanks to Nischal's tweets and crypto enthusiasts.

March 2020: Supreme Court lifts cryptocurrency banking ban

The RBI circular's restriction was a blow, therefore bitcoin exchanges challenged it in court. The Supreme Court reversed the ban and deemed the RBI circular illegal. Supreme Court judgement revived bitcoin exchanges and coincided with crypto boom.

2021: Crypto Bill

India's cryptocurrency battle continued. India will introduce a national digital currency and ban private cryptocurrencies on January 29, 2021. In November 2021, the Finance Committee met with BACC and other cryptocurrency stakeholders. In December 2021, Narendra Modi discussed cryptocurrency.

6.0 THE TRENDS IN GROWTH OF CRYPTOCURRENCIES TRADING.

Bitcoin has become a prominent worldwide market capitalization participant in recent years. Multiplying the quantity of coins in circulation by their market value gives market capitalization. Figure 2.1 displays bitcoin prices from April 2013 to December 2018. The graph depicts bitcoin's volatile value.



Source: Trading view

Bitcoin prices ranged from 69155 USD in November 2021 to 18185 USD in September 2022.

Figure-2.1 and Figure-2.2 have a similar trend, although Figure-2.2 excludes Bitcoins. Since January 2017 to mid-2018, the Market Capitalization of cryptocurrencies (including Bitcoins and Altcoins) increased at an astounding rate; nevertheless, the trend has been negative, and volatility is significant.



Source: Tradingview ,Total market capitalisation of Bitcoin from 2017 to October 2023

6.1 Growth Motivators

1. Growth: Economic growth is important to bitcoin's growth. With the debut of blockchain technology and Bitcoin in 2009, and Bitcoin's subsequent exponential growth after 2013, it is obvious from the history of cryptocurrencies that investors' appetite for risk returned to pre-recession levels. In 2017, the stock market nearly set a record and investor confidence soared. Expanding risky investment assets.

2. Blockchain: Bitcoin has captivated the technology world with blockchain. Before blockchain, cryptocurrencies like bitcoin were worthless. Blockchains improve cryptocurrencies' efficiency, transaction costs, and security. It allows users to conduct unforgeable, verifiable transactions without bank fees. Since 2008, the value of cryptocurrencies has grown exponentially, which explains their popularity and introduction into reverse mergers. This expansion and blockchain's usage in finance are expected to continue.

3. Investing propensity: Capitalist lust has contributed to the bitcoin surge. Government and investment institutions gave cryptocurrencies disproportionate attention in 2017, validating them as financial assets. Japan approved legislation requiring cryptocurrencies to register with the monetary services agency in February and April. Goldman Sachs' markets division will cover Bitcoin due to high demand. CME will issue Bitcoin derivatives. These events show limited capitalist demand for cryptocurrencies.

4. Decentralized investment appeal: Central bank policy can devalue centralised currencies. Because they're not regulated by governments or central banks, cryptocurrencies are mostly managed by market forces. By definition, cryptocurrencies are secure. Blockchain's decentralised nature permits cross-border, unforgeable transactions.

This allows sceptics' concerns regarding cryptocurrencies during the past decade.

5. Digitally-only: Bitcoins are digital, therefore no shipping or transaction fees apply. The digital nature of cryptocurrencies lowers digital transaction costs compared to online banking fees.

6. Technology: The emergence of devices that can use cryptocurrencies has increased the market's demand for digital currency. Cryptocurrencies are a good way to preserve and develop money.

7.0 THE FUTURE CHALLENGES OF CRYPTOCURRENCIES TO INDIAN ECONOMY.

Similar to other countries, India's use of cryptocurrencies like Bitcoin has surged following demonetisation. The rupee-dominated cryptocurrency has the third-highest trading volume behind the dollar and the yen. A large section of the population adopted cryptocurrencies after the 2016 demonetization decree, but soon after, facts surfaced that halted the market's rise in India. Despite its population, India contributes less than 2% to the global bitcoin market. In India, cryptocurrencies are not restricted. Because it has digital, Bitcoin is used for money laundering, terrorism financing, drug trafficking, and hacking. This has raised population fatigue because it reduces security and dependability.

- 1. Speculative and dangerous:** Investors will not profit from all cryptocurrencies. Supply and demand affect the cryptocurrency's price. Speculation drives cryptocurrency valuation, introducing risk.
- 2. Volatility:** Due to their volatility, cryptocurrencies are not suited for a large portion of the world's capital.
- 3. Cybercrime:** Blockchain technology has made crypto more secure, but it is still vulnerable to cyberattacks. Worldwide hackers have stolen hundreds of millions of dollars in recent years.
- 4. Taxation:** Depending on how long they kept the cryptocurrency, investors may be taxed as long-term or short-term capital gain.
- 5. Regulation problem:** Cryptocurrency trades are unregulated. This has increased fraud, threatened investor protection, and made it harder to track money flow in the economy. The RBI and other central banks could not monitor cryptocurrency.
- 6. Unsecured:** Because the entire asset is digital, it is always at danger for a security breach. Hackers can target any component, compromising the system.
- 7. Expensive:** It is expensive because it uses expensive new technologies.
- 8. Perceptions:** Since cryptocurrencies are not globally regulated, individuals regard them as illegal and are cautious to invest in it.
- 9. Technology upgrades:** The bitcoin economy is so uncertain that defining its industrial characteristics is impossible. Valuation changes frequently.
- 10. Theft:** Storing cryptocurrency keys is risky because they are unregulated and cannot be recovered if stolen. This digital asset must be protected from theft.

8.0 DATA ANALYSIS

Data analysis entails converting all questionnaire-based survey data into a usable form to extract and draw conclusions. Primary source information (questionnaires) was tallied and converted to percentages. Analyses used tabulated data. For further data analysis, pie charts or bar graphs (2D diagrams) were utilised. Due to the 16 multiple-choice or Likert scale questionnaire items, tables and graphs were generated. Tables were used to interpret the data.

Below is a data analysis of every question on the questionnaire:

Table 8.1 Shows number of respondents on the basis of Gender.

Sr.No	Response	No of Respondents	Percentage (%)
1	Male	73	68.86
2	Female	31	29.24
3	Prefer not to say	2	1.8
4	Total	106	100

Interpretation: According to the table, 68.9% of responders are men, 29.24% are women, and 1.8% are unsure.

Table 8.2 Shows number of respondents on the basis of Age Category.

Sr. No.	Response	No of Respondents	Percentage (%)
1	20-30 years	14	13.2
2	30-40 years	61	57.54
3	40-50 years	28	26.41
4	Above 50 years	3	2.83
5	Total	106	100

Interpretation: According to the table, 13.2% of respondents are 20–30, 57.54% are 30–40, 26.41% are 40–50, and 2.83% are beyond 50.

Table 8.3 Shows number of respondents on the basis of their educational qualification.

Sr. No.	Response	No of Respondents	Percentage (%)
1	High School	0	0
2	Senior Secondary	1	0.96
3	Bachelors	25	24.04
4	Masters	78	75
5	Total	104	100

Interpretation: 0% of respondents have a high school diploma, 0.96 have a senior secondary diploma, 24.04% have a bachelor's degree, and 75% have a master's degree.

Table 8.4 Shows number of respondents on the basis of their Occupation.

Sr. No.	Response	No of Respondents	Percentage(%)
1	Business	3	2.83
2	Employed(Public/Private/ Educational institution)	92	86.79
3	Student	4	3.77
4	Unemployed	7	6.6
5	Total	106	100

Interpretation: 86.79% of respondents are employed (in a public, private, or educational institution), 6.6% are jobless, 3.7% are students, and 2.83 are from the business class.

Table 8.5 Shows number of respondents on the basis of their annual income.

Sr. No.	Response	No of Respondents	Percentage (%)
1	1-5 lakhs	17	17
2	5-10 lakhs	21	21
3	Above 10 lakhs	62	62
4	Total	100	100

Interpretation: It is clear from the table above that 62% of respondents make more than that.

Table 8.6 Shows number of respondents on the basis of their awareness of Finance, Banking and Investment.

Sr. No.	Response	No of Respondents	Percentage (%)
1	Yes	72	67.92
2	No	6	5.66
3	May be	28	26.41
4	Total	106	100

Interpretation: 67.92% of respondents are educated about their finances and investments, 5.66% are not, and 26.41 are unclear.

Table 8.7 Shows number of respondents on the basis of their favourite Investment tool

Sr. No.	Response	No of Respondents	Percentage (%)
1	Mutual funds	56	52.83
2	Equity	18	16.98
3	Cryptocurrency	1	0.94
4	Real Estate/ Gold	31	29.24
5	Total	106	100

Interpretation: 52.83% of respondents said mutual funds were their favourite investment, followed by real estate/gold, 16.98% equity, and 0.94% cryptocurrencies.

Table 8.8 Shows number of respondents on the basis of their Awareness of Cryptocurrency.

Sr. No.	Response	No of Respondents	Percentage (%)
1	Yes	74	69.81
2	No	23	21.69
3	May be	9	8.49
4	Total	106	100

Interpretation: 69.81% of respondents are aware of cryptocurrencies, compared to 21.6% who are oblivious and 8.49% who are unsure.

Table 8.9 Shows number of respondents on the basis of their knowledge of Cryptocurrency.

Sr. No.	Response	No of Respondents	Percentage (%)
1	Basic Framework	31	34.06
2	Detailed knowledge	8	8.79
3	Just have an idea	52	57.14
4	Total	91	100

Interpretation: 57.14% of respondents have some knowledge of cryptocurrencies, 34.06% grasp its fundamentals, and 8.79% are experts.

Table 8.10 Shows number of respondents on the basis of their preference to choose Cryptocurrency as.

Sr. No.	Response	No of Respondents	Percentage (%)
1	Currency	35	38.04
2	Investment Tool	57	61.95
3	Total	92	100

Interpretation: 38.4% of respondents support cryptocurrencies as a medium of exchange, while 61.9% support it as an investment tool.

Table 8.11 Shows number of respondents on the basis of their choice whether to invest in Cryptocurrency or not.

Sr. No.	Response	No of Respondents	Percentage (%)
1	Yes	20	18.87
2	No	51	48.11
3	May be	35	33.02
4	Total	106	100

Interpretation: 18.87% of respondents are willing to invest in cryptocurrencies, 48.11% are opposed, and 33.2% are unsure.

Table 8.12 Shows number of respondents on the basis of income range.

Sr. No.	Response	No of Respondents	Percentage (%)
1	Less than 5%	41	38.68
2	5-10%	13	22.41
3	More than 10%	04	6.91
4	Total	58	100

Interpretation: According to the table, 38.68% of respondents would invest less than 5% of their annual income in cryptocurrencies, 22.41% would invest between 5 and 10%, and 6.91% would invest more than 10%.

Table 8.13 Shows number of respondents on the basis of their Return on Investment in Cryptocurrency.

Sr. No.	Response	No of Respondents	Percentage (%)
1	Less than 5%	19	70.37
2	5-10%	3	11.11
3	More than 10%	5	18.52
4	Total	27	100

Interpretation: 70.37% of respondents received less than 5% for their bitcoin investment, 11.1% received between 5% and 10%, and 18.52% received more than 10%.

Table 8.14 Shows number of respondents on the basis of their indifference towards Cryptocurrency.

Sr. No.	Response	No of Respondents	Percentage (%)
1	Legal Issues	12	16
2	Lack of confidence	42	56
3	Security issues	6	8
4	Volatility	15	20
5	Total	75	100

Interpretation: 16% of respondents were disinterested in cryptocurrencies due to legal problems, 56% lacked faith in them, 8% cited security concerns, and 20% cited their volatility.

Table 8.15 Shows number of respondents on the basis of their view on regulation of Cryptocurrency.

Sr. No.	Response	No of Respondents	Percentage (%)
1	Strongly Disagree	23	21.7
2	Disagree	11	10.38

3	Neutral	29	27.36
4	Agree	18	16.98
5	Strongly Agree	25	23.58
6	Total	106	100

Interpretation: The above table shows if the Indian government and regulators should regularise it. 21.70% strongly disagree, 10.38% disagree, 27.36% have no opinion, 16.98% agree, and 23.58% strongly agree.

Table 8.16 Shows number of respondents on the basis of their views on current regulatory and infrastructural support for cryptocurrency in the country.

Sr. No.	Response	No of Respondents	Percentage (%)
1	Yes	3	3.19
2	No	68	72.34
3	May Be	23	24.47
4	Total	94	100

Interpretation: 72.34% of respondents agreed we lacked regulatory and infrastructure support, while 24.45% were unsure and 3.1% agreed.

9.0 FINDINGS OF THE STUDY

The following findings have been drawn from the data analysis and data interpretation.

1. Most replies are men.
2. Most responders are in the age group of 30-40 years.
3. Most respondents have a master's degree.
4. Most responders work in governmental, private, or academic institutions.
5. Most respondents make at least 10 lakhs annually.
6. Most respondents know about finance, banking, and investing.
7. Most respondents chose mutual funds, then gold and real estate.
8. 75% of respondents know about cryptocurrencies.
9. Nearly half of respondents know about cryptocurrency. Few respondents understand cryptocurrency.
10. Most respondents think cryptocurrencies should be an investment instrument.
11. Only 35% of respondents are sure about investing in cryptocurrencies. 15% of individuals buy cryptocurrencies.
12. Most willing investors want to put 5% of their annual pay into cryptocurrency.
13. Most respondents who have invested in cryptocurrency have witnessed returns of 5-10%.
14. Respondents who were not interested in cryptocurrencies cited "Lack of Confidence in Cryptocurrency," volatility, and legal issues.
15. Half of respondents think India should legalise cryptocurrencies.
16. Most respondents feel we need cryptocurrency infrastructure and regulatory assistance.

10.0 SUGGESTIONS

1. Bitcoin is decentralised, everywhere-accessible infrastructure must moderate its irregular demand. Unauthorized use decreases with regulation.
2. Prohibiting cryptocurrency will deny millennials cutting-edge technologies. Regulate.
3. Because this study was so small, the results may not reflect how individuals feel. Understanding how people view things requires a large-scale study. Therefore, officials may make educated decisions.
4. This study's ease sampling units were not taught how to complete the questionnaire or answer each question. Analysis exposes sample issues. Guided questionnaire completing could prevent this error.

11.0 CONCLUSION

Most people know about cryptocurrencies and want to include them in their financial portfolios. Lack of government and regulatory monitoring prevents them from investing. If the Indian government and regulatory

organisations regulate its usage and transaction in the financial market, it might be a significant investment. Many nations have already prohibited cryptocurrencies' use in daily trade, and more are doing the same for financial market operations. Indian regulators should oversee cryptocurrency investments.

The RBI warned Indians against money laundering and terrorism financing. Cryptocurrency is an innovative instrument. Despite India's lack of regulation, bitcoin investors have increased. The Indian government should control this rising currency immediately. Indians are optimistic about cryptocurrency. Indicators suggest India will rigorously regulate cryptocurrency. The government may consider cryptocurrencies an asset, not money. Experts claim norms will increase bitcoin trading platforms' transparency. Balances prevent fraud and track international transactions. India is the leading investor in cryptocurrencies despite concerns over its future. India's cryptocurrency experience after the law passes will be interesting.

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MANAGING STRESS BY MUSIC THERAPY

¹Mrs. Reet Mayuresh Thule and ²Dr. Eknath Kundlik Zhrekar¹Research Scholar, Pillai College of Arts, Commerce & Science, Dr. K. M. Vasudevan Pillai Campus, Plot no.10, Sector 16, New Panvel East, Navi Mumbai²Assistant Professor, Mahatma Night Degree College of Arts and Commerce, Chembur Naka, Mumbai**ABSTRACT**

Stress Management is a wide spectrum of techniques and psychotherapies aimed at controlling a person's level of stress, especially chronic stress, usually for the purpose of and for the motive of improving everyday functioning. Music therapy is the use of music to address the physical, emotional, cognitive, and social needs of a group or individual. It employs a variety of activities, such as listening to melodies, playing an instrument, drumming, writing songs, and guided imagery. Music therapy is appropriate for people of all ages, whether they are virtuosos or tone deaf, struggling with illnesses or totally healthy.

Music therapy touches all aspects of the mind, body, brain and behavior. Music can provide a distraction for the mind, it can slow the rhythms of the body, and it can alter our mood, which in turn can influence behavior. Music is effective for relaxation and stress management. If you want to take the positive effects of listening to music to another level, try singing. Singing is one of the best ways to shift the vibrations of our thoughts and the very cells of our body, helping slow and regulate breathing and promote relaxation.

This form of treatment may be helpful for people with depression and anxiety, and it may help improve the quality of life for people with physical health problems. Anyone can engage in music therapy; you don't need a background in music to experience its beneficial effects.

Thus, this paper makes an attempt to study the stress management through a unique way through a musical therapy.

Keywords: - Stress management, Music Therapy, engaging in hobbies to reduce stress.

1. INTRODUCTION**1.1 Introduction to Stress and Stress Management Techniques**

Stress is our body's Response to pressure. Many Life events or varied situations can cause stress. It is often triggered when we experienced something new, unexpected or that threatens our sense of self, or when we have no or very little control over the situation.

Different people deal with stress differently. The ability to cope up with the stressors depends on number of factors, viz. early life events, personality and social and economic circumstances. Time stress, Anticipatory stress, Situational stress and Encounter stress are the four types of stress.

Stress management is a wide spectrum of techniques and psychotherapies aimed at controlling a person's level of stress, especially chronic stress, usually for the purpose of and for the motive of improving everyday functioning.

There are things we can learn to help us cope up with the stress before it gets to be too much. These tips may help us keep stress at bay:

- Keep a positive attitude.
- Accept that there are events that we cannot control.
- Be assertive instead of aggressive. Assert your feelings, opinions, or beliefs instead of becoming angry, defensive, or passive.
- Learn to manage our time more effectively.
- Set limits appropriately and say no to requests that would create excessive stress in our life.
- Make time for hobbies and interests.
- Don't rely on alcohol, drugs to reduce the stress. Drugs and alcohol can stress your body even more.
- Seek out social support. Spend enough time with loved ones.
- Seek treatment from the professional trainer to learn more healthy ways of dealing with the stress in our life.

1.2 Music Therapy

Music therapy is the use of music to address the physical, emotional, cognitive, and social needs of a group or individual. It employs a variety of activities, such as listening to melodies, playing an instrument, drumming, writing songs, and guided imagery. Music therapy is appropriate for people of all ages, whether they are virtuosos or tone deaf, struggling with illness or totally healthy.

Music therapy touches all aspects of the mind, body, brain and behavior. Music can provide a distraction for the mind, it can slow the rhythms of the body, and it can alter our mood, which in turn can influence behavior.

There are many different approaches to music therapy, including creating music, listening to music, and talking about music. Although music therapy is often used to promote mental and emotional health, it may also help improve quality of life for people coping with physical health conditions.

Music can have a profound effect on both the emotions and the body. Faster music can make you feel more alert and concentrate better. Upbeat music can make you feel more optimistic and positive about life. A slower tempo can quiet your mind and relax your muscles, making you feel soothed while releasing the stress of the day. Music is effective for relaxation and stress management. If you want to take the positive effects of listening to music to another level, try singing. Singing is one of the best ways to shift the vibrations of our thoughts and the very cells of our body, helping slow and regulate breathing and promote relaxation. If you're going to sing, pick songs you know will put you in a better mood, inspire you, or help you relax. Pay attention to how different you feel after a few minutes of singing aloud, and make note of the songs that make you feel best so you can return to them when you need them most.

Music therapy is a therapeutic approach that uses the naturally mood-lifting properties of music to help people improve their mental health and overall well-being. It's a goal-oriented intervention that may involve:

- Making music
- Writing songs

2. REVIEW OF LITERATURE

Yadira Albornoz (2010) "music therapy on depression in adolescents and adults with substance abuse: a randomized controlled trial" The effect of group improvisational music therapy on depression in adolescents and adults with substance abuse was investigated. As for post-test measures, significant differences were found between the groups on HRSD but not the BDI. Among limitations of the study were: a small sample size and the absence of a depression assessment tool for substance abuse.

Bill Matne (2018) In their journal entitled "Understanding literature reviews: Implications for music therapy" The purpose of this article is to present a comprehensive overview of literature review processes and methodologies by (a) describing the general purposes of narrow and broad literature reviews, (b) providing a historical overview of broad reviews, and (c) describing broad review methodologies in relation to their respective definitions, histories, methodological characteristics, purposes, example questions, and study examples from healthcare and music therapy literature.

Loory F Gooding (2019) In their journal entitled, "Music Therapy with Military Populations: A Scoping Review" Current research on music therapy with military populations is growing, but more information is needed to inform practice in a field. This scoping review provides an up-to-date synthesis of the available information on the use of music therapy interventions to promote health and improve functioning in military service members.

3. RESEARCH METHODOLOGY

3.1 Objectives

1. To know the types, pros and cons of the music therapy.
2. To understand the effects of stress and ways to manage it
3. To know the techniques, activities and tools of music therapy.

3.2 Scope of study

The proposed study is to understand how the music therapy is used to manage and reduce the stress of the life. Music is one of the oldest and most popular way to manage stress and relax the body. It is very essential for the people to maintain the effective physical and mental health in order to contribute towards the productivity of an organisation. This paper tries to recommend the stress management with the help of musical therapy.

3.3 Limitations

As the music therapy is still not that popular, it became difficult to collect the primary data.

3.4 Data Collection

Primary Data: Data has been collected by the researcher himself/herself through surveys, interviews with the help of specially designed questionnaire.

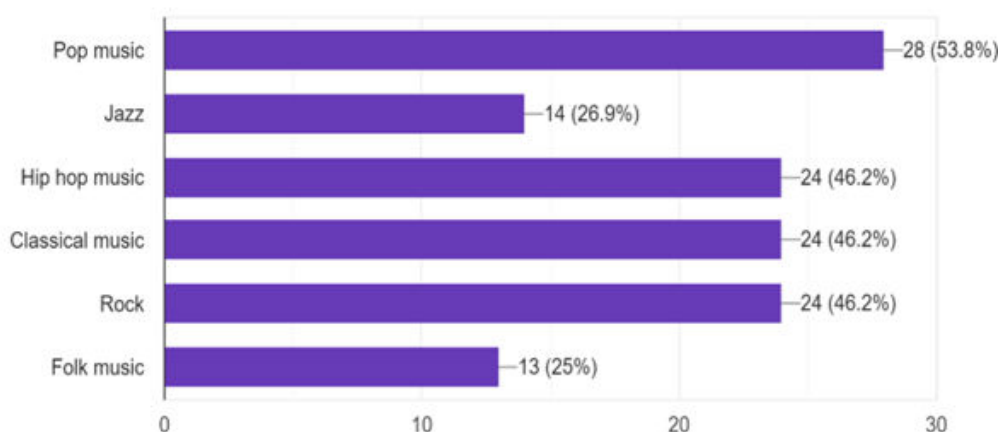
Secondary Data: Newspaper, Magazines, journals, Internet facilities, etc

Sample size: 52

4. DATA ANALYSIS AND INTERPRETATION

What type of music do you like?

52 responses



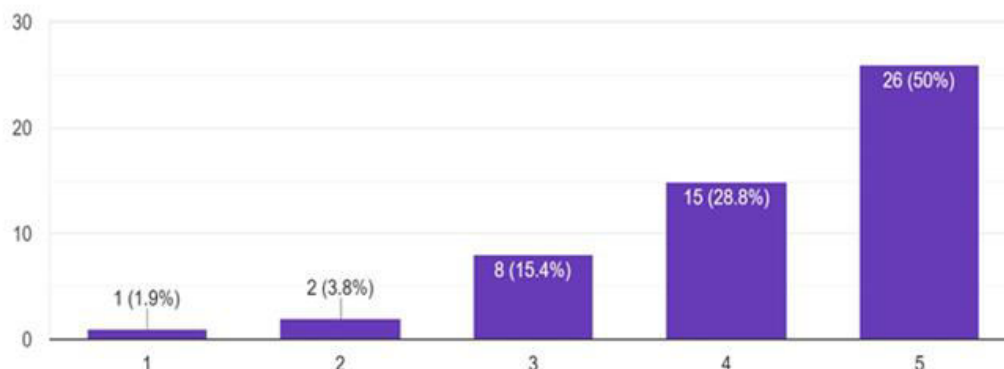
CATEGORY	FREQUENCY	PERCENTAGE
Pop Music	28	53.8%
Jazz	14	26.9%
Hip Hop Music	24	46.2%
Classic Music	24	46.2%
Rock	24	46.2%
Folk Music	13	25%

INTERPRETATION

The above table shows majority of people like Pop Music.

8. To what extent do you think the music treatment can lower your stress?

52 responses



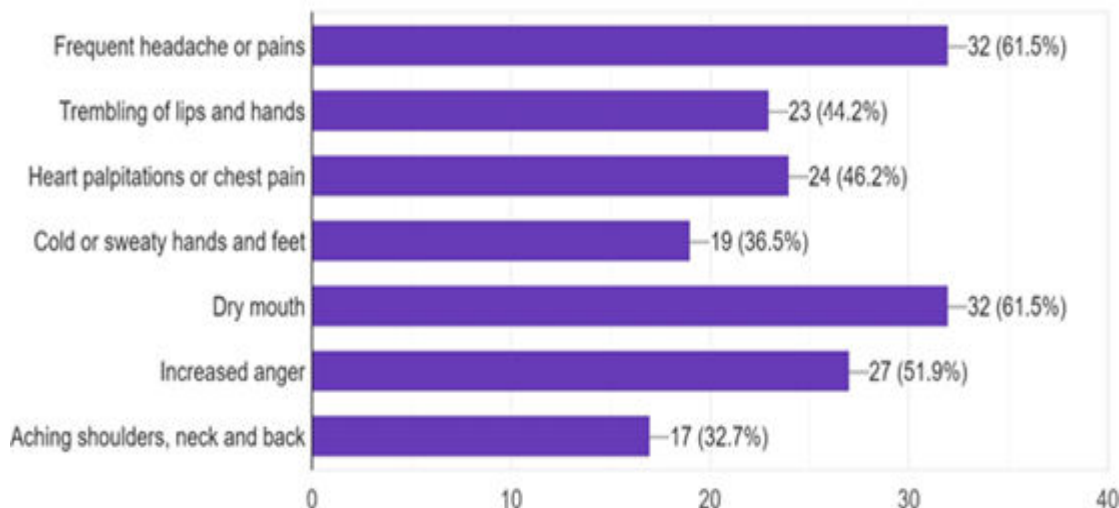
CATEGORY	FREQUENCY	PERCENTAGE
Least 1	1	1.9%
2	2	3.8%
3	8	15.4%
4	15	28.8%
5 Most	26	50%

INTERPRETATION

The above diagram shows the how people extent their stress usingmusic therapy the most is 50% and the least is 1.9%.

9. Which you are aware of the signs and symptoms of stress.

52 responses



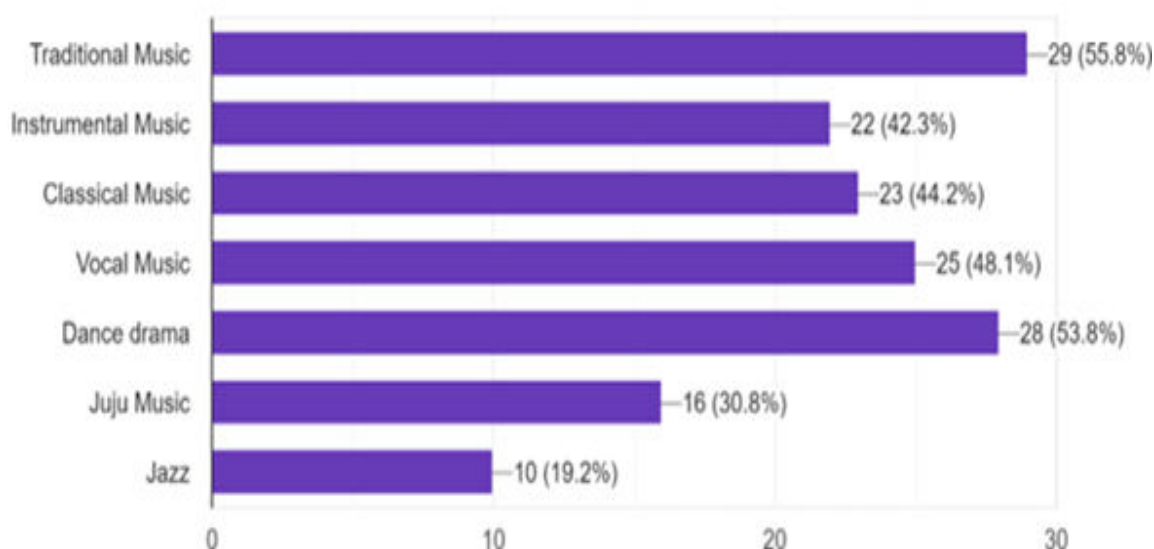
CATEGORY	FREQUENCY	PERCENTAGE
Frequent headache or pains	32	61.5%
Trembling of lips and hands	23	44.2%
Heart palpitations or chest pain	24	46.2%
Cold or sweaty hands and feet	19	36.5%
Dry mouth	32	61.5%
Increased anger	27	51.9%
Aching shoulders, neck and back	17	32.7%

INTERPRETATION

The above diagram shows us the Frequent headache or pains is 61.5%, Trembling of lips and hands is 44.2%, Heart palpitations or chest pain is 46.2%, Cold or sweaty hands and feet is 36.5%, Dry mouth is 61.5%, Increased anger is 51.9%, Aching shoulders, neck and back is 32.7%.

10. Which the listed music performances would serve as therapy for managing stress?

52 responses



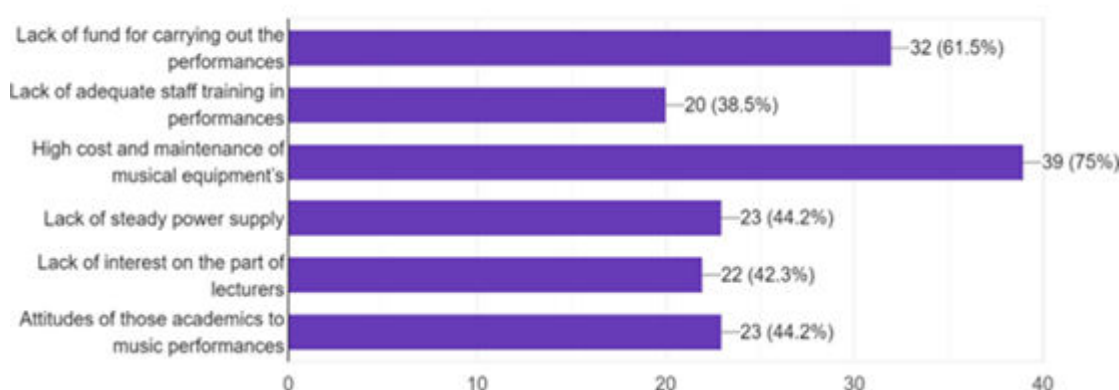
CATEGORY	FREQUENCY	PERCENTAGE
Traditional Music	29	55.8%
Instrumental Music	22	42.3%
Classical Music	23	44.2%
Vocal Music	25	48.1%
Dance drama	28	53.8%
Juju Music	16	30.8%
Jazz	10	19.2%

INTERPRETATION

In the above horizontal diagram shows the music performances serve as therapy for managing stress that is Traditional Music is 55.8%, Instrumental Music is 42.3%, Classical Music is 44.2%, Vocal Music is 48.1%, Dance drama is 53.8%, Juju Music is 30.8%, Jazz is 19.2%.

11. The hindrances to the use of music performance for stress management.

52 responses



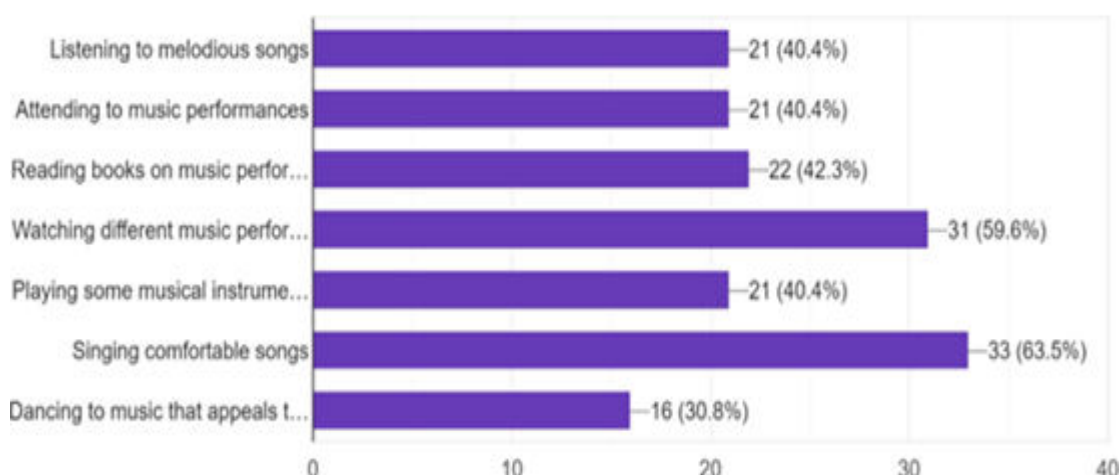
CATEGORY	FREQUENCY	PERCENTAGE
Lack of fund for carrying out the performances	32	61.5%
Lack of adequate staff training in performances	20	38.5%
High cost and maintenance of musical equipment's	39	75%
Lack of steady power supply	23	44.2%
Lack of interest on the part of lecturers	22	42.3%
Attitudes of those academics to music performances	23	44.2%

INTERPRETATION

The above diagram shows the hindrances to use muse is Lack of fund for 38.5%, High cost and maintenance of musical equipment's is 75%, Lack of steady power supply is 44.2%, Lack of interest on the part of lecturers is 42.3%, Attitudes of those academics to music performances is 44.2%.

12. Strategies would help in stress management

52 responses



CATEGORY	FREQUENCY	PERCENTAGE
Listening to melodious songs	21	40.4%
Attending to music performances	21	40.4%
Reading books on music performances	22	42.3%
Watching different music performances	31	59.6%
Playing some musical instruments	21	40.4%
Singing comfortable songs	33	63.5%
Dancing to music that appeals to you	16	30.8%

INTERPRETATION

Listening to melodious songs is 40.4%, Attending to music performances is 40.4%, Reading books on music performances is 42.3%, Watching different music performances is 59.6%, Playing some musical instruments is 40.4%, Singing comfortable songs is 63.5%, Dancing to music that appealsto you is 30.8%.

15. Do you believe in the effectiveness of music as a therapy?

52 responses



INTERPRETATION

Out of 52 respondents, 51 respondents i.e. 98.1% are sure that music is effective as a therapy and 1 respondent i.e. 1.9% is not sure about it.

5. SUGGESTIONS

1. Experience a "sound bath" and let the music carry away.
2. Eat and drink to optimize the health.
3. Aerobic exercise has been shown to release endorphins—natural substances that help to feel better and maintain a positive attitude.
4. Stop using tobacco and nicotine products.
5. To examine the values and live by them.
6. Set realistic goals and expectations. Be mindful of the things that can control and work on accepting the things that we can't control.
7. When you're feeling overwhelmed, remind yourself of what you do well. Have a healthy sense of self-esteem.
8. You can use to relax or reduce stress, including
 - Deep breathing exercises.
 - o Meditation.
 - o Mindfulness meditation.
 - o Progressive muscle relaxation.
 - o Mental imagery relaxation.
 - o Relaxation to music.

-
- Biofeedback
 - Counselling, to help you recognize and release stress.
9. Working out regularly is one of the best ways to relax your body and mind. Plus, exercise will improve your mood.
10. When you're stressed, your muscles get tense. You can help loosen them up on your own and refresh your body by:
- Stretching
 - Enjoying a massage
 - Taking a hot bath or shower
 - Getting a good night's sleep
11. Relaxing hobbies include things like:
- Reading
 - Knitting
 - Doing an art project
 - Playing golf
 - Watching a movie
 - Doing puzzles
 - Playing cards and board games
12. Guided meditation is a great way to distract yourself from the stress of day

6. CONCLUSION

Our findings indicate that music listening impacted the psychobiological stress system. Listening to music prior to a standardized stressor predominantly affected the autonomic nervous system (in terms of a faster recovery), and to a lesser degree the endocrine and psychological stress response. These findings may help better understanding the beneficial effects of music on the human body.

It is concluded that music therapy can be effectively used to overcome and prevent stress, depression and anxiety related disorders if used regularly in a prescribed manner under a supervision of a music therapist. It has a potential to be used in preventive as well as curative healthcare as an adjunct therapy. In depth research is on way to quantify the effect music has on brain functioning.

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FOOT NOTES

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RETAIL INVESTORS EDUCATION & AWARENESS: ROLE OF SECURITIES & EXCHANGE BOARD OF INDIA (SEBI)

Dr. Prasad John Dabre

Assistant Professor, St. Joseph College of Arts & Commerce, Satpala, Rajodi Road, Virar (W), P.O - Agashi, Tal. Vasai, Dist. Palghar – 401 301, Maharashtra, India

ABSTRACT

Capital market is of crucial importance as it provides institutional mechanism to transfer capital from lender to borrower. The retail and household investors are the back bone of the capital market. The capital market has witnessed impressive technological & structural changes. SEBI, BSE, NSE and Various Investors Association, Brokers Forum etc. are playing their own individual, collective & coordinated role in educating retail investors. SEBI, as a market regulator and developer, has played an incredible role on the various front of investors protection, grievance handling, surveillance and investors education. However, the retail investors have not been educated to the extend to which they should have been. Being a capital market regulator and promoter SEBI role is being studied and analyzed in this study.

Keywords : SEBI, BSE, NSE, Retail Investors, Capital Market

1. INTRODUCTION

Capital market is vital for the development and growth of the economy. Capital market is of crucial importance as it provides institutional mechanism to transfer capital from lender to borrower. The retail and household investors are the back bone of the capital market. The participation of retail investors depends upon the awareness and education of retail investors. In other words investor awareness and confidence is the base of any market. The top industrial luminary late Mr. Dhirubhai Ambani and Late Mr. J.R.D. Tata had great faith in Indian retail investors. They were of the view that true spirit of corporate democracy comes from participation of retail investors, which in turn leads to the overall growth of the economy. The small money pooled from millions of investors makes it big for companies and helps them realize the potential which is quite evident from the mutual funds and their collections (assets under management). The Securities & Exchange Board of India (SEBI), Bombay Stock Exchange (BSE), National Stock Exchange (NSE) etc institutions have been shouldered the responsibility of retail and household investors awareness and education.

2 STATEMENT OF THE PROBLEM:

An important problem facing the Indian government for the last two decades and yet remaining unsolved is how to revive the country's capital market. The market continues to be in depression which started around 1995 mainly due to withdrawal of retail investors. An important factor underlying such withdrawal is the erosion of retail investors confidence in capital market (Gupta, 2005). The data revealed by National Securities Depository Limited (NSDL), Central Depository Services Limited (CDSL) as well Securities & Exchange Board of India (SEBI) Investors Survey (2015) indicates that number of retail investors in India increased from about 10 million in 1990 to just over 23 million by 2015. This is merely 2.10% of 1.30 billion Indian population (2015, source: www.worldometers.info). Thus the SEBI's role in this regard is to be analyzed deeply

3 REVIEW OF LITERATURE:

A survey conducted by market regulator SEBI which is known as **SEBI Investor Survey (SIS)** conducted across urban and rural areas of the country in the year 2015 has revealed that not even 1 per cent of rural households in India are investors in stock markets, indicating a total lack of awareness among people about this mode investment. There are a mere 32 investors (0.234%) amongst the 13,697 rural survey respondents. Of these investors, 21 (66 per cent) invest in mutual funds (MF), 4 (12.5 per cent) invest in equities and 7 (22 per cent) invest in bonds and debentures although none have ever invested in derivatives or futures.” However, 95 per cent of rural survey respondents have bank accounts, 47 per cent have life insurance, 29 per cent have post office deposits and 11 per cent save in precious metals.

Black, Barbara (2008) is of the view that policymakers should analyse investor education as an important part of fairness and the regulator must “encourage and promote informed investment decision-making” as one of the main goal. According to author, it is unjust treatment if investors participate in markets about which they lack the necessary and enough education.

Subha. M.V, (2008), in her article entitled, “Indian Capital Markets - A Road Ahead”, addressed the current issues in the Indian capital market, lack of individual participation and the ways of restoring investor confidence. The article concluded that the responsibility of creating conducive environment of trust and

confidence lies with the regulators, stock exchanges and companies. Each of them should act in a responsible way and provide a healthy atmosphere for the functioning of an efficient capital market.

Parekh (2005), Chairman, HDFC, was of the view that key to greater participation of retail investor is the investor education.

Rai (2010) As per RBI data, the retail investors have put in around 2% of their savings in capital market (RBI, Economic Review, 2009). There is urgent need to look into the causes and to take remedial actions, if we expect consistent double-digit growth in GDP. There is need to increase the retail investors' participation, and this could be done by increasing the financial literacy and awareness, expanding the number of issues, providing diverse investment options, training and increasing the reach of intermediaries, enhancing investor protection measures, simplified norms and cost-effective services.

Srinivasan Aditya V, (2014) Chief Operating Officer and Chief Economist of Bombay Stock Exchange Brokers Forum has stated in his article that wealth creation through capital market can take place provided the stock is fundamentally sound and the investment strategy is correct. He further states that Investor Awareness Programs (IAP) are very critical and decisive for the overall growth of the Indian capital market since the awareness among the people about the stock market is very less.

Gandhi Kajal (2011) in her Study on the topic 'Retail Investors and Indian Stock Market - A Survey of Kolkata' states that in India participation of retail investors in capital market is comparatively low. India has one of the highest savings rates in the world. But only a small percentage of household savings in India is invested in the stock market.

4 OBJECTIVES OF THE STUDY:

The objectives of the study are as follows:

- To have overall understanding about need & importance of capital market & retail investors education.
- To have deep insight into the role and importance of SEBI.
- To make investors aware about the various steps and measures taken by SEBI
- To suggest the measures towards educating retail investors

5 RESEARCH METHODOLOGY:

• Sources of Data:

The study is purely based on secondary sources of data. Reports of various investor associated institutions viz. Securities & Exchange Board of India (SEBI), Bombay Stock Exchange (BSE), National Stock Exchange (NSE), Reserve Bank of India (RBI), National Sample Survey of India (NSS), Society for Capital Market Research and Development (SCMRD), National Securities Depository Limited (NSDL), Central Depository Services Limited (CDSL), Association of Mutual Funds in India (AMFI), Ministry of Corporate Affairs (MCA), Broker Forums, published literature in the form of books and articles from journals, business magazines, newspapers, websites, etc. have been used to collect the secondary data.

6 Limitations of the study:

1. The capital market is very sensitive and changes are taking place rapidly therefore the inputs and outcome of the study may or may not be relevant in future.
2. The present study is partly based on secondary sources of information and thus suffers from the same limitations as all such studies that rely on secondary data.

7 SEBI's Role in Retail Investor Awareness, Education & Protection

The Inception of SEBI :

The Union Finance Ministry set up a supreme autonomous body for the first time, exclusively for protecting the interest of investors and for the promotion of systematic and healthy growth of the capital market. Accordingly, the securities and exchange board of India (SEBI) was constituted on April 12, 1988. SEBI was recognized as a independent statutory body on February 21, 1992. Subsequently, the securities and exchange board of India regulation was replaced by the securities and exchange board of India act on April 4, 1992. SEBI performance is in line with the legal framework of the SEBI act, 1992.

The multiple objectives of SEBI are as follows:

1. To Safeguard and to protect the interest of investors in securities market;

2. To Promote the securities market;
3. To Regulate the securities market ; and
4. To curb fraudulent practices by maintaining a balance between statutory regulations and self-regulation.
5. To define the code of conduct for the brokers, underwriters, and other intermediaries.

Keeping in view the aforesaid objectives, SEBI has laid down a tactical aim in the four key specialties which include SEBI's functions viz. investors, issuers, intermediaries and regulator.

- a) To the investors , SEBI attempts to assure that their rights are safeguarded and protected entirely, they should be made aware and educated intensively about the market so as they are able to make informed decisions about their investments.
- b) To the issuers, SEBI's endeavor is to provide a transparent and healthy market where they can raise finance at cheaper rates, carry out themselves in accordance with the highest norms of corporate governance, and attentively meet their regulatory obligations.
- c) To the intermediaries, SEBI makes every effort to provide conducive atmosphere in a market in which they can operate in free and fair manner which eventually gives the investors and market participants an assurance that the market is efficient, orderly and fair.

In the regulatory regime, SEBI seeks to make sure that there should be complete transparency which leads to its credit worthiness and reliability so as it would always remains proper, impartial and valuable.

With these aforesaid core tactical objectives in view, SEBI has been persistently evaluating and reviewing its policies, devising new polices and rules to cover areas up till now inadequately regulated and execute them in a way so as to encourage the growth of the capital market with lucidity, equality, competence and reliability which will enable investors to have larger participation in a market.

SEBI: Investor Protection, Grievances Handling and Investor Education :

In the interest of investors and to promote the capital market, over two decades SEBI has made a number of reforms, some of which are outlined below in chronological order of year:

1. Stock invest scheme introduced in 1992.
2. Carry forward transactions were stopped in 1994.
3. On-line trading introduced in BSE and NSE in 1995.
4. National Securities Depositories Limited (NSDL) was set up in 1996.
5. Trading/Settlement in dematerialized form of securities began in 1996.
6. The Securities Lending Scheme introduced in 1997.
7. Weekly trading cycle implemented in all stock exchange in 1997.
8. Optional T+5 rolling settlement introduced in 1998.
9. Modified carry forward system introduced in 1998.
10. Settlement of trades in the depository started from 1998.
11. Online screen based trading in all stock exchanges started from 1999
12. Trading through the internet on stock exchange permitted in 2000.
13. Derivatives trading commenced from 2000.
14. Compulsory T+5 rolling settlement introduced in 2001.
15. Compulsory T+3 rolling settlement introduced in 2002.
16. Compulsory T+2 rolling settlement introduced in 2003.

SEBI and Investor Education :

Meaning & Importance of Investor Education for Retail Investors:

One of the primary objectives of the SEBI with reference to the investors in capital market is to aware and educate the investors in order to promote and develop the capital market.

To create the awareness among the investors and to educate them, SEBI undertakes intensive education program through which it issues chain of advertisements in a diverse local language newspapers about investor rights, their responsibilities, basic concepts and key terms used in capital market as well as the risks associated with the capital market. SEBI broadcasts informative and educative message for the investors through All India Radio and regional stations of Akashwani as well as telecasted on television channels. In addition to this more than crore of handy booklets (Investor Manuals) which are meant to guide the investors as a quick reference have been distributed either through the various companies or made it available on freely to the investors whoever visit SEBI offices. SEBI's annual report discloses detail information as what SEBI does for investor awareness and investors education. SEBI's various investors education and awareness program initiatives are listed out below:

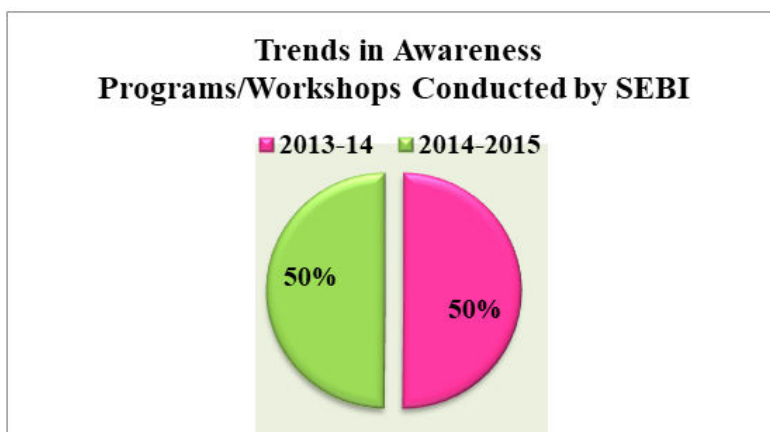
Investor Awareness Programs/Workshops :

Various investor awareness programs were conducted by SEBI with the help of exchanges, depositories etc. SEBI also reimburses the cost of the approved programs conducted by investor associations which it recognises, subject to certain limits. Most of these programs also try and sensitize people against unregistered collective investment schemes which offer unrealistic returns.

Trends in Awareness Programs/Workshops Conducted by SEBI :

Particular	2013-14	2014-15
Number of Programs	224	223

Source : SEBI Annual Report 2014 -15, Page No. 103



Mass Media Campaign :

SEBI's multimedia investor education and awareness campaign during 2014-15 aimed at spreading awareness against unregistered collective investment schemes (CIS)/Ponzi schemes were undertaken through mass media covering print, television and radio in Hindi, English and 11 major Indian languages. Through these campaigns, investors were cautioned not to go by rumor and not to rely on schemes offering unrealistic returns, and to do proper due diligence. More than 840 insertions in print, 90,000 radio spots and 17,000 television spots were covered in the campaign undertaken in 2014-15. Considering the menace of schemes offering unrealistic returns to dupe unsuspecting investors, a bulk SMS campaign was initiated on a pilot basis to caution people in the states of Assam, Bihar, Jharkhand, Odisha and West Bengal. More than two crore SMS's were sent cautioning investors not to invest in such schemes.

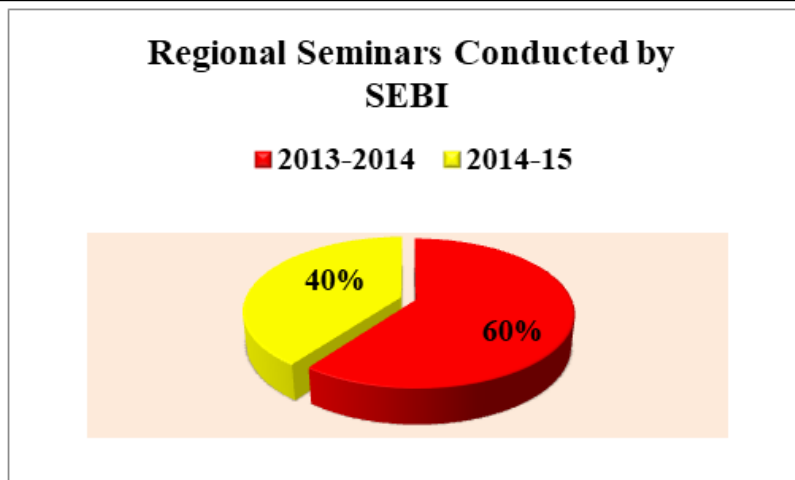
Regional Seminars :

This initiative was started in 2011-12 and has been extended to reach out to masses. It concentrates primarily on Tier II and Tier III cities in India. During 2014-15 efforts were made to cover towns and cities not covered in previous years.

Regional Seminars Conducted by SEBI :

Particular	2013-14	2014-15
Number of Seminars	77	51

Source : SEBI Annual Report 2014 -15, Page No. 105



Dedicated Investor Website :

SEBI maintains an updated, comprehensive website for education of investors (www.investor.sebi.gov.in). The website has been revamped to make it more user friendly and educative material is being updated. The schedule of various programs is also updated on the website.

Investors Assistance :

SEBI provides assistance/guidance to investors by replying to their queries received through the following modes:

1. Email (asksebi@sebi.gov.in)
2. Investors visiting various offices
3. Letters to SEBI

SEBI replied to around 3,500 queries during April 1, 2014 to March 31, 2015. Assistance so rendered to investors was augmented by gathering details from FAQs, circulars etc. available on the SEBI website and from the details gathered through email and phone calls from market intermediaries.

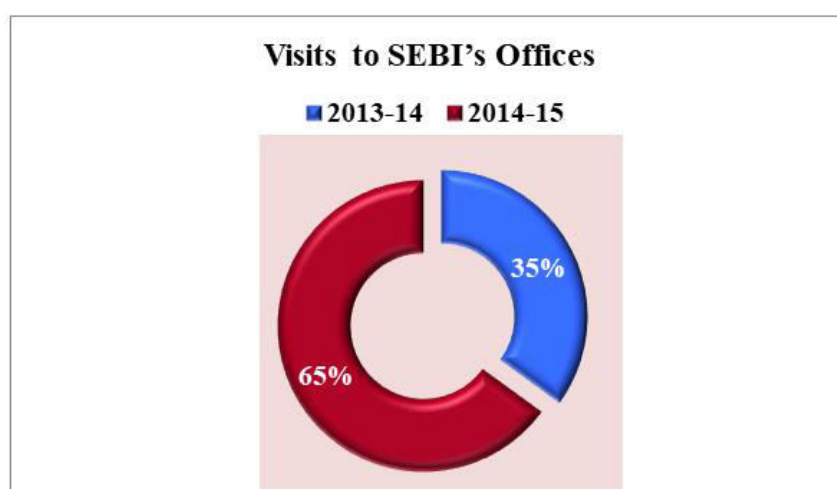
Visit to SEBI :

SEBI hosts 2-3 hour programs for students from schools, colleges and professional institutes who are interested in learning about SEBI and its role as a regulator of securities markets. The programs was started in February 2011 and has been quite popular. Till date, SEBI had hosted 336 such visits with participants visiting from different parts of the country and from different courses (company secretaries, management, commerce, banking, law, arts, science, etc.). Further, visits have also been initiated in SEBI’s various local and regional offices.

Visits to SEBI’s Offices :

Financial Year	2013-14	2014-15
Total Visits to SEBI	90	167

Source : SEBI Annual Report 2014 -15, Page No. 109



Other Initiatives :

1) SEBI stalls at various Fairs and Exhibitions

SEBI associated with exchanges where stalls were put up by the min fairs and exhibitions for engaging in conversation with general public, explaining the grievance redressal mechanism and taking suggestions from the public.

2) Awareness programs for complainants at various offices

SEBI educated investors when groups of complainants visited local offices regarding complaints against ponzi schemes or schemes offering Unrealistic returns etc. These sessions were appreciated by the participants and they said that they would be careful in the future while investing and would also advise their friends/relatives to exercise caution.

3) SEBI has designed “Do’s and Don’ts” in lucid and simple form for investors relating to various aspects of the securities market. These are available on the SEBI website and has been printed in the form of handouts to be distributed to the investors across country.

4) Investor Education Reading Material

SEBI has uploaded comprehensive and elaborate Investor Education Reading Material on its website. This titled has further been extended and named as “Beginner’s Guide to Capital Market”. Under this heading detail information about Primary Market, How to Invest in Public Issues?, How to Read Offer Document?, IPO Grading, Credit Rating, Secondary Markets, Mutual Funds, Rights and Responsibilities of Investors etc. aspects of capital markets are covered. This enables investors to get familiar about capital market.

5) With financial aid from SEBI, some of the SEBI registered investors associations organizes seminars for educating investors on various aspect of the capital market.

Training of Intermediaries :

A. National Institute of Securities Markets (NISM)

SEBI established the National Institute of Securities Markets (NISM) to cater the education about securities markets through various courses and training of intermediaries which is considered to be of a national importance. The activities of NISM are dedicated towards enhancing the quality of participation in securities markets within the broad framework of its vision, mission and philosophy.

8 FINDINGS OF THE STUDY:

- Retail investors flock to capital market if they feel safe and secured. A safe investor is one who is well informed and educated about capital market. An informed investor can take rational decision based on facts and figures rather than rumor and tips. Regrettably most of the household investors are not aware about investor education programs initiated by SEBI, BSE, NSE etc.
- In light of aforesaid findings, SEBI has remained pioneer and instrumental in protecting the interest of retail investors and educating the retail investors immensely. Ever since its incorporation, SEBI has taken various steps to bring fairness and transparency in the capital market through numerous reforms. In the area of investor education SEBI is conducting investor awareness programmed such as workshops, mass media campaign, regional seminars, dedicated investor website, investor assistance, visit to SEBI etc.

9 RECOMMENDATIONS :

- A special and dedicated investment education website should be launched by SEBI. This website should be given broad publicity especially in a public domain. In every prospectus of an IPO, it should be made mandatory to put a caption stating that investors are advised to visit the Investors education website before going for an investment. This should be easy to understand and cover an area specifically devoted to describing common type of schemes, do’s and don’ts, precaution, scams etc. which the investors should know. In addition, it should have a list of question investors should ask themselves before investing in any securities
- A mechanism should be developed to have a better co-ordination between SEBI and all stakeholders viz. stock exchanges, broking firms, broker associations, investors association etc.
- At college level, more and more events, workshops, discussion, activities about capital market should be organised along with the visit to SEBI, BSE, NSE. This will help immensely to create interest and augment curiosity among the students fraternity about capital markets.

10 CONCLUSION:

There have been several ups and downs in the capital market right from its inception due to one or other reasons. The capital market has witnessed impressive technological & structural changes. However, the retail investors have not been educated to the extent to which they should have been. The volume of capital market in terms of number and amount has been increased substantially over the decades but the penetration of retail investors in capital market is quite meager. Lack of comprehensive awareness, scams, malpractices, negative sentiments about the capital market, misconception etc. are the major reasons as why the retail investors have kept themselves away from the ambit of the capital market. SEBI, BSE, NSE and Various Investors Association, Brokers Forum etc. are playing their own individual, collective & coordinated role in educating retail investors. SEBI, as a market regulator and developer, has played an incredible role on the various front of investors protection, grievance handling, surveillance and investors education. The point to be noted, however, is that inspite of all these initiatives the small investors have not been benefited which indicates that there is fair scope of improvement by way of effective measures.

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- SEBI Annual Report 2014 -15, Page No. 103
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- SEBI Annual Report 2014 -15, Page No. 109

WEBSITES:

- www.sebi.gov.in
- www.nseindia.com
- www.bseindia.com

EFFECTS OF COVID-19 ON INDIA'S AGRICULTURE AND RELATED SECTORS

Dr Pratima Singh

I/C Principal, Chandrabhan Sharma College of Arts, Commerce & Science, Mumbai

ABSTRACT

In this article, an attempt has been made to understand the impact of COVID-19 on agriculture and allied sectors in India. The impact of Covid-19 in agriculture is not as severe as in the manufacturing sectors. However, the lockdown significantly impacts the country's agriculture and allied sectors, as the majority of the population, approximately 140 million households, depends on agriculture; any adverse impact on the agriculture sector is unsuitable for the economy. Furthermore, it is observed that the pandemic lockdown has aggravated the agrarian crisis in the country by disrupting both the demand and supply chain of agricultural commodities in the market.

Keywords: Covid-19, Agriculture, Indian Economy, Corona Viruses, Dairy Industry

Introduction India is the broadest and most diversified seventh-largest country in the world regarding land. India is the second most populous country in the world, next to China, with a population of more than one billion, contributing 18 per cent of the world's population. However, it shares only 2.4 per cent of the world's total land. The population density is very high in India. Three hundred eighty-two persons live per square kilometre, whereas the world average is only 25 persons per square kilometre. Besides, India's urban population keeps increasing, and the cities are increasingly overcrowded. Considering this, the impact of infectious diseases such as Covid-19 is severe in India compared with other countries. The first Covid-19 positive case was reported in Kerala India on 27th January 2020. Since then, it has started spreading at an alarming rate. The Government of India announced a countrywide lockdown to contain its spread on 24th March 2020. The lockdown has seriously affected all segments of Indian society. Agriculture is one of the sectors affected by the lockdown.

Importance of the Agriculture Sector

Agriculture is one of the crucial sectors of any economy, whether advanced or underdeveloped. Agriculture plays a crucial role in a country's national economy. It employs a large section of the population and addresses rural poverty effectively. The development in the agricultural sector has positive implications for the development of other sectors of an economy. Agriculture and industries are complementary; the former serves the latter by supplying raw materials. David Ricardo, the classical economist, believed that a limitation on the growth of agricultural output sets the upper limit to the growth of the non-agricultural sector and capital formation for economic expansion. Physiocrats (Pre classical school) considered agriculture the only sector in the economy producing surplus and considered other sectors sterile and unproductive. As they considered agriculture the productive sector, they emphasized that more importance should be given to the agriculture sector to develop a country's economy. Adam Smith also accepted the Physiocrats' arguments and gave more importance to the agriculture sector in his writings. Needless to say, agriculture is important in a country like India to achieve higher economic growth rates.

Role of Agriculture in the Indian Economy

India is an agrarian economy even after 72 years of Independence. Agriculture is an important sector in India that contributes 17 percent of the country's GDP and provides employment to over 60 percent of the population. It contributes 13 per cent to the country's export earnings. The agriculture sector is one of India's essential sources of government revenue. The development of the agriculture sector is crucial for India to feed its growing population. By increasing agricultural output, food security in India can be achieved and the per capita food availability of food grains can also be increased. Though the agriculture sector plays a crucial role in India's economy, it is constrained by many problems. In India, the agricultural market is highly imperfect in nature. There is always uncertainty in the price of the agricultural commodities in the market. The market's frequent price fluctuation severely affects the farmers' income. Farmers are unable to get remunerative prices for their produce. Many farmers are committing suicide due to indebtedness. The pandemic lockdown has aggravated the agrarian crisis in India.

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Corona Viruses

Covid-19 is an infectious disease caused by a newly discovered coronavirus. The first case was reported in December 2019 in Wuhan, China. Since then, it has spread at an alarming rate all over the countries in the world. The people affected by the coronavirus would develop mild to moderate respiratory illness depending upon their health status. Children and older people are generally more vulnerable to the coronavirus as they lack immunity power. People with health problems such as cardiovascular disease, diabetes, chronic respiratory disease, and cancer are more vulnerable to Covid-19. The symptoms are a cough, fever or chills, shortness of breath or difficulty breathing, muscle or body aches, sore throat, loss of taste or smell, diarrhoea, headache, new fatigue, nausea or vomiting and runny nose. Though 98 per cent of the COVID-19-positive cases are reported to recover, many are losing their lives to the virus. Yet there is no vaccine for coronavirus; people are advised to maintain social distancing, frequently washing hands and wearing a face mask to prevent the virus infection.

Impact on Agriculture

The closure of restaurants tea stalls and transport constraints reduced the demand for fresh agricultural commodities. As the transport was arrested, the farmers and the farmers producing perishable commodities such as fruits and vegetables found problems marketing their products. During the lockdown period, perishable agricultural commodities such as fruits and vegetables get wasted as the farmers cannot harvest. Due to the stoppage of transport, farmers could not send the commodities to the marketing centres. Most farmers sold their commodities at a reduced price to get revenue in the local market. Nearly \$ 40 billion of Indian agricultural exports are in crisis due to the continued global lockdown (Consultancy. Asia, 2020). The arrival of migrant workers from cities to rural areas has reduced the wage rate. There is a possibility that rural people would be infected with COVID-19 through the returned migrant workers. However, it is noticed that the spread of the virus is not as fast as in the urban areas as the population density is low in rural areas. Compared with urban people, the ability of rural people to meet their health expenditures is low. Hence, they lack in coping with the virus infection. Therefore, enough vigilance should be given to contain the virus infection in rural areas.

Impact on Dairy Industry

The lockdown reduced the demand for dairy products. There is an estimated a 25 to 30 per cent dip in demand for dairy products in the market. It was reported in the media that dairy farmers dumped milk in the streets due to a lack of demand and low prices. In India, most milk producers are landless or small and marginal farmers, whom the pandemic lockdown has badly hidden. The cooperative milk societies reduced milk procurement from Rs. 31 to Rs. 27. To ensure the livelihood of the dairy farmers, the government forces the milk cooperative societies not to stop the procurement despite the dip in demand. The cooperatives are using surplus milk to produce the skimmed milk powder. Due to the global lockdown, skimmed milk powder prices fell from Rs.340 per kg to Rs. 240 per kg due to a dip in demand in the global market. Nearly 15 per cent of the dairy industry's revenue comes from the home sales, which were worst affected by the countrywide lockdown. Dairy is the primary source of livelihood for many thousands of rural households; their livelihood is severely affected by the pandemic lockdown.

Impact on the Poultry Industry

India is one of the world's largest producers of chicken meat and egg. The country's annual turnover of the poultry industry is around Rs. 1,750 billion. While the agriculture sector grows by two per cent, the poultry industry is growing by eight to 10 per cent; the market of the poultry industry is projected to reach Rs. 4,340 billion by 2024. Apart from meeting the country's nutritional security, the poultry industry provides non-farm employment to a large section of rural population in India by playing a crucial role in the country's rural economy. However, the poultry industry is worst hit by the panic created by the Covid-19 pandemic. The misconception spread by social media that chickens are the carriers of the coronavirus led to a significant fall in the consumption of chicken meat, which has affected the 25 million farmers engaged in poultry farming activities; they have experienced an 80 per cent reduction in their sales. Due to this hoax, the poultry farmers buried thousands of live birds. The expected loss of the poultry industry in India is said to be \$ 3,050 million due to a 70 percent fall in the price of chicken meat and eggs. The lockdown has brought a massive setback to the poultry industry.

Impact on Fisheries

Fishes are rich in nutritional content and are consumed all over the world. Fish and fish are among the most traded food products globally, contributing 38 per cent to international trade. In India, about 14.5 million people are engaged in the fisheries sector for their livelihood. The fish supply chain disruption, transportation hurdles and labour movement restrictions in the market caused by the lockdown have severely affected the fishermen, fish processors, fish vendors, suppliers and transport workers. The global lockdown has hit the export of fish and fish products worst. Although European countries are the critical importer of Indian fish products, it is closed off. In the continued global lockdown, it would not be possible for India to achieve its target of exporting \$ 7 billion worth of fish and fish products by 2020. The Indian fisheries sector is in serious crisis due to stagnant fish exports and supply chain disruption in the local market due to the lockdown during the pandemic.

Policy Package for Agriculture and Allied Sectors

The Government of India has announced many policy measures to protect the agriculture and allied sectors from the adverse impact of the Covid-19 pandemic lockdown. One lakh crore rupees were allotted to the agriculture sector. Rs. 20,000 crores were allotted for the welfare of the fishers. Rs. 10,000 crores were allotted for the betterment of the micro food industries. For the development of animal husbandry, Rs. 15,000 crores were allotted. For the promotion of herbal cultivation, Rs. 4,000 crores were allotted. Rs. 500 crores were allotted for developing beekeeping with many other initiatives, Rs. 500 crores was allotted to improve the marketing infrastructure for fruits and vegetables. The Government is continuously taking many initiatives to protect the agriculture sector. However, the steps taken by the Government are inadequate. The government should increase its spending for pandemic relief to meet the needs of the agriculture sector and ensure a higher growth rate in the coming period.

Conclusion

Hitherto, the international medical community has failed to invent any useful vaccine to prevent the spread of Covid-19. The situation may continue for at least another six months. Hence, healthcare personnel, Government and the general public should stand together to fight against the spread of the virus. Society should follow the Government's guidelines to protect itself from the virus infection. Considering the importance of the agriculture sector, the Government should prioritise protecting the farmers and agricultural labourers from the virus infection.

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Fox, S. (1984). Empowerment as a catalyst for change: an example for the food industry. *Supply Chain Management*, 2(3), 29–33.

Bateson, C. D.,(2006), ‘Doing Business after the Fall: The Virtue of Moral Hypocrisy’, *Journal of Business Ethics*, 66: 321 – 335

• **Multiple author journal article:**

Khan, M. R., Islam, A. F. M. M., & Das, D. (1886). A Factor Analytic Study on the Validity of a Union Commitment Scale. *Journal of Applied Psychology*, 12(1), 129-136.

Liu, W.B, Wongcha A, & Peng, K.C. (2012), “Adopting Super-Efficiency And Tobit Model On Analyzing the Efficiency of Teacher’s Colleges In Thailand”, *International Journal on New Trends In Education and Their Implications*, Vol.3.3, 108 – 114.

- **Text Book:**

Simchi-Levi, D., Kaminsky, P., & Simchi-Levi, E. (2007). *Designing and Managing the Supply Chain: Concepts, Strategies and Case Studies* (3rd ed.). New York: McGraw-Hill.

S. Neelamegham," Marketing in India, Cases and Reading, Vikas Publishing House Pvt. Ltd, III Edition, 2000.

- **Edited book having one editor:**

Raine, A. (Ed.). (2006). *Crime and schizophrenia: Causes and cures*. New York: Nova Science.

- **Edited book having more than one editor:**

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Bessley, M., & Wilson, P. (1984). Public policy and small firms in Britain. In Levicki, C. (Ed.), *Small Business Theory and Policy* (pp. 111–126). London: Croom Helm.

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Young, M. E., & Wasserman, E. A. (2005). Theories of learning. In K. Lamberts, & R. L. Goldstone (Eds.), *Handbook of cognition* (pp. 161-182). Thousand Oaks, CA: Sage.

- **Electronic sources should include the URL of the website at which they may be found, as shown:**

Sillick, T. J., & Schutte, N. S. (2006). Emotional intelligence and self-esteem mediate between perceived early parental love and adult happiness. *E-Journal of Applied Psychology*, 2(2), 38-48. Retrieved from <http://ojs.lib.swin.edu.au/index.php/ejap>

- **Unpublished dissertation/ paper:**

Uddin, K. (2000). A Study of Corporate Governance in a Developing Country: A Case of Bangladesh (Unpublished Dissertation). Lingnan University, Hong Kong.

- **Article in newspaper:**

Yunus, M. (2005, March 23). Micro Credit and Poverty Alleviation in Bangladesh. *The Bangladesh Observer*, p. 9.

- **Article in magazine:**

Holloway, M. (2005, August 6). When extinct isn't. *Scientific American*, 293, 22-23.

- **Website of any institution:**

Central Bank of India (2005). *Income Recognition Norms Definition of NPA*. Retrieved August 10, 2005, from <http://www.centralbankofindia.co.in/home/index1.htm>, viewed on

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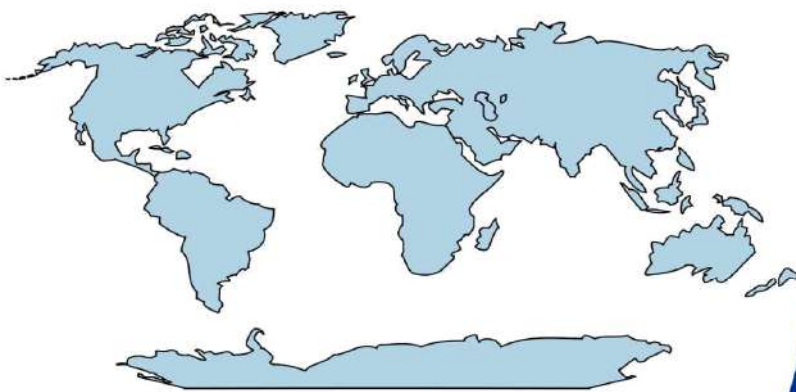
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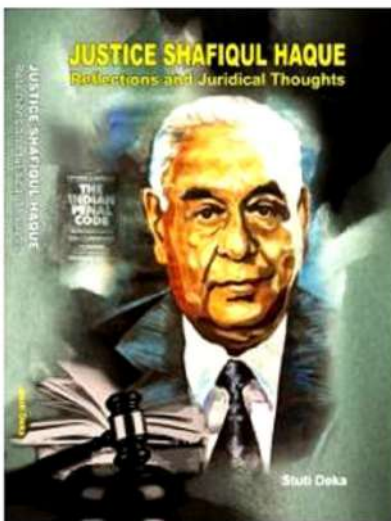


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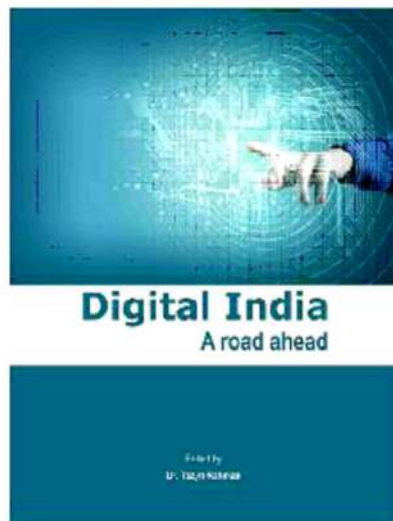
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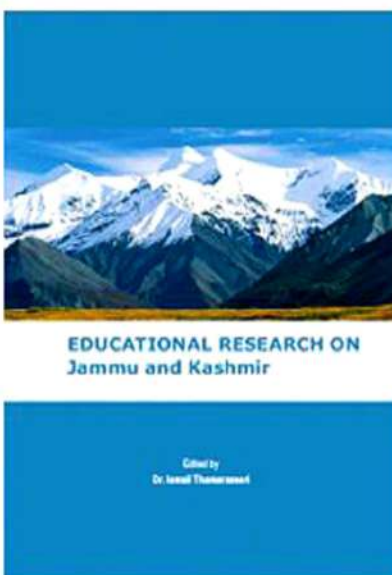
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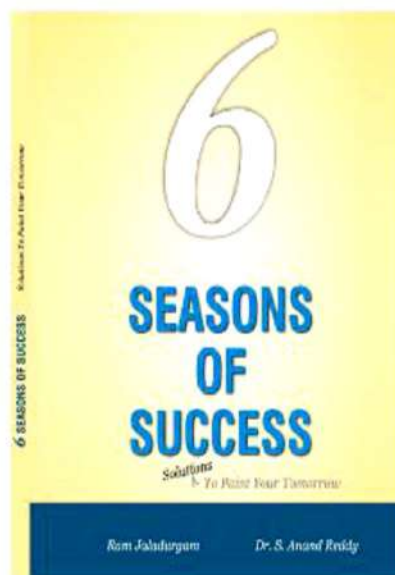
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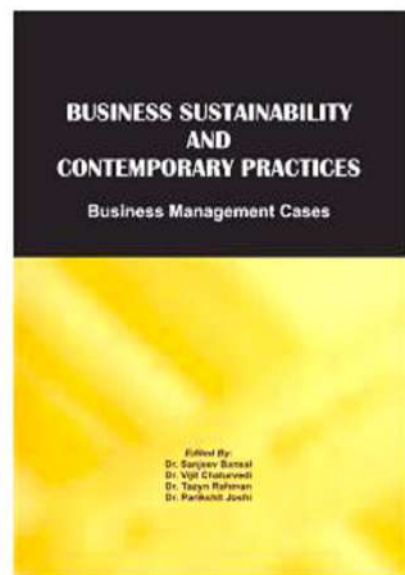
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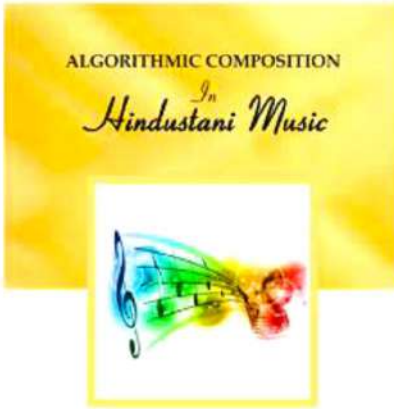
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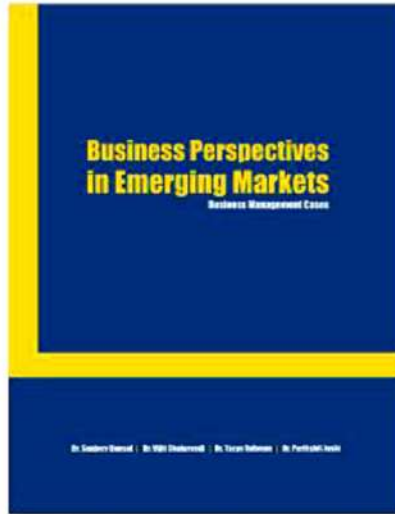
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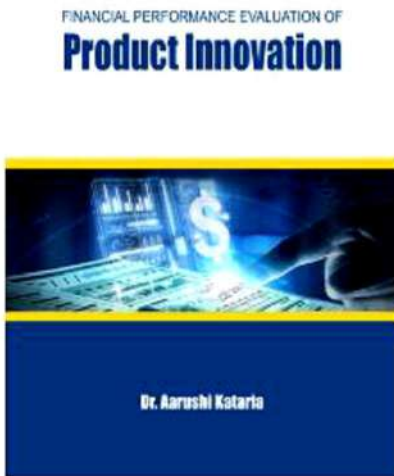


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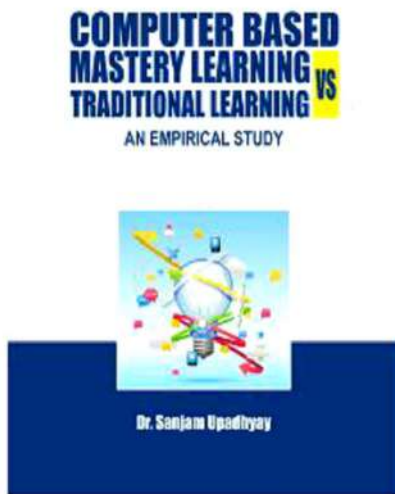
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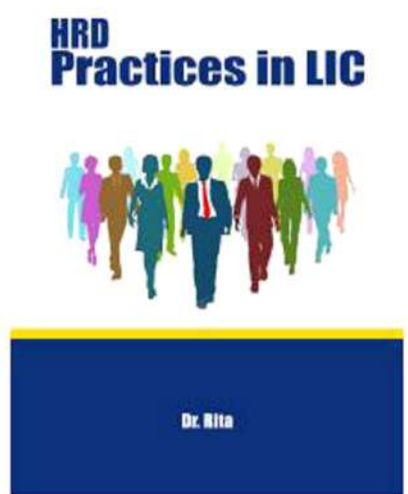
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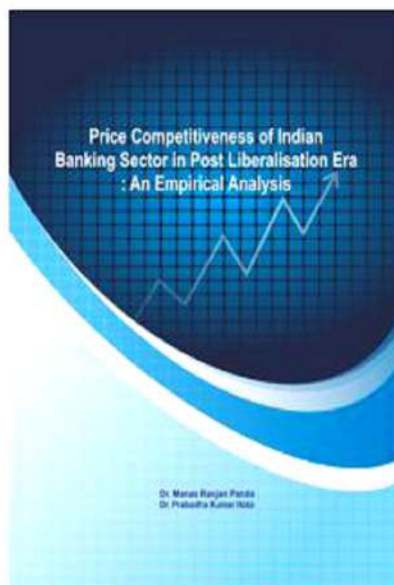
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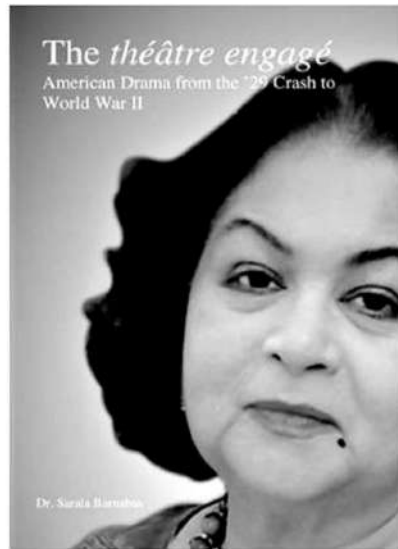
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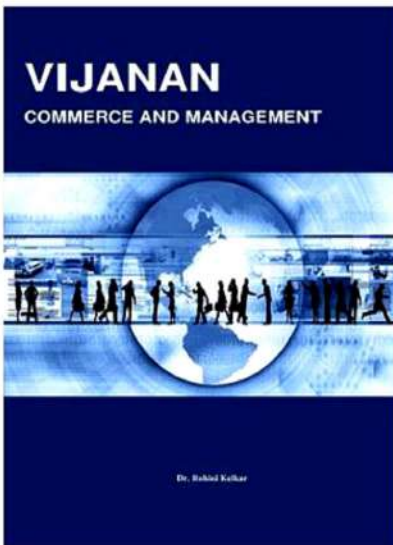
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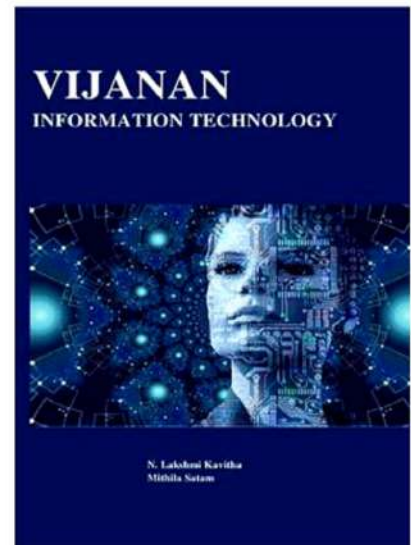
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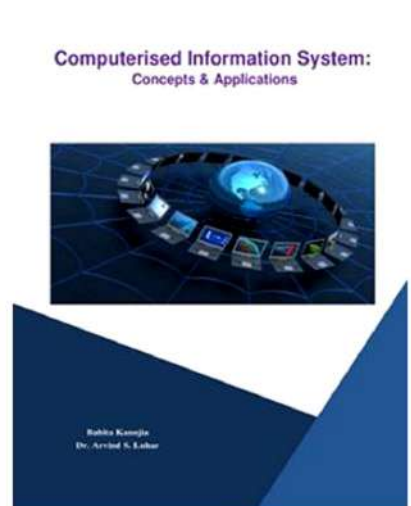
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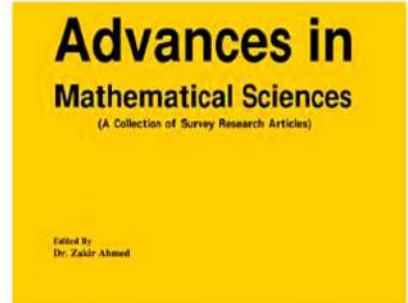
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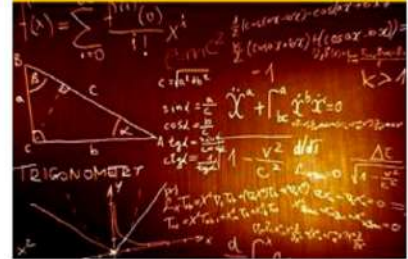
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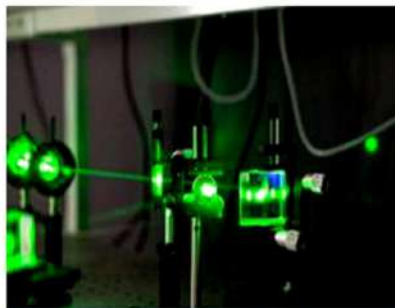


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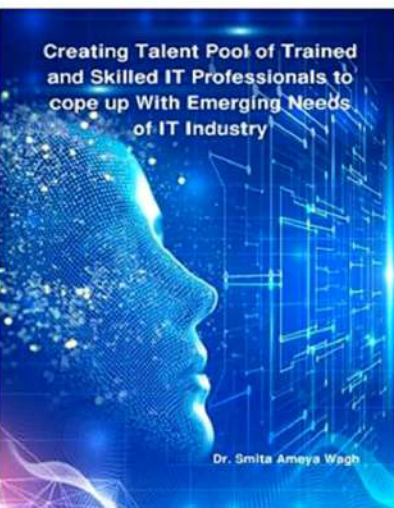
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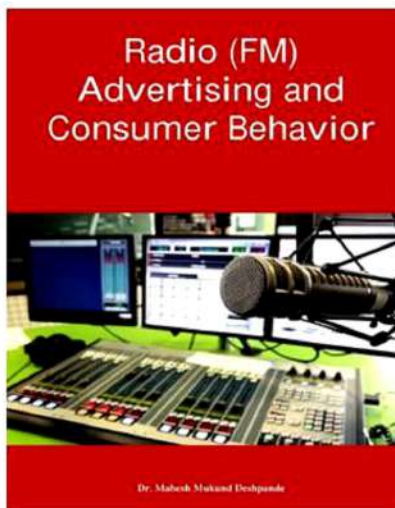
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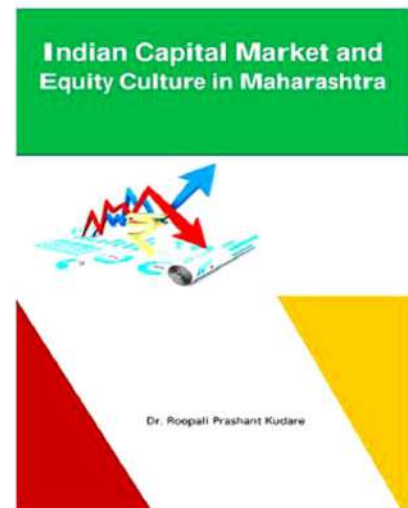
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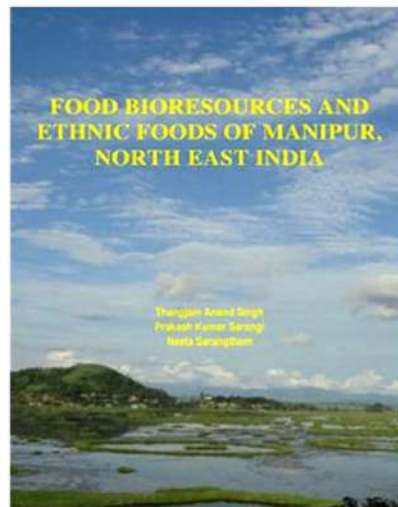
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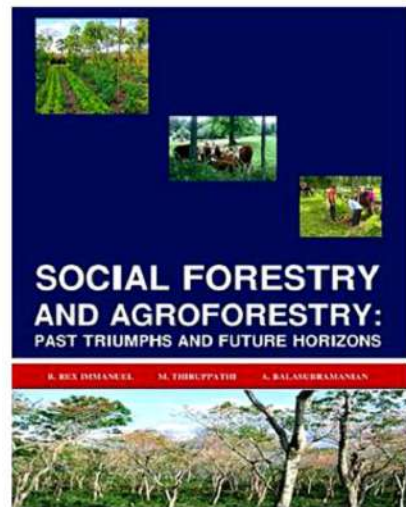
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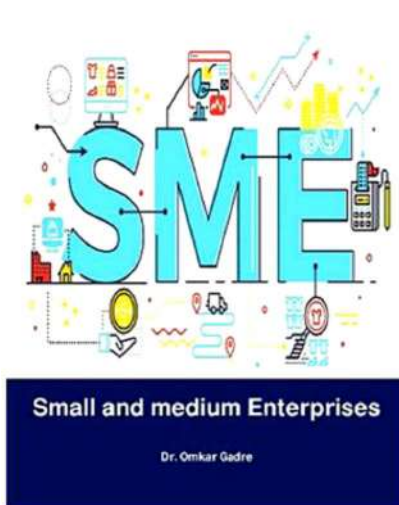
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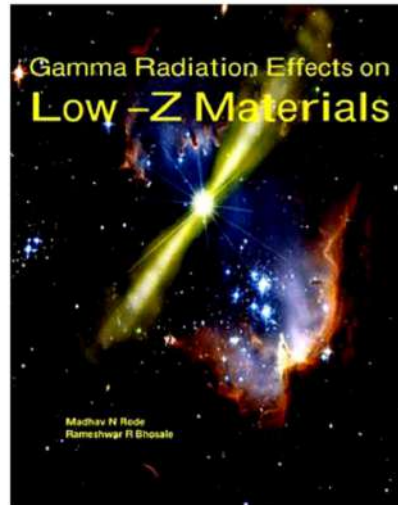
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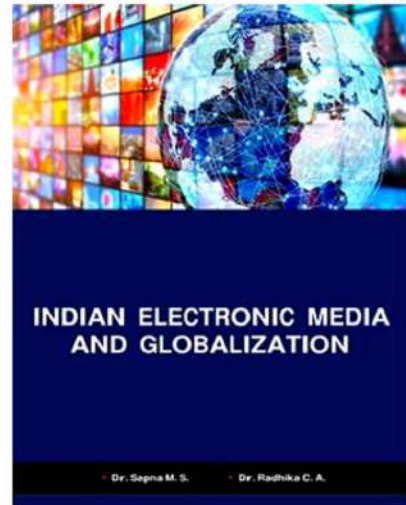
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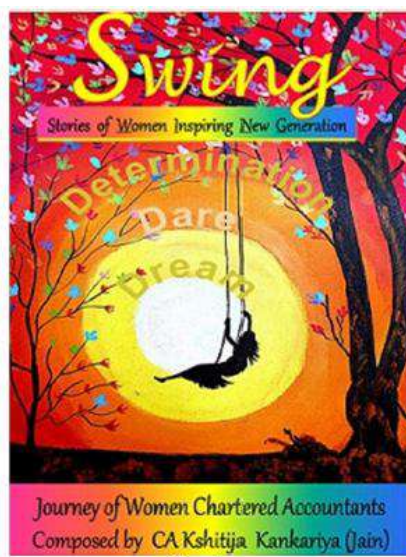
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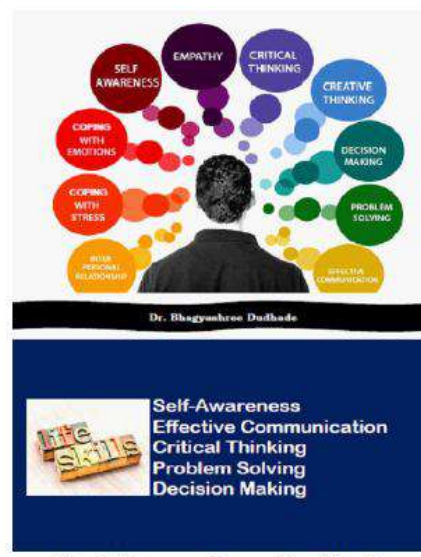
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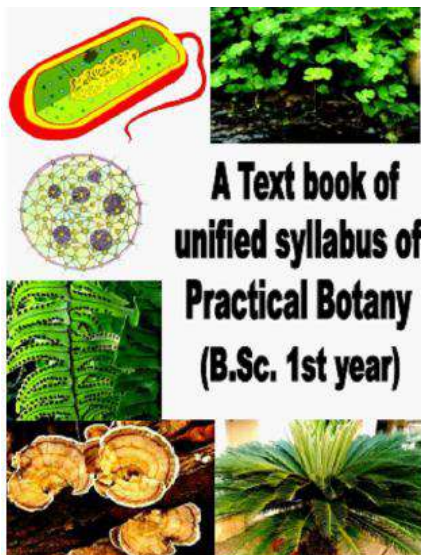
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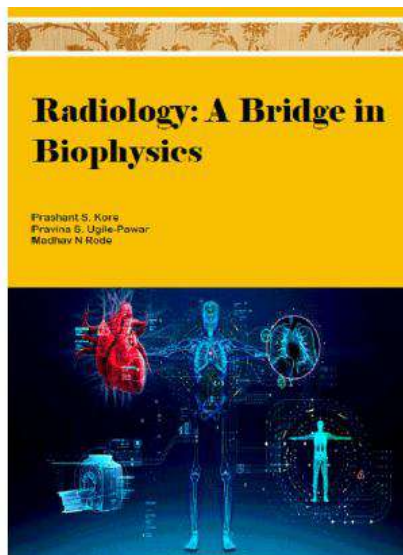


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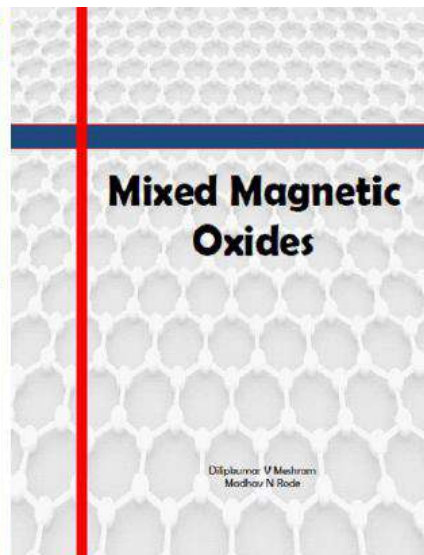
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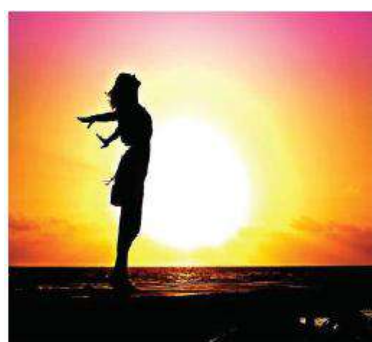
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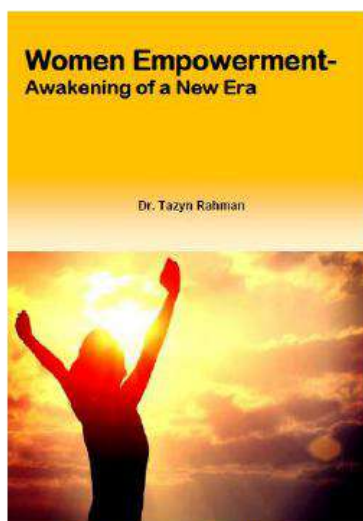
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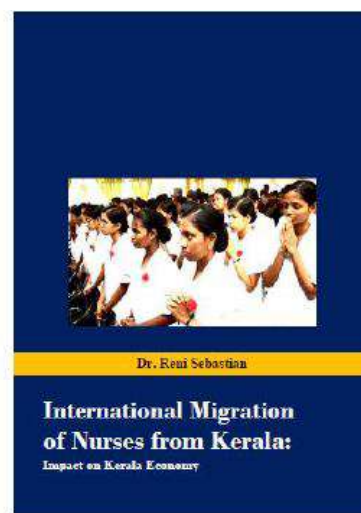
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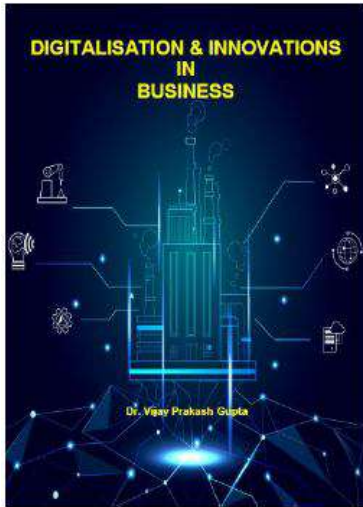
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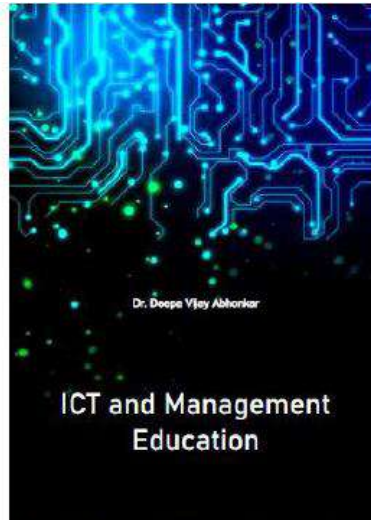


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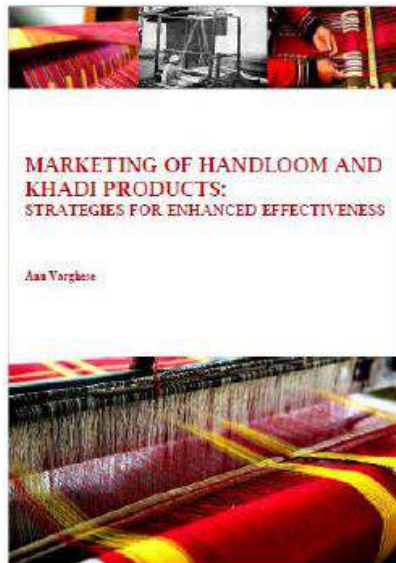
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