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THE SPECTRUM OF DISCOVERY

MULTIDISCIPLINARY RESEARCH IN THE MODERN ERA

VOLUME - 2

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1

CHAPTER

DESIGN OF EXPERIMENTS BASED ON SAMPLING TECHNIQUES

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Abstract

A statistical tool used in numerous sorts of systems, processes, and product design, development, and optimisation is called the Design of Experiments (DOE). It's a versatile tool that may be applied in a variety of circumstances, including design for comparisons, variable screening, transfer function discovery, optimisation, and resilient design. This study examines historical DOE issues. offers state-of-the-art application information and directs researchers on how to conceptualise, design, and carry out experiments and analyse and interpret data using examples. This article also shows how DOE applications have expanded rapidly over the past 20 years in the manufacturing and non-manufacturing industries. Its applications are particularly prevalent in the scientific fields of medicine, engineering, biochemistry, physics, and computer science, where they account for around 50% of its usage.

Key Words: Statistical tool, Design of experiments, Replication, Randomization, Local Control, Manufacturing & Non-Manufacturing Industries.

Introduction

To arrive at meaningful and reliable conclusions for the predetermined goals of a statistical study, experiment design is crucial. Any experiment requires careful planning, information gathering on the statistical hypothesis being investigated, and statistical analysis of the data. Experiments that are well-planned and executed produce more accurate and useful results.

Definition of design of experiments

The design of the experiment (DOE), which should be carried out entirely under the investigator's control, is described in statistics as the planning of an information-congregation experiment in which a discrepancy is present or not.

Typically, controlled experiments use this phrase. In order to make the results more reliable, these tests decrease the impacts of the variable. In this design, a group of people, plants, animals, leaves, etc. may operate as an experimental unit.

Major DOE terms include:

- **Experimental unit**
- **yield**
- Factor
- Level
- Treatment
- Treatment Combination
- Response
- Experimental Run
- Effect
- Interaction
- Randomize
- Blocking
- Replicate
- Reflect

Experimental unit:

The physical unit that undergoes a specific treatment, such as a plot in the field, is an experimental unit. It is crucial that the treatment allocation to a certain experimental unit be random.

Yield:

Yield refers to the measurement or observation obtained from an experimental unit.

Factors:

Factors are the independent variables of a process. Independent variables are the parameters or features of the process that we may alter or modify independently of the settings of another process variable. Environmental, technological, human, and methodological factors can all be considered.

Level:-

A factor's level can be defined as a certain value or setting. Levels do not have to be measurements that change over time. Also, they might be characteristics.

Treatment:-

The various techniques or things that are being compared in an experiment are referred to as treatments response.

Response:-

The process's results are the responses. Dependent variables are the results of a process. Outputs, or reactions, may have to do with product performance, safety, productivity, or quality.

- All of the independent variables' and factors' actions result in responses.
- The majority of DOEs allow us to simultaneously examine many replies.

Experimental run:-

Performing an experimental run is setting a process to a particular treatment combination, letting it run, and then gathering response data for analysis.

Effect:-

- A factor is said to have an impact on the response if its level is changed and the consequent change in the response is observed.
- The effect is a number that describes how much the reaction alters for a certain change in the values of the factors.

Interaction :-

The term "interaction" refers to the fact that elements can behave differently when analysed jointly than when analysed alone. When the levels of two or more factors are altered, an interaction takes place and results in a response that is different from what would be produced by the process if the factors had been altered to those levels independently.

Randomization:-

We will use experimental templates to set up and analyse our designed experiments.

Blocking:-

Occasionally, it is impossible to completely randomise the experimental runs.

Making numerous experimental runs for each treatment combination is known as replication.

Reflection:-

Reflection is a fresh set of treatment combinations that are applied at the antithetical levels to the first set.

The measurement unit is the scale at which surveillance is conducted; typically, one measurement is done for each experimental unit, but repeated measurements can involve many observations

Importance Of Design Of Experiments (DOE)

- The principles of an experiment increases the precision of the experiment.
- The principles of Design of experiments support in increasing the efficiency of the experiment

Applications of DOE

- DOE real-life applications in Six Sigma. Reduce R&D cycle time by 50% in inventions.
- DOE real-life applications in Pharmaceutical.
- Develop new formulation to control drug dissolution rate in human body.

Uses of DOE

- In driving knowledge of cause and effect between factors.
- To experiment with all factors at the same time.
- To run trials that span the potential experimental region for our factors.
- In enabling us to understand the combined effect of the factors

Principles of Experimental Design

- Replication.
- Randomization.
- Local Control

I. Replication

Definition

Replication refers to the use of an investigational treatment repeatedly, that is, carrying out the experiment more than once.

Advantages

By expanding the sample size, decreasing the standard error, and improving effect size estimations, it can also improve the power and sensitivity of statistical tests.

Disadvantages

1. Increasing the number of replications is not possible since it involves more cost
2. Large number of replications may lead to scarcity of the resources.

II. RANDOMISATION

Randomization is the process of distributing the treatments to different experimental units so that each experimental unit has an equal chance of receiving any of the treatments.

Advantages

1. Randomization eliminates all forms of bias from people.
2. It offers a rational foundation for carrying out different statistical tests of significance.

Disadvantages

1. Applying randomization to a large number of experimental units is challenging
2. Only statistics can be used to effectively apply the randomization procedure.

III. Local Control

Definition

Local control is the method of lowering experimental error by grouping the comparatively varied experimental material into homogenous blocks or subgroups.

Benefits

Local control decreases experimental error, for example.

2. The experimental design is more effective thanks to local control.

Disadvantages

1. If the experimental material is homogeneous, then separating it into blocks is not necessary, meaning that the local control concept is not very helpful in this situation.

2. It is challenging to divide soil fertility into homogeneous blocks since, in general, there is no systematic pattern to it.

General practical steps and recommendations for organising and carrying out DOE:

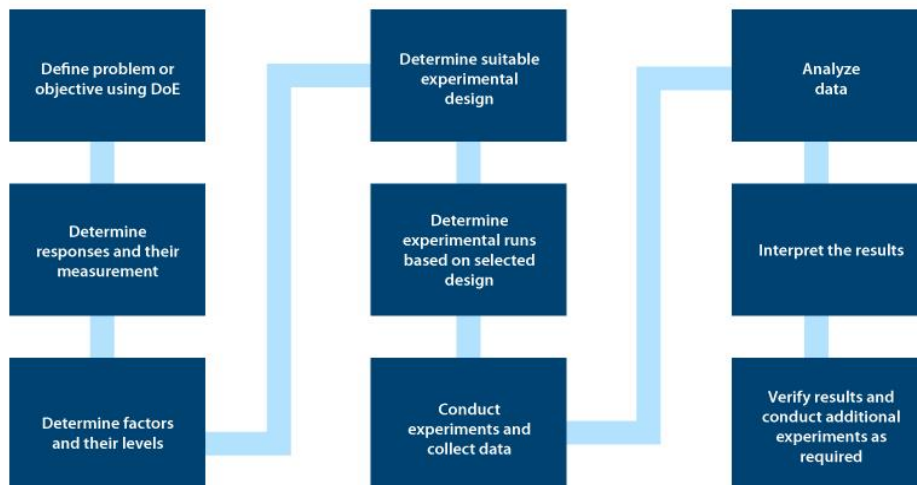
1. Outline the goals; this is a list of issues that will be looked into.

2. A response variable is a result of an experiment that can be measured and is dependent on predetermined objectives.

3. Choose the independent variable (factors) that will affect how the response variable changes, and then determine their levels. A fishbone diagram could be used to determine the variables that could have an impact on the response variable.

4. Select the type of experimental design, such as a screening design for identifying significant factors or an optimisation factor-response function that will be planned, along with the number of test samples.

5. Conduct an experiment utilising a design matrix.



Conclusion:

Design of Experiments is an important tool that can be utilized in most manufacturing enterprises. Managers that employ the technique will assure process effectiveness as well as cost savings and improvements to the quality of their products.

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CHAPTER

NAVIGATING THE FUTURE OF HEALTH PSYCHOLOGY: CURRENT INSIGHTS AND FUTURE DIRECTIONS

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Abstract

Human behavior plays a crucial role in many leading causes of death. The field of health psychology, which has experienced rapid growth, has greatly enhanced the treatment and prevention of chronic illnesses. This area encompasses a wide range of activities, including teaching, clinical services, basic and clinical research, and other related endeavors. Furthermore, health psychology aims to understand complex interactions between biological predispositions, behavior, and social contexts. While behavioral medicine & health psychology have generated a substantial amount of research, the findings are rarely applied in clinical settings. For modern health psychology, the task is to establish a harmonious relationship with clinical medicine. Collaboration between health psychologists and medical professionals is necessary to effectively evaluate patient outcomes and create interventions to address the impact of socioeconomic disadvantage. Health psychologists should focus on building strong relationships with other medical specialties and sharing knowledge regarding the intricacies of psychometric outcome assessment. Additionally, they should identify behavioral interventions that can help reduce health disparities and develop a framework that supports interdisciplinary research. By doing so, health psychology has the potential to greatly influence individuals', families', communities', and populations' health and well-being.

Key Words: Health Psychology, Behavioral Medicine, Biopsychosocial Approach, Impact, Health Results

1. Introduction

The study and prevention of chronic illnesses could benefit greatly from the application of psychological science. Over the past 30 years, the profession of health psychology has expanded and changed to address this problem. Health psychology is currently the sixth-largest division within the American Psychological Association, out of 56 divisions, and is one of the fastest-growing academic psychology subfields today. The Divisions of Health Psychology of the British Psychological Society and the European Health Psychology Society are likewise thriving.

A wide range of activities, including basic and clinical research, teaching, and therapeutic services, are included in the field of health psychology. The relationship between biology, behavior, and social context is the discipline's main area of interest. According to a biopsychosocial model, behavior, social circumstances, and biological disposition all interact in complicated ways to affect health (Fava & Sonino, 2008). This group includes actions like using tobacco products, taking chances, drinking alcohol, controlling one's diet, and exercising. On the other side, social conditions include poverty, family dynamics, and cultural influences. Many factors have been studied in biological studies within health psychology, but the effect of psychological stress on immunological function has received the greatest attention.

The study of relationships between behavior, biology, & environment with aim of improving health & well-being of individuals, communities, and populations is known as behavioral medicine, and it has a close relationship with the discipline of health psychology. Though there are some similarities between the two disciplines, the primary difference is that health psychology is regarded as a subdiscipline of psychology, whereas behavioral medicine considers itself to be multidisciplinary. Despite this distinction, there are numerous members of the American Psychological Association's Division of Health Psychology who are also members of the Society of Behavioural Medicine, demonstrating the practical links between the two fields.

1. The Challenge

Research in behavioral medicine and health psychology has demonstrated the difficulty of applying these discoveries to clinical practice. To guarantee that patients receive the finest care possible, nevertheless, is imperative. Seventy-five percent of healthcare costs are related to chronic diseases, and heart disease, cancer, and other ailments are predisposed by lifestyle factors including smoking, eating poorly, and not exercising. Furthermore, treatments that are not adhered to as directed may become less effective. Thus, to enhance patient outcomes, health psychology must work in tandem with clinical healthcare.

Despite the lack of instructions on how to apply the techniques, behavioral therapy is frequently recommended by modern practice guidelines. In fact, some overviews of these guidelines barely mention the behavioral aspect at all (Boden, 2003). The curriculum at most medical schools provides very little information on behavioral science. Funding for basic biological research outpaces that of prevention and behavioral research, and clinicians with a behavioral focus often receive minimal support in clinical settings.

Inadequate identification of the underlying causes of mortality contributes to the ignorance about role of behavior in health outcomes. Mokdad et al. (2004) have shown that psychological or behavioral factors are important in all ten of leading causes of death in majority of affluent nations. For example, heart disease, cancer, stroke, & chronic obstructive pulmonary disease are the top four causes of mortality, and smoking is a major risk factor for all of them. It is quite improbable

that knowledge of the genetic underpinnings of these illnesses would make it unnecessary to discourage tobacco smoking.

There is strong evidence that behavioral factors contribute to the development of chronic diseases and that even little behavioral changes have a significant positive impact on one's health. For individuals who are more susceptible to diabetes, even modest weight loss and exercise can avoid the disease. According to Tuomilehto et al. (2001), a thorough randomized clinical trial showed that adopting a healthier lifestyle was not only more cost-effective but also more successful than using medication to prevent type 2 diabetes. The use of tobacco products has dramatically decreased as a result of a number of behavioral, public policy, & communications initiatives (Messer et al., 2007). These decreases may have also contributed to a decrease in the number of fatalities from COPD, heart disease, & lung cancer.

Applying behavioural and psychological principles to the HIV epidemic has had a major and long-lasting impact, especially with regard to mother-to-child transmission. From nearly 1500 cases annually to less than 50, the United States has seen a substantial decline in HIV transmission rates, according to the Office of Behavioural and Social Science Research (2007).

1.1. What Factors Contribute to the Lack of Attention?

When presented with the option to choose between simple or complex solutions, we often incline towards latter. Presently, biomedical research emphasizes significance of genetics & molecular biology (Ogden, 2007). In United States, a substantial portion of the National Institutes of Health (NIH) budget is allocated towards technological advancements. Clearly, genetics & molecular biology hold key to comprehending numerous critical diseases. Nevertheless, simple behavioral interventions can yield substantial results at a relatively low cost. The issue lies in the belief that altering behavior is an easy feat. Advising patients or providing simple education often fails to achieve the desired outcome. For example, improved weight management may have significant advantages. But diet plans usually only provide temporary advantages (Mann et al., 2007). The body of research in health psychology clearly shows how complex and challenging it is to modify behaviour. To better understand how to improve these behavioural techniques, more research is required.

1.2. How Can We Address This Issue?

In order to fully utilize contemporary behavioral science to improve public health, we must do a number of things, such as the following:

1. Improved collaboration between health psychologists and healthcare professionals is necessary. By concentrating on topics with little practical significance, academic psychologists frequently lose touch with clinical practice. Practitioners often come upon issues that would benefit from a professional psychologist's methodical examination (Vardy et al., 2007). For example, treatment of breast cancer has been extremely aggressive in the United States, with adjuvant chemotherapy being given to the majority of women (Silverman et al., 2007). An increasing body of research indicates that adjuvant chemotherapy may cause impairments in cognitive function. Adjuvant therapy in particular has been linked to issues with working & long-term memory, however the exact nature of these effects is still up for discussion. Tamoxifen and other selective estrogen receptor modulators may also impair cognitive function. With the increasing success of cancer treatments, new problems surface. It is imperative to look into the social, emotional, and cognitive effects of cancer treatment & survivorship since number of prospective survivors is rising. It is remarkable how little

research has been done on the cognitive and social outcomes of cancer survivors, given the significance of these issues. Neither cancer specialists nor psychologists are qualified to handle these problems on their own. Working together across these fields could greatly advance our knowledge and provide fresh research directions. This field might advance if these collaborations are encouraged or if multidisciplinary applications are requested.

2. Evaluating patient outcomes is typically done from the perspective of healthcare providers. A burgeoning body of research underscores the importance of gauging health outcomes from the patient's point of view. The potential to diminish life expectancy and/or quality is a cause for concern. Disease and disability, such as cancer and heart disease, are among the leading causes of premature death in the United States. Moreover, an impairment or illness can adversely affect the quality of life (Glaser et al., 2005). A person with heart disease may face restrictions in daily living activities and may be unable to work or participate in social activities. Even relatively minor diseases and disabilities affect quality of life. A cold, for example, may interfere with the ability to concentrate, work, or attend school. The cold, however, lasts only a short time. A chronic disease, such as arthritis, may affect the quality of life for a long time. Within the last few years, medical scientists have come to realize the importance of quality of life measurement. Many major diseases, including arthritis (Meenan, 1982), heart disease (Grady et al., 2004), and diabetes, or even digestive problems (Gralnek, Hays, Kilbourne, Naliboff & Mayer, 2000), are evaluated in terms of the degree to which they affect life quality and life expectancy (Asakawa, Rolfson, Senthilselvan, Feeny & Johnson, 2008). One of the important puzzles in current outcomes research is that, although women live longer than men in most developed countries, women experience poorer self-reported outcomes during the years they are alive (Kaplan, Anderson & Ake, 2001).

We need a greater emphasis on the development of methods that can capture these outcomes. Health psychology offers a rich tradition of measurement and can make valuable contributions to the assessment of patient-reported outcomes. Some of the most common measures are the Medical Outcomes Study 36 item Short Form (Ware & Gandek, 1998), the Quality of Well-being Scale (Kaplan & Anderson, 1996), and the Health Utilities Index (Feeny, Furlong, & Barr, 1998). Many people with advanced training in health psychology have expertise that can contribute to the development of these methods. Health psychologists are typically well-versed in statistics, psychometrics, and experimental design in addition to their substantive training.

3. A multitude of research studies have indicated that people with higher incomes typically have better health outcomes in comparison to people with lower incomes (Ahles et al., 2008).
4. When assessing patient outcomes, using psychological techniques. Usually, the perspective of the practitioner is used to evaluate health outcomes. The problems of illness and disability are that they reduce life expectancy & life quality (Kaplan & Ries, 2008). For example, cancer & heart disease are two leading causes of premature mortality in United States. A disability or sickness may also lower one's quality of life.

2. Conclusion.

Health psychology is a rapidly expanding field that encompasses a wide range of activities, including basic and clinical research, teaching, clinical service. This discipline has significantly contributed to the prevention and treatment of chronic illnesses. The ultimate goals of health psychology are to identify behavioral interventions that can reduce health disparities to build an infrastructure that supports multidisciplinary research. This field focuses on the intricate interactions among biological dispositions, behavior, and social conditions. Although behavioral medicine and health psychology have produced a substantial amount of research, their conclusions are rarely applied in clinical settings. Modern health psychology faces the challenge of creating

integration with clinical health care through working with healthcare providers, utilizing psychological techniques to evaluate patient outcomes, and going beyond the mere recording of disparities to create interventions that lessen the effects of social disadvantage.

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3

CHAPTER

A STUDY ON GOLD AS AN INVESTABLE COMMODITY AMONG PEOPLE

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ABSTRACT:

Gold is one of the main commodities where the customers invest their money comparatively with bank for better interest. In the Indian context people purchase gold for their children's marriages for later period. The investment in gold is better suits for easy conversion into money with quickest possible time from the bank and gold merchants. The appreciation or depreciation of gold based on other investment options like fixed deposit, provident fund, international crude oil price, stock market, mutual fund etc. The comparative analysis of gold with other investment options gives an edge to the customer to clearly understand the investment pattern for their hard-earned money expected to give good returns in the future.

Keywords: Gold, Investment, Mutual fund, Stock market, Mutual Fund

INTRODUCTION:

Gold is a precious metal valued for its rarity, beauty and unique properties. It is a symbol of wealth, beauty and heritage carrying memories and cultures. However, besides these, gold also makes significant contributions to a wide range of technologies. It has a rich history dating back thousands of years, with cultural, economic and symbolic significance Gold is used extensively in jewellery, ornaments, and decorative arts due to its malleability and lustrous appearance. As an investment gold is considered a safe haven asset, often sought during economic uncertainties. It serves as a store of value and a hedge against inflation and currency devaluation. Gold mining is a major industry worldwide, with significant environmental and social impacts. The metal has various industrial applications, including electronics and dentistry. Scientifically, gold is studied for its unique properties and applications in fields like nanotechnology and medicine. The price of gold can be subject to short-term fluctuations but has demonstrated long-term stability. Gold is commonly traded through various financial instruments including ETFs and future contracts. It continues to be a symbol of wealth, prestige, and enduring value in many cultures worldwide Due to its physical features as corrosion resistance and highly malleable and ductile,

gold is being applied in space exploration, nano particle technology, and medicine. is considered by many, to be the best investment you can make to protect yourself during stock market declines and inflation. In fact, history shows that the performance of gold goes up in times of high inflation. However, the price of gold also has its highs and lows and you could just as easily lose money investing in gold as with any other investment.

GOLD MUTUAL FUNDS IN INDIA:

- SBI Gold Fund.
- Aditya Birla Sunlife Gold fund.
- Kotak Gold Fund.
- Axis Gold Fund.
- Quantum Gold savings fund.

SBI GOLD FUND:

SBI gold mutual fund is an Asset Management Company introduced by the State Bank of India (SBI) and incorporated in 1987 with its corporate head office located in Mumbai, India, SBIFMPL is joint venture between the State bank of India and Indian public sector bank, and Amundi, a European asset management company, A shareholder agreement in this regard has been entered on April 13, 2011, between SBI and AMUNDI asset Management. Accordingly, SBI currently holds 63% State in SBIFMPL and the 37% stake is held by AMUNDI Asset Management through a wholly owned subsidiary, AMUNDI India Holding. SBI and AMUNDI Asset Management shall jointly develop the company as an asset management company of international repute by adopting global best practices and maintaining international standards.

ADITYA BIRLA SUNFLIFE GOLD FUND:

Aditya Birla Sunlife Asset Management Company Ltd. (ABSLAMC), formerly known as Birla Sun life asset management Company Limited, is an investment managing company registered under the Securities and Exchange Board of India. It is a joint venture between the Aditya Birla Capital of India and the Sun Life Financial Inc. of Canada. The Company offers sector- specific equity schemes, fund of fund schemes, hybrid and monthly income funds, debt and treasury products and offshore funds. It offers a variety of investment products and schemes including debt, treasury and equity schemes, investments including fund of fund schemes, wealth management services, regular income scheme, offshore funds, hybrid and monthly income funds, Wealth creation, tax savings strategies, and also introduced research-based investments. By 2020. It maintained a presence in several global markets including the United Kingdom, United States, Canada, Japan, Indonesia, Philippines, Ireland, China, Hongkong, Bermuda and India.

KOTAK GOLD FUND:

Kotak Mahindra Asset Management Company Limited (KMAMC), is the asset manager for Kotak Mahindra Mutual Fund KMAMC started operations in December 1998 and has approximately 74 Lac investors in various schemes. Kotak Mutual Fund is wholly owned by Kotak Mahindra Bank Limited and was established in December 1998. In December 2020, it became the first India Mutual House to launch the Global REIT Fund of Fund. It manages pension funds in India. It offers services like banking asset management, investment banking, life insurance, stock broking and general insurance. Currently, it has an investor base of over 2 million investors. It has a distribution network of around 43,000 distributors. The company is present in 82 cities and has 86 branches. It is currently the 5th Largest mutual fund house in the country with more than 2.86 Lakh crore Assets.

Under Management Under Management. It currently operated out of 86 branches in India with headquarters in Mumbai, and has around 75 lakhs investor accounts, with a distribution network comprising 50000 empanelled distributions. It is currently managing more than 73000 of equity assets. Kotak Mutual Fund follows an institutionalized investment process. It includes investment universe, research, idea generation, company meeting and idea discussion, investment report, portfolio action and on-going review. The fund manager is the decision maker for their portfolios.

AXIS GOLD FUND:

Axis Mutual Fund is an Indian asset Management company. It was established in the year 2009 and has its headquarters in Mumbai. Axis Mutual Fund offers various types of mutual fund scheme to invest in India, such as equity funds, hybrid funds, debt funds, and more. Axis mutual fund started its operations in 2009 with its first equity scheme, Axis equity Fund.

QUANTUM GOLD SAVINGS FUNDS:

The Quantum Group of funds are privately owned hedge funds based in London, New York, Curacao and Cayman Islands. They are advised by George Soros through his company Soros Fund Management. Soros started the fund in 1973 in partnership with Jim Rogers. In 1987, the funds lost \$800 million of Japanese stocks shortly before the October 19, 1987 stock market crash. In 1992, the lead fund, Soros Quantum Fund, became famous for breaking the Bank of England, forcing it to devalue the pound. Soros had bet his entire fund in a short sale in the ultimately fulfilled prediction that the British currency would drop in value, a coup that netted him a profit of \$ 1 billion, also known as Black Wednesday. In 1997, Soros was blamed for forcing sharp devaluation in Southeast Asian Currencies. On February 14, 1994, the funds have a major loss of \$600 million in one day betting against the Japanese yen. The Fund lost US\$2 billion in investments in Russia during the 1998 Russian Financial Crisis. In July 2011, to avoid having to register with the SEC and comply with reporting requirements under the Dodd-Frank reform act, the Quantum Fund announced they would be turning the fund into a family investment group and returning all outside money to investors by the end of 2011. The fund is now managed Soros family money as well as working with retail investors.

II. OBJECTIVES:

This study aims to identify gold as an investable commodity among customers and to analyse customer preference to invest in gold and also to find the reason for investing in gold to understand the factor that influences customers to invest in gold and to find customers opinion about gold is luxury or necessity.

III. REVIEW OF LITERATURE:

Found the existence of short-term interaction and long-term equilibrium gold prices and stock prices. Accordingly, there is no long run relationship between the gold price and stock price but in short run stock price affect gold price. (*Graham 2001*)

The gold ETFs have lesser variability as compared to the physical gold and concluded that the performance of gold ETFs is better than the performance of physical gold (*Vipin Kumar Aggarwal et al., 2013*)

The overview of gold ETFs and its various positive features”, they try to explain comparative study of gold ETFs v/s Physical gold and its also gives focus on Gold ETFs as a strong and attractive investment option for the investor. Gold ETFs gives extra leverage tot its users in terms of the profit. (*Mohdsaleem and Matloobullahkhan 2013*)

The Gold to other precious metals and conclude that gold is the most efficient diversifier in a similar fashion, other studies highlight gold’s ability against eroding effects of inflation. (*Hillier et al 2006*)

IV. MATERIALS AND METHODS:

A. RESEARCH DESIGN

Research is purely and simply the framework and plan for the study that guides the collections and analysis of data. “Analytical research” technique was adopted in the project. Analytical research is designed to analyse the facts/ information available to make a critical evaluation.

B. OBJECTIVES OF THIS RESEARCH

1. To identify gold as an investable commodity among customers.
2. To analyse customer preference to invest in gold.
3. To find the reason for investing in gold.
4. To understand the factor that influences customers to invest in gold.
5. To find customers opinion about gold is luxury or necessity.

C. SAMPLE DESIGN

Sampling technique used here is convenient sampling techniques. The sample size was 200 surveyed collected through google form.

D. DATA COLLECTION DESIGN

- Primary data collection method comprised survey method while primary data collection instruments was structured questionnaire data.
- Secondary data collection method comprised of websites and online journals, Published reports & Review of literature from published articles.

E. STATISTICAL TOOLS

The main tools used for statistical analysis is hypothesis testing analytical tools such as Chi square test and Anova.

V. DATA ANALYSIS:

TABLE.1. ANNUAL INCOME

ANNUAL INCOME	NO. OF RESPONDENTS	PERCENTAGE
1,00,000-2,00,000	30	30%
2,00,000-4,00,000	30	30%
4,00,000 – 6,00,000	18	18%
Above 6,00,000	22	22%
Total	100	100%

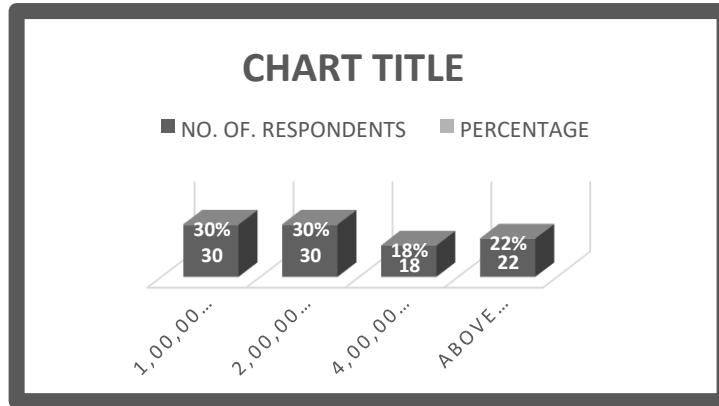


FIG. 1. ANNUAL INCOME

It is inferred from table and figure 2 that Majority (30%) of the respondents earning from Rs.1,00,000 to Rs.2,00,000 and 2,00,000 to 4,00,00 as their Annual Income

TABLE.2. OCCUPATION

OCCUPATION	NO.OF. RESPONDENTS	PERCENTAGE
Employee	67	67%
Entrepreneur	5	5%
Others	28	28%
Total	100	100%

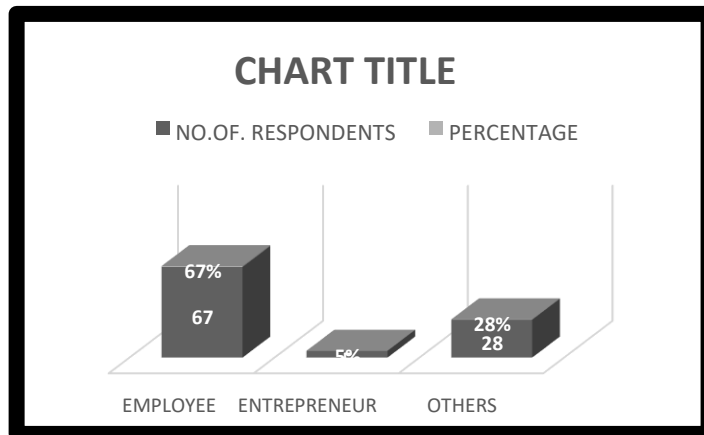


FIG. 2. OCCUPATION

It is inferred from table and fig 2 that Majority (67 %) of the respondents are Employed.

TABLE 3. TABLE INDICATING INCOME DO YOU SAVE TO BUY A GOLD

Options	No. of. Respondents	Percentage
0-10%	39	39%
10%-20%	38	38%
20%-30%	18	18%
30%-40%	5	5%
Total	100	100%

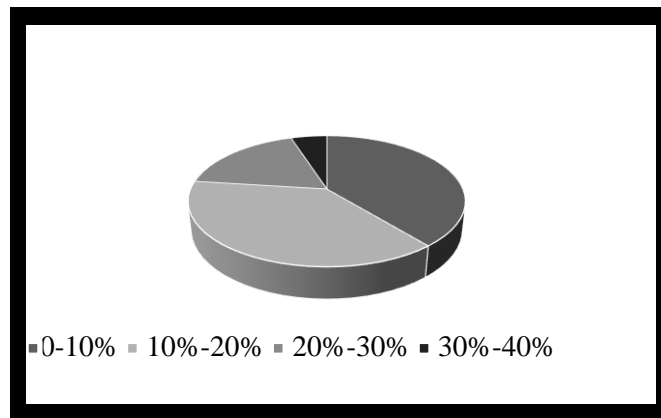


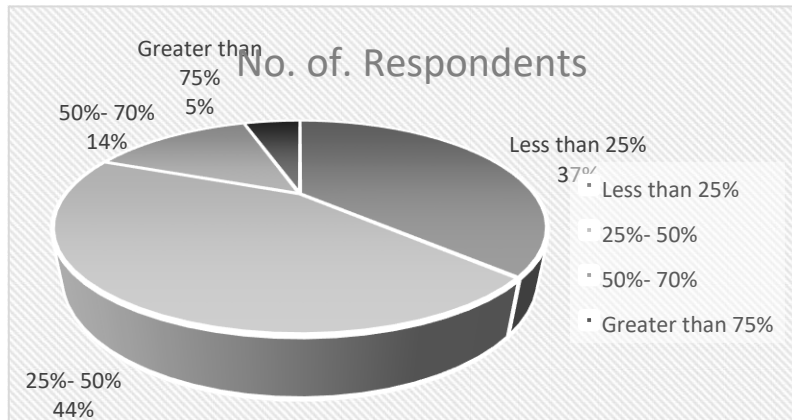
FIG. 3. CHART REPRESENTING INCOME DO YOU SAVE TO BUY A GOLD

It is inferred from table and figure 3 that Majority (39%) of the employees preferred 0-10%.

TABLE 4. INVESTMENT DEAL IN GOLD FUTURE PLAN

Options	No. of. Respondents	Percentage
Less than 25%	37	37%
25%- 50%	44	44%
50%- 70%	14	14%
Greater than 75%	5	5%
Total	100	100%

CHART NO 4. INVESTMENT DEAL IN GOLD FUTURE PLAN



It is inferred from table and figure 4 that Majority (44%) of the respondents are 25% to 50%.

TABLE NO. 5 ONE WAY ANNOVA TEST:

ANOVA					
What percentage of your income do you save to buy gold?					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1.391	3	.464	.598	.618
Within Groups	74.399	96	.775		
Total	75.790	99			

It is inferred from table 8, Since p value is less than 0.05. we reject null hypothesis & accept alternate hypothesis. Hence, there is a significant difference between Annual Income and Income save to buy gold.

TABLE NO.6 CHI SQUARE TEST:

Chi-Square Tests			
	Value	df	Asymptotic Significance (2sided)
Pearson Chi-Square	5.952 ^a	6	.429
Likelihood Ratio	6.801	6	.340
Linear-by-Linear Association	.020	1	.886
N of Valid Cases	100		

a. 7 cells (58.3%) have expected count less than 5. The minimum expected count is .25.

It is inferred from table 8, Since p value is less than 0.05. we reject null hypothesis & accept alternate hypothesis. Hence, there is a significant difference between Occupation and Investment deal in Future plan.

VI. RECOMMENDATIONS:

- Investing in gold as a benefit is constantly useful for long haul.
- Invest with at any rate as a twofold the edge cash that is required for a specific product

VII. LIMITATIONS:

- The analysis of investment was mainly based in historical data.
- There is no guarantee that what happened in past will continue in the future.
- Storage is the biggest issue in physical gold investment.
- International movement shave impact on the price of gold in India.

VIII. CONCLUSION:

Though there are various investment options available investors namely securities, real estate, bank deposits, commodity exchange and mutual funds, Gold has been considered as the most preferred investments due to its high liquidity and profitability. Investors are now looking beyond gold as merely a commodity for consumption and are realizing its worth as an investment avenue too. Investments in gold have yielded consistent and assured returns, especially in volatile times. The rise of India as an economic power will continue to have gold at its heart. However, the public are not aware of various forms of gold namely gold accounts, ETF's gold bullion which yields a high amount of return comparatively to that of physical form of gold. Hence awareness should be created.

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4

CHAPTER

PHARMACIST'S ROLE IN HEALTHCARE SYSTEM

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Abstract

The chapter delves into the various responsibilities and roles that pharmacists fulfill within the healthcare system. The profession of pharmacy has expanded significantly in recent years, and pharmacists are now recognized as an essential component of multidisciplinary healthcare team. Their primary responsibility is to ensure that patients receive the correct medication at appropriate time, dosage, & route, and in correct manner. Pharmacists work in a variety of sectors within profession, including academic, industrial, community health, clinical research, drug design and discovery, & the development of NDDS. The paper emphasizes current state of pharmacy profession in healthcare system and highlights the importance of pharmacists in achieving the goal of "Health for All by 2000 A.D." The concept of health is defined as complete physical, mental, & social well-being, & pharmacists play a crucial role in achieving this goal. The mission of pharmacists is to provide the correct medication to patients at the appropriate time, dosage, and route, and in the correct manner.

Keywords: Pharmacy profession, Health care system, Pharmacist roles, Multidisciplinary provision, Professional services delivery

1. Introduction

Pharmacy practice has changed from being a technical, product-focused field to one that prioritizes professional services, patient-centered health outcomes counseling, and professional services. The term "Pharmaceutical Care" refers to this paradigm change, in

which pharmacists collaborate with other healthcare practitioners to guarantee that patients receive the best possible outcomes from their medication therapy (Kuchekar, 2008). Identifying, fixing, and preventing drug-related issues is the main duty of modern pharmacists. The pharmacist's role in healthcare system The International Conference on Primary Health Care, held in Alma Ata in September 1978, outlined several important aspects of healthcare to achieve goal of "Health for All by 2000 A.D." as stated:

The improvement of public health requires a multifaceted approach encompassing various essential measures. Firstly, education programs aimed at increasing awareness of prevalent health issues and methods for their identification, prevention, and management are crucial. Additionally, promoting a healthy food supply and advocating for proper nutrition are vital components in maintaining overall well-being. Efforts should also be directed towards preventing and controlling locally epidemic nutrition to mitigate its adverse effects on communities. Furthermore, ensuring the provision of essential healthcare services, including immunization against major infectious diseases, is paramount. Equally important is the availability of a skilled healthcare workforce to address diverse health needs effectively. Finally, the development and implementation of comprehensive national health policies play a central role in orchestrating these efforts and ensuring equitable access to quality healthcare services for all members of society (Sahoo, 2022).

Based on the social and economic values of the country and its people, this study was deemed essential to be categorized as a supplement. For individuals from various nations, word "health" might indicate different things. For a lot of people, it only means they are free from sickness or illness (Akshaya, 2022). Nevertheless, the World Health Organization defines health as more than just absence of sickness; it also encompasses a condition of whole physical, mental, and social well-being. According to Ayurveda, a balanced metabolism is a sign of well health. Happy state of being senses & mind. The notion of health is broad and positive, providing a unifying goal for nations to work toward despite the shortcomings of the World Health Organization's definition. Social and economic security are correlated with the well-being of a country's population. Because of this, it is imperative for every nation to guarantee universal health (Thalkari et al., 2018).

Health plays a pivotal role in development, intersecting with various aspects of life. It is central to the concept of quality of life, making it a universal social goal. To achieve this goal, nations prioritize healthcare by establishing professional healthcare systems (Patrekar & Mali, 2014).

➤ **Professionals include in Health care system**

In the healthcare system, there are direct professionals such as pharmacists, physicians/doctors, nurses, compounders, and dispensers, who directly interact with patients and provide essential medical services. Additionally, there are indirect professionals like engineers and teachers who contribute indirectly to healthcare. While each professional plays a distinct role, pharmacists stand out as key players in the healthcare system, uniquely positioned to provide crucial medication-related services and play a major role in patient care and overall health outcomes (Kokane & Avhad, 2016).

➤ **According to pharmacy Act 1948**

“Registered Pharmacist is person whose name for time being is entered in the register of pharmacist of the state, in which he is for the time being residing or carrying on his profession or business of pharmacy”. The word "PHARMACIST" embodies a range of qualities essential to the profession. It represents Patience, Honesty, Alertness, Research skills, Motivational abilities, Administrative proficiency, Courage, Intelligence, Studiousness, and the capacity for Critical Thinking. These attributes collectively define the role of a pharmacist, highlighting their dedication to patient care,

commitment to ethical standards, and continuous pursuit of knowledge and innovation within the field of pharmacy.

1.1. Mission:

A healthy lifestyle depends on taking the right prescription. The preparation of pharmaceuticals has long been the responsibility of pharmacists, who are qualified experts. In the modern world, medicine is essential to save lives. Medicine has become a vital basic necessity in the modern era, even though food, clothes, and shelter still rank highly among human needs (Thorat, 2021). Pharmacists are the first professionals in the health care system; according to a 1963 British Pharmaceutical Conference discussion, "without medicine, there is no life, it acts as sanjivani for human beings." Pharmacists are considered experts in pharmaceuticals (Saxena et al., 2022).

2. Roles of Pharmacist

2.1. Academic Pharmacist:

Academic pharmacists concentrate on developing future pharmacists through research, teaching, and training. Pharmacists are primarily recruited from academic institutions, adding expertise to the healthcare system. Pharmacists play a vital role in the health care system by organizing seminars, projects, or academic systems. The health care system's personnel are driven by education (Mikhael et al., 2023). Students in this discipline gain a solid understanding of these topics through their basic education & pre-registration training. Pharmaceutical sciences are a vast field that spans a range of scientific principles and procedures. Through this study, they will be able to stay up to date with the ever-evolving fields of medicine and pharmacy throughout their careers. All facets of medication manufacturing, distribution, action, and usage are covered by the knowledge and skills of students studying pharmaceutical sciences. Additionally, individuals who choose to pursue postgraduate training & research can do so.

Educational training programs assist professionals in acquiring current knowledge. In the case of pharmacists, they obtain specialized information about drugs & their therapeutic effects through practical training. In general, we can say that the academic aspect of pharmacy plays a crucial role in the early stages of the profession (Remington, 2006).

2.2. Industrial Pharmacist

Research and development: Pharmacists play a vital role in research, and their exceptional knowledge in the development of formulations is particularly important for understanding the bioavailability of active substances.

Manufacture and quality assurance: By verifying each stage of production and inspecting products before to release, pharmacist's vast knowledge in pharmaceutical sciences allows for a thorough approach to quality assurance that includes good manufacturing practice.

Drug Information: The public and other members of the health profession can obtain comprehensive information on medications from the pharmacist because of their knowledge and experience. Pharmacists also offer an informational service to the business.

Parent application and drug registration: The pharmacist is best suited to comprehend and compile the variety of data needed for permission and potent submissions.

Clinical trials and post–marketing surveillance: The pharmacist possesses medication & healthcare delivery expertise necessary to support government, business, and medical professionals working together on clinical trials & surveillance.

Sales and marketing: The pharmacist can contribute to appropriate health care marketing practices and the dissemination of pertinent information to the public and other health professionals. The pharmacist's professional ethics require them to consider the interests of their patients.

Management: The inclusion of pharmacist in all levels of management promotes an ethical approach within management policies (Felton, 2012).

2.3. Primary care pharmacist/ prescribing advisors:

Those who work for NHS organizations are in charge of overseeing a range of neighborhood healthcare providers, such as community pharmacy & physician offices. They want to make the best use of resources and medications in the region that they have been assigned. In certain places, primary care pharmacists and pharmacists run medication review clinics and see patients on a regular basis.

2.4. Community pharmacists:

Across the nation, pharmacies provide care in both urban and rural settings, making them a vital component of the healthcare system. Their main duty is to assist the general people, and they operate out of their own pharmacies or from neighborhood medical facilities and physician offices. It is the duty of community pharmacists to evaluate the conditions of their patients and provide the right medications. In addition, they give guidance on how to stay healthy and distribute medication. Community pharmacists are frequently well-liked members of their communities and work in a profession that is highly recognized and responsible.

One notable development is the growing participation of community pharmacists in clinical responsibilities traditionally filled by physicians. Blood pressure checks and the management of diseases like diabetes and asthma are now the responsibilities of community pharmacists. They also give advice on better diets, support to people trying to stop smoking, and guidance on matters related to sexual health.

Some community pharmacists choose to run their own businesses & relish responsibilities of handling finances & being accountable for employees, inventory, and facilities. Others work for a major chain of high-street pharmacies and get the chance to progress inside a preexisting organizational structure (Fox, 2006).

2.5. Pharmacist with special interest:

Pharmacists who specialize in specific areas such as diabetes and cancer focus on enhancing their knowledge and skills in these niche fields. In addition to conducting blood pressure checks, cholesterol & osteoporosis screenings, glucose testing, and diabetes counseling, providing tobacco cessation programs, and administering vaccinations, approximately 42% of pharmacists also offer a range of clinical & educational services to their community. Currently, the Indian government recognizes pharmacists as "Arogyadoot," meaning they are qualified to formulate, compound, and dispense medication from their pharmacy (Royal, 1963).

2.6. Hospital pharmacy:

Hospital pharmacists play a critical role in both private hospitals and primary healthcare (PHC),

making them an indispensable part of the healthcare system. Their work is always primarily focused on the needs of the patients. Similar to the roles of physicians, hospital pharmacists can assist in many different ways. These experts participate in ward rounds on a regular basis and are becoming more and more important in determining which treatments are best for the patients. Hospital pharmacists handle a variety of patient problems in addition to working on the wards. They also operate in the dispensary, where they supply the hospital's prescription information to patients and supervise sterile medicine manufacture. They can also take part in the overall administration of the hospital, in addition (Unit, 1990).

Pharmacists with specialized interests often work in various fields, such as pediatrics, gynecology, cardiovascular medicine, urology, diabetes, and hematology. These pharmacists serve as consultants, providing their expertise in these areas to their patients.

Pharmacy is a comprehensive profession, with pharmacists assuming multifaceted roles across society. They embody the creativity of artists, designing drug dosage forms with precision and innovation. Like lawyers, they possess a thorough understanding of laws and regulations governing drugs. With a foundation in technical expertise akin to engineers, pharmacists ensure the efficacy and safety of pharmaceutical products. They also demonstrate entrepreneurial skills, adept in management, accounting, marketing, and counseling, facilitating effective medication management. Moreover, as health professionals, pharmacists possess a deep understanding of health principles, further enhancing their impact on public well-being.

As pharmacists handle all societal health-related issues and create excellent healthcare systems, they also continuously strive to expand their expertise while upholding ethical standards. Consequently, the only highly skilled professionals who offer the structural support that fortifies the country's health care system are pharmacists (Vaidya et al., 2009).

3. Conclusion

This chapter delves into the various roles and responsibilities that pharmacists undertake within the healthcare system. These roles are critical for ensuring that patients receive the appropriate medication in a timely and effective manner, adhering to the specified dosage and protocol. Pharmacists are employed in a diverse range of fields, including academia, business, community health, clinical research, drug design and discovery, & the development of NDDS. The study sheds light on the current state of the pharmacy profession within the healthcare system and emphasizes the indispensable role that pharmacists play in achieving the goal of "Health for All by 2000 A.D." This ambitious goal encompasses total physical, mental, & social well-being, & pharmacists are essential to realizing it. In order to meet this goal, pharmacists are dedicated to providing patients with right medication at right time, dosage, route, and administration, in accordance with established protocols.

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5

CHAPTER

EXPLORING THE INTERPLAY: GRATITUDE, SELF-EFFICACY, AND PERCEIVED STRESS IN COLLEGE STUDENTS

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ABSTRACT

The purpose of the present study was to explore the relationship between gratitude, self-efficacy and perceived stress among college students. Data was collected from 188 college students in India. Students responded to self-report measures including general Gratitude Scale by Dr. Michael E. McCullough and Dr. Robert A, 2002; Self-efficacy scale by Lay, 1986 and Perceived Stress Scale by Cohen, 1994. Pearson product moment correlation was done to find out relationship between gratitude, self-efficacy and perceived stress. The results showed that there is significant negative correlation between gratitude and perceived stress ($r = -.261^{**}$, $p < 0.01$); perceived stress and self-efficacy ($r = -.363^{**}$, $p < 0.01$); gratitude and self-efficacy ($r = .170^*$, $p < 0.05$)

Keywords: - *Gratitude, Perceived stress, Self-efficacy*

Introduction

“Acknowledging the good that you already have in your life is the foundation for all abundance”- Eckhart Tolle

The present research was conducted to study the correlation between gratitude, self-efficacy and perceived stress. High levels of gratitude can lead to decreased stress. When individuals feel grateful, they have lesser stress to deal with in their everyday life. Perceived stress often

leads to negative self-talk, where individuals might start doubting themselves and their capabilities. Gratitude is the gratefulness, when a someone does good something for any one then feels grateful. Gratitude is an independent protective factor against perceived stress and burnout after controlling for personality and psychopathology. People's expression of their gratitude causes change in individuals. Gratitude is considered to be a feeling that strengthens social relationships and interpersonal communication. At the same time, the perception of self-efficacy should be taken into consideration as an important variable when planning and attempting to participate in activities and to provide healthy communication. In this sense, it is seen that high gratitude and self-efficacy levels in individuals will increase their resilience. (: Özkan, M. S., Akça, F. (2022).

Concepts used in the study

Gratitude is the gratefulness, when someone does something good for any one then feels grateful. Gratitude is defined as, as “a sense of thankfulness and joy in response to receiving a gift, whether the gift be a perceptible benefit form a specific other or a moment of peaceful ecstasy suggested by natural beauty” (Emmons, 2004, p.554). Gratitude is when you feel thankful for the good things in your life. These could be things people often take for granted, like having a place to live, food, clean water, friends, and family. Gratitude is defined as an emotional state characterized by self-reported feelings of thankfulness and gratefulness, which are evolved by the beneficiary's awareness of and elaboration on the benefactor and the benefits received.

Perceived Stress

According to Lazarus and Folkman (1984) that perceived stress is a subjective assessment or appraisal an individual makes regarding the level of stress they believe they are experiencing in a given situation. It's a personal evaluation of the demands placed on them and their perceived ability to cope with those demands. This concept recognizes that stress is not solely determined by external factors but is highly influenced by an individual's interpretation and emotional response to those factors. Various factors contribute to perceived stress, including environmental stressors, life events, and daily hassles. The way individuals interpret and cope with these stressors varies, impacting their overall perception of stress.

Self-efficacy refers to an individual's belief in their ability to accomplish specific tasks or goals. It is confidence a person has in their capacity to execute behaviour necessary to procedure specific performance outcomes. This concepts, proposed by psychologist Albert Bandura, is a central element in his social cognitive theory. High self-efficacy often leads to setting higher goals, greater persistence in the face of obstacles and a willingness to take on challenges. Self-efficacy is defined as "Beliefs in one's capabilities to organise and execute the courses of action required to produce given achievements". (Albert Bandura, 1977)

Rationale of the study

The goal is to better understand how these factors interact and how they can impact academic performance, mental health, and overall well-being. This study is important for both college students and researchers working with them, as the findings could lead to interventions that reduce perceived stress. The significance of this study is that it provides evidence for the link between Gratitude, self-efficacy and Perceived stress. As the level of gratitude increases and people become more aware of their competencies and weakness.

REVIEW OF LITERATURE

Gratitude and Perceived Stress

The review of literature offers an in-depth summary of several studies that examine the relationship between gratitude and stress, burnout, and quality of life in different populations. The studies explore the impact of gratitude on software developers, male firefighters, Arab students, and nurses during the COVID-19 outbreak, providing valuable insights into the potential benefits of practicing gratitude. Kurian and Thomas (2023) conducted a study involving 421 software developers and found that practicing gratitude can reduce stress and fatigue levels, particularly among older developers and men. This study highlights the importance of gratitude in improving the overall well-being of software developers.

Lee et al. (2018) focused on male firefighters in Korea and found that gratitude can act as an independent defense against stress and burnout. The study included 464 male firefighters who completed a questionnaire, and the results suggest that gratitude should be integrated into the training and mindset of firefighters throughout their careers to help them cope with the demands of their job. Ahmad Valikhani et al. (2019) conducted a study that explored the relationship between gratitude and quality of life. The study found that gratitude has a direct impact on mental stress and mental health, suggesting that practicing gratitude can have a positive impact on individuals' overall well-being. Murat Yildirim & Zainab Shalal Alanazi (2018) conducted a study among Arab students in Saudi Arabia to investigate the relationship between gratitude, stress, and life satisfaction. The study found that gratitude positively predicts life satisfaction, while stress negatively predicts it, and stress fully mediates the relationship between gratitude and life satisfaction. This study provides valuable insights into the underlying mechanisms of gratitude, life satisfaction, and stress in a non-Western context. A study published in 2021 aimed to examine the relationship between gratitude and perceived stress among nurses in Korea during the COVID-19 outbreak. The study found that nurses may experience extra emotional stress during the pandemic, and gratitude can help decrease perceived stress levels.

In summary, the findings of these studies provide valuable insights into the potential benefits of practicing gratitude on individuals' health and well-being. The studies suggest that practicing gratitude can reduce stress levels, act as an independent defense against stress and burnout, positively predict life satisfaction and mental health, and negatively predict stress levels. By examining the underlying mechanisms of gratitude, life satisfaction, and stress, these studies offer detailed information that can help individuals improve their overall well-being.

Perceived Stress and Self-efficacy

A study titled "The Perks of Being Grateful to Partners, Expressing Gratitude in Relationships Predicts Relational Self-Efficacy and Life Satisfaction During the COVID-19 Pandemic" was conducted by Jet U Buenconsejo, Frank D Fincham, and Jesus Alfonso D Datu in 2023. The study used a brief longitudinal design and found that expressing gratitude in partnerships strongly predicted subsequent relationship self-efficacy and life satisfaction, even after adjusting for auto-regressor effects, age, gender, ethnicity, trait thankfulness, and life contentment. The study emphasizes the psychological benefits of practicing appreciation in a relationship atmosphere.

Kaspar Burger and Robin Samuel conducted a study titled "The Role of Perceived Stress and Self-Efficacy in Young People's Life Satisfaction" in 2019, which found that life satisfaction is a key sign of good development. However, teenagers' life satisfaction can differ based on how much

stress they encounter at school and the circumstances surrounding their upbringing. The study also found that coping mechanisms can lessen the negative impact that stress has on one's quality of life. The findings broaden our understanding of life and enhance our comprehension of two important psychological variables of teenage life happiness.

Gabriela Alia Dumitrescu conducted a study titled "Perceived Stress and Self-Efficacy as Correlates and Self-Efficacy as Correlates of Satisfaction With the Dissertation Process Among Doctoral Students in Educational Psychology in Selected Universities in the United States" in 2016. The study found that self-efficacy and perceived stress are correlated with satisfaction with the dissertation process among doctoral students in educational psychology. Participants with a high degree of self-efficacy and a medium level of perceived stress are more likely to make sufficient progress on their dissertation.

A study titled "Association Between the Five Factor Personality Traits and Perceived Stress: Is the Effect Mediated by General Self-Efficacy?" was conducted by Torben Jørgensen, Lene Falgaard Epløv, and Charlotta Pisinger in 2011. The study found that personality qualities that result in diverse approaches to assessing and overcoming daily challenges have an impact on poor health brought on by chronic stress. The research project looked at possible associations between general self-efficacy (GSE) and personality traits.

Gratitude and Self-efficacy

Several studies conducted by researchers around the world have shown that gratitude is a crucial factor that positively impacts various areas of life. One such study conducted in 2023 by Jet U Buenconsejo, Frank D Fincham, and Jesus Alfonso D Datu titled 'The Benefits of Gratitude in Relationships During the COVID-19 Pandemic' demonstrates that gratitude plays a pivotal role in predicting relational self-efficacy and life satisfaction. The study's short-term longitudinal design illustrates how gratitude moderates the association between self-actualization and life satisfaction, highlighting the psychological benefits of cultivating gratitude within relationships.

Another study conducted by Sensen Zhang and Yulan Tang in 2022 showed that gratitude has a positive correlation with meaning in life and career calling, which indirectly affects career goal self-efficacy among pre-service teachers.

Similarly, in 2020, Lakeshia Cousin, Harleah Buck, Bryan Benitez, Paul Mills, and Laura Redwine conducted research titled 'Gratitude, Self-Efficacy, and Medication Adherence in Heart Failure Patients.' The study focused on patients with Stage B Heart Failure and found that gratitude, as a practice of appreciating positive aspects in life, positively affects self-confidence. Although little is known about the relationship between gratitude and self-efficacy in individuals with heart disease, self-efficacy is shown to be associated with medication adherence. Future studies will explore whether gratitude leads to improvements in self-care.

In September 2020, Jesus Alfonso D. Datu and Mantak Yeun conducted research titled 'Students' Connectedness and its Link to Gratitude and Self-Efficacy Outcomes.' The study examined the correlation between personal learning, gratitude, and self-efficacy development in Hong Kong's high school students. According to the study, students' academic self-efficacy was predicted through gratitude by their connection with parents and peers, while involvement with parents and school positively predicted self-efficacy resulting from gratitude. The research suggests that educators should create opportunities for students to enhance their relationships and gain confidence in their education and professional growth.

Furthermore, a study conducted by Dustine Rey in 2009 titled 'Gratitude, Well-Being, and Academic Success Among College Students' aimed to explore the correlation between gratitude, self-efficacy, well-being, academic success, and academic beliefs. The study's findings revealed that gratitude had a positive association with various factors, such as self-efficacy, academic self-efficacy, well-being, and academic belief management. The study highlights how gratitude can positively impact academic outcomes and overall well-being for students in university.

Overall, these studies emphasize the significant role of gratitude in promoting healthy relationships, personal growth, and well-being. They suggest that educators and healthcare professionals can play an essential role in promoting gratitude and enhancing individuals' relationships by creating opportunities for them to develop gratitude and gain confidence in their education and professional growth.

METHODOLOGY

Variables used in the Study

Variable 1- Perceived Stress

Variable 2- Gratitude

Variable 3- Self-efficacy

Hypothesis

H1: There will be a positive correlation between gratitude and perceived stress.

H2: There will be a negative correlation between self-efficacy and perceived stress.

H3: There will be a positive correlation between gratitude and self-efficacy.

Sample

Sample size-188 college students

Age range-18-30

Inclusion criteria- Indian population and students currently pursuing their education

Exclusion criteria- age under 18 and above 30, people who aren't current students

Sample selection- purposive sampling

Procedure

An online survey was created using Google Forms to collect data on participants' age, gender, education level, and preferences for different humor styles. The survey was distributed online through messaging apps, social media platforms, and email. The collected data was analyzed using statistical software (SPSS) to identify any correlations between humor styles and empathy. The statistical analysis involved two steps: 1) Descriptive analysis to calculate mean, minimum range, maximum range, and standard deviation, and 2) Inferential analysis to calculate Pearson correlation.

Results and Discussion

Results

This section elaborates on the research findings. The descriptive statistics are provided to describe and illustrate the frequency of data. Inferential statistics explain whether a hypothesis is accepted or rejected.

4.2.1 Descriptive statistics

Variables	Min	Max	N	Mean	SD
Gratitude	18.00	42.00	188	23.787	4.150
Perceived Stress	14.00	35.00	188	32.978	5.517
Self-efficacy	6.00	24.00	188	18.0798	3.155

The Descriptive statistics contains the variables, i.e., Perceived stress and Gratitude and Self-efficacy. The mean for variables is 32.978 and 23.787 and 18.0798 respectively. The mean represents the average score of a variable, providing the central measure. The Standard Deviation for Perceived Stress, Gratitude and Self-efficacy are 5.517, 4.150 and 3.155 respectively. The Standard Deviation indicates the extent of variability around the mean, helping to understand the spread of scores. The minimum range for the variables is 14.00, 18.00 and 6.00 respectively, which is the difference between lowest and the highest scores in the dataset the maximum range is the spread of scores from lowest to the highest, that is, 35.00, 42.00 and 24.00 for the variables respectively. The total number of participants is crucial in the context, giving the overview of the sample size. Together, these statistics offer a comprehensive view of data’s central tendency, variability and the scope of participant involvement.

4.2.2 Correlation Table

Variable	Gratitude	Perceived Stress	
Gratitude	1	-.261**	
Perceived Stress	-.261**	1	
Self-efficacy	.170*	-.363**	
			1

** . Correlation is significant at the 0.01 level (2-tailed).

* . Correlation is significant at the 0.05 level (2-tailed).

In the correlational table, Pearson product moment correlation was done to find out the relationship between gratitude perceived stress and self-efficacy as a focal point of investigation. By examining the correlation coefficients between these variables, we aim to distinguish the extent to which gratitude tendencies align with heightened perceived stress and self-efficacy levels. The table provides a quantitative exposure of these connections, offering insights into potential patterns or trends that contribute to our understanding of the interplay between gratitude and the perception of stress and self-efficacy in the studied population.

4.3. Discussion

The present study, the effect of gratitude perceived stress and self-efficacy among college students was conducted to examine the relationship of gratitude, perceived stress and self-efficacy in a population of college students who are in between the age of 18-30. The tools that were used in gathering the information involves Perceived stress scale by Sheldon Cohen (1983), the gratitude questionnaire scale by McCullough, M. E., Emmons, R. A., & Tsang, J. (2002) and general self-efficacy scale by Jerusalem, M. and Schwarzer, R (1955). The data for this study was collected using online survey and distributed among college students which involved the tools mentioned above. The google form included a consent form for the participant which allows them to choose whether they wanted to participate in the study or not and the following questions that included

demographic details would not be used wrongly. Questions that were a part of the online survey were not made to harm or hinder anyone's personal life or not to cause anyone any upheaval was mentioned in the consent form, feedback was asked to give if the participants were interested to give any. Pearson Product Moment Correlation was used to test the hypothesis proposed in this study.

The hypothesis stating "There is negative correlation between gratitude and perceived-stress" was accepted. the correlation coefficient value is high and significant at the 0.05 level ($r = -.166^*$, $p < 0.05$). The results are also supported by a study conducted by Riba Maria Kurian, Shinto Thomas (2023), titled 'Perceived stress and fatigue in software developers'. It was discovered while researching the benefits of gratitude that software development necessitates creativity and problem-solving abilities. Long-term stress and fatigue, on the other hand, can impair these skills in software developers. This cross-sectional study looked at the effects of gratitude, age, and gender on stress and fatigue in 421 people aged 21 to 57, with 244 men (58%) and 177 women (42%). ($M = 36.20$; $SD = 7.56$). The Multi-Component Gratitude Scale, the Perceived Stress Scale, and the Fatigue Rating Scale were among the instruments used. Multiple linear regressions confirmed the positive effects of gratitude while also indicating higher levels of perceived stress and fatigue in women and younger professionals. These findings have implications for organizational psychologists because they suggest that gratitude can help reduce stress and fatigue in software developers. The authors suggest that organizational practitioners focus on improving professional well-being through the strategy and implementation of gratitude training programs.

4.4. Summary

This chapter examined the statistically significant positive relationship between gratitude and perceived stress. It also provides a valuable lens of conducted researches that supports the hypothesis.

Conclusion

The study sought to discover the relationship between gratitude and perceived stress and self-efficacy among college students.

The variables used in the study are gratitude, perceived stress and self-efficacy. The hypothesis stated that, "there is a significant negative correlation between gratitude, perceived stress and self-efficacy" is accepted. Participants included 188 people all over India. The scales used for the study were Gratitude Scale and Perceived Stress Scale and general self-efficacy scale. The survey was conducted through Google Forms where the participants were first informed about the ethical consideration and anonymity. Then they were taken to the page where they were asked to fill out the questionnaire. Following the completion of the survey, they were thanked for the same. The analysis used were Descriptive analysis, Inferential analysis and SPSS.

The study's findings revealed a significant negative relationship between gratitude and perceived stress and self-efficacy among college students.

5.3 Implications of the study

1. Findings of the current study will help provide an insight to better understand the areas of gratitude, perceived stress and self-efficacy among college students.
2. Understanding these concepts can lead to the development of interventions aimed at improving mental health, reducing stress-related illnesses, and promoting overall well-being.

3. Thinking more about it, people who will incorporate more gratitude will automatically take less stress and could have better understanding of their competencies.
4. Schools and parents could foster such habits and curriculum since the start of children's education that how important is to make gratitude a part of life at every level.

5.4 Limitations of the study

- The current study is restricted to college students under the college premises
- Individuals in between the age of 18-30 were included in the study to gather responses.
- The study was carried out in a very short and limited time frame.
- The areas that have been covered by the scales are not wholesome as individual's sense of gratitude in other areas was not determined, stress level of individuals was also limited and did not cover the important factors.

5.5 Suggestions for Further Research.

- A larger sample should be used.
- The study should be extended to more than one city or state of India.
- Control for age, gender, socio-economic status, education level, and cultural background, as these factors can influence perceptions of gratitude, self-efficacy, and stress.
- The study can be conducted including a larger sample population, as gratitude and perceived stress can have significant role in people's lives and could also depend upon the same.
- Gratitude and perceived stress and self-efficacy can also be studied with a common topic health, physical well-being and workplace.

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6

CHAPTER

EFFECTS OF EARLY MARRIAGE

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Abstract

Birth, marriage and death are the standard trio of key events in most people's lives. But only 'marriage' is a matter of choice. The right to exercise that choice was recognized as a principle of law even in times earlier and has long been established in international human rights instruments. The word "early" refers to the fact that the marriage or union of girls and adolescent girls competes with their schooling, entry to the labour market and their physical, psychological and emotional development (Greene, 2019). The term "early" also emphasizes that a marriage or union can disrupt a young woman's development and have adverse consequences at different points of her adult life. The practice of early marriage in some communities was influenced by social, cultural, economic and individual factors. Social scientists have argued that early marriage prevents women from attaining their rightful education, accessing employment and training opportunities, developing social relationships with peers and participating in civic life. Early marriage, a problem faced mostly by girls, leads to inequality and discrimination in the lives of women (Hervish & Feldman-Jacobs, 2011; International Planned Parenthood Federation & United Nations for Population Association [IPPF & UNFPA], 2007). Early marriage—which is non-normative—could have no, or even negative, mental health consequences for young adults. When a girl is forced into early marriage, she is denied access to education, healthcare and economic opportunities. This breeds gender-based violence and is a violation of human rights, the consequences of which follow these young women all their lives. It confirms poor mental health as a risk factor for early marriage. Additionally, the study confirms that early marriage heightens risks for depression and suicidality. It furthermore establishes abuse within marriage as an additional risk factor for mental health problems and suicide risks in girls.

Key words: marriage, poverty, mental health, early

Introduction

Throughout the world, marriage is regarded as a moment of celebration and a milestone in adult life. Birth, marriage and death are the standard trio of key events in most people's lives. But only 'marriage' is a matter of choice. The right to exercise that choice was recognized as a principle of law even in times earlier and has long been established in international human rights instruments. The word "early" refers to the fact that the marriage or union of girls and adolescent girls competes with their schooling, entry to the labour market and their physical, psychological and emotional development (Greene, 2019). The term "early" also emphasizes that a marriage or union can disrupt a young woman's development and have adverse consequences at

different points of her adult life. Sadly, it is clear, that the practice of early marriage gives no such cause for celebration. All too often, the imposition of a marriage partner upon a child means that a girl or boy's childhood is cut short and their fundamental rights are compromised. Over the last thirteen years working in an educational institution, I have encountered the phenomena of early marriage on numerous occasions in my work front. While much of the impact remains hidden, it is absolutely clear that millions of young girls suffer negative consequences. This chapter looks at the perpetuation of early marriage, and its possible increase in populations under stress. A key factor is poverty, with the marriage of the girl often seen as a strategy for economic survival. In addition, it is perceived as a way to protect girls and to provide some stability in situations where societies are under extreme pressure.

While early marriage takes many different forms and has various causes, another issue is paramount. Whether it happens to a girl or a boy, early marriage is a violation of human rights. The right to free and full consent to a marriage is recognized in the 1948 Universal Declaration of Human Rights (UDHR) and in many subsequent human rights instruments – consent that cannot be 'free and full' when at least one partner is very immature. For both girls and boys, early marriage has profound physical, intellectual, psychological and emotional impacts, cutting off educational opportunity and chances of personal growth. For girls, in addition, it will almost certainly mean premature pregnancy and childbearing, and is likely to lead to a lifetime of domestic and sexual subservience over which they have no control.

Yet many societies, in developing countries continue to support the idea that girls should marry at or soon after puberty. Their spouses are likely to be a few years older than they are, but may be more than twice their age. Parents and heads of families make marital choices for daughters and sons with little regard for the personal implications. Rather, they look upon marriage as a family-building strategy, an economic arrangement or a way to protect girls from unwelcome sexual advances.

The practice of early marriage in some communities was influenced by social, cultural, economic and individual factors. Social scientists have argued that early marriage prevents women from attaining their rightful education, accessing employment and training opportunities, developing social relationships with peers and participating in civic life. Early marriage, a problem faced mostly by girls, leads to inequality and discrimination in the lives of women (Hervish & Feldman-Jacobs, 2011; International Planned Parenthood Federation & United Nations for Population Association [IPPF & UNFPA], 2007). Early marriage—which is non-normative could have no, or even negative, mental health consequences for young adults. When a girl is forced into early marriage, she is denied access to education, healthcare and economic opportunities. This breeds gender-based violence and is a violation of human rights, the consequences of which follow these young women all their lives. Forced child marriage is a gross violation of human rights and a barrier to girls' health and social well-being. It confirms poor mental health as a risk factor for early marriage heightens risks for depression and suicidality. It furthermore established abuse within marriage as an additional risk factor for mental health problems and suicide risks in girls.

For example, increasing evidence suggests that poverty is significantly associated to poorer mental health outcomes, particularly in relation to common mental disorders such as depression and anxiety. The relationship between mental health, intimate partner violence (IPV) and gender-based violence is widely acknowledged. 2018 systematic review and meta-analysis of cohort studies found that IPV is associated with increased rates of depression among adolescents and young women. Sexual health issues such as HIV and early child-bearing have clear links to poor mental health. Obstetric fistula, one of the leading reproductive health risks facing girls who marry and have children early, has also been linked to poor mental health in numerous studies. The importance of schooling and social connectedness for adolescent mental health and wellbeing is also globally

recognised. Such evidence suggests that the wider contexts of child marriage may establish particular risk pathways for poor mental health and leads us to our current work.

Mental Health: The missing piece?

In order to fully understand the mental health and child marriage relationship, we must also consider how related social environments such as those described above establish mental health risks in their own right, potentially establishing compounded risk profiles for those who experience early marriage. The loss of adolescence, the forced sexual relations, and the denial of freedom and personal development attendant on early marriage have profound psychosocial and emotional consequences. The impact can be subtle and insidious and the damage hard to assess. It includes such intangible factors as the effect of a girl's loss of mobility and her confinement to the home and to household roles. Obviously there is a marked lack of data in these areas, and social researchers have failed to examine the impacts of early marriage in this context. Most girls who are unhappy in an imposed marriage are very isolated. They have nobody to talk to as they are surrounded by people who endorse their situation. The notion of good reproductive health covers all aspects of the reproduction process – including a satisfying and safe experience of sexual relations, the capability to reproduce, and the freedom to decide if and when to bear a child. The right not to engage in sexual relations and the right to exercise control over reproduction may both be violated by early marriage.

In Jordan a study of 15 women aged 15–37 highlighted that early marriage and pregnancy contributed to distress associated with loss of education, self-confidence, decision-making power, childhood, freedom of mobility and peer social networks. In Ghana, girls who perceived their marriage as “early” reported increased distress linked to low income, pregnancy and childbirth and parenting challenges. However, both studies also noted alleviation of some form in psychological distress in some cases, linked to increased access to financial and practical support (i.e childcare support) or increased social status among girls whose marriage was framed as ‘timely’ instead of ‘early’

Education for empowerment and intellectual development

The key to girls’ progress is education and learning. Persuading parents to keep their daughters in school and ensuring that they receive a basic education, as is their right, is important for a number of personal and family, as well as wider social and economic, reasons including postponement of marriage. Finally, the chapter offers positive guidelines to end the practice of early marriage. We must work to change attitudes in families and in societies at large, extend opportunities for childhood learning and education, offer appropriate support to families and children, and seek to have all children – girls and boys – recognised as valuable members of society rather than economic burdens.

The awareness programs should focus on three key issues: 1) Providing girls with life skills such as numeracy, literacy, using a telephone or articulating their needs and interests to elders; 2) Raising awareness and commitment among parents, teachers, religious leaders and other influential adults to eradicate forced child marriage; and 3) Working with young people—including boys—to understand and build peer support on the idea of preventing forced child marriage. Finally, any effort aimed at ending forced child marriage, must address how to strengthen girls’ education programs to ensure that girls stay in school and learn enough for parents to consider it worthwhile postponing their marriage.

Girls around the world have a right to experience childhood and early adulthood – to make friends, go to school and colleges, pursue their aspirations and live a healthy life free from any sort of

impositions. The practice of forced child marriage robs girls of these opportunities. But it does not need to be this way – we have successful solutions. In many communities, the desire to abandon child marriage exists, and local organizations are doing substantial work. What is lacking is sustained and coordinated support from governments, the international community and donors. With increased leadership and support, we have the opportunity to significantly diminish the number of child marriages in the next few years. Ending child marriage will yield a double dividend. Not only is it the right thing to do – it is the smart thing to do. This bill will help protect the human rights of adolescent girls – and it will and provide the opportunities to live fuller lives that could break the intergenerational cycle of poverty. We need to protect young adults from sacrificing their lives and future in name of early marriage with the support of an act. In spite of this it is an ardent need to make people aware and the society at large against the evil effects of early marriage. Treat the girls as they are, but as brides ignoring their will to be a bride.

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7

CHAPTER

SCRUTINIZING SCABIES: UNDERSTANDING ITS ORIGIN AND EFFECTIVE TREATMENT

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ABSTRACT:

Scabies, caused by the microscopic mite *Sarcoptes scabiei*, is a highly contagious skin infestation prevalent in various settings globally. This chapter explores the symptoms, causes, and treatment modalities associated with scabies. The hallmark symptom is intense itching, accompanied by a distinctive rash that often manifests in specific areas of the body. Transmission occurs through direct skin-to-skin contact or indirectly through infested items. Key treatment approaches involve prescription medications like permethrin and ivermectin, alongside topical steroids for symptom relief. Environmental measures, including thorough cleaning and isolation, play a crucial role in preventing reinfestation. Recognizing the importance of early detection and intervention, this chapter aims to enhance awareness and understanding of scabies, providing valuable insights for both healthcare professionals and the general public.

KEYWORDS: Scabies, *Sarcoptes scabiei*, contagious skin infestation, itching, rash, transmission, treatment, permethrin, ivermectin, topical steroids, prevention, early detection, public health.

INTRODUCTION:

Scabies, an infectious skin condition caused by the *Sarcoptes scabiei* mite, poses a significant health concern globally. Characterized by relentless itching and a distinctive rash, scabies affects individuals across diverse demographics, with a higher incidence in communal environments. This chapter delves into the multifaceted aspects of scabies, shedding light on its symptoms, causes, and treatment strategies. As a contagious malady with the potential for rapid transmission, understanding the intricacies of scabies is pivotal for healthcare professionals, caregivers, and the general public alike. By exploring the nuances of this parasitic infestation, we aim to facilitate early recognition, effective management, and preventive measures, contributing to improved public health outcomes.

ETIOLOGY:

Scabies, a dermatologic condition with an intricate etiology, is primarily caused by the parasitic mite *Sarcoptes scabiei*. These mites are microscopic, belonging to the arachnid family, and their life cycle involves several stages. The adult female mite burrows into the top layer of the skin, creating tunnels where it lays eggs. The hatched larvae then mature into nymphs and eventually into adult mites, completing the cycle.

Transmission of scabies typically occurs through prolonged, direct skin-to-skin contact with an infested person. The mites may also spread indirectly through infested clothing, bedding, or other personal items. The ability of *Sarcoptes scabiei* to survive away from the human body for a short period enhances the risk of transmission in shared environments.

Certain risk factors contribute to the susceptibility of individuals to scabies infestation. Living in crowded or close-contact settings, such as nursing homes, prisons, or childcare facilities, increases the likelihood of exposure. Individuals with compromised immune systems, the elderly, and those with prolonged skin-to-skin contact with an infested person are also at a higher risk of contracting scabies.

Understanding the etiology of scabies is crucial for effective prevention and control measures. Recognizing the mite's life cycle, modes of transmission, and risk factors informs healthcare professionals and the general public about the importance of early detection, prompt treatment, and the implementation of preventive strategies to curb the spread of this parasitic infestation.

PATHOPHYSIOLOGY OF SCABIES:

Scabies is characterized by a complex pathophysiology involving the infestation of the skin by the *Sarcoptes scabiei* mite. The mite's life cycle and the host's immune response play integral roles in the development of the characteristic symptoms and manifestations associated with scabies.

1. **Burrowing and Egg Laying:** The female *Sarcoptes scabiei* mite burrows into the epidermis, creating characteristic serpiginous tunnels. These burrows serve as protective environments for the mite to lay eggs. The eggs hatch into larvae, which then progress through nymphal stages before reaching adulthood. The entire life cycle occurs within these burrows.
2. **Immune Response:** The presence of mites, their eggs, and waste products in the skin triggers an immune response. This response involves the activation of inflammatory pathways, leading to the release of histamines and other immune mediators. It is this immune reaction that results in the intense itching and rash characteristic of scabies.
3. **Clinical Manifestations:** The immune response contributes to the formation of a red, pimple-like rash and the development of small, raised bumps or blisters. The itching, often more pronounced at night, is a result of both the direct irritation caused by the mites and the inflammatory response initiated by the host's immune system.
4. **Secondary Infections:** Persistent scratching due to itching can lead to open sores, creating an entry point for bacteria. Secondary bacterial infections may further complicate the clinical picture, adding to the overall discomfort and potential for complications.
5. **Transmission:** The mites are primarily transmitted through direct, prolonged skin-to-skin contact. Additionally, mites can survive for a brief period outside the human body, facilitating transmission through infested clothing, bedding, or other personal items.

EPIDEMIOLOGY OF SCABIES:

Scabies is a widespread dermatologic infestation that affects people across the globe, presenting a notable public health concern. The epidemiology of scabies involves the study of its occurrence, distribution, and determinants within populations.

Global Prevalence: Scabies is found worldwide, with varying prevalence rates in different regions. It is more common in areas with crowded living conditions, limited access to healthcare, and inadequate sanitation.

High-Risk Settings: Certain environments, such as nursing homes, prisons, and childcare facilities, pose a higher risk for scabies transmission due to close contact and shared living spaces. Outbreaks can occur in these settings, emphasizing the importance of early detection and intervention.

Age and Gender Distribution: Scabies can affect individuals of all ages and genders. However, it often spreads more easily among children and young adults due to increased physical contact during play and other activities.

Seasonal Patterns: Scabies may exhibit seasonal variations in different climates. Factors such as temperature and humidity can influence the survival of mites outside the human body, potentially affecting transmission rates.

Socioeconomic Factors: Socioeconomic status plays a role in scabies prevalence. Overcrowded living conditions, lack of access to proper hygiene, and limited healthcare resources contribute to higher rates of infestation in economically disadvantaged populations.

Immune Status: Individuals with compromised immune systems, such as those with HIV/AIDS or other immunodeficiencies, may be more susceptible to severe and persistent scabies infestations.

Global Health Impact: While scabies itself is not a life-threatening condition, its impact on affected individuals' quality of life can be significant. Scratching and secondary bacterial infections can lead to complications, emphasizing the need for timely intervention.

Control and Prevention: Public health measures focus on early detection, treatment, and prevention of scabies spread. Strategies include health education, proper hygiene practices, and the treatment of affected individuals and their close contacts.

CLINICAL PRESENTATION OF SCABIES:

Scabies presents with a distinct set of signs and symptoms, primarily stemming from the infestation of the skin by the *Sarcoptes scabiei* mite. The clinical presentation can vary among individuals, but certain common features characterize this parasitic skin infestation.

- **Intense Itching:**

The hallmark of scabies is intense itching, often exacerbated at night. This itching is a result of the body's allergic response to the mites, their eggs, and their waste products. The severity of itching can lead to significant discomfort and sleep disturbances.

- **Characteristic Rash:**

A red, pimple-like rash is a typical feature of scabies. The rash may manifest as small, raised bumps, blisters, or tiny red lines. These lesions often appear in specific areas, including the webbing between fingers, wrists, elbows, knees, buttocks, and genitalia.

- **Burrows:**

In some cases, thin, grayish-white, or red lines may be visible on the skin, indicating the burrows created by the female mite as it tunnels beneath the surface. Burrows are commonly found in the folds of the skin and between fingers.

- **Papules and Nodules:**

The affected areas may develop papules, small solid bumps, or nodules, larger, more palpable masses. These skin changes contribute to the overall discomfort experienced by individuals with scabies.

- **Secondary Infections:**

Persistent scratching due to itching can lead to open sores, creating a risk for bacterial infections. Secondary infections can complicate the clinical picture and may require additional medical attention.

- **Localized or Generalized Involvement:**

Scabies infestations can be localized or widespread. In localized cases, the mites infest specific areas, while generalized cases involve a more extensive distribution over the body.

- **Symptoms in Infants and Children:**

In young children and infants, scabies may present with widespread, itchy rashes and irritability. The appearance of lesions can vary, and the infestation may involve the palms, soles, and face.

- **Symptoms in Immunocompromised Individuals:**

Individuals with compromised immune systems may experience more severe and persistent scabies infestations, with a higher likelihood of complications.

DIAGNOSIS OF SCABIES:

Diagnosing scabies involves a combination of clinical evaluation, examination of characteristic skin lesions, and, in some cases, laboratory tests. Healthcare professionals utilize various methods to accurately identify and confirm the presence of *Sarcoptes scabiei* mites on the skin.

1. **Clinical Examination:** A thorough clinical examination is crucial for diagnosing scabies. Healthcare providers assess the patient's medical history, inquire about symptoms, and conduct a physical examination. The characteristic signs, including intense itching, rash, and the presence of burrows, are key factors in the clinical diagnosis.

2. **Skin Lesion Inspection:** Examining the skin lesions is a fundamental aspect of scabies diagnosis. The rash often appears as small, red bumps, blisters, or lines, with a predilection for specific areas such as the webbing between fingers, wrists, elbows, and genitalia. Burrows, if present, may be visible as thin, grayish-white, or red lines on the skin.

3. **Microscopic Examination:** In certain cases, healthcare providers may perform a microscopic examination to confirm the diagnosis. This involves taking a skin scraping from an affected area and examining it under a microscope to detect the presence of mites, eggs, or fecal matter.

4. **Dermoscopy:** Dermoscopy, a non-invasive technique using a specialized magnifying instrument, may be employed to enhance the examination of skin lesions. This can aid in visualizing characteristic features such as burrows.

5. **Scabies Ink Test:** The scabies ink test involves applying ink to the skin, wiping it away, and then applying a clearing solution. This process highlights the burrows, making them more visible for examination.

6. **Biopsy (Rarely Used):** In rare cases, a skin biopsy may be conducted to examine a small sample of skin under a microscope. Biopsies are not commonly necessary for routine scabies diagnosis but may be employed in challenging cases.

7. **Contact Tracing:** In outbreaks or situations involving close contacts, healthcare professionals may recommend treating all individuals in the affected group, even if they do not show symptoms. This contact tracing approach helps prevent further spread of the infestation.

A definitive diagnosis of scabies is crucial for initiating appropriate treatment and preventing the spread of the mites. Healthcare providers consider the clinical presentation alongside additional diagnostic tools to ensure accurate identification of scabies and to rule out other skin conditions with similar symptoms.

TREATMENT OF SCABIES:

The treatment of scabies involves the use of medications to eliminate the *Sarcoptes scabiei* mites, relieve symptoms, and prevent further transmission. It is essential to treat all individuals in close contact with the infested person simultaneously to prevent reinfestation. The primary medications used for scabies treatment include topical agents and, in some cases, oral medications.

1. Topical Scabicides:

- **Permethrin Cream:** This is the most commonly prescribed scabicide. It is a topical cream that is applied to the entire body from the neck down and left on for a specified period before washing off. Permethrin effectively kills the mites and their eggs.
- **Ivermectin Lotion:** Another topical option is ivermectin lotion, which is applied to dry skin and left on for a specified duration. It is particularly useful in situations where topical creams are less well-tolerated.

2. Oral Medications:

- **Ivermectin Tablets:** In some cases, oral ivermectin may be prescribed, especially when topical treatments are impractical or less effective. It is taken as a single dose and works systemically to eradicate the mites.

3. Topical Steroids:

- **Corticosteroid Creams:** To alleviate itching and inflammation, healthcare providers may recommend topical steroids. These creams are applied to affected areas and help manage the allergic response associated with scabies.

4. Antihistamines:

- **Oral Antihistamines:** In cases of severe itching, oral antihistamines may be prescribed to provide relief and improve sleep. This is especially relevant during the initial stages of treatment when itching can be intense.

5. Environmental Measures:

- **Washing Clothing and Bedding:** All clothing, bedding, and personal items should be washed in hot water and dried on high heat to eliminate any mites or eggs.

- **Vacuuming and Cleaning:** Thoroughly cleaning the living environment helps remove stray mites. Vacuuming carpets, upholstery, and other surfaces can contribute to preventing reinfestation.
6. **Isolation and Prevention:**
- **Avoiding Close Contact:** Infected individuals should avoid close physical contact with others until the treatment is complete.
 - **Treating Close Contacts:** All individuals in close contact with the infested person, even if asymptomatic, should be treated simultaneously to prevent the spread of scabies.
7. **Follow-Up:**
- **Reassessment:** A follow-up visit with a healthcare provider may be recommended to ensure the effectiveness of the treatment and address any lingering symptoms or complications.

CONCLUSION:

Scabies, caused by the *Sarcoptes scabiei* mite, is a common yet manageable dermatologic condition with a global impact. Its distinctive clinical presentation, characterized by intense itching, rash, and burrows, necessitates prompt and effective intervention. The diagnostic process involves a combination of clinical evaluation, microscopic examination, and, in some cases, additional tests to confirm the presence of mites. Once diagnosed, treatment primarily revolves around the use of topical scabicides, oral medications, and supportive measures to relieve symptoms.

Beyond individual treatment, addressing scabies requires a comprehensive approach that includes treating close contacts simultaneously, implementing environmental measures, and practicing good hygiene. Timely intervention not only alleviates discomfort for affected individuals but also helps prevent further spread of the infestation within communities, particularly in high-risk settings.

The global epidemiology of scabies underscores the importance of public health initiatives to raise awareness, facilitate early detection, and implement preventive measures. Education about scabies transmission, symptoms, and treatment is crucial for minimizing its impact on individuals and communities alike.

In conclusion, while scabies can be an uncomfortable and challenging condition, effective treatment strategies, combined with public health efforts, can contribute to its successful management. By understanding the etiology, pathophysiology, clinical presentation, diagnosis, and treatment options, healthcare professionals and the general public can work collaboratively to mitigate the impact of scabies on both an individual and community level.

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8

CHAPTER

TRANSFORMING THE FUTURE OF EDUCATION IN INDIA: ROLE OF METaverse

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Abstract

The metaverse, a technology that uses immersive technologies like virtual reality, augmented reality, and artificial intelligence, has the potential to revolutionize education by transforming classroom instruction, knowledge retention, vocational training, and lifelong learning. It can enable students to learn from people and institutions they cannot access soon, addressing regional inequities and providing a personalized approach. However, metaverse-based education should be seen as an addition to conventional approaches, promoting student engagement, strengthening conceptual understanding, and increasing satisfaction. Large corporations like Meta (formerly Facebook) are investing in AR for hiring and onboarding, and artificial intelligence will be included in the Indian educational system as part of the National Education Policy (NEP). The metaverse is here to stay, but challenges must be overcome, such as ensuring the quality and accessibility of virtual environments, protecting students from security risks, and establishing standards for high-quality education. Governments can set the framework by creating curricula, instituting digital literacy programs, and encouraging educators to direct virtual reality technology.

Keywords: Metaverse; Indian Education; Augmented Reality; Virtual Reality; Experiential Learning.

Introduction

AI and immersive technologies are transforming education by enabling tailored experiences for individual students. AI can design virtual environments for specific lessons, personalize curriculum materials, and process multiple languages simultaneously. This makes language learning more effective, allowing students to interact with waiters and receive real-time feedback. The Metaverse is a virtual universe created by combining Virtual Reality (VR), Artificial Intelligence (AI), and Augmented Reality (AR) in online space. It is inhabited by avatars who perform real-life activities, providing an immersive experience. The term was first used in 1992 in Neal Stephenson's *Snow Crash*, a 3-dimensional virtual world for escape from oppressive reality. Today's Metaverse is like that world but promises to be more beneficial in various areas, especially in education. Conventional and screen-based learning require constant presence and location, while metaverse offers flexibility and time flexibility through smart wearable devices and high internet connectivity. It allows learners to create avatars, interact with teachers and peers, and receive real-time feedback. Metaverse also provides realistic scenarios for practical learning, unlike traditional methods that focus on theoretical methods. It also offers real learning resources and activities, unlike traditional methods that rely on static materials like textbooks and pictures. This innovative

approach allows teachers to innovate new teaching methods and create more engaging and interactive learning environments.

The metaverse, a virtual recreation of the real world, has the potential to reform education by offering unique experiences and virtual simulations. However, it should be seen as a supplement to traditional methods, providing students with a blend of textbook knowledge and practical virtual experiences. This approach can enhance comprehension, participation, and satisfaction. While the metaverse offers benefits for educators and learners, it is crucial to balance its use with privacy and a positive learning environment. As technology advances, it is essential to consider both the benefits and drawbacks of this innovative approach. The metaverse is set to revolutionize education by allowing students to explore historical sites and learn through immersive 3D environments. This technology, rebranded by Mark Zuckerberg as Meta in October 2021, can be accessed through virtual reality (VR) and augmented reality (AR) headsets, as well as phones, consoles, and linked gadgets. The metaverse economy is estimated to be worth over \$3 trillion globally in a decade, providing a more immersive and interactive learning experience for students. This technology could significantly enhance traditional education models.

Need of Metaverse in Indian Education

The Metaverse is poised to transform education in India by democratizing access to quality education, saving on costly infrastructure, and facilitating easy upskilling. With no geographical constraints, the Metaverse can make quality education easily accessible to all, particularly girls. It also reduces the digital divide by providing a better educated and trained population, benefiting both students and the country. Easy upskilling is another benefit of the Metaverse, as it allows for specialized training and hands-on experience in new machinery or technology. Relocating this process from the physical world to the Metaverse saves time on logistics and puts India in the lead in technological and production prowess.

Customized tutoring can be facilitated by the Metaverse, based on the student's learning style, enriching their understanding of the subject matter, and increasing engagement. Large multinationals, such as Meta (previously known as Facebook), are investing in AR for over 10 million students and 1 million teachers in India. The National Education Policy (NEP) intends to assimilate Artificial Intelligence into the Indian education system, highlighting the Metaverse's potential to bring exciting changes in this sector for both teachers and students.

The advantages of Metaverse in Education

The metaverse is transforming education by providing a safe, controlled, and interactive learning environment. It allows students to practice surgeries, design structures, and learn from hands-on experiences. Teachers can customize the learning experience for each student, enhancing engagement and learning outcomes. The metaverse also fosters teamwork, allowing students to collaborate on projects and engage in virtual discussions. This makes learning more accessible, eliminating geographical, physical, and cost limitations that traditional education may have. The technology also makes education more cost-effective and accessible to those who might not be able to afford traditional education. Research shows that students generally view metaverse education as a positive and engaging form of learning.



Fig. 1 Advantages of Metaverse in Education

Overall, the metaverse offers a more flexible and accessible approach to education by providing flexible learning concepts, interactive curriculum, and gamification. It simplifies understanding concepts like the solar ecosystem, rocket launch, and medical surgeries. Gamification keeps learners motivated and encourages them to explore different geographical areas. The metaverse is a versatile tool in various educational settings, including arithmetic, engineering, STEM education, and aviation instruction. It allows students to interact with virtual aircraft, enhances learning and practice, and presents applications in STEM fields. The metaverse allows students to engage in extra-curricular activities like athletics and arts, as well as participate in virtual clubs and virtual playgrounds. Platforms like Zepeto, Roblox, Gather.town, and Fortnite offer 3D graphics and world construction tools, allowing users to customize their virtual worlds. The metaverse can also spark students' interest in humanitarian causes and societal issues, such as famine, pollution, and climate change. Mobile virtual reality games can enhance students' learning determination and communication skills in game-based learning. However, few studies have utilized augmented reality or lifelogging modes, focusing on virtual worlds mode for technical support. The metaverse also makes teaching more interactive, allowing for more opportunities to experiment and improve problem-solving skills. Few advantages of Metaverse in education sector are shown in Fig.1.

The metaverse can revolutionize the education system by allowing students to create avatars and attend classes with others in a virtual 3D environment. Virtual campus activities provide the feeling of being physically present on campus and participating in events like competitions and sports. Practical learning can be improved by combining or exchanging concepts, such as mathematics formulas for physics. Events with prominent figures can also be organized in the metaverse, allowing students to interact and learn from their experiences and knowledge. The transformation of the education sector from eLearning to the metaverse is expected to continue, benefiting various applications in the future.

Opportunities of the Metaverse in India

The adoption of Virtual Reality (VR), Augmented Reality (AR), and Mixed Reality (MR) technologies in India has been growing steadily, with companies like HTC Vive, Oculus, and Sony

PlayStation introducing their products. VR is being used in entertainment, education, healthcare, retail, and e-commerce, while AR is being used in retail, advertising, marketing, architecture, and manufacturing. MR is being explored for training, remote collaboration, product design, and visualization. However, challenges include limited access to high-speed internet and technological infrastructure in rural areas, a need for greater awareness and education about the potential applications and benefits of VR/AR/MR technologies, the availability of quality content and applications, and a need for clear regulatory frameworks to address privacy, security, and ethical concerns associated with immersive technologies. Despite these challenges, the VR/AR/MR market in India has significant potential for growth and innovation across various sectors. As technology advances and awareness increases, the integration of immersive technologies into everyday life in India is expected to continue.

Table 1 showcasing the successful implementations of the metaverse in India. This table shows how organizations in India are leveraging the metaverse and immersive technologies to innovate across various industries, including automotive, education, retail, real estate, and telecommunications.

Existing Metaverse Practices in India		
Tata Elxsi's Virtual Automotive Showroom		Tata Elxsi, a design, and technology company, developed a virtual showroom for the automotive industry. The showroom allows users to explore different car models in a virtual environment, customize features, and experience the vehicles in immersive detail. This virtual showroom enhances the car buying experience and enables automotive companies to showcase their products digitally.
BYJU'S Future School Virtual Learning Platform		BYJU'S, one of India's leading edtech platforms, launched the FutureSchool virtual learning platform, which leverages immersive technologies to offer interactive and engaging educational experiences. The platform incorporates elements of the metaverse to create virtual classrooms, interactive simulations, and personalized learning environments. Through the FutureSchool platform, students can access high-quality education from anywhere, fostering a more inclusive and accessible learning ecosystem.
Aditya Birla Fashion and Retail Limited's Virtual Trial Rooms		Aditya Birla Fashion and Retail Limited introduced virtual trial rooms for its fashion brands, allowing customers to virtually try on clothes and accessories before making a purchase. Using augmented reality (AR) technology, customers can see how different garments look on them in real-time without needing to visit physical stores. This innovative approach enhances the retail experience, reduces the need for physical inventory, and increases customer engagement and satisfaction.
Mahindra Lifespace Developers' Mixed-Reality Real Estate Experience		Mahindra Lifespace Developers, a real estate company, implemented mixed-reality technology to create immersive experiences for potential homebuyers. Through mixed-reality headsets, customers can visualize and explore virtual models of properties, walk through floor plans, and experience the ambiance of different living spaces. This technology-driven approach revolutionizes the real estate buying process, enabling customers to make informed decisions and envision their future homes more vividly.
Reliance Jio's JioMeet Virtual		Reliance Jio, a telecommunications giant in India, launched JioMeet, a virtual conferencing platform that incorporates elements of the metaverse to

<p>Conferencing Platform</p>	<p>facilitate remote collaboration and communication. JioMeet offers features such as virtual meeting rooms, customizable avatars, and interactive environments to enhance the virtual meeting experience. The platform caters to diverse use cases, including business meetings, online events, virtual classrooms, and social gatherings, making virtual interactions more immersive, engaging, and productive.</p>
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Concerns in Metaverse for Education

The metaverse offers numerous educational opportunities but also raises concerns about accessibility, digital divide, privacy, security, content quality, digital citizenship, virtual identity, screen time, health, and equity in educational opportunities. Accessibility is crucial for students and schools, as economic disparities may prevent them from fully engaging with the metaverse. The digital divide, which refers to the gap between those with access to digital technologies and those without, could widen if not addressed. Privacy and security are also important concerns, as is content quality and accuracy. Educators must critically evaluate content to ensure its accuracy and educational value. Students need to develop digital citizenship skills to navigate the metaverse responsibly and ethically. Virtual identity and presence should be considered, as excessive screen time can negatively impact students' physical and mental health. Equity in educational opportunities is also a concern, as some students may have access to better resources. Collaboration among educators, policymakers, technology developers, and other stakeholders is needed to ensure the metaverse is inclusive, safe, and beneficial for education.

Regulatory and Policy Considerations

India needs to address several regulatory and policy considerations when implementing the metaverse. These include protecting user data and privacy, regulating content, enforcing intellectual property rights, protecting consumers, and enhancing digital identity and authentication. Data privacy and security are crucial, with laws governing the collection, storage, processing, and sharing of personal and sensitive information. Content regulation is essential to prevent harmful or illegal content, such as hate speech, violence, and pornography. Intellectual property rights are crucial, with mechanisms for licensing, attribution, and enforcement. Consumer protection is essential, with laws protecting consumers against fraudulent practices, deceptive advertising, unfair competition, and unauthorized transactions.

Digital identity management and authentication systems should be robust, using technologies like blockchain, biometrics, and multi-factor authentication. Cross-border jurisdiction and enforcement are crucial, with India collaborating with international stakeholders to develop harmonized regulations and standards for the metaverse. Regulatory frameworks should promote innovation and competition while preventing monopolistic practices and anti-competitive behaviour. India should foster a conducive regulatory environment that encourages entrepreneurship, investment, and diversity in the metaverse ecosystem as shown in Fig. 2. By addressing these regulatory and policy considerations, India can create an enabling environment for responsible and inclusive metaverse development, fostering innovation, growth, and digital empowerment while safeguarding user rights and interests.

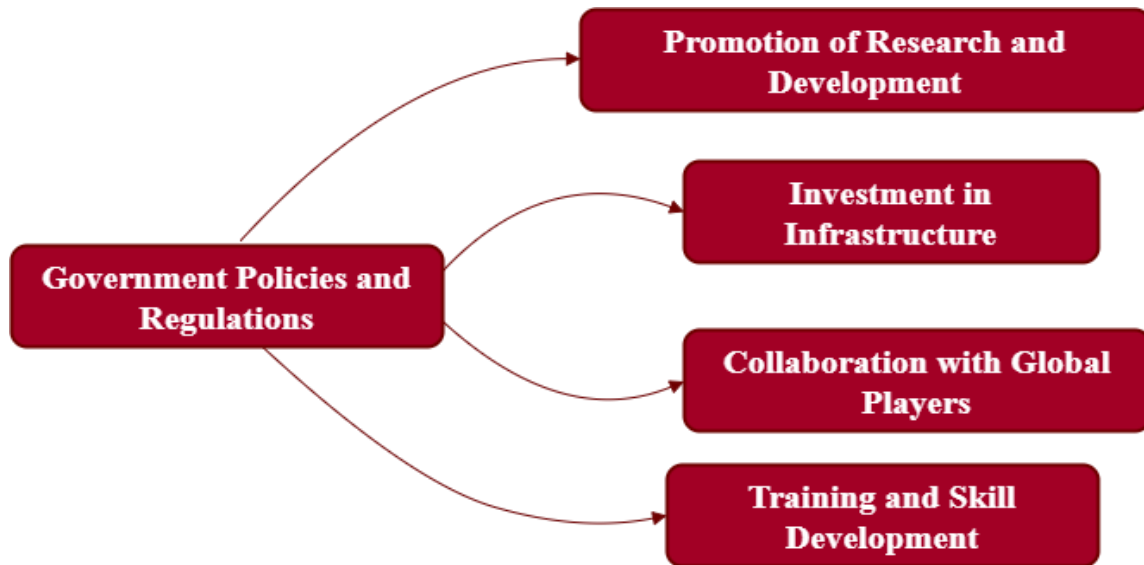


Fig. 2 Government Policies and Regulations for Metaverse in India

Recommendations for fostering the growth of the metaverse in India

The metaverse in India is a rapidly growing technology that requires a multi-faceted approach involving various stakeholders. To promote its growth, India should invest in infrastructure, integrate digital literacy and education into school curricula, and provide grants and funding opportunities for research and development. Regulatory clarity and support should be established to promote innovation, entrepreneurship, and investment in the metaverse while protecting consumer rights, data privacy, and security. Public-Private Partnerships (PPPs) should be established to co-create solutions, share resources, and address challenges related to infrastructure, content, skills development, and market access. Content creation and curated should be encouraged, with grants and subsidies for content creators, artists, developers, and cultural institutions. Inclusive and accessible design should be prioritized, ensuring virtual environments are accessible to users with disabilities, diverse backgrounds, and varying levels of digital literacy. Intellectual property rights should be strengthened to protect creators, innovators, and investors. Community engagement and awareness should be raised through outreach programs and public campaigns. International collaboration and exchange should be fostered with international partners to exchange knowledge, share best practices, and explore global opportunities in the metaverse.

Conclusion

The metaverse holds immense potential for India's technological landscape and society. It offers new opportunities for technological innovation, digital inclusion, economic growth, cultural preservation, and well-being. By embracing immersive technologies like VR, AR, and MR, India can drive innovation across various sectors. The metaverse can bridge digital divides, empowering marginalized communities and underserved groups. It also presents significant economic opportunities, including job creation and wealth generation. The metaverse also allows for cultural preservation and expression, fostering intercultural dialogue and understanding. However, India must address challenges related to digital literacy, online safety, mental health, and privacy. Ethical and legal considerations are also crucial. By fostering collaboration and collective action, India can harness the transformative potential of the metaverse to create a more equitable, prosperous, and resilient society.

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9

CHAPTER

CHALLENGES AND OPPORTUNITIES IN THE EVOLVING LANDSCAPE OF FINANCIAL MARKET

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Abstract:

This research paper explores the dynamic landscape of financial markets, identifying and analyzing the key challenges and opportunities that shape the industry. As financial markets continue to evolve, influenced by technological advancements, regularity changes and global economic shifts, understanding these factors becomes crucial for market participants regulators and policymakers. Though an in-depth examination, this paper aims to shed light on the multifaceted nature of challenges faced and opportunities presented in contemporary financial markets. The rapid growth and globalization of financial markets is perhaps one of the most significant developments in the world economy. This development has far reaching consequences, not only for financial markets per se but the growth and direction of world business. No other development has contributed so much to the growth of inter-dependence among the nations. Total volume of funds made available through these markets for exceed the flows of the unsponsored international financial institutions. The Indian financial markets play a crucial role in economic development through, saving investment, also known as capital formation. A vibrant and competitive financial market is necessary concomitant of trade and industrial policy liberalization to sustain the ongoing reform in the structural aspects of the real economy. Financial markets, which exist where ever financial transactions occur, are equally pervasive. There are two broad segments, of the financial market, viz. the money market and the capital market. The money market deals with short-term debt, whereas the capital market deals with long-term debt and stock (equity and preference).

Key words: *Financial Market, Instrument, Finance, Development, Opportunities, Challenges*

Introduction:

A market that serves as a link between the savers and borrowers, by transferring the capital or money from those who have a surplus amount of money to those who are in need of money or investment, is known as **Financial Market**. A Financial Market is a marketplace to trade financial instruments or selling and buying of financial assets and securities take place. These markets provide finance for companies to help them in investing and thus grow it allocates limited resources in the nation's economy. It serves as an agent between the investors and collector by mobilizing capital between them. Financial markets serve as indicators of economic performance, reflecting changes in the demand and supply of financial assets, as well as broader economic conditions. Simply put, Financial Market is a market that creates and exchanges financial assets. In general, the investors are known as the surplus units and business enterprises are known as the deficit units. Hence, a financial market acts as a link between surplus units and

deficit units and brings the borrowers and lenders together. One can allocate funds with the help of the following two main ways:

- Through Banks
- Through Financial Markets

Each and every business unit must operate within the financial environment. The financial system consists of a number of organizations, institutions and market. They secure the needs of the *consumers, firms and governments*. If a firm invests the idle funds temporarily in marketable securities, then it has to approach the financial market. Most of the firms use the financial markets to finance their investments in assets. Financial markets can be defined as “All Institutions and procedures for bringing buyers and sellers of the financial instruments together”. They provide better facilities for buying and selling of all the financial claims and services. All the participants trade in the financial products in the markets either directly or through the brokers. Financial institutions, agents, brokers, dealers, borrowers, lenders and savers participate both on demand and supply sides of the financial markets. The development banks and financial institutions can also influence the supply of funds. The government will determine the volume of supply of funds, allocation of funds, cost of funds and other factors.

The households (who are the surplus units) may keep their savings in banks or they may use that amount for buying securities from the capital market. The financial market and banks then lend the funds to the business firms (who are the deficit units). The banks and financial market compete with each other.

Types of Financial Markets

- **Stock markets:** These are markets where publicly traded companies issue and trade shares of their stock. It allows investors to buy and sell these shares in the hope of profiting from the company’s growth.
- **Bond markets:** These are markets where governments, corporations, and other entities issue and trade bonds, which are essentially loans that investors can buy and receive interest payments on.
- **Foreign exchange markets:** These are markets where currencies are bought and sold. They are used by businesses and investors to hedge against currency fluctuations and to speculate on the movements of different currencies.
- **Commodity markets:** These are markets where commodities such as gold, silver, oil, and agricultural products are traded. They are used by producers, consumers, and investors to manage the risks associated with commodity price fluctuations.
- **Derivatives markets:** These are markets where financial instruments such as options, futures, and swaps are traded. They are used by investors and businesses to manage risk, speculate on market movements, and hedge against changes in interest rates, exchange rates, and commodity prices.
- **Futures market:** It is a financial market where contracts for the future delivery of a specific asset, such as commodities, currencies, or financial instruments, are traded. Futures contracts refer to the agreement between a buyer and a seller to exchange an asset at a specific price and date in future.

Other types of financial markets	Meaning
Commodity Market	It deals in trading of commodities like pulses, gold, metals, silver, oil, grains, etc.
Derivatives Market	A marketplace where futures and options are traded
OTC Market	Deals with companies that are generally small and can be traded cheaply without any regulations.
Foreign Exchange Market	<ul style="list-style-type: none"> ○ It deals in trading of currencies of different countries. ○ It is considered as the most liquid financial market as currencies can be sold and purchased easily. ○ The fluctuating rate of currencies benefit the traders who are eager to derive profits by selling at a higher rate and buying at a lower one.
Bond Market	<ul style="list-style-type: none"> ○ It facilitates trading of government and corporate bonds that are offered by the companies and the government to raise capital. ○ These bonds are debt instruments having a fixed rate of return. ○ They also have a specific tenure, thus the bond market lacks liquidity.
Banking Market	It consists of banks and non-banking financial entities that provide various kinds of banking services including collection of deposits, offering loans, and so on.

Classifications of Financial Markets:

1. By Nature of Claim

- **Debt Market:** These Markets offer debt instruments and fixed claims like bonds and debentures, etc. for trading. Traders can buy these Financial holdings at debt Markets for a fixed return and an agreed-upon maturity period.
- **Equity Market:** These Markets are designed for residual claims. Investors can deal in equity financial holdings in such Markets.

2. By maturity of claim

- **Money Market:** Certificates of deposits, treasury bills, etc. are available in these Markets for trading. These are usually short term financial holdings, and can be traded online since these Markets usually do not exist physically.
- **Capital Market:** Among classification of Financial Markets, capital Markets are divided into primary and secondary Markets. Primary Markets allow newly listed companies to issue new securities, while also allowing listed companies to issue new shares.

3. By Timing of Delivery

- **Cash Market:** These Markets offer real time transactions which are immediately settled between different sellers and buyers.
- **Futures Market:** Among various types of Financial Markets and their functions, these Markets offer transactions where settlements and commodities are delivered in future dates.

4. By organizational Structure

- **Exchange-Traded Market:** These are centralised trading Markets which record immense trading on a daily basis. These have standard procedures which regulate their functioning while trading financial holdings like shares.
- **Over-the-Counter Market:** These Markets have customised procedures and do not have any centralised organisation. Traders can trade without involving any broker in their transactions. Typically offering shares from small companies, investors can trade in these Markets online.



Functions of Financial Market

Financial Markets helps in mobilizing savings, determining and settling the prices of various securities, providing liquidity to assets, and easing access to all types of traders.

1. Mobilisation of Savings and Channelising the Savings into the most Productive Uses: As the financial markets act as a link between the savers and investors, it transfers savers' savings to the most productive and appropriate investment opportunities.

2. Facilitation of Price Discovery: Another vital function served by Financial Markets is that of pricing different securities. Essentially, demand and supply in Financial Markets along with its interaction between investors determine these pricing.

3. Providing Liquidity to Financial Assets: Tradable assets must be provided with liquidity for its smooth functioning and flow. This is another role of the Financial Market which goes on to help

in the functioning of a capitalist economy. It not only allows investors to easily sell their securities and assets, but also allows them to easily convert them into cash money.

4. Reduction of the Cost of Transaction: Investors and companies have to collect information regarding financial securities before investing in them, which can be very time-consuming. The financial markets help these investors and companies by providing them with all information regarding financial securities including its price, availability, and cost.

5. Ease of Access: Financial Markets also offer efficient trading since they bring traders to the same Market. As a result, relevant parties do not have to spend any resource, be it capital or time, to find interest buyers or sellers. Additionally, it also provides necessary information related to trading, which also reduces the effort that interested parties must put in to complete their trades.

The advantages of the financial market are as follows.

- It offers a platform for businesses to raise funds for both long and short-term investments.
- Companies may obtain financing at a lesser cost than if they took out a high-interest loan from a commercial bank. Furthermore, commercial banks do not provide large loans.
- Companies have the freedom to obtain money from the market as needed until their authorized share capital is depleted.
- Financial market intermediaries, such as banks and financial institutions, give financial and strategic advice to both corporations and investors. They give information, advice, and professional services that might otherwise be unavailable.
- It offers a platform for simultaneously trading and dealing with various shares, equities, bonds, derivatives, and other financial instruments.
- Financial market laws and regulations that are stricter assist to strengthen the economy by instilling trust in both investors and businesses.
- Provide a platform for worldwide money lending and borrowing in several currencies.

The disadvantages of Financial Markets are follows:

- Too many procedures imposed by regulatory organizations might lengthen the process.
- Due to strict laws and restrictions, certain businesses are unable to access the financial sector. They are unable to establish resources that need constant monitoring and compliance checks.
- Investors may lose money owing to a lack of knowledge or because they are uninformed of the situation.
- Companies may shift from being investor-driven to being profit-driven. It's critical that the Board of Directors makes choices that benefit all of the company's stakeholders and avoids manipulating investors' funds for personal gain.

Regulators of the Financial Markets

The regulators of Financial markets in India have a special status as far as the Indian economy is concerned. These regulators operate in the financial market so that the participants of the market

abide by the laws and regulations of trading. Subsequently, the regulators ensure that there is fair trade in the market and the investors' interest is protected.

The prominent regulators of financial institutions in India are as follows:

Reserve Bank of India (RBI)

The RBI acts as chief and most prominent regulatory authority for the banks and non-banking financial institutions. It is also considered as the central bank of India, which is responsible for formulating monetary policies, foreign exchange policies, credit policies, etc. All the banks and non-banking financial institutions in India are required to follow the rules and guidelines set by the Reserve Bank of India in order to stay operational in the market.

Securities & Exchange Board of India (SEBI)

The SEBI is the prime regulator of the capital market. That means, it is also responsible for regulating both the primary as well as secondary capital market. All the trading and transactions taking place in the capital market is governed and regulated by the rules and regulations lay down by the Securities & Exchange Board of India.

Insurance Regulatory & Development Authority (IRDA)

The IRDA acts as the chief governor of the insurance companies and their intermediaries. The Insurance Regulatory & Development Authority is entrusted with the responsibility of regulating the insurance market comprising both life insurance market as well as general insurance market in India.

Challenges Faced By Financial Market in India:

Indian economy is one of the largest and fastest-growing economies in the world. There have been various reforms that have acted as a catalyst in the growth of the Indian economy; however, there are specific challenges that continue to block the development of the Indian economy. One of the most challenging encounters faced by the Indian markets is low levels of financial literacy. It creates an imbalance in the market, leading to the miss-selling of financial products and services. Apart from this, other factors contribute, such as:

1. Absence of Well Organized Banking Sector: - There is an absence of a well-structured banking sector in India. The banking operations are concentrated in major cities and towns but rural areas are completely devoid of it. Such anomalies in demographic disparities create a bottleneck in the efficiency of money market operations.

2. Shortages of Funds: - Usually, there is a shortage of funds in the Indian Money Market due to various factors, such as low savings, inadequate banking facilities, lack of banking habits, the existence of a parallel economy, etc.

3. Foreign Policy: - A country's foreign policy deals with Foreign Direct Investments (FDI) that a country is likely to receive. The higher the rate of the FDI flows to the country, the better it is for the country in the short run as well as in the long run.

4. Non Uniform Tax Reforms: - India has non-uniformity in its tax system across the state that makes it difficult for organizations to carry out business. This has resulted in the undergrowth of the businesses. The difference in the tax rates implemented in some states across India is one of the

significant challenges to carry out the business smoothly. It also accounts for the rising prices of the goods and services in the country.

5. Delays in technological up-gradation: - Upgradation of technology is a major requirement for the smooth functioning of money markets. However, this is absent in many places, especially rural areas in India. The absence of quick upgradation of money markets creates a backlog which is a major problem. India's technological impetus is changing fast which can add immense value to the money markets.

6. Climate and Natural Disasters: - Addressing the impact of climate change, mitigating risks associated with natural disasters, and implementing measures to build resilience in the face of environmental challenges.

7. Sustainable Development: - Balancing economic growth with environmental conservation and social well-being to meet the needs of the present without compromising future generations.

8. Education and Unemployment: - A significant chunk of the Indian population falls in the bracket of unemployment, thus making unemployment another major issue that affects the Indian capital market and its growth and development. The literacy rate too plays a vital role in the growth and development of the nation. Though the literacy rate is increasing, the rate of increment is low.

Conclusion:

This research paper provides an overview of the challenges and opportunities in financial markets, offering insights into the multifaceted nature of the industry and providing recommendations for stakeholders to navigate and capitalize on the evolving landscape.

Indian market is a booming market and has a vast scope of development in sectors like Pharmaceuticals, Retail Industry, Educations, FDI, etc. FDI should be increasingly allowed to attract foreign investors by keeping our economy stable of its own and not mostly dependent on the global market is essential. The markets in the Indian economy are of great importance for economic development. They are highly regulated, efficient and accessible to a broader range of investors. They facilitate capital formation, enabling companies to finance their operations and investments and improving economic growth. It has made them a crucial part of the Indian economy.

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10 CHAPTER

HARMONY AMIDST GROWTH: NAVIGATING THE ETHICS OF ENVIRONMENTAL CONSCIOUSNESS

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Abstract

"Harmony Amidst Growth: Navigating the Ethics of Environmental Consciousness" delves into the intricate relationship between human development and environmental preservation, focusing on the ethical implications of this complex dynamic. This chapter underscores the historical and ongoing conflict between economic growth and environmental conservation, a dilemma born during the Industrial Revolution and perpetuated by our current consumerist society. The narrative weaves through the role of literature, both classical and contemporary, in reflecting and shaping society's attitudes towards nature, and how these literary works have influenced our understanding of our place within the environment. The chapter critically examines the impact of ethics, values, politics, and consumerism on environmental degradation, while also exploring alternative, more sustainable models of consumption. It emphasizes the crucial role of proactive engagement with nature, presenting case studies where communities have successfully balanced economic growth with environmental preservation. The chapter concludes with a call to action, advocating for a shift in perception and behaviour, urging individuals and societies to strive for harmony between development and environmental consciousness. It provides an insightful, multi-dimensional analysis of the pressing need for a symbiotic relationship between nature and human progress.

Key Words: Environmental Consciousness, Green Consciousness, Conscious Consumerism, Sustainable Practices, Public Awareness

Introduction

In a world that is increasingly interconnected and interdependent, the topic of environmental consciousness is of paramount importance, and its relevance can hardly be overstated. As we grapple with the existential threats of climate change, biodiversity loss, and environmental degradation, understanding our relationship with the environment becomes not just a matter of philosophical interest, but a survival imperative. This chapter, "Harmony Amidst Growth: Navigating the Ethics of Environmental Consciousness," aims to delve into this critical subject,

exploring the intricate and often complex relationship between human development, economic growth, and environmental preservation.

At the heart of this exploration are three key terms that underpin our discussion: 'green consciousness', 'environmental ethics', and 'economic growth'. These concepts, though distinct, are deeply interconnected, and understanding them is crucial to navigating the terrain of environmental consciousness.

'Green consciousness' is a term that encapsulates our awareness of the environment and our role in its preservation. It involves recognizing the interconnected nature of all life on Earth and understanding that our actions, as individuals and societies, have far-reaching implications for the health of our planet. More than just awareness, green consciousness also involves a commitment to making lifestyle and societal choices that are environmentally friendly, sustainable, and respectful of nature's inherent value.

'Environmental ethics', on the other hand, is a field of philosophy that considers the moral relationships between humans and the natural world. It asks questions about the rights and wrongs of our actions towards the environment, challenging us to consider whether we have moral obligations to non-human entities and future generations. Environmental ethics pushes us to reevaluate our anthropocentric perspectives and consider more ecologically inclusive world views.

'Economic growth', a term that is often equated with progress and development, refers to an increase in the production and consumption of goods and services in an economy over time. It is often measured by gross domestic product (GDP) and is generally considered a positive indicator of a country's prosperity. However, traditional models of economic growth have often overlooked the environmental costs associated with increased production and consumption, leading to unsustainable practices that harm our planet.

The intersection of these three concepts forms the crux of our discussion in this chapter. How do we navigate the ethical implications of our green consciousness in a world that is driven by economic growth? How do we balance the need for development with the imperative to preserve and protect our natural world? And most importantly, how do we create a society where economic growth and environmental preservation are not seen as opposing forces, but as complementary aspects of a sustainable future?

These are the questions that guide our exploration in this chapter, as we delve into the historical, philosophical, and practical aspects of this critical topic. Through this journey, we hope to provide not just a comprehensive understanding of the subject, but also a roadmap for individuals and societies seeking to achieve harmony amidst growth.

Section 1: The Ethical Dilemma of Growth vs. Preservation

1.1 Defining the Dilemma

The conflict between economic growth and environmental preservation presents a significant ethical dilemma that has shaped human civilization for centuries. Economic growth, as traditionally understood, involves increasing production and consumption, which often leads to resource exploitation and environmental degradation. On the other hand, environmental preservation calls for the protection and conservation of natural resources, promoting sustainable practices that often require limiting consumption and exploitation.

This conflict has its roots in the Industrial Revolution of the 18th and 19th centuries. This period marked a significant shift from agrarian and handicraft economies towards industrial and machine

manufacturing processes. The Industrial Revolution brought unprecedented economic growth, technological advancement, and improvements in living standards. However, this progress came at a significant cost to the environment. Increasing industrial production led to the overexploitation of natural resources, widespread deforestation, and significant increases in pollution. The era heralded the beginning of a resource-intensive economic system that prioritized growth and profit over environmental sustainability.

The Industrial Revolution also marked the advent of fossil fuel usage on a massive scale. Coal, and later oil and gas, became the primary sources of energy that powered the new industrial economies. The burning of these fossil fuels has led to significant increases in greenhouse gas emissions, a major contributing factor to climate change. Thus, the historical basis of our current economic system, rooted in the Industrial Revolution, set the stage for the ongoing conflict between economic growth and environmental preservation.

1.2 Impact of the Dilemma

Today, the impact of this dilemma is more evident than ever. The pursuit of economic growth at the expense of the environment has led to widespread environmental degradation, affecting various aspects of life on Earth.

One of the most alarming consequences of this conflict is biodiversity loss. Exploitative practices such as deforestation, overfishing, and urbanization have led to habitat destruction, driving countless species towards extinction. This loss of biodiversity not only threatens the survival of individual species but also disrupts entire ecosystems, affecting their ability to provide essential services such as pollination, carbon sequestration, and nutrient cycling.

Climate change, another major impact of this conflict, threatens the stability of our planet's climate system. Increased greenhouse gas emissions from burning fossil fuels and deforestation have led to a rise in global temperatures, resulting in more frequent and severe weather events, sea-level rise, and altered precipitation patterns. These changes pose significant threats to human societies, particularly those in vulnerable regions.

Further, environmental degradation also has implications for human health. Pollution of air, water, and soil can lead to a range of health issues, from respiratory problems to cancer. Additionally, the degradation of natural resources threatens food and water security, particularly for communities that rely directly on these resources for their livelihoods.

The conflict between economic growth and environmental preservation, therefore, has far-reaching implications, affecting not only the health of our planet but also the wellbeing of its inhabitants. Addressing this conflict requires us to rethink our approach to economic growth and consider how we can achieve development that is environmentally sustainable.

Section 2: Literature and Environmental Consciousness

2.1 Historical Role of Literature

Literature has long served as a mirror to society, reflecting our attitudes and beliefs about the world around us. This is particularly true when it comes to our relationship with nature. Historically, literature has played a critical role in shaping societal attitudes towards the environment, offering insights into our evolving understanding of nature and our place within it.

In classical literature, nature often served as a backdrop, a setting against which human dramas unfolded. However, even then, there were works that spoke to the intrinsic value of nature. For

example, many of the fables of Aesop, a storyteller from ancient Greece, taught lessons about respect for nature and the interdependence of all life. Similarly, the Romantic poets of the late 18th and early 19th century, such as William Wordsworth and Samuel Taylor Coleridge, celebrated nature's beauty and spiritual value, often contrasting it with the disconnection and disenchantment of the industrialized world.

In American literature, transcendentalist writers like Henry David Thoreau and Ralph Waldo Emerson promoted a philosophy of nature reverence and conservation. Thoreau's "Walden" and Emerson's "Nature" encouraged readers to seek a deeper connection with the natural world, arguing that such a connection was essential for personal growth and societal progress.

2.2 Contemporary Literature

In contemporary literature, the tradition of reflecting on our relationship with nature has not only continued but has also evolved to reflect the increasingly urgent environmental challenges of our time. Works of contemporary literature often grapple with the ethical implications of our interaction with the environment, asking hard questions about sustainability, responsibility, and the potential consequences of our actions.

For instance, Margaret Atwood's "Madd Addam" trilogy explores a dystopian future resulting from environmental destruction and unchecked genetic manipulation. These novels serve as a cautionary tale about the potential consequences of our current trajectory, urging readers to consider the long-term implications of our actions on the environment.

Barbara Kingsolver's "Flight Behaviour" explores the effects of climate change on a rural community, highlighting the interplay between environment, economy, and society. Through her narrative, Kingsolver shows the real-world implications of climate change, making the abstract threat tangible and personal for readers.

Such works of contemporary literature not only reflect our current environmental concerns but also play a vital role in shaping our understanding of these issues. They bring environmental challenges to life, making them more accessible and relatable. They allow readers to explore different perspectives and potential futures, fostering empathy and understanding. And perhaps most importantly, they challenge readers to consider their role in preserving the environment, encouraging us to think critically about our actions and their impacts.

Through both historical and contemporary literature, we can trace the evolution of our understanding of and relationship with the environment. These works not only reflect our attitudes towards nature but also help shape them, playing a critical role in promoting environmental consciousness and encouraging sustainable practices.

Section 3: Ethics, Values, Politics, and Consumerism

3.1 Ethics and Values

Our approach to the environment is deeply intertwined with our ethics and values. These moral frameworks shape how we perceive our relationship with the environment, influencing our actions and their impacts on the natural world.

Different ethical theories can lead to different perspectives on environmental issues. For instance, anthropocentric ethics place humans at the centre, valuing the environment primarily for its utility to humans. This perspective can lead to the justification of resource exploitation for human benefit, often at the expense of the environment.

Contrastingly, biocentric ethics assert that all life has inherent value, regardless of its utility to humans. This perspective encourages respect for all living beings and promotes conservation and preservation of biodiversity.

Eco-centric ethics, meanwhile, go a step further, recognizing the value of entire ecosystems, including their non-living elements. This perspective can lead to a more holistic approach to environmental preservation, focusing on maintaining ecological balance rather than just protecting individual species.

Understanding these different ethical perspectives is crucial in shaping our approach to environmental issues, as they influence our attitudes towards conservation, resource use, pollution, climate change, and other environmental concerns.

3.2 Politics

Politics plays a pivotal role in shaping environmental policies, which in turn have significant impacts on the environment. Governments can establish regulations to protect the environment, enact legislation to limit pollution, and provide incentives for sustainable practices. However, the formulation and implementation of such policies are often influenced by a complex interplay of interests.

Political leaders must balance the demands of different stakeholders, including businesses, consumers, and environmental groups. Economic interests often exert a strong influence on environmental policies, with industries seeking to minimize regulations that could limit their ability to generate profits. This tension between economic and political interests and environmental preservation often results in policies that favour economic growth over environmental protection.

However, as public awareness and concern about environmental issues grow, there is increasing pressure on political leaders to prioritize environmental preservation and sustainable practices. This shift in public sentiment is leading to more environmentally friendly policies in some regions, although progress is uneven and often fraught with challenges.

3.3 Consumerism

Consumerism, characterized by high levels of consumption and a focus on material possessions, plays a significant role in environmental degradation. The production and disposal of consumer goods contribute to pollution, resource depletion, and waste generation, leading to various environmental issues.

Traditional models of consumerism are based on a linear economy, where goods are produced, consumed, and then discarded. This model is inherently unsustainable, as it relies on continuous resource extraction and generates significant waste.

In contrast, alternative models of consumption, such as the circular economy, aim to minimize waste and make efficient use of resources. In a circular economy, products are designed to be reused, repaired, and recycled, reducing the need for resource extraction and waste disposal. Similarly, the concept of 'conscious consumerism' encourages consumers to make purchasing decisions based on the environmental and social impacts of products. This involves choosing products that are sustainably produced, ethically sourced, and designed to be durable and recyclable.

These alternative models of consumption represent more sustainable approaches to consumerism, offering potential solutions to the environmental issues associated with traditional consumption

patterns. However, transitioning to these models requires changes at multiple levels, from individual consumer choices to business practices and government policies.

Section 4: Proactive Engagement with Nature

4.1 The Importance of Proactive Engagement

Proactive engagement with nature is integral to fostering sustainable societies. It involves more than just passive appreciation of the natural environment—it requires active involvement in preserving and restoring it. Such engagement can take many forms, from adopting sustainable practices in our daily lives to advocating for policy changes at the community or national level.

Adopting sustainable practices is one of the most direct ways of engaging with nature. This can involve changes in the way we consume resources, such as reducing waste, recycling, and choosing products with lower environmental footprints. It can also involve changes in our lifestyles, like adopting plant-based diets, reducing energy consumption, and using public transportation or other low-carbon modes of transport.

Another level of engagement involves advocating for environmental preservation. This can take many forms, from participating in environmental protests to lobbying for policy changes. By raising our voices for the environment, we can influence decision-makers and contribute to the development of policies that protect and sustain the natural world.

4.2 Case Studies of Proactive Engagement

Several communities across the world have shown that it is possible to balance economic growth with environmental preservation through proactive engagement.

The community of Gaviotas in Colombia provides a unique example. Founded in the 1970s in the barren savannahs of eastern Colombia, the community aimed to develop a sustainable and replicable model for living in the tropics. Over the years, the residents of Gaviotas have reforested large areas of land, created innovative and sustainable technologies for water and energy, and established a profitable industry based on the sustainable harvesting of resin from the planted pine trees.

Similarly, the city of Curitiba in Brazil has demonstrated how urban planning can balance economic growth with environmental preservation. The city has implemented a range of innovative measures from creating an efficient and affordable public transportation system to developing extensive green spaces and promoting recycling. These initiatives have improved the quality of life in the city while also preserving the environment.

In Costa Rica, the government has made a strong commitment to environmental preservation, despite being a developing country. Costa Rica has reversed deforestation trends, created extensive protected areas, and invested heavily in renewable energy. The country aims to be carbon-neutral by 2021, demonstrating that economic development and environmental preservation can go hand in hand. These case studies illustrate that proactive engagement with nature can lead to solutions that balance economic growth with environmental preservation. They provide inspiration and valuable lessons for other communities striving to achieve sustainable development.

Conclusion

This chapter explored the intricate relationship between society and nature, underscoring the critical role that literature, ethics, values, politics, and consumerism play in shaping our engagement with

the environment. It demonstrated how literature historically and contemporarily reflects and influences our attitudes towards nature, encouraging us to consider our role in environmental preservation. Through the discussion on ethics and values, we examined the impact of various ethical theories on our approach to the environment. Anthropocentric, biocentric, and ecocentric ethics each present a different perspective on how we should relate to and interact with the natural world.

It also highlighted the pivotal role politics plays in shaping environmental policies, acknowledging the tension between economic interests and environmental preservation. These political dynamics are further complicated by consumerism, which contributes significantly to environmental degradation. However, alternative, more sustainable models of consumption, such as the circular economy and conscious consumerism, were explored as potential solutions.

Moreover, it emphasized the importance of proactive engagement with nature, highlighting case studies where communities successfully balanced economic growth with environmental preservation. These examples serve to inspire and guide others in the quest for sustainable development. The potential for harmony between economic growth and environmental preservation is not a distant dream but a viable reality, as evidenced by the successes of communities in Colombia, Brazil, and Costa Rica. Achieving this balance, however, requires a shift in societal attitudes and practices, as well as in political and economic systems. It requires us to see the environment not merely as a repository of resources to exploit but as an intricate system that sustains all life, deserving of our respect and care. As we move forward in an era of increasing environmental challenges, it is vital that we, as individuals and societies, engage more proactively with nature. This engagement involves not only making sustainable choices in our daily lives but also advocating for policies that protect and sustain the environment. It involves fostering a deep appreciation and understanding of the natural world, as reflected and cultivated through literature. It involves challenging the norms of consumerism and advocating for more sustainable models of consumption. In essence, it requires us to rethink and redefine our relationship with the environment, shifting from a paradigm of exploitation to one of stewardship. As we navigate this path, it is our responsibility to ensure that economic growth and development do not come at the expense of the environment but rather work in harmony with it, ensuring a sustainable and prosperous future for all.

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11 CHAPTER

EXPLORING DIASPORA LITERATURE: IDENTITY, DISLOCATION, AND CULTURAL DILEMMAS IN BHARATI MUKHERJEE'S WIFE

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Abstract:

This research abstract explores the themes of identity, displacement, and cultural dilemmas in Bharati Mukherjee's novel *Wife* within the context of diaspora literature. It discusses the significance of homeland and the experiences of minority communities living in a state of exile, particularly focusing on the Indian Diaspora's emergence and its cultural significance. The abstract highlights Mukherjee's unique perspective as an Indo-American writer and her portrayal of the protagonist, Dimple, who grapples with societal expectations and personal aspirations amidst the challenges of migration and marital discord. Through Dimple's journey, the abstract emphasizes the complexities of diasporic experiences and the quest for autonomy, cultural distinctiveness, and women's empowerment. On the whole, the abstract underscores the novel's poignant reflection on immigrant experiences and the ongoing negotiation between tradition and modernity in a globalized world.

Keywords: Identity, Displacement, Immigration, Cultural Dilemmas, Women's Empowerment, Hybrid Identities, Marital Discord

Diaspora Literature revolves around the concept of a homeland, which serves as the point of departure for displacement, often driven by economic necessity. Essentially, diaspora refers to a minority community living in a state of exile. The Indian Diaspora holds significant cultural significance on a global scale. Its emergence can be largely traced back to British colonial rule and the subsequent integration of India into the British Empire. In discussions of diasporic experiences, there is a consistent exploration of ancestral origins through reinterpretation and narrative revision, akin to post-modern discourse. Typically, diasporic writers find themselves physically situated between two worlds, experiencing a dual marginalization that undermines their sense of belonging to either location.

The state of living in-between is profoundly distressing for individuals, leaving them feeling disoriented and resistant to various expressions of power. Through literary expression, migrants often become advocates for their unique identities, asserting the importance of cultural

distinctiveness. Despite the blending of cultures that occurs during migration, migrants often long to return to their lost origins, seeking a sense of belonging and familiarity. Additionally, they grapple with cultural dilemmas when their practices are ridiculed, posing a threat to their cultural identity.

The diasporic journey serves as a wellspring of intense inspiration, giving rise to multiple identities, new perspectives, creative memories, and fresh interpretations of language and life. Earlier immigrant narratives, particularly those of the neo-colonial era, often stemmed from forced migrations prompted by religious, political, or social persecution. However, many Indians who migrated to America starting in the mid-1970s sought a better life, driven by aspirations for material success and prosperity.

Diaspora literature delves into themes of alienation, loneliness, homelessness, existential uncertainty, nostalgia, inquiry, protest, and assertions of identity. It also explores issues related to the merging or disintegration of cultures, the stark divisions between different social environments, the internalization of nostalgia, and the struggle with forced forgetfulness.

Bharati Mukherjee is one of the important writers in Indian Writing in English, who captivates Western readers by infusing her tales with elements of Indian exoticism. Western audiences are both curious and intrigued by Indian culture. Mukherjee, originally from India but now settled in the US, endeavours to carve out a niche for herself in the American literary landscape by incorporating Indian cultural motifs into her fiction. While she attempts to distance herself from her Indian heritage, she frequently draws upon Indian themes in her writing, drawing inspiration from India's rich history and traditions.

Mukherjee adopts a perspective that views her culture and heritage through American lenses, adding a touch of irony to portray them as peculiar and different, thus appealing to her Western audience. While her language and tone are distinctly American, the themes she explores remain rooted in Indian culture, allowing her to find success both in mainstream American literature and in the American book market. Her narratives are enriched with Indian mythology, serving as a primary tool for attracting attention to her fictional works.

This study examines the challenges, hardships, and triumphs experienced by immigrants as they strive to achieve their dreams in America. Bharati Mukherjee, recognized as an Indo-American or Asian American writer, focuses on the aftermath of migration in her works. Despite claiming American citizenship, Mukherjee often writes about her native India. As a writer of the Indian Diaspora, she portrays herself through the prominent characters in her narratives. Having migrated to America, Mukherjee grapples with feelings of alienation in the land of her aspirations, struggling to establish her identity first as an exile from India, then as an Indian expatriate in Canada, and ultimately as an immigrant in the United States. Through her experiences, she reflects the current discontentment faced by immigrants in a nation built by migrants.

In Bharati Mukherjee's novel *Wife*, the protagonist, Dimple, is born into a middle-class family and is compelled by her father to marry Amita Basu. However, her marriage begins with profound disappointment, leading to feelings of alienation, isolation, and frustration. As a feminist writer, Mukherjee portrays Dimple's struggle for individuality amidst societal expectations. Like many other young women, Dimple harbours dreams about her marriage, aspiring to wed a neurosurgeon. Yet, she finds herself married to a software engineer chosen by her father, resulting in deep disillusionment and depression regarding her marital life.

Mukherjee presents a newly awakened woman prepared to confront the harsh realities of her existence. In *Wife*, the protagonist Dimple fiercely battles for her feminine identity, showcasing the

contemporary plight of women who are often marginalized and dominated by male-dominated societies, rendering them voiceless in addressing domestic issues. Through this novel, Mukherjee portrays a strong female lead navigating through unconventional circumstances. Despite harbouring desires to marry a neurosurgeon, Dimple complies with her father's choice of spouse, a decision that inflicts psychological trauma as she struggles to reconcile her aspirations with her marital reality. Moving to America with her husband Amit Basu, Dimple anticipates a lavish lifestyle but is met with disappointment as Amit's expectations of her as an ideal wife clash with her own desires and aspirations.

Despite being raised with traditional values, Dimple finds herself unable to tolerate certain aspects of her marriage. She desires a vibrant and dignified life with Amit Basu, rejecting the notion of women as mere servants or homemakers. However, Amit's narrow view of women as solely fulfilling domestic roles creates a significant rift between them, leading to frequent quarrels and marital discord. Dimple's frustration and resentment boil over, symbolized by her violent reaction to a rat, demonstrating her pent-up anger.

Upon learning of their impending move to America, Dimple asserts her feminine identity by making a decisive choice regarding her pregnancy. Recognizing her freedom to shape her own life, she opts to terminate the pregnancy, determined to pursue a fulfilling life alongside her husband. She understands that disclosing her pregnancy would jeopardize their plans to move to America, and she refuses to live a dependent life. Dimple's ultimate decision to take her husband's life stems from her desperation to reclaim agency over her own destiny and to realize her dream of a harmonious life with her spouse.

Dimple enters her marriage with Amit Basu full of hopes and expectations, but soon finds herself unable to tolerate her husband's behaviour towards her, leading her to make decisions she later regrets. Like many women, she initially envisions her married life with numerous dreams and aspirations, only to be met with disappointment when reality does not align with her expectations. Dimple anticipates receiving love and care from her husband but struggles to accept Amit Basu's demeanour towards her. She also harbours resentment towards her mother-in-law and sister-in-law, particularly disliking the fact that her mother-in-law changes her name to Nandini against her wishes.

Dimple's dissatisfaction with her marital situation is compounded by her husband's reluctance to change his behaviour and his insistence that she conform to his family's expectations. Feeling trapped and disillusioned in her marriage, Dimple yearns for a fresh start in America, although she is also apprehensive about the challenges of immigration to Africa or North America.

As an Indian wife, Dimple expresses a strong preference for living in India rather than settling in America, a desire her husband, Amit, never bothers to inquire about. She harbours significant apprehension about relocating to Western countries, fully aware of the potential cultural conflicts she may face. Dimple initially inhabits a world of fantasy and dreams, all of which are shattered upon her marriage to Amit. The unexpected disappointments in her marital life gradually transform her into a tormented and regretful woman.

As her frustration reaches its peak, Dimple contemplates a drastic solution to escape her torment: killing Amit. This decision underscores Mukherjee's portrayal of Dimple as an exceptionally modern character, unlike the passive women of earlier times who endured their suffering silently. Dimple refuses to sacrifice her identity or abandon her feminist beliefs, finding a sense of liberation in contemplating Amit's demise, despite its contradiction to Indian traditions and cultural norms.

Mukherjee's depiction of Dimple challenges readers to break free from societal constraints and pursue happiness on their own terms, advocating for women to be treated with dignity and respect. Through Dimple's character, Mukherjee highlights the struggles of women yearning for genuine love and care amidst traumatic circumstances.

Upon learning that Amit's plans for moving to America do not align with her expectations, Dimple's mental state deteriorates, leading her to experience psychic distress. Initially, she anticipates immigrating to America with Amit after their marriage, but the reality falls short of her fantasies. She enters into marriage with high hopes, only to encounter difficulties in adjusting to her in-laws' family dynamics. When Amit struggles to secure employment in America, Dimple is profoundly disappointed. However, her spirits are lifted when Amit finally secures a job offer in the United States. In pursuit of a happier life in America, Dimple undergoes an abortion.

Upon arriving in America, Dimple finds it challenging to adapt to the unfamiliar culture, resulting in feelings of isolation and alienation. Despite her struggles, Amit remains indifferent to her needs and aspirations, focusing solely on his new job. Dimple spends much of her time watching television, grappling with mounting frustration that eventually drives her to commit the ultimate act of violence against Amit. Had she remained in Calcutta, the opportunity to take such drastic action may never have arisen. Dimple's inner conflict reflects the tension between her desire for independence and assertiveness, influenced by Western feminist ideals, and the traditional expectations placed on Indian wives to be submissive and self-effacing.

Dimple grapples with an identity crisis as she finds herself isolated in a foreign land, devoid of familiar support systems, traditional values, and the guiding norms of the dominant culture. Her journey unfolds as that of a seemingly passive individual who unexpectedly resorts to violence. The seemingly senseless act of murdering her husband, Amit, can be interpreted as Dimple's desperate attempt to assimilate into American culture or to forge a new identity in a new setting.

The tragic conclusion of the novel *Wife* sees Dimple stabbing Amit in the face, a moment of perceived liberation from his control. Throughout the narrative, Dimple steadfastly holds onto her sense of self, despite her efforts to conform to her husband's expectations. Despite her attempts at adaptation, she ultimately remains steadfast in her desire for independence and the preservation of her individual identity. Bharati Mukherjee's portrayal of Dimple underscores feminist principles, offering a distinct Indian perspective on common themes in immigrant literature such as shattered dreams, displacement, marital discord, and the challenges of navigating a hostile cultural environment while grappling with the loss of one's former identity and community.

In conclusion, the exploration of diaspora literature, particularly through Bharati Mukherjee's novel *Wife*, sheds light on the complex interplay of identity, displacement, and cultural dilemmas experienced by immigrants. Mukherjee's portrayal of the protagonist Dimple reflects the multifaceted challenges faced by individuals caught between two worlds, grappling with the tension between cultural expectations and personal aspirations. Through Dimple's journey, readers witness the profound impact of diasporic experiences on individual identity and the quest for autonomy.

Dimple's narrative underscores the significance of cultural distinctiveness and the struggle for agency amidst societal constraints. Mukherjee's fusion of Indian themes with American perspectives highlights the hybrid nature of diasporic identities and the on-going negotiation between tradition and modernity. Through Dimple's ultimate act of defiance, Mukherjee challenges conventional gender roles and advocates for women's empowerment, emphasizing the importance of asserting one's individuality in the face of adversity.

On the whole the novel, *Wife* serves as a poignant reflection of the complexities inherent in diaspora literature, offering a nuanced portrayal of immigrant experiences and the enduring quest for belonging and self-determination. Mukherjee's narrative not only amplifies the voices of marginalized communities but also invites readers to confront prevailing power dynamics and embrace the richness of cultural diversity in an increasingly interconnected world.

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12

CHAPTER

ENVIRONMENTAL ISSUES AND FINANCE VIABILITY OF THE SUSTAINABLE TECHNOLOGY IN INDIA

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ABSTRACT:

In order to fulfil human needs, goods and services are produced. Resources, both man-made and natural, are needed for the creation of many different goods and services. Resources are depleted more quickly when more products are produced. In addition to depleting resources, the industrial process also results in other issues. For instance, factories that manufacture items produce smoke that contaminates the air we breathe. In a similar vein, sewage that is dumped into rivers contaminates our drinking water. Resources are needed more and more as consumer demand for products and services rises. Because of this, resources are being used up and suffering permanent damage. We damage nature when we clear forests, contaminate rivers, mine for minerals, and pollute the air. Such a devastation of nature is terrible.

KEY WORDS: India, Funds allocated, Funds spent, Environmental issues, Sustainable technology

INTRODUCTION:

All civilizations need sustainable development, but poorer countries especially so because they rely more on natural resources like soil, rivers, fisheries, and forests than wealthier society do. According to this argument, environmental issues in richer countries are mostly caused by affluence and excessive consumption, whereas they are primarily caused by poverty in poorer ones. This is the future, particularly when viewed from a long-term generational viewpoint. The potential that the things we appreciate today will still exist in the future is what sustainability is all about. The idea of a link between environmental protection and economic growth is known as sustainable development. This essay uses literature to explore some important concerns related to the economics of sustainable development in the current environment.¹

REVIEW OF LITERATURE

In most instances, the sources of pollution do not take into account the full cost (including the related social costs) caused to others by their actions, making the severity of environmental problems and their socio-economic effects important research topics. Pollution and damages are local or global externalities, implying market failures. The management of diverse environmental issues and the consequences that follow is of importance to decision-makers. Estimates of damage costs and a range of other topics relating to changes in environmental quality as well as the significance of uncertainty and risk aversion are crucial topics up for debate. Additionally, careful study of each pollutant source is necessary for developing effective regulations. Due to these factors, numerous elements in the application of adequate policies.²

In recent years, environmental protection has gained worldwide and national attention. The media has only recently begun to draw attention to issues like the Minamata disease (Japan), the Bhopal tragedy (India), the greenhouse effect, deforestation, global warming, and waste generation, even though scientists and environmentalists have long recognised the magnitude and significance of environmental problems. The implementation of a sustainable development strategy must be done in a proactive manner. According to the World Business Council for Sustainable Development, sustainable development is a "form of progress that meets the needs of the present without compromising the ability of future generations to meet their needs". Therefore, projects and efforts to promote environmental awareness must be emphasised as essential ones before numerous situations in order to make sustainable development and the environment.³ Policies intended to dramatically reduce environmental issues like global warming, acid rain, deforestation, garbage disposal, or any deterioration in the quality of the air, water, or soil may come with a cost in terms of slower GDP growth, decreased global competitiveness, or lost jobs. The predicted shift in relative pricing will have an impact on the economy's overall general equilibrium. It is helpful to assess the outcomes of environmental policy actions using a CGE model because of this. Although CGE models additionally allow for adjustments in all sectors, enabling us to take into account the interactions between the intermediate actors, partial equilibrium models also allow for adjustments in all sectors, making it possible to estimate the costs of environmental policy measures while taking substitution processes in production and consumption as well as market clearing conditions into account.⁴

OBJECTIVES

1. To know the environmental issues and sustainable policies in India
2. To study the funds allocated spent in innovation of environmentally sustainable technology in India 2017-18 to 2021-22.

HYPOTHESES

1. To know the environmental issues and sustainable policies in India is not significant.
2. To study the funds allocated spent in innovation of environmentally sustainable technology in India 2017-18 to 2021-22 is not significant.

METHODOLOGY

The current study is supported by secondary data. A qualitative approach to this research framework is provided by secondary data collected from reputable and authentic government offices, agencies, organisations, survey reports, private studies, websites, journals, newspapers, and annual reports. By its very nature, research design is descriptive.

ENVIRONMENTAL ISSUES AND SUSTAINABLE POLICIES IN INDIA

The ecology in India is being harmed by issues such as population increase, urbanisation, industrialization, and poverty, among others. One of the most serious environmental problems in India is

1. The declining air quality index.
2. Widespread environmental deterioration
3. Biodiversity loss
4. The Himalayan region's urbanisation
5. Loss of Ecosystem Resilience
6. Insufficient Waste Management

7. Resource (land, air, and water) depletion

growing lack of water The primary obstacles to sustainable development that have a universal scope include unemployment, poverty and exclusion, climate change, war and humanitarian assistance, creating inclusive and peaceful communities, fortifying institutions of governance, and promoting the rule of law. Environmental issues in each nation are correlated with its economic growth, access to natural resources, and other factors.⁵

POLICIES FOR SUSTAINABLE DEVELOPMENT:

Population expansion, poverty, industrialisation, agricultural development, transport development, urbanisation, market failure, etc. are only a few of the many variables that contribute to environmental issues including air pollution, water pollution, soil degradation, deforestation, loss of biodiversity, etc. Such environmental deterioration has a negative impact on human health, lowers economic output, and results in the loss of amenities. Therefore, by making wise decisions about economic and environmental policies as well as environmental investments, the negative impacts of environmental deterioration may be mitigated. The following are crucial policy actions for sustainable development:

1. Bringing Poverty Down:

The government's first aim should be to reduce poverty. It ought to pick the initiatives that give the underprivileged more prospects for work. Expanding family planning, health care, and education will all help slow down population increase. Supply of water for drinking,

2. Eliminating Subsidies:

Subsidies for resource usage by the public and private sectors should be eliminated in order to prevent environmental deterioration without incurring any net financial costs for the government. Because subsidies for things like power, irrigation, pesticides, fertilisers, fuel, petrol, and water use result in wasteful consumption and environmental issues.

3. Clarifying and Extending Property Rights:

When resources are used excessively due to a lack of property rights, the ecosystem suffers. This results in excessive mineral extraction, overgrazing, and deforestation. Therefore, defining ownership titles and transferring them to private owners will address environmental issues.

4. Market-based Approaches:

A variety of market-based strategies should be used to safeguard the environment. Market-based tools like emission taxes, pollution taxes, tradable permits, depositor fund systems, and input taxes

6. Public engagement:

Promoting environmental improvement via public engagement and knowledge. Numerous official and informal education programmes, environmental awareness campaigns, public outreach initiatives, reforestation efforts, wildlife conservation efforts, etc. have to be organised on a big scale for this aim.

7. Trade and the Environment:

The government should create a trade strategy that is environmentally friendly for both local and international commerce. To stop environmental deterioration, it should promote the development

of less polluting industries, the use of cleaner technology, the adoption of environmentally friendly practises, etc.

8. Participation in Global Environmental Efforts:

Participation in various international conventions and agreements on environmental protection and conservation can also help to minimize damages of environmental degradation. They include the Montreal protocol, the Basel convention, the Rio Declaration, the Agenda 21, the Earth summits, etc.

9. Renewable energy:

Policies should be framed for the use of renewable energy like solar and wind in place of coal and petrol. Atomic Energy Agency predicted that renewable energy would overtake natural gas to become the second largest source of power generation worldwide within two years, and that global wind and solar generating capacity would increase by more than 30 per cent.⁶

FINANCE VIABILITY OF THE SUSTAINABLE TECHNOLOGY

Technology also provides many solutions to help society become more sustainable. Sustainable technology depends on finance. Table-01 and figure -01 shows the funds allocated in innovation of environmentally sustainable technology in India 2017-18 to 2021-22

TABLE-01

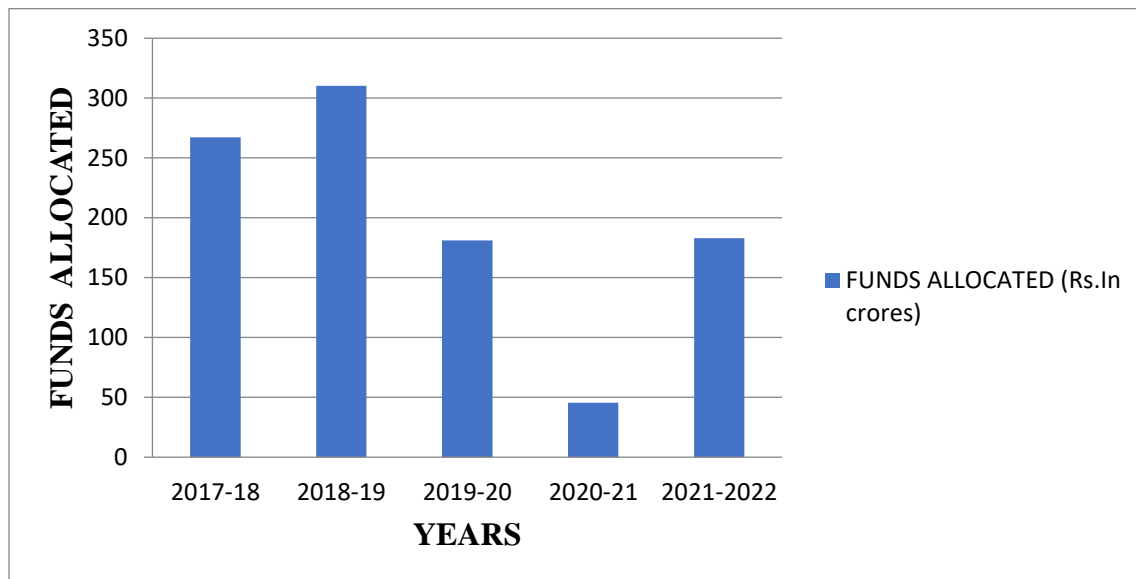
FUNDS ALLOCATED IN INNOVATION OF ENVIRONMENTALLY SUSTAINABLE TECHNOLOGY IN INDIA 2017-18 TO 2021-2022

YEARS	FUNDS ALLOCATED (Rs.In crores)
2017-18	267.09
2018-19	310.38
2019-20	181.02
2020-21	145.41
2021-2022	182.86
CAGR	-7.3

Source: Lok Sabha Unstarred question no. 3343, dated on 23.03.2022.

Table -01 shows the funds allocated to sustainable technology in from 2017-18 to 2021-22.

In 2017-18 years the funds allocated to sustainable technology was 267.09. In 2019-20 it was increased 310.38 crores. In table-01, the sequent years 2019-20, 2020-21 and 2021-2022 funds allocated in innovation of environmentally sustainable technology was not noticeable increase. Over the course 5 years, the funds allocated grew from 267.09 to 182.86. Its compound annual growth rate is -7.3.

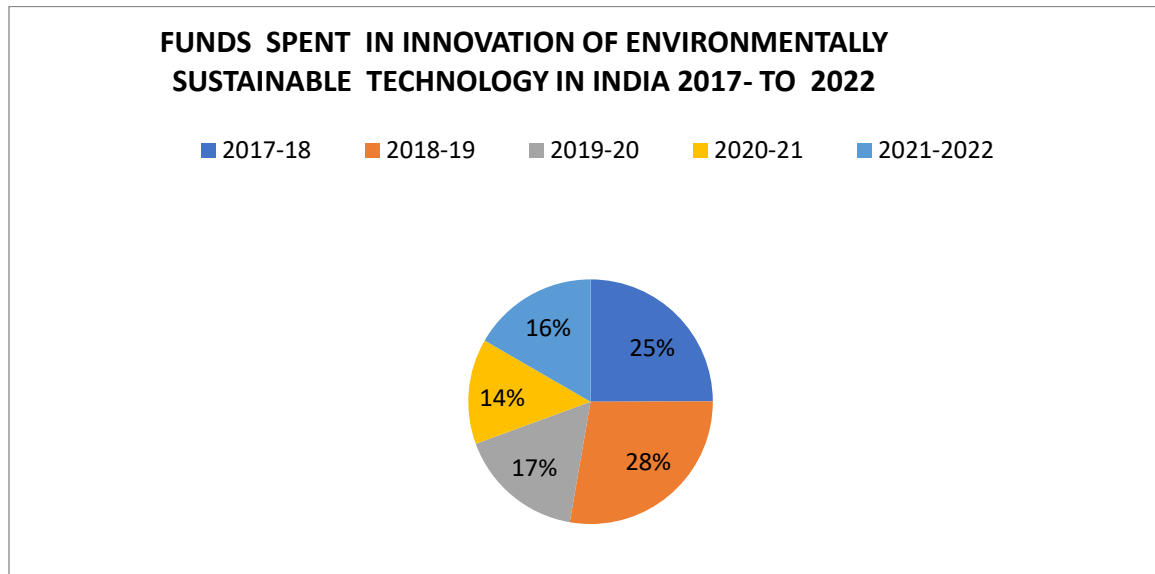
FIGURE-01**FUNDS ALLOCATED IN INNOVATION OF ENVIRONMENTALLY SUSTAINABLE TECHNOLOGY IN INDIA 2017-18 TO 2021-22****TABLE-02****FUNDS SPENT IN INNOVATION OF ENVIRONMENTALLY SUSTAINABLE TECHNOLOGY IN INDIA 2017-18 TO 2021-22**

YEARS	FUNDS SPENT(Rs.In crores)
2017-18	266.13
2018-19	296.19
2019-20	177.92
2020-21	148.58
2021-22	177.75
CAGR	-7.75

Source: Lok Sabha Unstarred question no. 3343, dated on 23-03-2022.

Table -02 shows the funds allocated to sustainable technology in from 2017-18 to 2021-22. In 2017-18 years the funds spent sustainable technology was 266.13 crores. In 2018-19 it was increased 296.19 crores. In table-02, the sequent years 2019-20, 2020-21 and 2021-22 funds allocated in innovation of environmentally sustainable technology was not noticeable increase. Over the course of 5 years, the funds allocated grew from 266.13 to 177.75. Its compound annual growth rate is -7.75

FIGURE -02



RESULTS

1. The hypotheses namely ‘to know the environmental issues and sustainable policies in India is not a significant’ is accepted
2. The hypotheses namely ‘to study the funds allocated spent in innovation of environmentally sustainable technology in India 2017-18 to 2021-22’ is not significant’ is accepted

FINDINGS

1. From 2018-19 to 2019-20, funds allocated for the development of ecologically sustainable technologies in India grew by 1.16 times. The funds allocated for the next years, 2019–20 through 2021–22, did not rise.
2. From 2018-19 to 2019-20, India's spending on environmentally sustainable technology innovation grew by 1.11 times. The amount of money spent in the subsequent years, 2019–20 through 2021–2022, remained flat.

CONCLUSION

Environmental sustainability and fiancé viability are long-term ideas that place equal significance on the advancement of future generations. Additionally, sustainable development emphasises how decisions made in one section of India have an impact on others throughout the world. We must consider development for the entire globe in order for it to be sustainable, not only for our town, village, or nation. Think about how you might encourage sustainable development in your neighbourhood as a thought exercise. What can you do to make your community's environment better? How your actions can enhance the environment and the lives of people in other areas of the world should be noted.

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CHAPTER

CHILD LABOUR IN INDIA: AN ANALYTICAL STUDY ON UNDER NATIONAL CHILD LABOUR PROJECT

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ABSTRACT:

Our Indian society is still plagued by the serious issue of child labour. It has existed for a while, and as the years passed, the evil spread over both towns and cities. Exploiting young, impressionable youngsters is a serious societal ill. One of the most significant blemishes and stigmas on the supposedly illustrious Indian civilization. Even today, many young, underprivileged children face the difficulties brought on by child labour, despite the fact that new laws and regulations have been created with the passage of time to abolish such evil practices. India appears to be a significant hotspot for the issue. The peace, serenity, and development of our society are further hampered by it. This paper deals with the child labour study under national child labour project

KEY WORDS: Child Labour, India, National child labour project, Withdrawn, Budget Expenditure

INTRODUCTION

The theories and research surrounding child labour, their socioeconomic problems, and the child labour situation in India and the rest of the world. It examines the motivating elements for child labour in India and throughout the world. The many types of child work and health risks they confront. Child employment has several reasons, including the curse of poverty, a lack of educational resources, social and economic illiteracy, addiction, illness, or disability, the allure of cheap labour, family tradition, and gender discrimination. Child labor consequences include general child maltreatment and injuries including cuts, burns, and lacerations, fractures, exhaustion and lightheadedness, as well as excessive worries and nightmares. Drug usage, prostitution, early and unintended pregnancies, abortion, sexually transmitted diseases (STDs), notably the sexual exploitation of girls by adults, and rape.¹

REVIEW OF LITERATURE

According to ILO (2013), most child laborers work in hazardous jobs and together the number of child labor is increasing, although it is prohibited by law. These children are vulnerable illnesses and they struggle with long-term physical and mental pain. The main reason why children are to work is poverty. These children work for survival and for their family (Mapaure, 2009). Some studies like Dessay and Pallage (2003) argue that not all child labor is harmful or cruel. Some jobs may offer successful learning opportunities such as babysitting or newspaper delivery jobs, but not when the work is exposed psychological stress such as human trafficking, prostitution and pornographic activities.²

According to the International Labour Organisation (ILO), the ideal definition of child labour is any employment that harms a child's physical or mental development and robs them of their youth, potential, or dignity. It includes jobs that put kids in risk on a mental, physical, social, or moral level; it also includes jobs whose schedules make it difficult for them to attend normal school; and it includes jobs that negatively impact kids' capacity to concentrate in class or have a healthy upbringing.³

Women and female children are frequently denied equal access to resources. The family's poverty affects the female family members, particularly the female children. Naturally, a poor family puts its female children in danger. Every opportunity is taken to avoid carrying a feminine load. Thus, child marriage is a logical option for poor families to escape the responsibilities that come with having a female kid. It is sometimes thought that child marriage and the sale of girls by poor families are cloaked forms of the same thing. The custom of marrying a kid to a god also has its roots in familial hardship, Lal (2015).⁴

OBJECTIVES

1. To know the State-wise Number of Children Withdrawn from Work and Mainstreamed under National Child Labour Project (NCLP) Scheme in India 2017-2018 and 2021-2022 years.
2. To study the Budget Expenditure Incurred under National Child Labour Project Schemes (NCLPS) in India from 2010-11 to 2021-22.

HYPOTHESES

1. To know the State-wise Number of Children Withdrawn from Work and Mainstreamed under National Child Labour Project (NCLP) Scheme in India 2017-2018 and 2021-2022 years is not significant.
2. To study the Budget Expenditure Incurred under National Child Labour Project Schemes (NCLPS) in India from 2010-11 to 2021-22 is not significant.

RESEARCH METHODOLOGY

The study has been conducted mainly on the basis of literature survey and secondary information this is collected from the Census Surveys, Reports, newspapers, journals, articles, websites, etc.

SCOPE OF THE STUDY

Child Labour Prohibition and Regulation Act, 1986 aims to eradicate any kind of child abuse in the form of employment and prohibit the engagement of children in any kind of hazardous employment, who have not completed 14 years of age.

CHILD LABOUR STUDY UNDER NATIONAL CHILD LABOUR PROJECT

One must admit that India has always had a proactive approach to tackling the issue of child labour and has always supported the constitutional, regulatory, and developmental measures needed to end child labour. Indian Constitutional provisions that are relevant to ensuring universal primary education are in place. Child labour issues have been investigated by labour commissions and committees, who provided lengthy suggestions. The Indian judiciary has responded to the practise of child labour with very sympathetic replies all the way up to the highest levels. Despite several aggressive laws, regulations, and legal rulings, the issue of child labour nevertheless presents a concern for the nation. Table-1 explain the State-wise Number of Children Withdrawn from Work/Rehabilitated and Mainstreamed under National Child Labour Project (NCLP) Scheme in India (2017-2018 and 2021-2022).⁵

TABLE-1

State-wise Number of Children Withdrawn from Work/Rehabilitated and Mainstreamed under National Child Labour Project (NCLP) Scheme in India (2017-2018 and 2021-2022)

STATES	YEARS	
	2017-2018	2021-2022 (P)
Andhra Pradesh	203 (0.82)	885 (8.43)
Assam	915 (3.71)	NA
Bihar	2800 (11.36)	-
Gujarat	187 (0.75)	-
Haryana	NA	NA
Jharkhand	2014 (8.17)	NA
Karnataka	679 (2.75)	263 (2.50)
Madhya Pradesh	11400 (46.26)	2237 (21.32)
Maharashtra	5250 (21.30)	2110 (20.11)
Nagaland	197 (0.79)	-
Odisha	NA	15 (0.14)
Punjab	994 (4.03)	4867 (46.40)
Total	24639 (100.0)	10489 (100.0)

Abbr.: P: Provisional.

NA: Not Available.

Note: - : Not Functional.

Source: Lok Sabha Unstarred Question No. 3497, dated on 08.08.2022.

Table-1 explains the State-wise Number of Children Withdrawn from Work/Rehabilitated and Mainstreamed under National Child Labour Project (NCLP) Scheme in India in 2017-2018 to 2021-22 years. Madhya Pradesh occupying first place under National Child Labour Project in 2017-18 years, it was 46.26 percent. In **2021-2022 years it was decline to 21.32 percent.** Maharashtra occupying second place (21.30) under National Child Labour Project 2017-18 years. In **2021-2022 years** it was slowly declined to 20.11 percent. The same years like **2017-2018 to 2021-2022** under National Child Labour Project Punjab were reached 4.03 percent to 46.40 percent. Andhra Pradesh reached 0.82 percent to 8.43 percent in the both years under National Child Labour Project. Remaining states are not significant values under National Child Labour Project (NCLP) Scheme in India. State-wise Number of Children Withdrawn from Work/Rehabilitated and Mainstreamed under National Child Labour Project (NCLP) Scheme in India (2017-2018 and 2021-2022) in figure-1.

FIGURE-1

State-wise Number of Children Withdrawn from Work/Rehabilitated and Mainstreamed under National Child Labour Project (NCLP) Scheme in India (2017-2018 and 2021-2022)

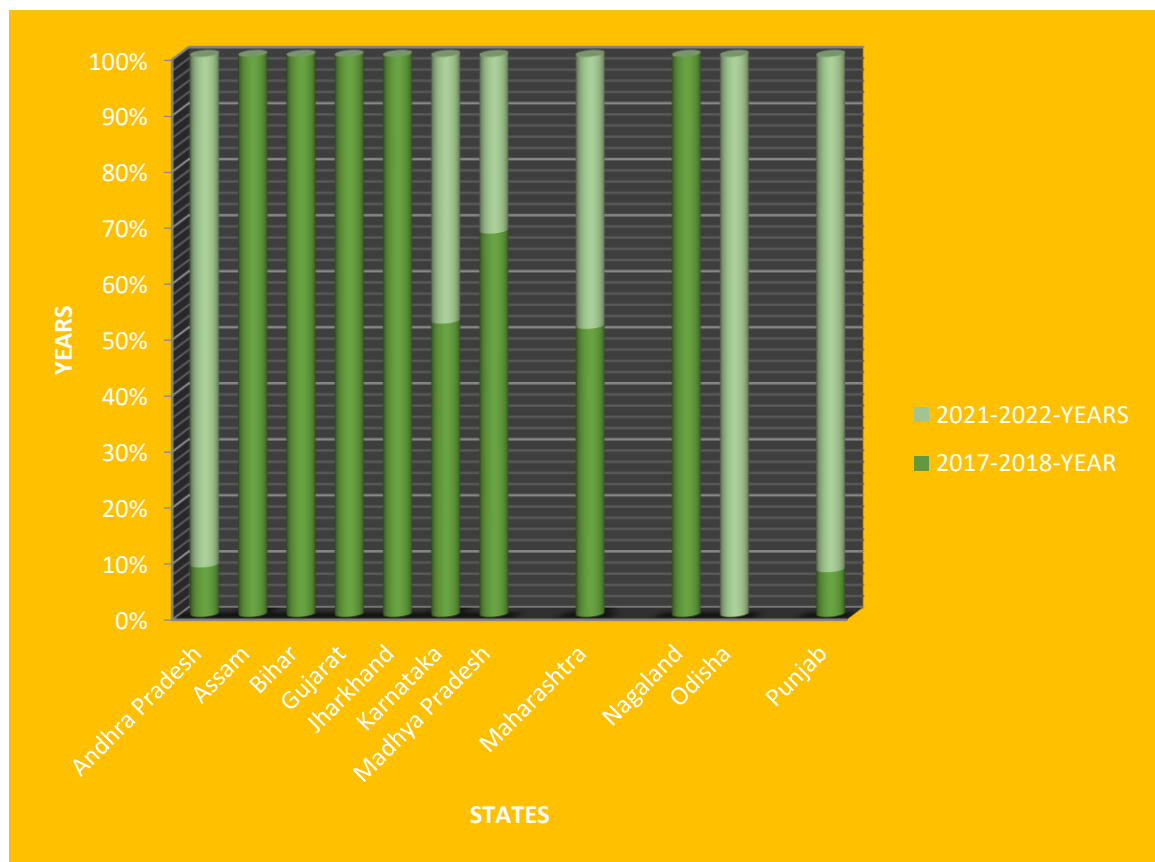


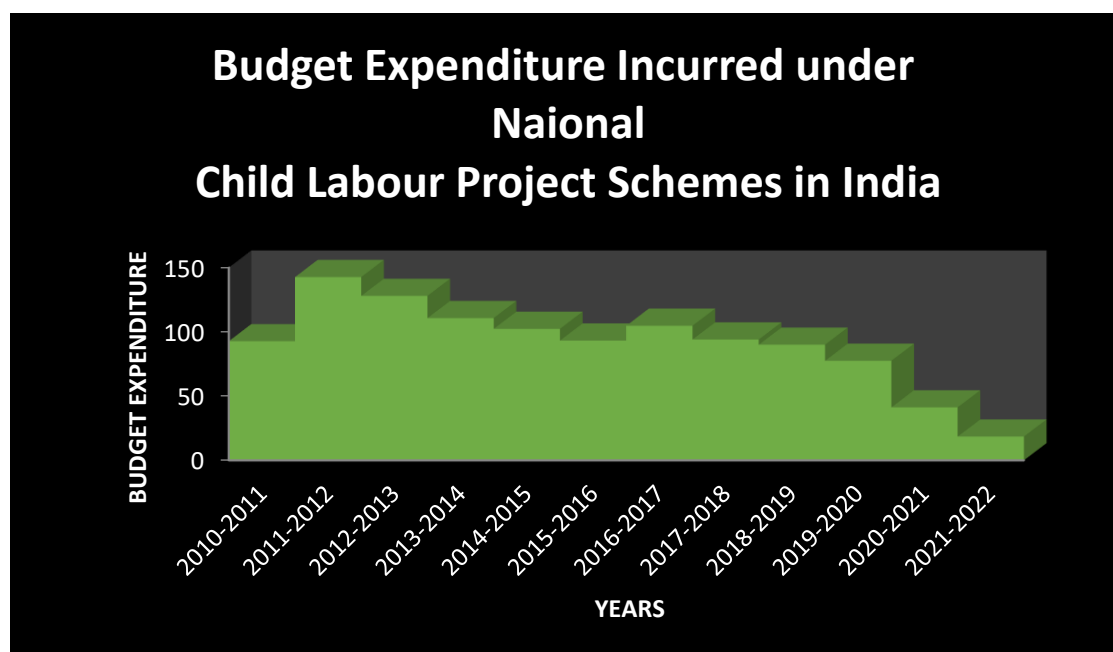
TABLE-2**Budget Expenditure Incurred under National Child Labour Project Schemes (NCLPS) in India**

Year	Expenditure (Rs .in crore)
2010-2011	92.71
2011-2012	142.66
2012-2013	128.01
2013-2014	110.73
2014-2015	102.34
2015-2016	93.2
2016-2017	104.73
2017-2018	94.03
2018-2019	89.99
2019-2020	77.47
2020-2021	41.19
2021-2022	18.45
CAGR	-13.65

Source: 1.Ministry of labour and employment Govt of India (on 2782) & past issues

2. Lok sabha unstarred question no.2090 dated on 29-07-2022.

Table-2 explains Budget expenditure incurred under National Child Labour Project Scheme highest in 2011-12 years, it was 142.66 crores. In 2012-2013 years it was reached 128.01 crores, Remaining years like 2017-18 to 2021-22 Budget Expenditure Incurred under National Child Labour Project Schemes was not significantly increase. The CAGR value is -13.05. Budget Expenditure Incurred under National Child Labour Project Schemes (NCLPS) in India is shown in the figure-2.

FIGURE-2

RESULTS

1. To know the State-wise Number of Children Withdrawn from Work and Mainstreamed under National Child Labour Project (NCLP) Scheme in India 2017-2018 and 2021-2022 years is partial significant.
2. To study the Budget Expenditure Incurred under National Child Labour Project Schemes (NCLPS) in India from 2010-11 to 2021-22 is not significant.

FINDINGS

1. Madhya Pradesh occupying first place under National Child Labour Project in 2017-18 years, it was 46.26 percent. In **2021-2022 years it was decline to 21.32 percent.**
2. Maharashtra occupying second place (21.30) under National Child Labour Project 2017-18 years. In **2021-2022 years** it was slowly declined to 20.11 percent.
3. The same years like **2017-2018 to 2021-2022** under National Child Labour Project Punjab were reached 4.03 percent to 46.40 percent.
4. Budget expenditure incurred under National Child Labour Project Scheme highest in 2011-12 years, it was 142.66 crores.

CONCLUSION

NCLP action should be taken as per the law against employers, child laborers should be identified immediately and arrangements made for their rescue and rehabilitation. Therefore the extension and strengthening of the NCLP program is of utmost importance. If it is implemented according to the program guidelines and properly monitored by the government and relevant implementing agencies, it will be an important tool to break the system of illiteracy, child labor and poverty in the country.

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CHAPTER

TRANSHUMANCE: CONTRIBUTION OF INDIGENOUS COMMUNITY IN ENVIRONMENTAL COMMUNICATION

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Abstract

Transhumance and environmental communication are connected through their potential to promote sustainable land management, preserve cultural heritage, support local economies, and contribute to climate change adaptation. By effectively communicating the environmental benefits and cultural importance of transhumance, environmental communication can contribute to the conservation and promotion of this traditional practice. However, with the advent of modernization and technological advancements, the practice of transhumance has undergone significant changes and faced certain challenges. To promote the sustainable use of natural resources in the face of changing environmental, economic, and social conditions, the cultural heritage of pastoral communities should be protected.

Keywords: *Environmental Communication, Conservation, Sustainable Development, Transhumance*

Introduction

Indigenous communication systems' encompass a variety of informal, person-to-person social interactions intricately intertwined with a given society's unique characteristics, such as its language, history, beliefs, values, knowledge, institutions, customs, and way of life. At the heart of traditional communication lies language, which involves the expression of thoughts, feelings, and words. Additionally, non-verbal traditional communication surpasses mere speech, involving complex methods of sharing meaning through non-linguistic means.

Transhumance or pastoral communities have effective indigenous communication systems through which they generate, store, share, transmit and use information and knowledge. The primary mode of communication for many pastoral groups is dyadic, i.e. word of mouth as a means of face-to-face communication. Across India, pastoralist societies are characterized by diverse native languages and a penchant for utilizing folk mediums like storytelling, music, poetry, communal gatherings, marketplaces, and conversations at communal hubs such as wells and tea houses, among other forms of communication.

The combination of mobile phones and radio, along with the Internet, affords a unique opportunity to overcome the challenges of collecting information on the environment and climate change in remote areas inhabited by transhumance communities. While modern information and communication technologies such as the Internet are not so easily accessed, mobile phones are widely used in the Himalayan Region of India where most of the pastoral communities are found

and seen to be migrating. This has helped pastoralists to exchange views on grazing land resources and environment changes, climatic conditions, policy trends and security matters, all of which affect their livelihoods. Transhumance is prevalent in regions where the availability of pasture and water varies with the seasons. In India, this is often seen in the Himalayan states like Himachal Pradesh, Uttarakhand, Jammu and Kashmir, as well as in the hilly areas of states like Rajasthan, Maharashtra, and Karnataka.

Transhumance and Environmental Communication

Transhumance is the practice of pastoralist communities moving between geographically distinct places. So, they frequently expose them to various cultural and racial groupings. This offers chances for cross-cultural interaction and sharing of cultures, traditions, and information. It facilitates the exchange of original viewpoints and encourages cultural diversity.

The pastoralist communities encounter people who speak different languages or dialects through their movement. Effective intercultural communication becomes crucial in these situations, enabling individuals to understand and communicate with each other. Engaging in intercultural communication helps individuals from different cultures to understand and appreciate each other's perspectives. It fosters empathy, reduces stereotypes, and promotes a more inclusive and tolerant society.

Through intercultural communication, these communities can share their cultural practices, stories, and knowledge with others. This exchange helps preserve and safeguard their cultural heritage, ensuring its continuity for future generations.

Learning and adapting to different communication styles and languages facilitate cooperation and mutual understanding. Transhumance communities have accumulated knowledge and practices related to sustainable land management, resource conservation, and animal husbandry. Through intercultural communication, this valuable knowledge can be shared with other communities, contributing to sustainable development, environmental stewardship, and the protection of natural resources, spreading environmental communication and biodiversity conservation.

There are several ways that transhumance might help to protect biodiversity. The rotation of grazing grounds made possible by the movement of livestock herds prevents overgrazing and promotes the regrowth of vegetation. The diversity of plant species, including the development of grasses, herbs, and shrubs, is encouraged by this rotating grazing pattern. Additionally, it promotes habitat heterogeneity, which benefits a variety of animal species by providing them with alternative foraging. Transhumance can contribute to the preservation of biodiversity in multiple ways. The movement of livestock herds allows for the rotation of grazing lands, preventing overgrazing and enabling vegetation regeneration. This rotational grazing pattern promotes the diversity of plant species, including the growth of grasses, herbs, and shrubs. It also provides habitat heterogeneity, benefiting various wildlife species by offering different types of forage and cover throughout the year.

Transhumance embodies traditional knowledge and ecological understanding developed by pastoral communities over generations. This knowledge includes a deep understanding of local ecosystems, seasonal dynamics, and the interaction between livestock, wildlife, and their habitats. Researchers and conservationists can collaborate with pastoral communities, tapping into this knowledge to gain insights into ecosystem functioning, climate change adaptation, and sustainable land management practices.

Transhumance has a positive impact on wildlife populations, including the facilitation of migration, the provision of refugia during dry seasons, and the reduction of human-wildlife conflicts. It also emphasizes the need for collaborative management approaches that integrate transhumance and wildlife conservation. Transhumance practices contribute to maintaining diverse plant communities, providing habitat for a range of species. It has also a crucial role in supporting the conservation of threatened or endangered species. Transhumance practices, with their rotational grazing approach, promote soil conservation. By allowing vegetation recovery between grazing periods, transhumance helps maintain soil health, prevent erosion, and retain water in the landscape.

Transhumance in the Uttarakhand Region: A Case Study

The northern Indian state of Uttarakhand is known for its scenic beauty and rich cultural diversity. The state is in the Himalayan North of India, also known as the ‘Dev Bhoomi’ or the ‘Abode of God’. It is divided into two regions: Garhwal in the West and Kumaon in the East. It is home to several pastoral communities popularly known as transhumance, like the *Bhotiyas*, *Van Gujjars*, and *Jaunsaris*. These communities, particularly the Van Gujjars, are well-known for their seasonal migration with their herds of livestock, primarily consisting of buffaloes. In the Himalayas, transhumance has been practised by various communities for centuries as a way to optimize livestock grazing and resource utilization in challenging mountainous terrain. Though eventually their grazing pastures were turned into national parks, tiger reserves and wildlife sanctuaries, these tribes continued their nomadic way of life.

The movement of herders and their livestock is typically driven by the availability of grazing pastures and the changing seasons. They migrate from the lower Himalayan valleys in the winter to the alpine meadows at higher altitudes in summer. Transhumance is a traditional practice of seasonal migration followed by pastoral communities, where they move their livestock between different grazing areas depending on the time of year. The movement of these communities and their livestock has not only been a means of livelihood but also a way to sustain a symbiotic relationship with nature and promoting intercultural communication.

Van Gujjars, and *Bhotiyas*, who keep mixed flocks of sheep and goats for wool, meat and rituals; horses for baggage transport and dogs for protection are the two major nomadic tribes of Uttarakhand. They are one of the many tribes who have lived in deep dependence on wild habitats in India and for whom, “transhumance” (the practice of moving livestock from one grazing ground to another in a seasonal cycle) has been a way of life for centuries. Also, much before the concept of inviolate spaces for wildlife conservation descended onto Indian “environment” policy in the form of the 1972 Wildlife Protection Act. And yet, today, the idea of “home” for *Van Gujjars* has been made precariously tentative.

The transhumance systems in Garhwal and Kumaon regions are of the vertical type wherein transhumant and livestock inhabit warmer zones during winters, moving upwards as the weather warms during spring until they reach alpine pastures in summers. While Gujjars move with their herds of buffalo and cattle, *Bhotiyas* keep mixed flocks of sheep and goat for wool, meat and rituals; horses for baggage transport and dogs for protection for improving the socio-economic condition of transhumant *Bhotiya/Anwal* and *Gujjar* communities. These groups such as *Gujjars* and *Bhotiyas* are nomadic tribes who are primarily engaged in animal husbandry as they migrate from higher altitudes to lower altitudes during the peak winter months along with their cattle and/or flocks of sheep and goats in search of green pastures. These groups live with limited resources and often have to face hardships during transit.

The transhumance systems in Garhwal and Kumaon regions are of the vertical type wherein transhumant and livestock inhabit warmer zones during winters, moving upwards as the weather

warms during spring until they reach alpine pastures in summers. While *Gujjars* move with their herds of buffalo and cattle, *Bhotiyas* keep mixed flocks of sheep and goat for wool, meat and rituals; horses for baggage transport and dogs for protection.

Transhumant routes in the Uttarakhand area

Table 1: Transhumant routes in the Uttarakhand area				
Transhumant Communities	District	Transit Duration (days)	Route	Type of Migration
Van Gujjars	Dehradun	7	Vikasnagar-Kalsi- Shaiya-Chakrata	Traditional with families
		8	Vikasnagar-Kalsi- Koti-Tuni	
		6	Vikasnagar-Kalsi- Shaiya-Chakrata	
		6	Khothibhandi ko Devvan	
		6	Jokla to Devvan	
	Tehri	9	Vikasnagar-Kalsi-Juddo-Yamunapul-Nainbag-Purola	
	Rudraprayag	7	Mohankhal to Pokhri	Traditional with families
		15	Rudraprayag to Simal bend	
		7	Mohantag to Gangnani	
	Uttarkashi	6	Vikasnagar to Nagtibba	Semi sedentary with families
Bhotiya/ Anwal	Almora	10	Sheraghat-Bhaisiyachana-badichina-lamgada-saharfatak- Ramgarh-Bhawali-Bhimtal- Haldwani	Traditional, migrate without families
		10	Panar-Dhaydi-Danaya-Badichina- Bhawali-Bhimtal-Haldwani	
		10	Sheraghat-Bhaisiyachana-badichina-lamgada-saharfatak- Ramgarh-Bhawali-Bhimtal- Haldwani	
	Pauri	9	Joshimath- Chaudikhal-Thalisain-	
		8	Yamunapul-Nainbag-Damta-Naugaon-Purola	
	Dehradun	3 months	Kahanehra to Pikhagram	Semi-sedentary with families

Table 1: Transhumant routes in the Uttarakhand area					
	Uttarkashi	10	Sahastradhara to Harsil		Traditional with families
		8	Phakot to Harsil		
		8	Shivpuriteg to Harsil		
		8	Raipur to Naugaon		
	Champawat	8	Ghat to Champawat		Traditional migrants without families
		8	Ghat to Devidhura		
	Pithoragarh	7	Raiagar to Saraghat		
		7	Gangolihat to Panar		

Table2: Transhumant Population Movement				
Division	Places Where Population Stays	Transhumant	Departure to Bugiyals (Grasslands)	Back to villages
Vikasnagar, Dehradun	Haripur, Quansi, Chakrata & Sahiya		March/ April	September/ October
Thatyur, Tehri	Nainbagh & Thatyur		March/ April	September/ October
Rudraprayag	Bansbada, Kund & Jakholi		March/ April	September/ October
Uttarkashi	Naugaon-Baghasu & Mori-Sandra		March/ April	September/ October
Pithoragarh	Thal & Nachani- Chinkiya		May/ June	September/ October
Almora	Garunabaz, Kafli and Dodam		Feb/March	September/ October
Bageshwar	Talsar Patiyasar, Munar, Chauda Sthal, Badi Paniyali (Shama), Gogina, Bhanar and Vinayak.		March/April	September/ October

Table3: Transhumant Census								
District	Transhumant	No. of Transhumant	Details of livestock					Total
			Cow	Buffalo	Sheep/ goat	Mule/ horse	Other (calves, Dog etc.)	
Rudraprayag	Gujjars	200	0	80	4100	60	41	4281
Tehri	Gujjars	112	135	1418	240	45	103	1941
	Gaddi	85	0	0	6218	28	48	6294
Uttarkashi	Gujjars	88	494	992	383	98	140	2107
	Bhotia	73	75	10	867	15	30	997
Dehradun	Gujjars	148	253	1791	242	351	651	3288
Almora	Bhotia	47	0	0	5693	38	21	5752
Bageshwar	Gujjars	210	0	0	10200	60	60	10320
Pithoragarh	Bhotia	140	0	0	16139	124	125	16388
Total		1103	957	4291	44082	819	1219	51368

Challenges to Transhumance

With the advent of modernization and technological advancements, the practice of transhumance has undergone significant changes and faced certain challenges. Modernization often involves the construction of roads, railways, and other infrastructure projects, which can disrupt traditional transhumance routes. These barriers limit the mobility of livestock herders, forcing them to alter their traditional migratory patterns or abandon transhumance altogether. The decline of transhumance due to modernization can lead to the loss of traditional knowledge, cultural practices, and social cohesion within the communities and could further affect the communication that they establish with the environment. It can also impact the relationship between humans, animals and the environment. The close bond formed through transhumance may be weakened or lost. The changes in agricultural practices, market integration, and technological advancements have influenced transhumant pastoralism

Transhumance and environmental communication are connected through their potential to promote sustainable land management, preserve cultural heritage, support local economies, and contribute to climate change adaptation. By effectively communicating the environmental benefits and cultural importance of transhumance, environmental communication can contribute to the conservation and promotion of this traditional practice.

However, it's worth noting that modernization, changing land use patterns, and restrictions imposed by wildlife conservation efforts have posed challenges to traditional transhumance practices in Uttarakhand. These challenges include restrictions on grazing in protected areas, conflicts with wildlife conservation initiatives, and the increasing sedentarization of pastoral communities.

Efforts have been made by the government and non-governmental organizations to strike a balance between conservation efforts and the preservation of traditional transhumant practices. There have been initiatives to identify and demarcate specific routes and grazing areas for transhumant communities to ensure the sustainability of both livelihoods and ecological conservation.

A Transhumance Action Plan (TAP) has been prepared in the state to improve the socio-economic condition of transhumant *Bhotiya/Anwal* and *Gujjar* communities. Under the Transhumant Action Plan, various interventions such as health camps were organized for both the humans (1351 individuals) as well as their livestock (over 60,000) has impacted improving their health by identifying and addressing the disease and administering curative as well as preventive measures. Over 20000 units of items such as tarpaulin/poly sheets, tents, feed tubs, blankets, concentrated feed for the cattle, torches/solar lanterns, daris/cow mats, raincoats, umbrellas, buckets, milk/ water cans, shearing scissors, bells for cattle, shoes, socks, *pitthu* bags, tarpaulin canvas, cookers, cotton mats, first aid kits, etc. were distributed over the project period. These activities have helped to benefit over 1351 humans and above 60000 livestock population at a financial cost of Rs. 44.01 million. The Transhumant Action Plan is designed to promote the sustainable use of natural resources, protect the cultural heritage of pastoral communities, and ensure the resilience of transhumant pastoralism in the face of changing environmental, economic, and social conditions.

By preserving the pastoral lands, Uttarakhand can not only protect the livelihoods of the pastoral communities but also ensure the conservation of its biodiversity and maintain the natural beauty of the region for future generations. Several initiatives demonstrate the effectiveness of environmental communication in supporting pastoral communities. Community radio programs can provide a platform for sharing knowledge and promoting dialogue on local environmental issues. Participatory communication approaches, such as community-based mapping and storytelling, can also empower communities to document their experiences and advocate for change. Environmental communicators can use transhumance as an opportunity to educate the public about the importance

of preserving diverse ecosystems and the role of migratory species in maintaining ecological balance. Integrating transhumance into environmental communication efforts can help foster a deeper understanding of the complex relationships between human societies, livestock, and the environment, ultimately contributing to environmental sustainability. Modern communication technologies such as GPS tracking, remote sensing, and mobile communication should be integrated into transhumant practices to understand and minimize environmental impacts.

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COMBATING THE PERVASIVE ISSUE OF COUNTERFEIT VACCINES AND MEDICATIONS IN WESTERN ASIA: URGING FOR COMPREHENSIVE AND COLLABORATIVE EFFORTS

CHAPTER

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I. Abstract

The World Health Organization reports that approximately 10.5% of drugs globally are of poor quality or counterfeit. While counterfeit pharmaceuticals mostly affect underdeveloped and low-income countries, they also pose a significant problem to the developed countries. Counterfeit vaccines and medicines has harmful effects on public health, security, and economic progress. Counterfeit medicines production and supply chain shows vulnerabilities that are taken advantage of by illegal business, inadequate regulations, easily crossed borders, and restricted availability of authentic pharmaceuticals.

This paper examines the causes that contribute to the trade of counterfeit medicine, such as technological improvements that make it difficult to distinguish between legal and illegal supply chains, the increase in online pharmacies, and the lack of public knowledge about the risks involved. The article recognizes current endeavours to address counterfeiting, including actions by WHO, FDA, and pharmaceutical corporations, as well as technology measures such as serialization and anti-counterfeit packaging. Previous laws such as the Medi-crime Convention and the efforts of several international organizations are also analysed. The study highlights the necessity of focused public education initiatives and the significance of addressing the demand aspect of the issue. It emphasizes that a complete plan involving all parties is important to establish a safer and healthier future for the people of Western Asia. In light of the pressing nature of the crisis, the chapter advocates for a thorough and collaborative approach that includes efforts at the national, regional, and international levels.

Key words: Counterfeit Vaccine and Medicines, Western Asia, Regulatory Agencies, Illegal trade, Technological Solutions, International Cooperation.

II. Introduction

The widespread distribution of counterfeit vaccines and medications in Western Asia presents a significant threat to public health, security, and economic development. These fraudulent products undermine trust in healthcare systems, cause illness and fatalities, and hinder access to legitimate medicines. This illicit trade exploits weak regulatory frameworks, porous borders, and limited access to affordable genuine medications.

Producing counterfeit life-saving drugs is a profitable illegal business, which is a component of a global fraud of \$431 billion, as estimated by the World Health Organization. The counterfeit drug trade, which is highly growing criminal industries globally, brings in millions of dollars for criminal organizations in Western Asia and beyond regions. Western Asia is also an important transit point for counterfeit vaccines and medicines that are being sent to Europe or Africa. The Western Asia region's permeable borders, insufficient regulatory frameworks, and corrupted law enforcement agencies make it an appealing trafficking route for the supply of counterfeit vaccines and medicines.

According to global data, the profit margins on counterfeit drugs are estimated to be 10–25 times higher than those of narcotics. The governments are far behind in tackling the issue as criminal groups continue to take advantage of this extremely profitable business. More than a third of Western Asia's pharmaceutical supply is made up of counterfeit medications, which range from common analgesics to medications for severe ailments. The prevalence of this black market presents further difficulties in a region where many nations' healthcare systems are already in danger of collapsing. Even though the COVID-19 pandemic brought to light the market's widespread nature of counterfeit vaccines and medicines, governments frequently overlook its illicit roots, seeing it as a issue of copyright infringement or a solely public health concern.

III. Discussion

Technology advancements in the global pharmaceutical sector are primarily to blame for the growing indistinct boundaries between the licit and illicit medicinal supply chains in Western Asia. The World Health Organization (WHO) has recognized the growth of online pharmacies as a major factor contributing to the global rise in counterfeit medications. The absence of strict and widespread drug regulations, the intricate nature of the worldwide pharmaceutical supply chains, and the complexity of counterfeit medicine packaging are some of the elements that provide challenges for regulators, pharmaceutical companies, campaigners, and consumers in addressing the issue of production and supply of counterfeit medicines and vaccines. There is lack of public understanding regarding their prevalence and the repercussions of using such drugs.

One of the ongoing initiatives is the WHO's portal on "substandard and falsified medical products;" The US Food and Drug Administration's Know Your Source, Filled with Empty Promises, and BeSafeRx; Alliance for Safe Online Pharmacies' Buy SafeRx; and Pfizer's Fight the Fakes. Serialization, blockchain tech, anti-counterfeit packaging tech like holograms, tamper-evident seals, and invisible inks were used to make it harder for counterfeiters to copy real packaging.

Global Surveillance and Monitoring System (GSMS), developed by WHO in the Western Pacific Region, Rapid Alert System (RAS) which is a communication network created by WHO and partners that provides intersectional detection and notification of counterfeit medicine occurrences. Radio Frequency Identification (RFID) technology, Message Alert System, The Global Pharma Health Fund (GPHF) Minilab™, a mobile mini-laboratory used in developing countries are some of the measures taken to address counterfeit vaccines and medicines.

Past Actions and Legislatures developed for counteracting counterfeit drug production and supply such as WHO Member State Mechanism, WHO's Global Surveillance and Monitoring System, Medi-crime Convention, International Medical Products Anti-Counterfeiting Taskforce (IMPACT), WHO Guidelines on Good Distribution Practices (GDP), Joint Interagency Task Force on Medicine Crime (JITF-MC), WHA- A63/23. European Alliance for Access to Safe Medicines (EAASM), European Federation of Pharmaceutical Industries and Associations (EFPIA), The Pharmaceutical Research and Manufacturers of America (PhRMA), US Food and Drug Administration (FDA), World Health Organization (WHO), EU verification logo for online pharmacies, Global Anti-Counterfeiting Network International Chamber of Commerce (ICC/BASCAP), Quality Brand Protection Committee (QBPC), The International Anticounterfeiting Coalition (IACC), World Customs Organization (WCO) are few organizations continuously monitoring counterfeit vaccines and medicines.

The proposed solutions:

i. Strengthening Regulatory Frameworks

Countries in Western Asia should review their legislation to fill in any loopholes in national laws concerning counterfeit items. Strong anti-counterfeiting laws that adhere to global standards, such as the Medi-crime Convention, should be put into effect. It is important to create and give authority to regulatory agencies that are apart from the pharmaceutical industry to oversee and implement regulations. Global agencies such as WHO and UNODC should provide technical support and help in creating capacity to aid these endeavours.

ii. Enhancing Technological Solutions

Member States should allocate resources to implement reliable track-and-trace systems utilizing technologies such as blockchain and RFID. Promotion of packaging elements that help prevent counterfeiting, such as holograms and tamper-evident seals, is necessary. Online verification tools should be used to enhance transparency and consumer confidence. Non-governmental players should work together with authorities to create and implement new anti-counterfeiting technology.

iii. Fostering Public Awareness and Education

It is important to initiate public awareness efforts that educate citizens about the risks associated with counterfeit items. Education initiatives that empower individuals to make well-informed health decisions should be created and put into practice in schools and communities. The use of mass media and communication technology should be employed to spread accurate information and promote the reporting of suspected counterfeit activity. Civic groups and local leaders should collaborate with authorities and provide culturally appropriate communication to increase awareness and engage communities.

iv. Strengthening International Cooperation

Member countries should strengthen regional and global collaboration by making agreements to exchange information, monitor illegal activities, and eliminate criminal organizations. Encouraging active involvement in established processes such as the JITF-MC and IMPACT is advisable. Enabling the transfer of individuals participating in the counterfeit drug trade is essential. Global organizations should simplify the exchange of information among law enforcement agencies and offer financial and technological support to enhance capabilities and facilitate collaborative operations.

v. Addressing Demand-Side Factors

Member countries should enhance the availability of affordable and authentic medicines through strong healthcare systems and specific financial assistance. Efforts should be made to tackle corruption and shortcomings in healthcare systems in order to decrease susceptibility to counterfeiters. Encouraging trust and transparency in authorized healthcare providers can help decrease dependence on unregulated alternatives. Members of the public and local leaders should support better access to and affordability of healthcare, challenge unfavourable views about formal healthcare systems, and promote safe use of drugs.

vi. Moving Forward

The Secretary-General should prepare a detailed report on the present status of the counterfeit drug trade in Western Asia and the effectiveness of current measures to combat it. An international strategy for addressing fake vaccines and medicines, taking into account the particular requirements of Western Asia, should be formulated. Continual monitoring of progress and taking additional action as needed should be done. All relevant parties, including as governments, international organizations, civil society, and the commercial sector, should actively engage in carrying out this resolution.

IV. Conclusion

Specific public education initiatives should be initiated to inform citizens about the risks associated with counterfeit items. Education programs that empower individuals to make well-informed health decisions should be created and put into action in schools and communities. The use of mass media and communication technology should be employed to distribute accurate information and promote the reporting of suspected counterfeit activity. Civic groups and local leaders should collaborate with authorities and provide culturally appropriate communication to increase awareness and engage communities.

The paper thoroughly discusses the supply aspect of the counterfeit drug trade, but also recognizes the significance of also considering the demand aspect. Implementing focused advertisements that appeal to consumers' moral beliefs, societal standards, and safety concerns might be vital in decreasing dependence on counterfeit items. Through implementing a diverse strategy that tackles both the supply and demand sides, enhances regulatory frameworks, utilizes technology, raises public awareness, and encourages international cooperation, this all-encompassing plan can lead to a healthier and safer future for the people of Western Asia.

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CHAPTER

THE PORTRAYAL OF FAMILIAL BOND IN A.K RAMANUJAN'S POETRY: A CRITICAL STUDY

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Abstract

A.K. Ramanujan, celebrated as one of the preeminent voices in Indian English literature, rose to prominence in the post-colonial era as a versatile poet, proficient in both English and Kannada. His works delve into the rich tapestry of Indian culture, encompassing themes such as familial relationships, rural life, superstitions, and the diverse landscapes of India. Ramanujan's poetry is deeply rooted in his personal experiences and memories, making him a poignant chronicler of human existence. The focal point of Ramanujan's poetic exploration lies in the intricate dynamics of family relationships. Through his verses, he intricately weaves together the threads of familial bonds, capturing the nuances of love, conflict, and nostalgia. Memory serves as a cornerstone in his poetry, acting as a bridge between the past and present, allowing readers to traverse through the corridors of time and experience. The article delves into the thematic depth of Ramanujan's poetry, particularly focusing on the profound significance of family relationships in some of his most compelling works. By examining the interplay of memory, childhood, experience, and relationships in his verses, we seek to unravel the layers of emotional complexity and cultural resonance embedded within his literary masterpieces. Through this exploration, the article aims to shed light on the enduring relevance of Ramanujan's poetic vision and its profound impact on the landscape of Indian literature.

Keywords: Familial Relationships, Conflict, Nostalgia, Childhood, Memory

Introduction

Attipate Karishnaswami Ramanujan, a luminary in Indian English literature, distinguished himself as a bilingual poet and translator. Throughout his illustrious career, he adeptly crafted poetry in both English and Kannada, showcasing his linguistic versatility. Beyond his role as a poet, Ramanujan's prowess as a translator garnered international acclaim, particularly for his translations from Tamil, Kannada, and Telugu. His notable collections in Indian English poetry, including "The Striders" (1966), "Relations" (1971), "The Second Sight" (1971), and "The Black Hen" (1995), exemplify his mastery of verse and thematic depth. Additionally, his translation of U.R. Ananthamurthy's novel "Samskara" from Kannada into English further solidified his reputation as a formidable literary figure. Ramanujan's oeuvre is deeply imbued with the imagery and symbolism of familial bonds, reflecting his belief that his English education and academic pursuits in linguistics and anthropology provided the "outer" forms, while his upbringing and immersion in Indian languages, folklore, and cultural heritage offered the "inner" substance to his poetry. His mantra, "I will seek and will find/My particular hell in my Hindu mind," encapsulates his introspective exploration of identity and the human condition within the context of Indian

culture and tradition. Renowned for his evocative imagery, linguistic innovations, and exploration of themes such as familial relations, Hindu mythology, nostalgia, and existential anxieties, Ramanujan's poetry resonates with readers on a profound and universal level.

Portrayal of Familial Bond

Ramanujan's poetry intricately explores the tapestry of familial relationships, drawing inspiration from his own experiences and cultural heritage. Rooted in his emotional and cultural upbringing, his father played a significant role in shaping his identity and worldview, providing him with a strong foundation upon which his poetry flourished. Throughout his works, Ramanujan sketches vivid portraits of various relatives, including cousins, wives, daughters, and aunts, each contributing to the rich tapestry of his poetic narrative. Poems such as "Small Scale Reflections on a Great House," "Obituary," "History," "Of Mothers, Among Other Things," "Love Poem for Wife," "Routine Day Sonnet," and "Looking for a Cousin on a Swing" serve as poignant explorations of familial bonds and the intricacies of human relationships. Characterized by a blend of casualness and irony, Ramanujan's poems often mask underlying emotions of pathos and nostalgia. The depth of feeling is subtly woven into the fabric of his verses, concealed beneath layers of irony and wit. This deliberate choice adds complexity to his work, inviting readers to delve beneath the surface and uncover the profound emotional truths hidden within his poetic narratives. Through his nuanced exploration of family relations, Ramanujan captures the universal experience of love, loss, and longing, leaving an indelible mark on the landscape of Indian English literature.

The poem "Small Scale Reflections on a Great House" stands out as one of Ramanujan's most renowned and widely anthologized works. At its core, the poem delves into the significance of family life and communal living, offering a nuanced perspective on the Indian joint family system tinged with irony. The metaphor of the poem is "great house," symbolizing the encompassing nature of familial and communal life. Everything that enters this house, whether living or inanimate, becomes absorbed by its vast embrace. Daughters, upon marriage, depart from the house only to return, often due to unfortunate circumstances. Their marital bliss is short-lived, as they either face abandonment by their husbands or return as widows. Similarly, sons who venture away from the household eventually find their way back, sometimes reincarnated as grandchildren:

"Nothing stays out: daughters get married to short-lived idiots: sons who run away come back in grandchildren..."

Through this poignant imagery, Ramanujan captures the cyclical nature of familial relationships and the inevitable interplay between departure and return. The poem reflects the complexities and contradictions inherent within the Indian joint family system, offering a profound meditation on the ebb and flow of life within the familial and communal sphere.

Ramanujan's poem "Obituary" delves into the intricacies of familial dynamics, focusing on the life and death of a typical Indian father. Through the speaker's recollections, the poem navigates the aftermath of the father's sudden demise, shedding light on the profound impact it has on the family. The main theme of the poem is the portrayal of the father's life and death, encapsulated with poignant irony.

"Like his Caesarian birth In a brahmin ghetto and his death by heart failure in the fruit market."

The speaker reflects on the father's birth, which occurred through a Caesarian procedure in a Brahmin neighborhood, juxtaposed with his eventual demise due to heart failure in a fruit market. This juxtaposition serves to underscore the transient and unpredictable nature of life, as well as the

ironic twists of fate that shape human existence. Moreover, the poem subtly critiques the patriarchal norms prevalent in Indian society, highlighting the dominance of males in middle-class life. Through the lens of the speaker's reflections, the poem offers a poignant commentary on the complexities of familial relationships and the inherent vulnerabilities that accompany mortality. In "Obituary," Ramanujan masterfully intertwines themes of life, death, and societal expectations, inviting readers to contemplate the fleeting nature of human existence and the enduring bonds of family that transcend the passage of time.\

Ramanujan's poem "Love Poem for Wife" delves into the complexities of familial relationships, specifically focusing on the discord between an Indian husband and his wife within the context of modern Indian society. The poem encapsulates the modern Indian's embrace of Western norms regarding marriage, while also highlighting the underlying tensions and disparities that exist within marital life. The poem opens with the speaker acknowledging the profound impact of their unshared childhoods on their present relationship: "Really what keeps us apart at the end of years is unshared childhood." This statement serves as a poignant reflection on the disconnect between the speaker and his wife, stemming from their lack of knowledge about each other's formative years. Central theme of the poem is the speaker's contemplation of his wife's childhood, depicted through vivid imagery of her creating a picture of the poet in the family albums. The juxtaposition of the husband's imagined presence in these albums, transitioning "from ghost to real and back again," underscores the ephemeral nature of memory and the elusive quest for understanding within familial bonds. Through the speaker's musings on familial anecdotes and recollections of childhood, Ramanujan paints a nuanced portrait of the intricacies of married life in modern India. The poem serves as a meditation on the enduring impact of shared memories and experiences on the fabric of familial relationships, while also acknowledging the challenges inherent in bridging the divide between past and present selves.

The poem "Looking for a Cousin on a Swing" delves deeply into the realm of familial relationships, evoking nostalgic memories of childhood innocence and companionship. Through the lens of the protagonist's recollections, the poem vividly captures the carefree days of youth, where a swing serves as a portal to boundless joy and exploration. At its core, the poem is more than just a simple recollection of past events; it is a nuanced reflection on childhood experiences viewed through the lens of adulthood. The protagonist embarks on a search for something elusive and nostalgic, delving into the memories of his own childhood and those of his cousin. The swing becomes a symbol of shared laughter and adventure, as the young protagonists, a girl of four or five and a boy of six or seven, find solace and excitement in the simple pleasure of swinging beneath the branches of a leafy tree. However, their idyllic existence is abruptly interrupted when the cousin is whisked away by marriage to the bustling city, leaving behind the innocence of childhood. The poignant imagery of the cousin searching for a swing in the vast expanse of urban sprawl, "in cities with fifteen suburbs," underscores the longing for the simplicity and innocence of the past. Despite her attempts to recapture the carefree joy of childhood, the realities of adulthood inevitably intrude. Through "Looking for a Cousin on a Swing," Ramanujan masterfully explores the bittersweet nostalgia of lost innocence and the enduring bond of familial relationships, inviting readers to reflect on the fleeting nature of youth and the longing for simpler times.

Conclusion

A.K. Ramanujan's poetry is replete with themes of family, showcasing the profound impact of his personal relationships on his poetic sensibilities. Through his verses, Ramanujan delves into the intricacies of familial bonds, exploring the dynamics between himself and his immediate family members with depth and introspection. In many of his poems, Ramanujan asserts and celebrates his relationships with family members, portraying them as pillars of support and sources of inspiration. Whether it's his parents, siblings, spouse, or children, each individual relationship is

imbued with its own unique significance and resonance. Through his poetry, Ramanujan immortalizes the tender moments shared with loved ones, capturing the essence of familial love, understanding, and belonging. From poignant reflections on childhood memories to heartfelt tributes to parental guidance and companionship, his verses serve as a testament to the enduring bonds that tie families together. Moreover, Ramanujan's exploration of family themes extends beyond mere sentimentality, delving into the complexities and challenges inherent in familial relationships. Through his keen observation and introspection, he navigates the nuances of familial dynamics, portraying the joys, conflicts, and transformations that shape familial interactions over time. Ramanujan's poetry serves as a profound exploration of the human experience within the context of family, offering readers a glimpse into the rich tapestry of emotions, memories, and connections that define our most intimate relationships.

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Abstract:

This study aims to investigate importance & scope of English language in today's world of globalization. Through a comprehensive review of its historical, social, and linguistic aspects, as well as its present-day usage, instruction, and acquisition, this paper presents research findings that demonstrate The rise of English as a commonly used international language for communication across a range of industries, including business, education, science, and technology. Millions of people acquire English as a second or foreign language each year as a result of the widespread adoption of English language teaching (ELT) as an essential component of education across the globe. This paper highlights the ongoing significance of English and its potential to shape the future of communication, culture, and identity.

Keywords: English language, global lingua franca, teaching, learning, communication, culture.

1. Introduction

English, which has emerged as a preeminent global language, serves as a means of communication in various fields, including business, education, science, and technology. Its widespread use can be attributed to a combination of historical, social, & linguistic factors, & it is now employed not only by native speakers, but also by non-native speakers as a foreign or second language. This study aims to investigate the significance and widespread use of the English language in the modern, globalised society, with an emphasis on its education, acquisition, and usage.

English has become a worldwide phenomenon and is widely recognized as a global lingua franca (Crystal, 2018). It serves as the language of international communication, trade, and diplomacy, and is spoken by more than 1.5 billion people across the globe. The spread of English language has been facilitated by a variety of factors, including historical, social, and linguistic forces, and it now encompasses not only native speakers, but also non-native speakers who use it as a second or foreign language (Ur, 2012). The origins of English language can be traced back to 19th century, when the British Empire underwent extensive colonial expansion. During this time, Despite the decline of the British Empire, the influence of English continued to grow, particularly in the 20th century when the United States emerged as a dominant global power (Orwell, 2001). The historical and social contexts of English are deeply intertwined, and its status as a global lingua franca is largely due to political, economic, & cultural influence of United States & United Kingdom. Furthermore, widespread adoption of the Internet and social media has facilitated the spread of English, making it easier for people to communicate across borders (Orwell, 2021).

English is known for its versatility and flexibility in linguistic context. It incorporates words and grammar from various languages, and creates new expressions. English is a hybrid language with multiple dialects and accents. This flexibility has made it more accessible for people to learn and use language in various situations (Saini, 2023). English has assumed great significance in the contemporary world, which is characterized by globalization. The historical, social, and linguistic factors that have contributed to its development have also had a wide-ranging impact. The fact that it serves as a common language for people from diverse linguistic backgrounds has made it indispensable for cross-border communications (Rani & Hussain, 2023).

2. Literature review

2.1. Historical Context

The dissemination of English can be traced back to the colonial expansion of British Empire in 19th century. During this period, English was extended to various parts of world, including North America, Australia, India, & Africa, because of the expansion of the British Empire. The impact of English continued to be felt, even after the dissolution of the British Empire, as United States emerged as predominant global power in 20th century (Sharma, 2022).

2.2. Social Context

The history of English language is intricately connected to its social context. The widespread use of English as a global language can be attributed to political, economic, & cultural influences of United States & United Kingdom. Furthermore, the growth of Internet & social media has played a significant role in making communication across borders more accessible, thereby contributing to the proliferation of English (Sharma & Sharma, 2022).

2.3. Linguistic Context

The adaptability and versatility of the English language have made it a highly versatile and dynamic tool for communication. English has incorporated words and grammatical structures from various other languages, and has also generated new words and phrases. Because of its multifaceted nature, English has numerous dialects and accents. This adaptability makes it easier for individuals to acquire and utilize language in a wide range of contexts (Sharma, 2023).

2.4. Use of English Language

The use of English has expanded to include various domains such as business, education, science, and technology. English is a language of international trade, commerce, and finance. It is used for communication between people from different countries, who do not share a common language. In

the academic world, English is language of instruction in many universities, & is used for research & publication. In science & technology, English is the language of communication used for research papers, conference presentations, and patent applications. In the digital age, English dominates the Internet and is used for communication on social media, email, and other forms of online communication (Cable, 2013).

2.5. Teaching English Language

English as a Second or Foreign Language (EFL) has gained significant importance in the global education landscape. ELT has emerged as a multi-billion-dollar industry catering to millions of students through language schools, private tutoring, and online courses. English is taught across all levels of education, from primary schools to universities. The traditional grammar-translation method has evolved into a more communicative approach that prioritizes the speaking and listening skills (Salih, 2021).

3. Global Politics & Power of Language

According to Italian Marxist philosopher Antonio Gramsci, "every time the question of language surfaces, in one way or another a series of other problems are coming to the fore," including "the fight over cultural hegemony," "the enlargement of the governing class," and "relationships between the governing groups and the national-popular mass." Rosemary Salomone's "The Rise of English," which supports Gramsci, examines the linguistic conflicts occurring globally, highlighting political, economic, & cultural issues involved & demonstrating that English is currently winning. This book is vast, incredibly captivating, and enlightening, with striking information on almost every page (Jalilovna & Abdurakhmanova, 2023).

With over 1.5 billion speakers worldwide, English is the most widely spoken language even though fewer than 400 million people speak it as their first language. With over 60% of all content on the Internet being in English, it is the universal language of pop culture and the global economy. The vast majority of the world's top 100 science journals are published in English. Almost all European students take English at some point in their academic career (Rowling, 2014).

English continues to prevail even in France, where it is officially considered a national preoccupation to challenge its predominance. Salomone notes that despite the persistent efforts of French regulators to outlaw Anglicisms "like gamer, dark web, and fake news," their directives are "quietly ignored." French pupils are required by law to learn a foreign language, and out of the eight accessible languages, ninety percent select English.

Kenneth Wang, Salomone, a law professor at St. John's University School of Law, tends to skirt around the subject of why English prevailed, saying only that it is the language of globalisation and neoliberalism, which begs the question. She does, however, analyse surprising winners and losers and chronicle the struggles being waged over language policy in nations ranging from Italy to the Congo with meticulousness & depth. It's unclear exactly who gains from English. It obviously helps native English speakers.

Because of what Salomone refers to as their "smug monolingualism," Americans frequently live blissfully ignorant of the benefits that come with their mother tongue's widespread dominance. Globally integrated minority groups that hold market dominance in non-Western nations, like the English-speaking white population in South Africa and Anglophone Tutsi elite in Rwanda, also profit from learning English. Switching from French to English is considered in former French colonies like Algeria & Morocco as a form of rebellion against their colonial heritage as well as a means of modernising (Silvestre, 2022).

Conversely, individuals belonging to lower castes and non-Hindi speaking communities perceive English as a safeguard against the power of the majority. English, according to some reformers, is a "egalitarian language," whereas Indian languages are "tainted by caste." English can also be used as a social status indicator.

In a recent Bollywood blockbuster, a character states: "In this country, English is more than just a language. It's a course. Indian tiger parents, ranging in affluence from the richest to the poorest, advocate for their children's education in English, perceiving it as the means of achieving upward social mobility. English is one of the 11 official languages of South Africa, along with Afrikaans. Although only 9.6% of people speak it as their first language, English "dominates every sector," including the press, government, internet, business, broadcasting, street signs, and popular music. But the political and business elites in South Africa speak other languages besides English. It had great symbolic significance because it was also a language of black resistance to the apartheid government, which was dominated by Afrikaners (Jutronic, 2003). Thus, despite the fact that many of them are not fluent in the language, Black activists from the working class and impoverished have advocated for English-only instruction in universities in recent years. On the other hand, English opponents contend that abandoning Afrikaans education disproportionately harms the impoverished of all races, especially lower-class Blacks, Whites, and South Africans of mixed races who identify as "coloured." Afrikaans, a dialect of Afrikaans endorsed by hip-hop musicians, is one of the many modes of expression that younger "coloured activists are exploring in addition to challenging the English-Afrikaans binary." However, as of right now, English is the most powerful language economically, and South Africa's constitutional commitment to language equality is at best aspirational.

There are "positive labour market returns across the globe" associated with learning English. "Publish in English... or perish" is now the rule in academia, especially in Europe and Asia, instead of "publish or perish." In Middle East, "employees who were more proficient in English earned salaries from 5 percent (Tunisia) to a stunning 200 percent (Iraq) more than their non-English-speaking counterparts." Ninety percent of employers in Argentina "thought that managers and directors needed to be fluent in English." English proficiency and income are connected in all of the countries surveyed.

A quick look at American monolingualism that promotes more multilingualism in Anglophone nations and describes the political outrage that has been felt over challenges to English as the country's official language. Salomone referenced research demonstrating how learning a new language enhances cognitive performance in general, in addition to the economic advantages of multilingualism in an increasingly interconnected society. A broad linguistic and cultural perspective on life, she adds, "leads to greater creativity and innovation." Will Mandarin someday take the place of English as the universal language, given its 1.11 billion speakers? Will the problem be resolved by Microsoft Translate or Google? Salomone answers these problems in his incredibly detailed book. (Nunan, 2003). The main argument in favour of English—or any other language—as a universal language is its economic viability. The arguments for preserving regional languages, on the other hand, tend to sound in different registers. These include significance of cultural heritage, the geopolitics of opposing powerful nations, the worth of indigenous art, and the elegance of peculiar terms in other languages that characterise all various kinds of snow or various tastes of melancholy (Linse & Nunan, 2005).

4. Conclusion

With more than 1.5 billion speakers worldwide, English language is significant in today's globalised society. As the lingua franca of international communication, commerce, and diplomacy, it has become an essential tool in global interaction. The 19th-century British Empire's historical

expansion resulted in the English language's global dissemination in North America, Australia, India, and Africa, among other regions. English continued to spread as the United States became the world's leading nation in the 20th century, even after the British Empire began to fall. The linguistic context of English is characterized by its flexibility and adaptability, with its willingness to borrow words and grammar from other languages, and to create new expressions. This diversity is reflected in numerous dialects and accents found worldwide. The use of English has expanded to encompass various domains including business, education, science, and technology. In these fields, English has become the language of choice for international trade, commerce, research, and publications. As a language of communication in science and technology, English is used in research papers, conference presentations, and patent applications. In the digital age, English dominates the Internet and is used in social media, email, and other forms of online communication.

Millions of students worldwide are enrolled in online courses, private tutoring, and language schools offer English as a foreign language. All educational levels teach English, and the language's traditional grammar-translation strategy has given way to a communicative approach that prioritises speaking and listening abilities. Speaking and understanding English is vital for the millions of people who acquire it every year through formal or informal schooling in today's globalised world. Knowing English opens doors for education, employment, and social mobility. They also allow individuals to appreciate diverse cultures and perspectives. The significance of English cannot be ignored, as it is a symbol of globalization and has the potential to shape the future of communication, culture, and identity. As more people learn and use language, they continue to evolve and adapt to new contexts and cultures. Therefore, it is essential for individuals and institutions to recognize the importance of English and invest in teaching and learning to promote global communication, understanding, and cooperation.

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CHAPTER

LEARNING ENGLISH IN RURAL INDIA: CHALLENGES AND ISSUES

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Abstract:

In the current circumstances English is renowned as a Global Language. English Language has spread its fire branch all around the world and earned the advantage as the most successful language. English stand for higher intellect, better education, and better future. Getting the work done in successful manner has become more important than having the most knowledge. A number of studies have shown that an advanced ability and knowledge of English leads one to higher paying jobs, strong mobility, and a great deal of social success. It is quite unmistakable that irrespective of the career whether it is engineering, medicine, management or history, command of the English will lead to great success. These past two to three decades have mirrored the increasing value put on oral communication abilities. Success in this hostile environment requires not only the acquisition of information and practical skills, but also the growth of strong communication abilities. So it is essential that purposeful learning and goal oriented teaching have gained wonderful importance. On the one hand, the English language has attained this prestige and Indians have proven their value around the world thanks to it. However, the majority of Indians who live in rural areas find it extremely difficult to cope with it. Through this paper I would like to discuss the worries of rural Indian students and some remedies for it.

Key Words: English Language Learning, Rural Students, Communication, ELT Methodology, English Grammar.

Introduction

People from all around the world use English extensively now that it has been recognised as an official language. English is a connect language which links the whole world. Indians are expanding all over the world as a result of their fluency in this language. Though Hindi is the National language, most of the people don't speak or understand Hindi, however they understand English. Due to the widespread use of English as a medium of instruction and communication in universities across the world, education has increased the significance of the English language. English is an international language. English is securely fixed in the soil of India. With the use of English, many individuals may converse with one another. English is a assurance planner language. It will get you anywhere. If you speak English well, that translates to being good overall.

Family Background

Rural pupils from low-income labour, farming, and household worker households lack an educational environment. English language look likes to be an alien to them. Since most of the

students are first invention learners, how can a student get familiar with the foreign language with regard to.

English without any supervision from their parents and others? Despite mastering the language, pupils are unable to construct even a single phrase in English that is free of grammatical errors. Uneducated parents and neighbours get cheerful with the thought that primary education is more than sufficient, and a question for a good communication is never raised.

Educational System

Students in primary school are advanced to upper classes despite having minimal subject understanding.. This badly affects learning process making students motionless and tired. Our examination system is such that it makes students rote memorization rather than testing their systematic and inspired skills. In this process, they remember lessons, replicate them in exam halls and forget them in the same day itself. Students study fundamental grammar at school for the sole goal of passing tests and examinations, not to tackle real-life circumstances. Application-oriented superior grammar is not taught in schools. Furthermore, enough practice is not given to students to learn a language. beginning too is far less to them. To such students it becomes difficult to handle up with the syllabus of English at graduation level. Students join college with fresh ambitions and objectives, but they must deal with the language barrier.

Most of the students fail to stand the testing period of learning through English, often develop a difficult and break off their studies.

Language Reduced as Subject

The English language is taught and learned as one of the examination subjects. The examination process of universities is correlated with writing skill. The primary objective of students is to obtain sufficient marks to pass the examination. and most of the students have only this much of approach which reduces the interest of in learning English. Interest is lost involuntarily Beauty of the language is also lost.

Medium of Teaching

In rural India English is taught in their mother tongue (Telugu), which leads to unnecessary misunderstanding of comparing the languages. English teacher is in a state to take up bilingual method. ELT experts consider this to be incorrect approach. Students are taught at school that English is an international language. To learn this language

Requires regular practice and patience. Students commonly believe that it is impossible to achieve confidence or command of the English language.. This kind of inclination prevents students from learning new languages like English. Learning second language means acquiring a system of rules, but just as a very little is identified about these rules, even less is known about how such rule systems are acquired. Students find it very difficult to earn a capability in those rules and in truth they have no idea of proper sentence structure. They have no idea of appropriate pronunciation, spelling, or grammatical norms. silently, they dislike the English Language and hence the single objective of the teacher and the learner remain to clear the exams. Hence, the students never recognize the importance of learning English as a language. Teacher also translates everything in mother tongue.

Fear, Hesitation, & Shyness

If a pupil is capable of overcoming all of these hurdles, fear, doubt, and shyness will block his rising interest. Students may become aware of the significance of the English language, but where is the platform to foster their interest or direction in using the little-known language? Society has a tendency to chuckle at other people's faults. When a pupil attempts to utilise the language, his errors are highlighted. His enthusiasm for studying the language has been snuffed out.

At Graduate Level

The organization followed in colleges is different from that of schools. Moreover, students have their own whims and fancies about college life because of the wonderful manipulate of mass-medias like theatres and satellite channels on them. These Medias project a fake observation about colleges and students. On seeing such things in movies, students take it for accepted. As a result of this, they have shaped an image for a college and want to act upon those images. The general thinking about college among student community is that college is very moderate in dealing with the students. No one cares for anything. They do not have domestic tasks at all. Whatever they think they can apply them. Attending class is not necessary. Keeping these views in mind they find it not easy in sitting in classrooms and listening to the lessons being trained to them. All their views about a college are crushed into pieces the moment when a teacher enters in a classroom and begins to teach and compel certain limits on them. At this moment, cruel problems start with the slow-learners. These pupils must pass their higher secondary exams. For them, sitting and listening a language class is something an rising task, while others listen the class with absorbed attention.

The student was never given the opportunity to demonstrate his little understanding, and he is frequently chastised for it. Moreover teachers, even in the graduate level, not succeed to make the students feel at home with the language. The teachers blame the main educational system and they don't find time to instruct the students from the especially basic level.

Remedies

Attentiveness about the importance of communicative English should be formed. Students from remote areas should be encouraged to use their limited knowledge of English. We need to build a regular approach which should later be followed essentially. The teachers should be skilled on modern skill. Teachers should discover some way of helping pupils to enjoy their language activities by spending sometime inside the language laboratories thereby building their confidence. The English teacher should have both wide-ranging interest and thoughts. Further, for tackling the lack of vocabulary in the students, creative and interested use of words should be kept in mind. Simple terms and their usage should be taught to pupils. This will aid in instilling in them the habit of learning new terms. Their newly learnt words will become a part of their own vocabulary and they will be in a position to use those words very tenaciously. This improvement of vocabulary will result into better appearance.

The children must be encouraged by their English teacher to speak exclusively English. This steps makes them self-assured. As a corrective step, the English instructor will pay close attention and report the subtleties of spoken language characteristics once or twice a week. When such type of spoken English classes begins, student-friendly or learner-centric atmosphere will certainly succeed, as more and more students will participate in the session. Teachers should motivate students for participative learning. This will remove all of the obstacles that pupils face.. Teaching learning is not a one-way process. It is a multi-way process. After the lesson is over, students should ask any questions they may have. Students' English communication abilities will improve as a result. To develop this, adequate practice must be given to students in their preliminary stage. While

maintaining classroom organization simultaneously learner-friendly atmosphere should also prevail there. Students will be more engaged and learn more as a result. Above all, a teacher serves as a friend, mentor, and philosopher to pupils in addition to being a teacher. In addition to helping students pass exams, he or she mentors them in overcoming obstacles and making wise selections when faced with difficult choices in life. Of course, a competent teacher has a difficult task ahead of them.

Inner advise to learn the language should be developed. Need to enhance Vocabulary and Sentence Construction. Language consists of words and sentence structures. They must attempt to learn five new words each day and try to incorporate them into their own phrases. The traditional approach of posting charts containing challenging words, phrases, and their applications on the walls and paying attention to them every day will be very beneficial.

Students must develop a custom of careful listening of English news, lectures, and explanations during tutorials, practical sessions, seminars, technical presentations, academic discussions, and academic interactions and so on. All of their demands are met by contemporary language labs. They must make most of it. good listening is a prerequisite for good communication.

Speaking skills are very important for a person specialized survival and growth. It gives practice of articulating words and improves self-belief in speaking. The students of rural area must be encouraged to ask questions in order to abolish their fear, as they hesitate to ask questions considering that they may commit error or go wrong. They must be given the chance to express their thoughts, agreements, disputes, and ideas, and they must receive credit for taking part in debates and presenting projects, products, graphs, tables, charts, maps, and other visual aids. They must guarantee that the single most crucial factor in recruiting specialists is speaking ability.

Effective communication depends on reading just like it does on listening and speaking. Students must study reports, proposals, magazine articles, letters, and instruction manuals as well as other technical and business materials. It is difficult to think of any academic, professional, or business endeavour that does not call on effective reading abilities.

The saying goes that reading makes a man whole, speaking makes a man ready, and writing makes a man perfect. For both students and professionals across all industries, writing is crucial. They should practise producing lab reports, topic notes, summaries, synopses, and abstracts for their projects. As they advance in their careers, they will have to manage the communication on their own. Writing business letters, memos, emails, proposals, minutes, notes, reports, professional summaries, and other documents will be required. There are very few academic or professional activities that do not need writing abilities, therefore both professionals and students need these talents to thrive in their fields.

Conclusion:

To succeed, students must put forth a lot of effort. They need to evaluate their strengths and weaknesses and work on themselves. Teachers ought to always provide kids with moral support. They may encounter obstacles along the way, but they are there to help them become more excellent rather than to discourage them. Excellence is seldom the result of luck, but rather of earnest and persistent work. They have access to advanced technologies in our modern day. They must utilise it wisely and develop into a bright star.

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CHAPTER

EXPLORING THE FATE AND FREE WILL IN CHINUA ACHEBE'S THINGS FALL APART

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ABSTRACT:

African literature tells the tales of both present-day people and people who lived hundreds of years ago. It is a vital component of the literary world because it gives voice to those who are marginalized and enables them to retell their stories. Africa's history of colonization, combined with its own distinct ideals and narrative techniques, gave rise to a distinctive literary genre with highly specific traits. Writing *Things Fall Apart* was primarily Achebe's way of teaching his readers the importance of his African culture. This novel gives readers a glimpse of Igbo society just before to the arrival of white missionaries. The narrative "Things Fall Apart" follows Okonkwo, a village chief of Igbo society in Nigeria in the 1890s, as he navigates both the effects of British colonization and his own personal hardships. The book offers an insider's perspective of African life by describing the complicated Igbo community and its rich culture. *Things Fall Apart* describes Okonkwo as a tragic figure in order to illustrate the relationship between a person's will to succeed and their own fate. This paper illustrates that fate is a strong, unavoidable event, despite Okonkwo's belief that he can conquer it with hard labor.

Keywords: culture, tragedy, belief, fate, will.

Fate and Free Will in *Things Fall Apart*

Things Fall Apart opens with Okonkwo being celebrated for his immense wealth and authority throughout Umuofia. Achebe highlights the protagonist's accomplishments while praising "If ever a man deserved his success, that man was Okonkwo." He upholds the honor of his community at a young age by defeating Amalinze the Cat in a wrestling contest and, via diligent labor, yields an abundance of crops. Okonkwo, who feels that hard work and determination are more important than chance, takes great pride in his wealth and sway over his community. He thinks that his perseverance and hard work have helped him succeed.

"Perhaps down in his heart Okonkwo was not a cruel man. But his whole life was dominated by fear, the fear of failure and of weakness. It was deeper and more intimate that the fear of evil and capricious gods and of magic, the fear of the forest, and of the forces of nature, malevolent, red in tooth and claw. Okonkwo's fear was greater than these. It was not external but lay deep within himself."

-Chinua Achebe, *Things Fall Apart*, Chapter 2, **Page 12, 13.**

Although Okonkwo believes that his gods have predestined some aspects of his existence, Achebe delicately refutes this notion by offering logical justifications for the events in Okonkwo's terrible life. For example, Okonkwo accidentally kills a fellow clansman while taking part in the warrior salute during the highly revered Ezeudu's funeral. It's interesting to note that Okonkwo believes his gods planned this awful incident. This is made clear to readers by Achebe's oblique allusion to a spell being cast. Achebe offers a logical explanation for this incident, nevertheless. To put it plainly, Okonkwo is not a skilled gunman, and the weapon he owns is a rusted, ancient artifact that was never meant to be used. Therefore, this incident does not represent Okonkwo's terrible destiny; rather, Okonkwo chose to handle a defective rifle voluntarily. In the end, he controls his own fate, as evidenced by his exercise of free will throughout the book. The other members of Okonkwo's clan accept his tendency toward independence and make fun of him for having too much confidence in his choices. Okonkwo controls how his life unfolds; his own agency, not fate, is what makes him a tragic figure.

“At the most one could say that his chi or ... personal god was good. But the Ibo people have a proverb that when a man says yes his chi says yes also. Okonkwo said yes very strongly; so his chi agreed”.

~Chinua Achebe, *Things Fall Apart*, Chapter 4, **Page 26**.

Using chi, the Ibo tribe uses fate to explain both physical and supernatural causality, rather than relying on free choice. Stated differently, Unoka's shameful death and laziness were caused by his chi rather than his specific decisions. It was predetermined that Unoka would be buried in the Evil Forest, be an Agbala, and have no titles. From a different angle, a Westerner would see it this way. Unoka had free will because he decided to sing and tell stories instead of working. Unoka declined to become a title bearer because he did not identify with the culture he was born into. Thus, rather than being the product of fate or otherworldly forces, his rebellion led to his disgraceful death and agbala status. Okonkwo makes an effort to decide his own destiny. He puts twice as much effort into the yam fields because he knows his father was a failure. But Okonkwo is also a character in a tragedy, a cultural and emotional tragedy because he and his tribe will both "fall apart" and perish. Tragedies have characters designed to fail. As a character, Okonkwo obviously has no control over the demise of himself and his tribe. Nevertheless, Okonkwo fights till the very end. Thus, by executing the messenger, he selects his own fate in a sense. In order to utilize violence to bring about his own self-destruction, he seeks to be put in an environment that encourages aggression and violence (suicide).

When Okonkwo's situation starts to go south, he starts to blame himself. Ikemefuna's demise marks the start of this. Ikemefuna and the baby twins in the book are the most obvious victims since they are severely treated without being given the opportunity to defend themselves. Although it may be argued—and is contested by the clan's eldest member, Ezeudu, as well as by Okonkwo's neighbor Obierika—that he had a choice in whether to take part or not, Okonkwo blames the Oracle for his part in the murder of Ikemefuna. Later, Okonkwo faces exile after his gun shatters and he unintentionally kills one of Ezeudu's sons. Okonkwo is greatly demoralized by the experience, even though his crops flourish in the nearby tribe and he is permitted to return in seven years.

“The story of this man who had killed a messenger and hanged himself would make interesting reading. One could almost write a whole chapter on him. Perhaps not a whole chapter but a reasonable paragraph, at any rate. There was so much else to include, and one must be firm in cutting out details. He had already chosen the title of the book, after much thought: *The Pacification of the Primitive Tribes of the Lower Niger*.”

~ Chinua Achebe, *Things Fall Apart*, Chapter 25, **Page 197**.

Thus, in general, I believe that protagonists in tragedies lack free will, despite the irony that they fight to the death to protect it. Tragic heroes in tragedies are the victims of tragic fate, which is a confluence of poor personal decisions and external determinism. Early and frequent foreshadowing of Okonkwo's death serves to establish dramatic irony, the primary idea that underpins all tragedies.

CONCLUSION

This novel presents conflicting viewpoints on the question of fate vs. free will. The people of Umuofia talk about a property known as chi, which they think has an impact on luck. They are pragmatic farmers, nevertheless, and they think that a person's choices ultimately determine their fate. Take the character Unoka, who is portrayed as the cause of his own misfortune in addition to being an unfortunate man.

The Oracle of Agbala instructs him to look to his neighbors, whose harvests are good because of the effort they put in, and accepts sole responsibility for his low harvests caused by his idleness. Later on, in a parallel with Unoka, Okonkwo is said to be fortunate as well as the architect of his own good fortune, having achieved his wealth via unwavering perseverance in the face of adversity and pure hard labor. The narrator informs the reader that luck has not been on his side when an elder implies that it has. This idea holds that each person controls their own destiny. So, based on how we understand chi, Okonkwo appears to have some degree of responsibility for his own untimely demise. When things are going well for him, Okonkwo believes he is in control of his own destiny; conversely, when things go wrong, he instantly abstains from taking responsibility and queries why he is so unlucky. Okonkwo fluctuates between these two extremes.

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“Free Will and Fate: Things Fall Apart.” Studymode, 19 Feb. 2024.

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Abstract:

Each year, plant infections and pests cause 20% to 40% of crops to fail. The majority of pesticides used today to control plant diseases are hazardous and may be bad for both people and the environment. Pesticides may benefit from nanotechnology by being less toxic, having a longer shelf life, and becoming more water soluble, all of which may have a favourable effect on the environment. The two ways that nanoparticles can be used to manage plant diseases are examined in this review: either as standalone protectants or as nano carriers for pesticides, fungicides, herbicides, and RNA interference agents. Despite the many potential benefits of using nanoparticles in agriculture, few nano particle-based products have been made commercially available. Numerous issues, including a dearth of field trials and underuse of pest-crop host systems, could be used to explain the lack of commercial applications. Nanotechnology has advanced quickly in other industries, and the only way to keep up with it for agricultural applications is by comprehending the key research questions and filling in the knowledge gaps to support the development of commercial nano products.

Keywords: Nanotechnology; Agriculture; Nano pesticides; Targeted Delivery; Disease Management

Introduction

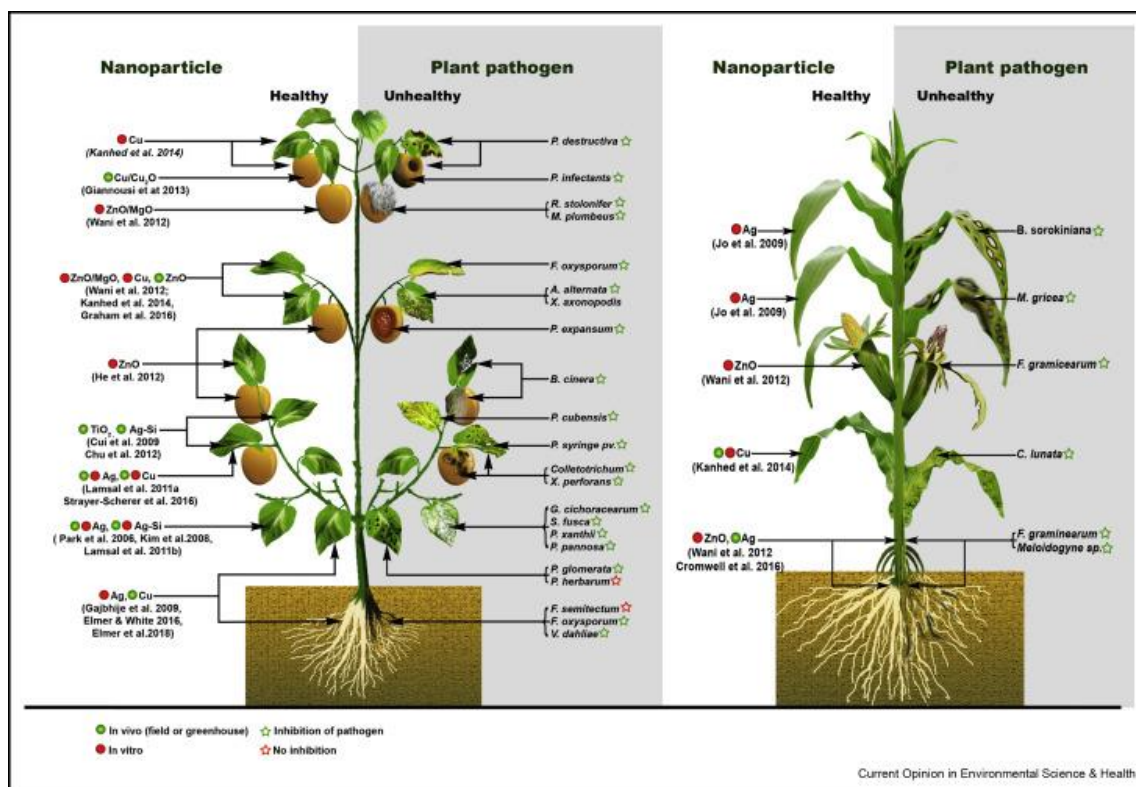
Pests and pathogens significantly reduce crop yields global losses of 20 to 40 percent per year. Current pest control is highly application dependent pesticides such as insecticides, fungicides and herbicides. Despite many advantages, e.g high availability, rapid action and reliability, pesticides have adverse side effects on non-target population organisms, the recovery of the pest population and the development of resistance. In addition, it is estimated that 90% of used pesticides are lost during or after use. As a result there is an increased incentive to develop cost-effective and efficient pesticides that are less harmful to the environment

Nanotechnology has led to the development of new concepts and agricultural products huge potential to solve the above problems. Nanotechnology has essentially evolved in medicine and pharmacology, but received relatively less interest in agriculture applications. The use of nanotechnology in agriculture in plants is currently being investigated hormone distribution, seed germination, water management, target gene transfer, nanobarcoding, nanosensors and controlled release of agrochemicals. with desired properties such as shape, pore size and surface properties so that they can then be used as protective agents or for precise and targeted delivery by adsorption, encapsulation and/or conjugation active agent as an insecticide. The development of agricultural

nanotechnology has potential to offer the amount of new generation pesticides and other substances used to control plant diseases is increasing considerably.

The use of nanoparticles in plant protection can be achieved by two different mechanisms: (a) nanoparticles which themselves provide plant protection or b) nanoparticles as carriers for existing pesticides or other active agents such as double-stranded RNA (dsRNA) and can be sprayed or soaking/soaking seeds, leaf tissue or roots. Nanoparticles as carriers can provide several advantages such as (i) longer shelf life, (ii) better solubility of poorly water-soluble pesticides, (iii) reducing toxicity and (iv) increasing target-specific absorption of the target pest. Increased activity and stability of the nano pesticides under environmental pressure (UV and rain), which significantly reduces the number of applications, toxicity and their costs are other possible advantages of the nano carrier.

In this review, we discuss recent advances in plant disease control using nanoparticles as self-protective substances and nanoparticles as carriers of insecticides, fungicides, herbicides, and dsRNA for RNA interference (RNAi)-mediated protection. Nanotechnology has been proven for years an opportunity to create a strong footprint for the development of effective formulations. However, the authors I believe that agricultural nanotechnology research is not reaching its potential. due to scarcity on commercial applications. Only two articles, of the 84 papers investigating nano particle-loaded pesticides, on fungicides or herbicides (published since October2018), have conducted field trials. In addition, only 24 articles addressed environmental issues such as non-target toxicity or soil leaching, and only 46 articles examined developed formulations against target pests. This is criticalthat research continues to move toward experiments with crops, target pests, and short-term testing as well as long-term field trials to advance agricultural nanotechnology.



Types of Nanoparticles for Plant Disease Management:

Materials of a size between 10 and 100 nanometers (nm) are known as nanoparticles. They can be created with specific chemical, physical, and biological properties that set them apart from their molecular and bulk counterparts. Simply using nanoparticles could result in direct application to sow seeds, foliage, or roots to ward off infections and pests including viruses, bacteria, fungi, and insects. The antibacterial, antifungal, and antiviral activities of metal nanoparticles such as silver, copper, zinc oxide, and titanium dioxide have been the subject of much research. The current literature studies for the specific nanoparticles that already exist are briefly summarised and updated in this section.

Due to "green synthesis" production in plants, bacteria, fungi, or yeast, the use of silver nanoparticles has grown recently. By using a well diffusion assay, silver nanoparticles have been found to limit the growth of several fungi, including *Alternaria alternata*, *Sclerotinia sclerotiorum*, *Macrophomina phaseolina*, *Rhizoctonia solani*, *Botrytis cinerea*, and *Curvularia lunata*. Sun-hemp rosette virus was completely suppressed when silver nanoparticles were applied to bean leaves. Elbeshehy etc also demonstrated that when faba bean plants were sprayed with silver nanoparticles and challenged with bean yellow mosaic virus, the results were noticeably improved when the nanoparticles were applied 24 hours after infection, as opposed to spray application prior to infection or concurrently at the time of inoculation. Nanoparticles of silver, Gold, titanium dioxide, and copper are some further regularly utilised metal nanoparticles.

There hasn't been much research into using nanoparticles to control plant diseases; fertiliser is more frequently used than plant disease management. Aluminium nanoparticles as an insecticidal dust and research on titanium dioxide, silver, copper, and other nanoparticles for antimicrobial capabilities have been emphasised. In addition, titanium dioxide nanoparticles in fertilisers have resulted in bacterial protection and viral inactivation (as outlined in Sadeghi et al.

Barley yellow mosaic virus particles were shown to melt and dissolve when poly-dispersed gold nanoparticles were introduced by a mechanical abrasion, giving resistance to the plant.

Another well-liked nanoparticle is chitosan, which is biodegradable, biocompatible, non-allergenic, and possesses antibacterial action in addition to having minimal toxicity to people and animals. By shielding plant tissues from infections brought on by the mosaic virus of alfalfa, tobacco, peanut, potato, and cucumber, chitosan nanoparticles promote viral resistance in plant tissues. Chitosan nanoparticles have demonstrated antimicrobial capabilities, such as the ability to suppress rice *Phyricularia grisea*, tomato root rot, botrytis bunch rot, and fusarium crown, but they are less efficient against bacteria. Chitosan's antimicrobial actions could be caused by a variety of processes, according to Malerba and Cerana, including agglutination, cell membrane rupture, suppression of H⁺ -ATPase activity, inhibition of toxin production and microbial growth, and inhibition of the synthesis of certain molecules.

Nanoparticles and RNAi for Plant Protection:

New and innovative methods for the control of infections and pests have been made possible by the discovery of the RNAi pathway. A conserved eukaryotic process called RNAi plays a role in host defence against viruses and transposons as well as in growth and development. The general method of using dsRNA to target pathogen RNA is shown in the picture. DsRNA, which is converted into small-interfering RNA (siRNA) by Dicer-like (DCL) enzymes, initiates RNAi in plants. The RNA-induced silencing complex (RISC) incorporates the siRNAs. The RISCs are then instructed by the siRNAs through base pairing to destroy the pathogen RNA by preventing it from being utilised as a translation template. The RNAi pathway has gained notoriety since its discovery. A very appealing approach for dsRNA treatment is topical administration. This approach to application has similar problems to pesticides, including short lifespan because to environmental

degradation and challenges with site-specific pest uptake. Until now, carriers made of nanoparticles target viruses, employ honeybees as a model organism for DNA methylation and alternative splicing, target aphids, and target mosquitoes with RNAi-inducing chemicals. By spraying plants with dsRNA loaded onto LDH nanoparticles, or BioClay, Mitter et al. (2017) successfully provided viral protection against cucumber mosaic virus (CMV) and pepper mild mottle virus (PMMoV). An important finding was that a single spray of BioClay protected plants for 20 days both on sprayed and newly emerging, unsprayed plants.

SiRNA loaded onto perfluorocarbon nanoparticles was utilised by Li-Byarlay et al. to investigate DNA.

In honeybees, methylation occurs. This work demonstrates that siRNA-loaded perfluorocarbon was successfully delivered via aerosol, despite honeybees being regarded as a non-target insect. This first Li-Byarlay et al.'s research laid the groundwork for the creation of the perfluorocarbon-siRNA nanotechnology, which targets three different aphid species: *Acyrtosiphon pisum*, *Aphis glycines*, and *Schizaphis graminum*. It was shown that the gene knockdown caused by the nanoparticle-loaded siRNA was substantially higher than that caused by siRNA alone.

Although it has the potential to be used against agricultural pests, further research is currently restricted to mosquitoes as a means of preventing human disease. Based on four investigations, dsRNA was loaded onto chitosan nanoparticles and successfully knocked down the targeted genes in the African malaria vector *Anopheles gambiae* and/or the dengue and yellow fever vector *Aedes aegypti*.

A comparison of chitosan, carbon quantum dots, and silica nanoparticles as dsRNA carriers against *A. aegypti* larvae was done. According to Das et al., polyethyleneimine-coated carbon quantum dots were the most effective at delivering dsRNA and killing mosquitoes.

Because RNAi has the capacity to target a variety of fungal infections, each of these investigations demonstrates the possibility of RNAi topical applications aided by nanoparticles.

Conclusion and Future Outlook

Nanotechnology has the potential to help with agricultural applications and modernise the pest control technologies that are currently in use. The development of nano-pesticides can provide previously unattainable benefits including (i) enhanced solubility of insecticides with poor water solubility, (ii) improved shelf-life and controlled delivery of actives; (iii) target-specific delivery of the active molecules and pH dependent release; (iv) smart delivery of RNAi molecules for disease management; (v) smart delivery of RNAi molecules; (vi) nanoparticles as carriers to reduce degradation of active molecules; (vii) nanoparticles as carriers to improve the formulations' UV stability and rain-fastness; and (viii) nanoscopic structures.

From the above discussion, it is clear that nanopesticides are an attractive step forward, because of their potential benefits to the environment and human health. However, nanotechnology cannot enter the market. Most of the nanoparticles formed pesticides are at a very early stage of development; hence potency and toxicity nanopesticides directed to the soil and environment must be studied more precisely. From many studies pesticides loaded into nanoparticles, only two of which have passed field trials; chlorfenapyr loaded into silica nanoparticles with chrome emulsions, applied to Brassica chinese, and imidacloprid loaded into sodium alginate nanoparticles. Another problem at the beginning Currently, there is a lack of long-term trials in the research phases of plant protection nanoparticles. Only a few studies included extended time trials in their studies; for example, Mitter et al. tested an Local RNAi/nanoparticle delivery platform called BioClay protects

plants from viruses for 20 days post-spray application, Zhao et al. investigated pesticide levels within 48 days of application nanoformulation developed by them, Yang et al. then tested for insecticidal activity over a period of 5 months applying their formulation to stored grains and Jenne et al. investigated azadirachtin in both zinc oxide or chitosan nanoparticles in ground nut jar with peanut brocidal insects more than 180 days.

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CHAPTER

COMPARATIVE STUDY OF BODY IMAGE, SELF-ESTEEM AND LONELINESS IN DATING APP USERS AND NON-USERS

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Abstract

This study aims to explore the relationship between positive body image, self-esteem & loneliness, and the use of dating apps, to investigate whether dating app users exhibit lower levels of body appreciation, self-esteem & loneliness as compared to non-users. A sample of 112 participants, comprising 56 dating app users and 56 non-users, was taken in the research. The Body Appreciation Scale-2, developed by Avalos et al. (2015), was used to measure participants' levels of body appreciation. Rosenberg Self-Esteem Scale, a 10-item tool designed by Morris Rosenberg (1965) was used to measure self-esteem. UCLA Loneliness Scale (Version 3) by Russell et al. (1978), was used to measure participants' levels of loneliness. The research findings revealed that individuals who engage with dating apps tend to demonstrate lower body appreciation, self-esteem, and loneliness than their non-user counterparts. These findings shed light on the potential impact of dating app usage on individuals' mental health, contributing valuable insights into the use of dating apps, and social dynamics.

Keywords: *Dating apps, body image, self-esteem, loneliness*

Introduction

Humans are social animals. Human beings have been observed to have an internal need to belong and develop connections with individuals around them, maintain those relationships, and contribute to the development of society as a whole. With the rise in technology, dating apps and websites are becoming common ways to meet new people (Castro, Á., & Barrada, J. R., 2020). Around five years ago, 20 million Indians used dating apps. Since then, this number has increased by 293% reaching 82.4 million users in 2023 (Industry Survey, 2023). Online dating, despite having some great qualities, has been shown to harm how people regard themselves (Malz, 2020). Dating apps are predominantly based on the visually observable characteristics of the individuals. Numerous researchers have discovered that dating app users tend to harbour more negative opinions about their bodies as compared to non-users. Strubel and Petrie (2017) in their study "Love Me Tinder" found that Tinder users generally experience higher levels of body shame, compare their appearance more often, and have lower facial and body satisfaction in contrast to those who refrain from using Tinder and other such apps.

Body appreciation refers to the act of embracing, valuing, and honoring one's own body, while consciously rejecting the societal pressures to conform to narrow beauty ideals. It involves recognizing and valuing the body's ability to function and overall well-being (Tylka & Wood-Barcalow, 2014). Self-esteem refers to the sense of self-worth derived from consistently meeting expectations in activities that are personally valued (James, 1890). A study revealed that individuals with lower self-esteem more often face issues related to body image and well-being (Malz, 2022). Loneliness is the state that causes people to feel empty, alone, and unwanted, and the state of solitude. Loneliness and social isolation can impact self-confidence, especially among adolescents, leading to low self-esteem and poor mental health. Addressing all three of these issues simultaneously can improve overall well-being. (Vanhalst. J., et al., 2013).

This study has tried to compare the positive perception of themselves, self-esteem, and loneliness levels of young adults who use dating apps and those who don't. Negative body image, low self-esteem, and lower levels of loneliness are linked with overall poor well-being, and thus addressing these issues in the population that is most susceptible to the dangers of social media becomes important.

Methodology

This is a comparative quantitative study. The participants were administered, the BAS-2 (Avalos et al., 2015), Rosenberg Self-esteem Scale (Rosenberg, M., 1965), and UCLA Loneliness (version-3) (Russell D, et al., 1996) to measure the levels of body appreciation, self-esteem, and loneliness respectively. The study used a simple random method of sampling selection consisting of 112 participants aged between 18-27 years, with 56 who have used or are using online dating apps in the last 6 months and 56 who did not use any dating apps. The participants must have at least a high school level of education, must be a resident of India, and his/her relationship status must be single at the time of data collection.

Directional hypotheses were (1) Positive body image will be lower in dating app users than in non-users, (2) Self-esteem will be lower in dating application users compared to non-users, (3) Loneliness will be lower in dating application users compared to non-users.

Body Appreciation Scale-2 - BAS-2, is a reliable and valid tool with 10-item applied to evaluate optimistic body image by measuring one's appreciation and acceptance of their own body. **Rosenberg Self-Esteem Scale** (Rosenberg. M., 1965) is a 10-item tool measuring self-esteem designed by Morris Rosenberg in 1965. This scale is available in three renditions; of which the

original Rosenberg Self-Esteem Scale is applied in this study. **UCLA Loneliness Scale (Version 3)** (Russell . D., 1996) is a 20-item scale that evaluates loneliness. It was designed by Daniell Russell in 1996. UCLA scale was created to measure factors like loneliness regarding intimate others, social others, and lack of belongingness and affiliation. It is mainly used in adolescents and young adults to measure loneliness. Statistical analysis methods such as descriptive statistics, inferential statistics, and Independent T-test were used in conjunction with SPSS (Version 29).

Results

Positive Body Image

The Body Appreciation Scale (BAS-2) results showed a statistically significant difference in the mean scores between those who use dating apps and those who do not.

As shown in Tables 1.1 & 1.2, the mean score for dating app users was 39.96, while the mean score for non-users was 45.91. The standard deviation of individuals who use dating apps is 7.26 and for those who do not, it is 3.66. The hypothesis that stated positive body image will be lower in dating app users than non-users holds true. The independent t-test scores of participants on the body appreciation scale are $t(112) = 5.46, p = <.001$. The p-value is less than 0.001, indicating less than 0.1% chance of the observed mean score difference being due to chance. In conclusion, there is a statistically significant difference in the mean body appreciation scores between the two groups and the null hypothesis is rejected.

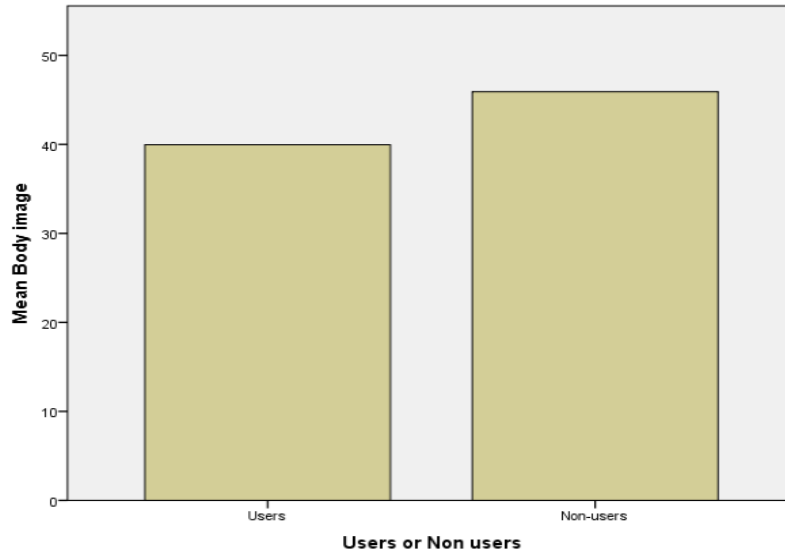
Table 1.1. *Sociodemographic Characteristics of Participants for positive body image*

Variables	Min	Max	N	Mean	SD
Positive Body Image	23.00	50.00	112	42.93	6.46

Table 1.2 *SPSS results for Positive Body Image in Dating App users and non-users*

Logistic parameter	Dating App Users		Non-users		t	p**
	M	SD	M	SD		
	39.96	7.26	45.91	3.66	5.46	<.001

** p-value = <.001 meaning the result is statistically significant



Self-esteem

The outcome revealed a statistically significant difference present between self-esteem of dating app users and non-users. In table 2.1, the N value is 112, in which the minimum scores were 19 and the maximum scores were 40. The mean value is 29.90 and the standard deviation is 4.34. In table 2.2, the mean value for app users is 29.03 and the standard deviation is found to be 4.30. In non-users, the mean was 31.03 and the standard deviation was 4.59. t-value for self-esteem is 2.378. The t-value shows that the app users have comparatively higher scores than the individuals who do not use the app on the variable of self-esteem being measured. The p-value, i.e. 0.019, is less than the normally used significance level of 0.05.

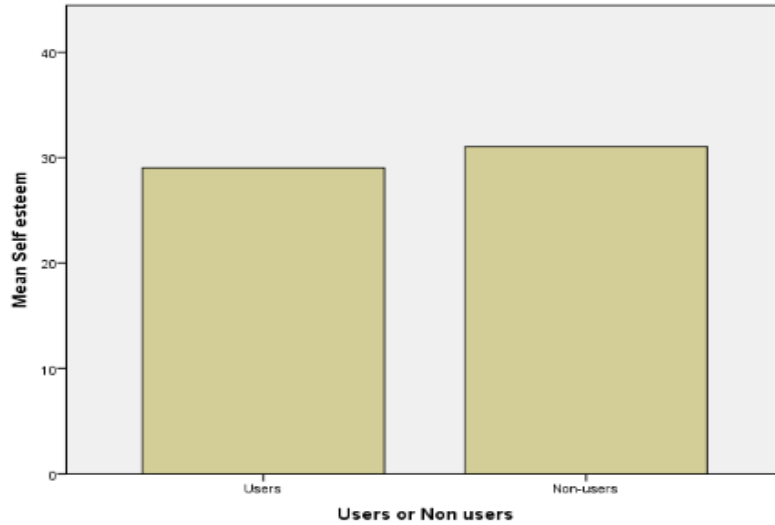
Table 2.1 Sociodemographic Characteristics of Participants for Self-esteem

Variables	Min	Max	N	Mean	SD
Self-esteem	19	40	112	29.90	4.34

Table 2.2 SPSS results for self-esteem in Dating App Users and Non-users

Logistic parameter	Dating App User		Non-user		t	p
	M	SD	M	SD		
<i>Self-esteem</i>	29.03	4.30	31.03	4.59	2.37	0.019

* *p-value = .001 meaning the result is statistically significant*



Loneliness

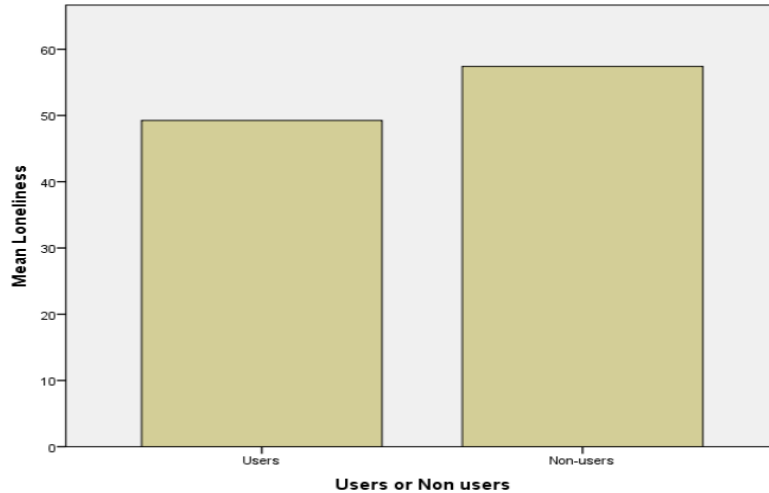
The study has conclusively shown that there is a meaningful difference between the average loneliness scores of dating app users and non-users. The research involved 112 participants, with an average loneliness score of 53.33. The standard deviation for loneliness was found to be 9.65, with a minimum of 25.00 and a maximum of 79.00. Among dating app users, the mean loneliness score was 49.2500 with a standard deviation of 10.38574. In contrast, non-users had an average loneliness score of 57.4107 with a standard deviation of 6.79780. The t-value for both groups was 4.920, indicating that dating app users had significantly higher scores on the loneliness variable. The p-value was <.001, signifying a statistically significant difference between dating app users and non-users. Therefore, the results confidently support the hypothesis that the use of dating apps is linked to decreased loneliness.

Table 3.1 Sociodemographic characteristics of the participants for loneliness

Variables	Min	Max	N	Mean	SD
Loneliness	25	79	112	53.33	9.65

Table 3.2 Result of the SPSS for loneliness of Dating app users and non-users.

Logistic parameter	Dating App Users		Non-users		t	p**
	M	SD	M	SD		
	49.25	10.38	57.41	6.79	4.92	<.001



Discussion, implications, and Suggestions

This study aimed to investigate the impact of dating apps on the mental health attributes of users by analyzing the levels of body appreciation, self-esteem, and loneliness among dating app users and non-users. The study sample consisted of 112 individuals aged 18-27 living in urban areas of India, selected through simple random sampling. To assess their positive body image, self-esteem, and loneliness levels, participants were administered the Body Appreciation Scale (Version 2), the Rosenberg Self-Esteem Scale, and the UCLA Loneliness Scale (Version 3), respectively. The results of the study indicate that dating app users exhibit lower levels of positive body image, self-esteem, and loneliness.

The study findings support the hypothesis that dating app users would have lower levels of positive body image compared to non-users. These findings are consistent with prior research that suggests using dating apps may lead to increased body dissatisfaction and concerns about body image (Tran et al., 2018). Moreover, a study by the Harvard T.H. Chan School of Public Health found that individuals who use dating apps are more likely to develop eating disorders than those who do not use them.

The findings from the Rosenberg Self-Esteem Scale undeniably confirm the hypothesis that dating app users have lower self-esteem than non-users. This conclusion is supported by a study conducted by Muqqadas Jan, Sanobia. A. Soomro, and Nawaz Ahmed (2017), which shows a significant correlation between social media usage and self-esteem. The study indicates that as social media usage increases, self-esteem decreases. Spending an hour on Facebook daily can lead to a 5.574-point drop in an individual's self-esteem score. This research demonstrates the adverse effects of social media apps, including dating apps, on self-esteem. However, the results of the UCLA Loneliness Scale (Version 3) suggest that dating apps can have a positive impact on loneliness by facilitating social connections. The study reveals that individuals who use dating apps report lower levels of loneliness compared to those who do not use such apps. Therefore, the hypothesis is convincingly accepted. Furthermore, E. Both and A. Fowler's (2020) research provides additional support for these findings. Their study aimed to identify the most common motivations for using Tinder and assess the role of personality traits and risk-taking tendencies in Tinder usage. They discovered that Tinder users were more likely to be single, outgoing, spontaneous, fun-loving, and willing to take risks. This research serves as a valuable reference point for understanding the appeal of dating apps.

In summary, dating apps are most attractive to outgoing, social, and extroverted individuals who are open to meeting new people and forming new relationships. The evidence overwhelmingly supports this conclusion. The results of this study underscore the possible adverse effects of utilizing dating apps on one's perception of their physical appearance, self-esteem, and levels of loneliness. These findings are particularly concerning due to the extensive use of dating apps among late teens and young adults who are vulnerable to the sway of societal expectations and media portrayals of idealized body types. Creating a more inclusive and body-positive online dating environment is crucial for fostering self-esteem, body acceptance, and overall well-being among dating app users. This quantitative research had limitations in terms of understanding the participants' motivation to use dating apps and the underlying causes of the results. It relied on self-reported measures which are subject to reporting biases and did not control other factors that could influence body image, self-esteem, and loneliness. The study's findings may not apply to other populations and it only examined variables at a single point in time. Additionally, the study did not explore the specific mechanisms underlying the relationship between dating app use and body image and self-esteem. Further research is necessary to gain a more comprehensive understanding of loneliness and self-esteem in dating app users.

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CHAPTER

HISTORY OF COMPUTER IN PHARMACEUTICAL RESEARCH AND DEVELOPMENT

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Abstract

With the growing importance of computers, the twentieth and early twenty-first centuries have seen many intriguing advancements in pharmaceutical research and development. Drug research has changed since the advent of computers, moving from trial-and-error methods to rational drug design. Researchers have begun using computers for quantitative structure-activity relationship (QSAR) studies, leading to development of computer-aided drug design (CADD). This has marked a shift from empirical approaches to rational drug design. Since then, it has been developed into structure-based drug design (SBDD), ligand-based drug design (LBDD), and fragment-based drug design (FBDD). Many novel medicinal compounds have been developed from the laboratory to the patient's bedside owing to advancements in computational chemistry and CADD. As a multidisciplinary subject, drug discovery has benefited from developments in computer science as well as related fields, such as software, the Internet, big data, the Internet of Things, and artificial intelligence (AI). This chapter discusses the author's efforts to locate significant historical developments that have contributed significantly to the advancement of drug research and development from 1960 to the present.

1. Introduction

In contemporary times, exaggerating the influence of computer technology on the majority of businesses is challenging, with the pharmaceutical sector being one such example. Since they were initially made available to pharmaceutical corporations in the 1940s, computers have become crucial in the development and study of medications and pharmacy goods. Computing has significantly accelerated the process of creating new pharmaceuticals. Much more time and work would be required to conduct research and produce new treatments if computers were not involved. Reducing trial and error and increasing efficiency of drug screening through the use of online libraries containing millions of compounds is possible with the use of computers. A summary of how computers have influenced and still influence pharmaceutical research and development is presented below.

1.1 Origin Of Computers In Pharmaceutical Investigation And Growth

Computers in pharmacies are used for information on drug data, records, and files, drug management and business details (Ramu & Bandameedi, 2016). Computers' primary functions include receiving data, storing it, processing it, and disseminating it. This constant flow of information demonstrates how well any system is working (Sean, 2006). Computers have played an indispensable role in revolutionizing pharmaceutical research and development (R&D), tracing their origins back to latter half of 20th century. With advent of computational technologies, pharmaceutical companies have begun to harness the power of computers to streamline drug discovery processes. One of the earliest applications was in molecular modeling, where computers simulated interactions between drug molecules and biological targets, thereby aiding in design of new therapeutic compounds. As computing power has advanced, the complexity of simulations and analyses has increased. This has led to emergence of computational chemistry, a field that focuses on using computer algorithms to understand chemical processes relevant to drug discovery. Computational tools have enabled researchers to predict the behavior of molecules, optimize their structures for the desired properties, and accelerate the identification of lead compounds. Moreover, the integration of computational techniques with experimental approaches has resulted in significant improvements in the efficiency of pharmaceutical R&D (Stein, 2002). High-throughput screening, combinatorial chemistry, and virtual screening have become standard practices that allow researchers to evaluate vast libraries of compounds and prioritize those with the highest likelihood of success. In addition to drug design, computers have been instrumental in other areas of pharmaceutical research and development, including pharmacokinetics, pharmacodynamics, and clinical trial design. Modeling and simulation techniques can help optimize dosing regimens, predict drug interactions, and enhance the probability of clinical success. Furthermore, the advent of big data and machine learning has transformed the landscape of pharmaceutical R&D. By leveraging large datasets from diverse sources, including genomics, proteomics, and electronic health records, researchers can uncover hidden patterns, identify novel drug targets, and personalize treatment strategies (Goodford, 1985).

Additionally, Fischer's lock and key theory gave rise to the theory that a medicine demonstrates its biological action by attaching to a receptor in the body. A portion of this work was assembled truthfully in the 1963 book by the Paris-based French writers Bernard and Alberte Pullman, which stimulated innovative thought on the possible applications of biomolecule computations (Bohm, 1992).

These include neuroinformatics, bioinformatics, immunoinformatics, genoinformatics, metaboloinformatics, and health informatics, which are used as bases for the discovery of drugs (Mallick et al., 2016). In the mid-1800s, mathematical works were published connecting chemical structures to biological activity in the 19th century. These developments finally provide an introduction to QSAR, which basically allocate molecular descriptors to describe biological activity, design new molecules, and improve their efficiency. (Rosen & Saul, 1967).

2. Computational Chemistry: The Beginning At Lilly

Sammet et al have shown that the first computers with scientifically interesting stored programs were purchased in late 1950s and the early 1960s. A rotating magnetic drum memory with 2000 accessible registers was one of these, IBM 650. IBM punched cards were not a form in which the programs, information input, and output were in. Dr. Edgar King oversaw Lilly's research statistics section, which had been administered. The Lilly computers did not grow to the size, speed, and sophistication needed to meet some of the computational demands of different assessment and design projects until 1968, when Don Boyd joined the group as a second theoretical chemist. It is only incidentally historical when discussing recent advancements or offers a broader perspective.

A significant amount of the literature originates with the participants, either via ongoing state surveys or the advancement of different fields (Abramov et al., 2023).

2.1 The Germination

In 1960, almost all computational chemists worked in academia rather than industry. For the industry's first forays into employing computers for drug discovery, researchers from these universities provided the greatest pool of candidates. X-ray crystallographers are another group of chemists who received their education via computers. IBM 7094 is one of the most significant computers used by theoretical chemists and crystallographers. Drug discovery in the early 1960s was performed by trial and error. There are two primary sources of these medicinal compounds. Natural goods, such as soil microbes and plants with therapeutic qualities, are transported through a smaller pipeline. Classical medicinal chemistry was the main source. By manually reading the patent literature of rival companies' products, chemists then created medicinally active compounds using their knowledge and inventiveness. Subsequently, biochemists and microbiologists screened for these compounds. A table comparing potency and activity was created after the compounds were tested not only against their target, but also against other targets whose structures were tested. This resulted in the identification of at least one compound that could be used as a drug. Research on pharmaceutical products has also been conducted. The most potent compound identified led to the testing of several other structures, which produced a table comparing potency and activity. Eventually, at least one compound that could be used as a drug and upon further development was referred to as a pharmaceutical product. However, these methods are time-consuming and inaccurate. Companies such as Abbott, Dow Chemicals, Schering Plough, and Upjohn spearheaded the investigation into computer-aided drug development. When Lilly discovered the connection between computed electronic structure of the beta-lactam ring of cephalosporins and their antibacterial action, it was one of early successes in computational drug development. These programs either increased the number of computer-saving resources or trained internal scientists to use new equipment. The most potent compound identified led to the testing of several other structures, which produced a table comparing potency and activity. Eventually, at least one compound that could be used as a drug and upon further development was referred to as a pharmaceutical product. These approaches, however, were imprecise and costly in terms of time. Businesses such as Dow Chemicals, Abbott, Schering-Plough, and Upjohn took the lead in investigating the use of computers in drug discovery. When Lilly discovered the connection between computed electronic structure of the beta-lactam ring of cephalosporins and their antibacterial action, it was one of the early successes in computational drug development. These programs either increased the number of computer-saving resources or trained internal scientists to use new equipment. Many companies started these initiatives, but many of them lost out because their management did not support them. It had been Lilly, whose perseverance had been paid off since it created the foundation of such knowledge. At that point, businesses used the money they made from the sales of their goods to invest in hardware and software. The 370 series was developed as a result of the popularity of IBM 360, and punch cards were increasingly replaced by dumb terminals PCs or terminals without local processing power—as the primary means of input. FORTRAN is still being used to write software, followed by the well-known MMPI molecular mechanics program. The organic chemical structures appear to be more precisely predicted by molecular mechanics than by quantum physics. Following these advancements, the pharmaceutical industry stopped relying solely on quantum physics and began utilizing statistics, molecular mechanics, and QSAR. However, a conflict has erupted between computational and medicinal chemists. Computational chemists have stressed that changing a nitrogen atom's position in relation to carbon or another element, or connecting a substance at any point in any stereochemistry that could increase the activity of the compound, is computationally much easier. From then on, changing a six-member ring to a five-member ring was incredibly simple (Leszczynski, 2022).

2.2 Gaining A Foothold

In pharmaceutical industry, computational chemists transitioned from academic backgrounds to embrace force field methods, QSAR, and statistics, simplifying research using techniques such as molecular mechanics and QSAR in the 1970s. Early successes included correlating calculated and experimental properties aided by CSD and the PDB in late 1970s. The 1980s saw pivotal advancements with the introduction of user-friendly computers, such as Apple Macintosh, facilitating data processing and graphics, which appealed to medicinal chemists. Software developments, notably emails and programs such as ChemDraw for creating chemical diagrams, transformed communication, and visualization capabilities. The ability to view 3D molecular structures on screens introduces molecular graphics, thereby expanding the scope of computational chemistry. These advancements have revolutionized research approaches, facilitating collaboration and enhancing the understanding of molecular properties, thus contributing significantly to pharmaceutical innovation (Outeiral et al., 2021).

2.3 Growth

The 1960s represented the Dark Ages and the 1970s the Middle Ages, then 1980s combined the elements of Renaissance, the Baroque Period, and the Enlightenment. Modern computational chemistry emerged in latter part of the 1980s because of the convergence of various methods from quantum chemistry, molecular mechanics, molecular simulations, QSAR, and molecular graphics. In the 1980s, a number of fascinating technological developments contributed to better computer environments in pharmaceutical companies (Shaikh et al., 2021).

2.4 Fruition

In the pharmaceutical industry, the 1980s set a stage for transformative advancements that reshaped drug discovery. Although supercomputers initially intrigued a select few companies, the rise of Silicon Graphics Inc. (SGI) workstations captured widespread attention for molecular research in the 1990s. The culmination of efforts from the preceding decade saw a surge in new chemical entities (NCEs) entering the market fueled by enhanced computing capabilities and strategic investments in technology. Despite initial hesitance, supercomputers gained prominence as the processing speed became critical. The pivotal move by the CEO of Cray Research to offer supercomputers at compelling prices catalyzed adoption across major pharmaceutical players, such as Lilly, Merck, Bristol-Myers Squibb, and others, ensuring competitiveness in drug development. Computational chemists have emerged as essential contributors, with their roles evolving to co-inventors on patents, reflecting the growing significance of computational drug discovery. This era witnessed a paradigm shift in which computers became indispensable tools for marketing, analytics, and research, fundamentally altering the landscape of pharmaceutical innovation (Manohar et al., 2018).

3. Bioinformatics Revolution

In the 2000s, pharmacies witnessed a transformative period with the onset of the bioinformatic revolution. This interdisciplinary field, amalgamating biology, computer science, and information technology, has reshaped drug discovery and personalized medicine. Mapping of human genome in 2003 marked a milestone, offering unprecedented insights into disease mechanisms and drug targets. Bioinformatics tools enabled the storage, analysis, and interpretation of vast biological datasets, expediting target identification, lead optimization, and predictive toxicology in drug development (García-Sancho et al., 2022). Molecular modeling, virtual screening, and structure-based drug design have emerged as powerful computational techniques that have accelerated the discovery of effective therapeutics. Pharmacogenomics leverages genetic and clinical data to

customize treatments, thus ushering in the era of personalized medicine. Collaborative initiatives, such as the Human Genome Project, facilitated data sharing and global collaboration, while open-access databases and bioinformatics resources democratized access to biological information. The bioinformatic revolution fundamentally transformed pharmacies, fostering a data-driven approach to research and enabling precision medicine tailored to individual patients (Cimino, 2014).

3.1 Big Data And Machine Learning

In the 2010s, pharmacy witnessed a revolution with big data and machine learning. Pharmaceutical companies leverage vast datasets to accelerate drug discovery and development. Machine learning algorithms sifted through this trove of information, identifying patterns and predicting drug interactions and efficacy. This data-driven approach revolutionized personalized medicine and tailored treatments for individual patients based on genetic profiles and other factors. In addition, machine learning enhances pharmacovigilance, rapidly detects adverse drug reactions, and improves patient safety. The integration of big data and machine learning has marked a significant milestone in pharmacy, driving innovation and shaping the future of healthcare (MacEachern et al., 2021).

3.2 AI:In Pharmaceutical Research And Development

AI's impact of AI on pharmacy history spans from automated drug discovery to optimizing patient care. Early AI applications involved expert systems for drug interaction detection and diagnosis. In the late 20th century, machine-learning algorithms began to aid in drug design and repurposing. With advances in deep learning, artificial intelligence (AI) has accelerated drug development by predicting compound properties and identifying potential targets. In pharmacy practice, AI optimizes medication management through personalized dosing and monitoring of adverse events. Additionally, AI-powered systems streamline the workflow in pharmacies, thereby enhancing efficiency and accuracy. AI continues to revolutionize pharmacy with greater precision, speed, and patient outcomes in the future (Ahmed et al., 2020).

4. Current Trends And Future Prospects

The current trends in pharmacy computing include the integration of AI for drug discovery, personalized medicine, and patient care. AI-driven algorithms analyze vast datasets to identify novel drug candidates, predict drug responses based on genetic profiles, and optimize treatment plans. Telepharmacy services are expanding, enabling remote consultation and medication management. Blockchain technology ensures secure and transparent supply chain management, reduces counterfeit drugs, and enhances traceability. Pharmacogenomic platforms enable tailored medication regimens based on individual genetic variations and improve therapeutic outcomes. Virtual reality and augmented reality enhance pharmacy education and training by providing immersive learning experiences. In the future, pharmacy computing will advance further with the emergence of quantum computing for complex drug modeling, expansion of telemedicine for remote patient monitoring, and widespread adoption of digital therapeutics for managing chronic conditions. These trends promise to revolutionize pharmacy practices and deliver more personalized, efficient, and effective healthcare solutions (Johnson et al., 2021).

5. Conclusion

This chapter delves into the historical progression of pharmacy in the context of pharmaceutical research and development, emphasizing the profound influence of computers on the field. The incorporation of computers in pharmaceutical corporations commenced in the 1940s, and since then, the industry has witnessed transformative evolution. The application of computers has

expedited the creation of new pharmaceuticals and has minimized the trial-and-error process in drug screening. In the latter half of the 20th century, the advancement of computational technologies empowered pharmaceutical enterprises to optimize drug discovery procedures by harnessing the potential of computers. The use of computers in pharmacies has immense significance in drug research and development, encompassing molecular modeling and clinical trial design. The synergy between computational techniques and experimental methodologies has led to substantial enhancements in the efficiency of pharmaceutical R&D. Moreover, the emergence of big data and machine learning has revolutionized the landscape of pharmaceutical R&D.

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CHAPTER

PUBLIC HEALTH IN COMMUNITY PHARMACY: ATTITUDES AND BARRIERS AMONG PHARMACISTS AND CONSUMERS

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Abstract

This chapter presents a systematic review of pharmacists & consumers' views on public health in community pharmacies. This evaluation sought to understand the attitudes and opinions of customers and pharmacists about pharmaceutical public health in order to determine the best course of action for enhancing and promoting this service. The findings of the investigation showed that pharmacists' confidence in their ability to provide public health services was typically poor, and that their lack of time was a common obstacle. Most pharmacy customers did not anticipate receiving public health services from their pharmacists and had never received one. Although consumers thought pharmacists were qualified to offer advice on public health, they had differing views about their capacity to do so. Based on this review, it is essential that both pharmacists and pharmacy patrons make significant behavioral changes for the service to be successful. It is crucial that pharmacists recognize their pivotal role in public health and modify their behaviors, accordingly, including being willing to refer the public to pharmacists for guidance on health-related matters, rather than seeking advice from other sources. Additionally, pharmacy patrons must also change their behavior, such as seeking the expertise of pharmacists for their health-related needs.

Keywords: Pharmacists' attitudes, Consumer perceptions, Pharmaceutical public health, Service barriers, Training needs

1. Introduction:

One of the five essential duties of a pharmacist is to promote healthy lifestyles. The focus on health promotion has grown dramatically in recent years despite the fact that pharmacists have always played a part in it. The introduction of new pharmacy contract, which defined public health services that pharmacists would have to offer, in 2005 in England and Wales & in 2006 in Scotland, formalized this evolving position. Along with participating in health promotion initiatives in Scotland, England, & Wales, these services also include providing advice on healthy living & self-care practices. Moreover, providing treatments for sexual health and quitting smoking are mandated by pharmacists in Scotland. Even though pharmacists have always been active in health promotion, there has been a noticeable increase in attention paid to this function in recent years. The new pharmacy contract, which was implemented in Scotland in 2006 and England and Wales in 2005, codified this process by outlining public health services that pharmacists would have to offer. These services provide guidance on self-care and healthy living, as well as participating in health promotion programs in Wales, England, and Scotland. Moreover, pharmacists in Scotland must provide services related to sexual health and smoking cessation (Eades et al., 2011). Community pharmacies are excellent venues for public health initiatives as they provide many benefits. Their longer office hours and advice-without-an-appointment policies make them more accessible than other venues. In Scotland, community pharmacists receive almost 600,000 visitors each day, with 94% of the population making at least one visit per year. This makes it possible for community pharmacists to engage with a wide variety of people, including those who may not often see other medical professionals and those in both good and bad health (RPSGB, 1996). Research evaluating community pharmacies' potential for public health initiatives has been validated by studies on evidence, indicating that pharmacists may in fact make a beneficial contribution to public health. Community pharmacies have a great deal of promise in improving public health, but for the service to be effective, both pharmacists and pharmacy patrons must adopt new behaviors. To fulfill their obligation to promote public health, pharmacists must acknowledge their involvement and alter their conduct accordingly (Batakyte, 2017).

To comprehend and encourage related behavioral changes, it is crucial to ascertain the opinions and attitudes of the general population as well as pharmacists toward provision of public health services in community pharmacies. Three systematic studies concentrating on different facets of public health services have been conducted to achieve this goal. The first evaluation looked at how the public and pharmacists felt about the various public health programs. With an emphasis on research up to 2001, the second study evaluated pharmacists' opinions on their role in public health (Executive, 2002). The public and pharmacist viewpoints were included in the third evaluation, which looked at emergency hormonal contraception provided in pharmacies. Prior analyses showed that, although pharmacists appreciated their role in enhancing public health, they were apprehensive about being overbearing and needed further assistance to carry out these tasks. It was also shown that pharmacists' attitudes and actions toward health promotion were positively affected by training. This review presents thorough analysis and assessment of quantitative and qualitative data that have been published since the last review, with an emphasis on the opinions and perspectives of consumers and pharmacists about pharmaceutical public health. Potential obstacles to the delivery of public health programmes offered by neighbourhood pharmacies can be identified and overcome by identifying the prevalent viewpoints (Anderson et al., 2003).

2. Staff

The perspectives of role, competence/confidence, challenges, and education were analyzed in connection to the thoughts and opinions of pharmacy personnel and pharmacists (Armstrong et al., 2005).

2.1. Perceptions of Role

Attitudes towards providing services to drug abusers have improved in the past few years. Surveys conducted in England & Scotland in 2007 revealed a significant increase in positive sentiments compared to surveys conducted in 1995. Furthermore, a survey conducted in the United States showed an increase in the proportion of pharmacists who believe that community pharmacies should be the primary source of sterile needles (Ajzen, 1991). Despite the progress made, opinions regarding the provision of services to drug abusers still differ. However, it is worth noting that sterile needle providers in the US and the UK have not reported any adverse effects on their clientele or serious issues with providing this service. Moreover, pharmacists in Vietnam, who provide sterile injectable supplies, have demonstrated a sense of responsibility to prevent blood-borne diseases and a willingness to counsel drug-abuse clients on their health (Sutton, 1998).

2.2. Competence/Confidence

Findings on self-perceived competence and confidence in offering services linked to health promotion are inconsistent. A study conducted in Scotland among pharmacists found that over one-third of respondents did not think they were qualified to protect the public's health, advance it, or prompt behavior change. Approximately two-thirds of the pharmacists claimed they couldn't use their expertise because they didn't have the necessary core knowledge, and another third felt the same. According to a survey done in Scotland, pharmacists were not very confident when it came to giving advice on HIV/hepatitis prevention. Roughly half of pharmacists said they felt confident enough to advise customers on HIV prevention, while around third said they were confident enough to counsel clients on Hepatitis B/C (Anderson et al., 2003). Pharmacists expressed more confidence in their ability to counsel on safer sexual practices. Seventy-eight percent of pharmacists said that they would be able to counsel any consumer or drug abuser on this matter. However, only 35% of the respondents felt comfortable counseling homosexual men regarding safer sexual practices. In a comparable poll conducted in Scotland, support staff members were less confident than pharmacists in their ability to advise on safer sexual practices. Only 51% of the support professionals believed they could accurately advise any customer, and 34% felt they could accurately advise a gay guy or someone who misused drugs (Anderson et al., 2004).

According to research conducted in the USA, the findings revealed that pharmacists' mean confidence scores were relatively low. Specifically, the scores were 3.0 for patients' weight reduction were achieved with pharmacist counseling and 2.8 for patients' intake of a diet restricted in calories. For medication-related components of obesity counseling, such as minimizing the side effects of anti-obesity drugs, mean confidence scores ranged from 3.3 3.4. Self-reported data also showed a strong correlation between confidence in attaining favorable results and the frequency of obesity counseling (Anderson et al., 2006).

2.3. Barriers

Several studies have identified various obstacles to public health practices, including limited time, consumer demand and reaction, availability of private counseling spaces, and payment for public health services. The absence of private therapy was also found to be a primary obstacle in providing focus groups in Sweden with guidance on health promotion, pharmacists, and support workers in Scotland with information on HIV/hepatitis prevention. In a study done in Thailand, almost half of the participants thought that the pharmacy environment prevented them from receiving counseling on quitting smoking, and almost two-thirds of pharmacists who responded to a survey said that having a dedicated area in a pharmacy helped them quit smoking very much or somewhat (Eden et al., 2011). One study identified pharmacists' assessment of having appropriate facilities as an important predictor of frequency of smoking cessation counseling. The majority of pharmacists

(71.7%) in this study felt that pharmacy environment did not pose a substantial barrier to smoking cessation counseling, even if it was a predictor of service provision. According to a survey conducted in Nigeria, 93.1% of pharmacists felt that their establishments were adequate for providing Chlamydia testing and treatment services, and they did not think that these facilities hindered patient participation in health promotion initiatives (Booth et al., 2012).

The primary obstacle to offer guidance on HIV/hepatitis prevention to pharmacists and support workers in Scotland, as well as to most pharmacists (75%) in Malaysian research, was found to be a lack of time. Half of the participants in two studies conducted in USA & one in Thailand thought that they lacked the necessary staff to offer smoking cessation services, and 50-70% of participants thought that time was a barrier to providing counseling for quitting smoking. Similarly, almost 70% of participants in a New Zealand study said that too much work prevented them from performing a quick alcohol check (Aquilino et al., 2003). In an American study, 67% of pharmacists stated that time was a barrier to offering EHC. Time was not a barrier to offering these services, according to studies on Chlamydia testing in England and health promotion in Nigeria (Couchenour et al., 2002).

The responses of patients to community pharmacists' public health services and their need for them varied. In a Thai survey, approximately 60% of pharmacists reported a lack of patient demand as hurdle in providing smoking education services. Conversely, Swedish focus group participants felt that patients had fewer expectations for health promotion advice from pharmacists.

2.4. Training

The need for training has been noted in numerous polls on public health services. Two-thirds pharmacists in Scottish study who participated into survey said that they would prioritize learning more about pharmaceutical public health in the future, and over half said that they needed it to improve their skills. Furthermore, in three separate investigations, one-third to a half of the pharmacists stated that their inability to quit smoking was due to a lack of knowledge and skills, training, or other support. According to a New Zealand study, over 80% of pharmacists cited a hurdle in providing alcohol screening and brief interventions. Similarly, Scottish pharmacists and support staff identified inadequate training as the primary obstacle to offering advice on HIV/hepatitis prevention. More than 70% of pharmacists who participated in polls in Scotland said that they wanted greater education on drug abuse. While most Nigerian pharmacists (86.9%) said they knew about health promotion, 93.2% said that they would be open to retraining to advance their expertise in this field.

According to a needs assessment conducted among pharmacists in Canada, training in behavioral strategies for quitting smoking and motivating patients would be most beneficial. When polled on the topic of working with drug abusers in Scotland, pharmacists most frequently expressed a desire for training in motivational and counseling skills. In a survey of pharmacists in Scotland, 79.3% agreed that training should focus on generic knowledge & skills, while 77.2% believed it should concentrate on priority health issues, such as chronic heart disease. Despite this consensus, no clear areas for future training have yet been identified. A study conducted in the United States found that training on smoking cessation for pharmacy technicians significantly improved their knowledge, confidence, and views on effectiveness of smoking cessation counseling (Dastani et al., 2004).

3. Conclusions

This chapter presents a thorough investigation of customer and pharmacist perspectives on public health in community pharmacies. The primary aim of this review was to evaluate pharmacists' and consumers' attitudes and opinions toward pharmaceutical public health to determine the most effective course of action for enhancing and supporting this program. The findings indicated that

pharmacists commonly cited a lack of time as a hindrance to offering public health services, and their confidence in doing so was generally low. Furthermore, there is requirement for additional training in public health services. Customers believed that pharmacists were qualified to offer advice on public health but were divided on how effectively they could do so. For the program to be successful, this analysis suggests that both pharmacists and pharmacy customers must make behavioral adjustments. Pharmacists must embrace their position in public health & modify their conduct accordingly in order to deliver the service, even if general public must view them as suppliers of public health services and turn to them for guidance rather than other sources.

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CHAPTER

A STUDY ON VARIOUS WAYS OF MAINTAINING CULTURAL HERITAGE THROUGH SUSTAINABLE TOURISM: CHALLENGES AND OPPORTUNITIES

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Abstract

This study examines the potential and difficulties involved in sustaining cultural heritage sites as it investigates the relationship between sustainable tourism practices and cultural heritage preservation. A society's cultural heritage, which embodies its history, customs, and values, is an essential component of its identity. On the other hand, these historic sites face both advantages and disadvantages from the quick expansion of tourism. By conducting a thorough analysis of extant literature and case studies, this study pinpoints the significant obstacles that cultural heritage preservation faces in the context of tourism growth. Overtourism, poor infrastructure, commercialization, and environmental deterioration are some of these issues. The research also looks into the socio-cultural effects of tourism on nearby communities, including alterations to customs and a decline in authenticity.

It identifies a number of tactics and best practices for advancing environmentally friendly travel and safeguarding cultural assets. These include visitor management techniques, heritage interpretation, capacity building, community empowerment, and the use of technology in conservation activities. The report also highlights how crucial it is for stakeholders—such as governmental bodies, regional governments, travel agencies, and historical preservation groups—to work together. Through an analysis of the potential and problems related to preserving cultural heritage through sustainable tourism, this study offers practitioners, policymakers, and researchers insightful information. In order to guarantee the long-term viability and resilience of cultural assets for future generations, it emphasizes the necessity of an all-encompassing strategy that strikes a balance between tourism development and heritage conservation.

Keywords Tourism, Cultural, Heritage, Sustainability, Challenges, Opportunities

Introduction

Cultural heritage, which embodies millennia of history, tradition, and identity, serves as a witness to the complex tapestry of human civilization. However, there are several obstacles to the preservation of cultural heritage in a period marked by fast globalization and rising tourism. Although the growing tourism sector helps the economy, these priceless treasures are frequently seriously threatened. Policymakers, practitioners, and communities around the world are facing increasing pressure to strike a balance between the need for conservation and the development of tourism.

Cultural heritage sites have seen both prosperity and hazard as a result of the tourism industry's fast rise in recent decades. On the one hand, higher visitor numbers have brought much-needed cash into regional economies, promoting the construction of infrastructure and the creation of jobs. Unchecked tourism, on the other hand, can result in congestion, environmental damage, and the commercialization of cultural items. In light of this, the idea of sustainable tourism has come to light as a possible way to lessen the damaging effects of tourism on cultural assets. Sustainable tourism aims to give travelers unforgettable experiences while reducing environmental damage, boosting local economies, and promoting cultural authenticity.

This study explores the complex interplay between sustainable tourism practices and the protection of cultural assets. It looks at the many opportunities and problems that come with preserving cultural heritage places while keeping in mind sustainable tourism. The ultimate objective is to guarantee the cultural heritage sites' resilience and long-term survival for the enjoyment and appreciation of future generations.

Review of Literature

“Sustainable tourism development meets the needs of the present tourists and host regions while protecting and enhancing the opportunity for the future. It is envisaged as leading to management of all resources in such a way that economic, social and aesthetic needs can be fulfilled, while maintaining cultural integrity essential ecological processes, biological diversity and life support systems” (WTO, 1996)

The best known definition of sustainable development is ‘development that meets the needs of the present without compromising the ability of future generations to meet their own needs.’ (WCED, 1987)

Robert A. Stebbin (1996) believed, Cultural tourism is activities based on the cultural motivation of tourists to pursue "formal leisure", or "literary interests".

“The ecosystem of earth can heal itself but within a limit. But now with the population explosion and increase in pollution, ecosystem is being disturbed substantially.” (Perry 2019)

Reizinger (1994) pointed cultural tourism is to seek and deeply participate in new forms of experiencing tourism of the aesthetic, intellectual, emotional and psychological experience.

Richards (1996) believed cultural tourism included a tour of historic buildings and sites, museum, art gallery, also included a visit of the contemporary painting and sculpture or watching performance art etc..

Ted Silberberg (1995) studied that cultural tourism brought business opportunities to museums, cultural heritage and tourism destination.

Tourism which is developed and maintained in an area (community, environment) in such a manner and at such a scale that it remains viable over an indefinite period and does not degrade or alter the environment (human and physical) in which it exists to such a degree that it prohibits the successful development and well-being of other activities and processes.(Butler 1993)

Objectives

The study is undertaken

- To examine the connection between cultural heritage preservation and sustainable tourism strategies
- To identify the substantial challenges that the preservation of cultural heritage faces in the context of rising tourism
- To shed light on the issues relating to sustainable tourism's role in protecting cultural assets

Relationship between cultural heritage preservation and sustainable tourism strategies

Sustainable tourism practices and the preservation of cultural assets complement one another and further each other's goals. Sustainable tourism planning and development can accomplish economic prosperity, social fairness, environmental preservation, and cultural enrichment for current and future generations at destinations by incorporating cultural heritage conservation. Discussed below is an analysis of their relationship.

a) Economic gains: Strategies for sustainable tourism frequently stress how crucial it is to protect cultural assets in order to promote economic expansion. Heritage places and customs that have been conserved can draw tourists, which boost local economies by generating income from lodging, dining, handicraft sales, and cultural events.

b) Preservation of Cultural Identity: Preserving a community's traditions, customs, artifacts, and sites that are essential to its identity is the goal of cultural heritage preservation. Sustainable tourism methods can provide genuine experiences that immerse visitors in the local culture and build respect and admiration for traditions by protecting these features.

c) Environmental Conservation: The preservation of ecosystems and natural resources, which frequently overlap with sites of cultural significance, is a top priority in sustainable tourism plans. By encouraging responsible tourism behaviors that limit detrimental effects on ecosystems and lower carbon footprints, cultural heritage preservation may support environmental conservation efforts and guarantee the long-term viability of both natural and cultural resources.

d) Education and Awareness: The preservation of cultural heritage provides a forum for informing the public about the value of protecting both material and immaterial cultural assets. Educating tourists about the value of historical monuments, customs, and environmentally friendly behaviors can be a key component of sustainable tourism efforts, increasing visitors' understanding of the value of environmental preservation and cultural variety.

e) Mitigation of Overtourism: Cultural heritage and sustainable tourism are both at risk from overtourism, which can result in crowding, environmental damage, and cultural commodification. Destinations can lessen the detrimental effects of overtourism on cultural heritage sites and guarantee their long-term preservation by putting into practice sustainable tourism plans that give priority to carrying capacity, visitor management, and diversification of tourist activities.

f) Community Empowerment and Involvement: Involving local communities in the preservation of their cultural heritage generates a sense of pride and ownership that promotes sustainable development. Prioritizing community involvement in sustainable tourism initiatives guarantees a more equitable distribution of economic benefits among local inhabitants, enabling them to take part in decision-making processes and reap the benefits of tourism income.

Challenges faced in preserving the cultural heritage due to rising tourism

In light of growing tourism, the preservation of cultural assets faces a number of significant issues. Among these difficulties are:

a) Lack of funds for conservation: A large number of cultural heritage sites struggle with a lack of funds for upkeep and conservation. Even if tourism has a positive economic impact, funds raised may not always be allocated fairly to conservation projects. Cultural assets may be neglected and deteriorated as a result of this budget shortage.

b) Unsustainable Development: Building hotels, resorts, and other infrastructure that is incompatible with the local cultural environment is a potential consequence of rapid tourism development. Unplanned growth has the power to upend local communities, compromise authenticity, and change the character of historic areas.

c) Wear and Tear: Historic structures, monuments, and archeological sites frequently sustain wear and tear as a result of an increase in visitors. Inadequate upkeep, foot traffic, and touching artifacts can cause irrevocable harm to fragile structures and artifacts.

d) Conflict & Political Instability: Areas impacted by civil unrest, political instability, or conflict frequently see their cultural legacy at risk. Deliberate destruction of cultural sites, looting of artifacts, and loss of cultural identity are all possible outcomes of war and armed conflict.

e) Climate Change and Environmental Degradation: Cultural heritage sites, especially those near coasts or susceptible to extreme weather, are seriously threatened by climate change. Cultural artifacts can deteriorate and be destroyed more quickly as a result of erosion, rising sea levels, and warmer temperatures.

f) Commercialization and Commodification: Sacred locations, customs, and rituals may become less significant or even disposable as a result of the tourism industry's commodification of cultural heritage. Profit may take precedence over the maintenance of authenticity and cultural integrity due to commercial demands.

Hindrances to sustainable tourism's role in protecting cultural assets

Although sustainable tourism has the potential to save cultural assets, there are a number of problems that could make it less successful in this regard. Following are some of the hindrances commonly seen in this regard.

a) An equation of preservation with economic development: Sustainable tourism frequently seeks to achieve a balance between the promotion of economic development and the preservation of cultural treasures. But there may be conflicts between the need to protect the environment and the desire to make money from travel. This delicate balance can result in the destruction of cultural assets if economic gains take precedence over the preservation of culture.

b) Involvement of the host population and lack of reaping benefits: Initiatives promoting sustainable tourism may fall short in providing fair benefits to local people from tourism-related

activities and in sufficiently involving them in decision-making processes. Locals may get frustrated with tourism development and oppose conservation efforts in the absence of meaningful engagement and benefit sharing.

c) Cultural Appropriation and Authenticity: The monetization of cultural assets and cultural appropriation may be unintentionally facilitated by sustainable tourism policies. The authenticity and significance of cultural customs and practices might be diminished when they are marketed for tourism. Instead of appreciating the authentic cultural expressions of the surrounding community, visitors could anticipate performances or experiences that fit stereotypes.

d) Attitude of the tourists: The actions of tourists may nevertheless have detrimental effects on cultural assets even in the presence of sustainability measures. Negligent tourism behaviors, like trash, vandalism, and rude conduct, can harm cultural landmarks and cause disturbances to nearby populations. Cultural assets must be protected by controlling visitor conduct and encouraging ethical tourism.

e) Loss of Cultural Identity: As destinations adjust to the tastes of foreign visitors, sustainable tourism development may lead to the uniformity of cultures. As localities change to satisfy the demands of the tourism industry, distinctive cultural identities and traditions may be lost as a result.

Opportunities available for maintaining cultural heritage through sustainable tourism

a) Encouragement of Sustainable Practices: Sustainable tourism encourages eco-friendly behaviors like energy conservation, trash management, and eco-friendly travel choices. Stakeholders in the tourist industry may ensure the sustainability of heritage sites for future generations by implementing sustainable practices that reduce the ecological footprint of tourism operations and mitigate negative impacts on natural and cultural resources.

b) Highlighting traditional arts and crafts: Opportunities for the resuscitation and preservation of traditional arts, crafts, and skills that are essential to cultural heritage can be found in sustainable tourism. Heritage traditions can be preserved for future generations by offering support to local artists and craftsmen through tourism-related initiatives like craft workshops, live performances, and artisan markets.

c) Mutual understanding and appreciation of varied cultures: Sustainable tourism promotes mutual understanding and appreciation of varied cultures by facilitating cultural interchange between visitors and local populations. By means of genuine and all-encompassing encounters, travelers acquire knowledge about regional customs, traditions, and ways of life, fostering tolerance and cultural consciousness.

d) Empowerment of the host population: Local communities can gain social and economic clout by participating in the management and decision-making of cultural heritage assets. Communities can gain employment possibilities, skill development, and revenue generating through sustainable tourism efforts, improving their standard of living and maintaining their cultural identity.

e) Exhibitions and guided tours: Cultural heritage places can be better understood by visitors through the use of effective interpretation and narrative approaches, which can lead to a greater sense of connection and appreciation for these sites. The historical, social, and cultural background of heritage sites can be taught to visitors through interactive exhibitions, guided tours, and interpretive programs, which enhances their visitation experience.

Few recommendations

- Invest in environmentally friendly amenities and infrastructure that will promote tourism without harming the environment. Reduce the ecological imprint of tourism activities at heritage sites by developing energy-efficient buildings, waste management systems, and eco-friendly transportation choices.
- To create integrated management plans for cultural heritage sites, encourage cooperation between government agencies, regional communities, travel companies, heritage conservation organizations, and other stakeholders.
- To maintain sustainable tourist practices and the integrity of heritage sites, zoning restrictions, visitor standards of conduct, and carrying capacities should be established.
- To safeguard the biodiversity and natural resources connected to cultural heritage sites, incorporate environmental conservation strategies into management plans for the tourism industry.
- Educate tourists on the value of ethical travel methods and how they contribute to the preservation of cultural assets.
- Provide monitoring and assessment systems to determine how well sustainable tourism efforts contribute to the preservation of cultural treasures.

Conclusion

Stakeholders can cooperate to maximize the advantages of tourism for nearby communities and future generations while ensuring the long-term viability and resilience of cultural heritage sites. In order to address these problems, sustainable tourism must be approached holistically, giving equal benefit sharing, cultural preservation, community involvement, and responsible tourism practices first priority. Governments, local communities, non-governmental organizations, and the tourism sector must work together to conserve cultural treasures and advance sustainable tourism growth.

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CHAPTER

THE EVER-EVOLVING LANDSCAPE OF EMPLOYEE ENGAGEMENT

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Abstract

In this comprehensive chapter, we meticulously scrutinize the pivotal and transformative role that employee engagement plays within the dynamic organizational landscape, spanning from the years 2019 to 2023. Our detailed exploration delves into nuanced dimensions, encompassing not only definitions but also the evolving drivers, diverse measurement methodologies, and forward-looking strategies that have been instrumental in shaping the contemporary discourse on employee engagement. The narrative goes beyond surface-level examinations, elucidating the transformative impact of engaged personnel on organizational triumph. Drawing insights from seminal works by Markos, Sridevi, Kaliannan, and Adjovu, our discourse highlights a strategic paradigm shift evident in the embrace of holistic well-being, proactive disengagement prevention, the cultivation of a positive work culture, the adoption of human-centered strategies, and a heightened acknowledgment of managerial contributions to employee engagement.

This scholarly exploration isn't merely theoretical; it is substantiated by a rich tapestry of global statistics. Through this, we aim to illuminate the escalating importance of employee engagement in steering organizational vitality and ensuring success throughout the specified timeframe. As we unravel the intricacies of this multifaceted topic, the narrative extends, providing a detailed and insightful examination of the critical elements that contribute to the ever-increasing significance of employee engagement in the organizational landscape.

Keywords: *Employee Engagement, Organization, 2019-2023, Workplace Dynamics, Strategies*

1. Introduction

In the dynamic landscape of contemporary organizations from 2019 to 2023, the notion of employee engagement has become increasingly crucial. As businesses navigate global trends, technological advancements, and evolving work models, the role of engaged employees in

driving success has garnered significant attention. This chapter delves into the multifaceted dimensions of employee engagement during this period, exploring its definition, evolving drivers, measurement methods, and strategies for enhancement. Exploration extends to the future, contemplating emerging trends and challenges. Through this journey, we aim to uncover the integral role that employee engagement plays in organizational vitality and success during the specified timeframe.

Scholars such as Solomon Markos and M. Sandhya Sridevi (in "Employee Engagement: The Key to Improving Performance") underscore the imperative for organizations to navigate evolving challenges and foster a committed, engaged workforce. Their research delves into the evolution of employee engagement, examining its distinctions from earlier concepts like Commitment and Organizational Citizenship Behaviour (OCB). The authors elucidate the multifaceted nature of employee engagement, emphasizing its critical role in organizational efficiency and productivity.

Building upon this foundation, Maniam Kaliannan and Samuel Narh Adjovu contribute insights through their case study titled "Effective Employee Engagement and Organizational Success: A Case Study." The study, conducted in a telecommunications organization in Ghana, provides practical dimensions to the discourse. It investigates the strengths and weaknesses of employee engagement strategies, offering a quantitative analysis of 137 responses. This case study reinforces the notion that effective employee engagement is an integral engine driving talent management, with implications for organizational branding and reputation.

As we embark on a journey through the years 2019 to 2023, this chapter aims to explore the global trends, technological advancements, and strategic approaches that shape employee engagement. Drawing from these seminal works, we will unravel the evolving work landscape, measurement methodologies, and future prospects, culminating in a comprehensive understanding of employee engagement's transformative role in organizational dynamics.

1.2 Concept of Employee Engagement & Significance

Employee engagement is a multifaceted concept that encapsulates the emotional, intellectual, and social commitment employees have towards their work and the organization. Reeshad S. Dalal, Michael Baysinger, Bradley J. Brummel, and James M. LeBreton, in their research titled "The Relative Importance of Employee Engagement, Other Job Attitudes, and Trait Affect as Predictors of Job Performance," highlight employee engagement as a pivotal factor influencing various facets of job performance. In essence, it measures how content, involved, and connected employees are with their roles, colleagues, and the organization as a whole.

In the context of organizational success, employee engagement holds immense significance. The study conducted by Dharmendra Mehta and Naveen K. Mehta, titled "Employee Engagement: A Literature Review," underscores that motivated and engaged employees contribute significantly to organizational productivity. They play a vital role in maintaining high commitment levels, ultimately leading to increased customer satisfaction. The positive impact of employee engagement extends beyond individual job satisfaction; it permeates across the employee-customer boundary, influencing revenue, corporate goodwill, and brand image.

Organizations with high levels of employee engagement enjoy enhanced productivity and profitability, as revealed by the research conducted by Dalal et al. The study identifies three primary predictors of overall employee performance: trait negative affect, employee engagement, and job satisfaction. This underscores the pivotal role of engagement in determining not only individual task performance but also broader aspects such as organizational citizenship behavior (OCB) and counterproductive work behavior.

The period from 2019 to 2023 has witnessed a growing emphasis on employee engagement as a critical driver of organizational success. The literature review by Mehta and Mehta highlights the evolving understanding of employee engagement during this timeframe. The concept has evolved from being a measure of job satisfaction to encompassing a broader range of factors, including leadership, relationships, and overall organizational performance.

The introduction of the literature review defines employee engagement as a measure of employee happiness with their jobs and working environment. It emphasizes the efficiency of employee performance as a key component of engagement. The research suggests that actively engaged workers are not only more productive but also more loyal to the company. The positive correlation between high employee engagement levels and organizational productivity is particularly noteworthy, reinforcing the idea that organizations with engaged employees tend to outperform their counterparts with lower levels of employee engagement.

In summary, employee engagement is a holistic measure that goes beyond mere job satisfaction, encapsulating the emotional and intellectual commitment of employees to their work and organization. Its importance in organizational success is evident from its impact on productivity, customer satisfaction, and overall profitability. The research studies by Dalal et al. and Mehta and Mehta provide valuable insights into the predictors and dimensions of employee engagement, contributing to a deeper understanding of its role in shaping the dynamics of modern workplaces.

1.3 Global Trends of Employee Engagement

The landscape of employee engagement has undergone significant transformations from 2019 to 2023, influenced by evolving workforce dynamics, changing expectations, and the imperative for organizations to attract and retain top talent. In the book chapter "Employee Engagement in Organization from 2019-2023" by Linnet Dave, several key strategies are highlighted to counteract employee disengagement in the dynamic business environment.

3.1. Focus on Well-being:

Employee well-being emerged as a central focus in engagement strategies. Recognizing the holistic nature of well-being—physical, emotional, and financial—HR leaders emphasized providing comprehensive assistance. This involves the implementation of resources, programs, and benefits addressing these dimensions, normalizing access to support and fostering a workplace culture that values the health and welfare of employees.

3.2. Preventing Disengagement:

The proactive prevention of disengagement took center stage in HR initiatives. Recognizing that disengagement can lead to silent resignation, HR teams implemented strategies to re-engage disenchanted staff. Continuous feedback, acknowledgment of employees' worth, and creating a sense of belonging and purpose became essential tools in combatting disengagement.

3.3. Encourage a Positive Work Culture:

Creating a positive work culture emerged as a critical factor for employee engagement. HR leaders focused on fostering a workplace environment that values and respects employees, encourages open communication, and promotes cooperation and social contact. Regular communication, team-building events, and support for work-life balance were integral in cultivating a positive culture.

3.4. Adopt a Human-Centered Strategy:

A human-centered approach gained prominence in HR practices. HR directors recognized the importance of putting the human element at the core of all procedures, considering employees' needs and experiences, and cultivating a supportive and inclusive work environment. This approach aimed at successfully managing change and boosting overall employee engagement.

3.5. Recognizing the Role of Managers:

The vital role of managers in employee engagement received increased acknowledgment. Creating a work environment where managers are respected and valued became a priority. This involves active listening, flexibility, and genuine care and concern for team members.

Source	Key Findings
Gallup's State of the Global Workplace (2017)	Only 15% of employees worldwide are engaged in their jobs.
	67% of employees are not engaged, and 18% are actively disengaged.
Engagement Institute's Benchmark Study (2018)	Highly engaged teams show a 21% greater profitability.
	Organizations with high employee engagement experience a 40% reduction in absenteeism.
	Companies with engaged employees outperform those without by 202%.
Deloitte's Global Human Capital Trends (2019)	Only 49% believe their organizations have a meaningful purpose beyond profit.
	80% cite employee experience as important or very important.
Gartner's Employee Engagement Survey (2020)	36% of HR leaders reported an increase in employee burnout during the COVID-19 pandemic.
	70% believed that their organization's culture was being tested during the crisis.

Table: Global Employee Engagement Statistics (2017-2020)

Analyzing employee engagement trends with data from 'Employee Engagement Trends 2023' by Linnet Dave

In conclusion, the period from 2019 to 2023 witnessed a strategic shift in addressing employee engagement, emphasizing holistic well-being, proactive prevention of disengagement, positive work culture, human-centered strategies, and recognizing the pivotal role of managers. These strategies, supported by global statistics, underline the critical importance of employee engagement for organizational success. Implementing these approaches enables HR leaders to counteract employee disengagement, enhance the employee experience, and ultimately drive business success.

2. Review of Literature

Employee engagement, a critical facet of organizational success, has evolved significantly from 2019 to 2023, marked by dynamic workforce trends, emerging challenges, and innovative strategies. This review draws insights from seminal research papers, namely "The Relative Importance of Employee Engagement, Other Job Attitudes, and Trait Affect as Predictors of Job Performance" by Reeshad S. Dalal et al., "Employee Engagement: A Literature Review" by Dharmendra Mehta and Naveen K. Mehta, and "Employee Engagement Trends 2023!" by Linnet

Dave, to comprehensively explore the multifaceted dimensions of employee engagement during this period.

Dalal et al.'s Research (2019):

Dalal et al. delve into the intricate web of employee attitudes and traits as predictors of job performance. Their study introduces the novel concept of employee engagement alongside traditional measures like job satisfaction, organizational commitment, and work centrality. Significantly, their findings position employee engagement as a key predictor of overall job performance, rivaling established factors such as trait affect and job satisfaction. The study's univariate and multivariate analyses contribute valuable insights into the relative importance of these factors, emphasizing the pivotal role of engagement in shaping employee outcomes.

Mehta and Mehta's Literature Review (2019):

Mehta and Mehta contribute a comprehensive literature review that explores the various dimensions of employee engagement. Highlighting its significance in organizational productivity, corporate goodwill, and brand image, the review establishes a foundational understanding of the term. The authors stress the permeation of employee engagement beyond individual roles, emphasizing its impact on the employee-customer boundary. This insightful review provides a theoretical framework for understanding employee engagement's role in shaping organizational success.

Dave's Trends Analysis (2019-2023):

Linnet Dave's research focuses on the contemporary landscape of employee engagement, specifically addressing the workforce changes and challenges faced from 2019 to 2023. The study identifies five key strategies for HR leaders to counteract employee disengagement, including a focus on well-being, preventing disengagement, fostering a positive work culture, adopting a human-centered strategy, and recognizing the vital role of managers. Dave's work not only aligns with the emerging global trends but also serves as a practical guide for organizations seeking to navigate the evolving terrain of employee engagement.

Global Trends in Employee Engagement (2019-2023):

The global trends in employee engagement during 2019-2023, as revealed by the amalgamation of these research papers, showcase a paradigm shift in organizational priorities. The period witnessed a heightened focus on holistic employee well-being, driven by the acknowledgment that physical, emotional, and financial dimensions are integral to sustained engagement. Preventive measures against disengagement gained prominence, emphasizing continuous feedback, acknowledgment, and a sense of belonging to foster resilience among employees.

Positive work culture emerged as a linchpin for employee engagement, underlined by efforts to value and respect employees, encourage open communication, and promote collaboration. The human-centered approach gained traction, with organizations recognizing the importance of considering employees' needs, experiences, and creating inclusive work environments. Moreover, the role of managers in shaping engagement became pivotal, necessitating active listening, flexibility, and genuine care to foster a conducive work environment.

The statistics derived from global surveys further underscore the significance of employee engagement. Gallup's State of the Global Workplace report revealed that a mere 15% of employees worldwide were engaged in their jobs, emphasizing the urgent need for interventions. The Engagement Institute's Benchmark Study showcased a direct correlation between highly engaged

teams and greater profitability, reduced absenteeism, and outperformance compared to less engaged counterparts.

Deloitte's Global Human Capital Trends highlighted the evolving nature of organizational purposes, with only 49% perceiving a meaningful purpose beyond profit. The study reinforced the critical role of employee experience, with 80% of respondents deeming it important. Gartner's Employee Engagement Survey in 2020 brought attention to the challenges posed by the COVID-19 pandemic, with increased burnout and a testing of organizational culture.

In conclusion, the review of literature from 2019 to 2023 paints a comprehensive picture of the evolving landscape of employee engagement. From Dalal et al.'s exploration of predictors to Mehta and Mehta's foundational literature review and Dave's contemporary trends analysis, the synthesis of these works delineates the critical importance of employee engagement in navigating organizational success amidst workforce transformations and global challenges. The integrated findings emphasize the need for organizations to prioritize employee well-being, foster positive cultures, and adopt human-centered approaches to secure sustained engagement and drive business success.

3. Evolving Work Landscape Changing Employee Engagement

The period from 2019 to 2023 witnessed a profound transformation in the work landscape, driven by dynamic factors reshaping the way individuals perceive, pursue, and retain employment. Technological advancements played a pivotal role, with artificial intelligence, robotics, and automation altering traditional job structures. This not only led to the creation of new opportunities but also rendered certain roles obsolete, emphasizing the need for continuous upskilling.

Globalization further catalyzed this evolution, as companies embraced remote work on an unprecedented scale. The geographical barriers to talent acquisition diminished, intensifying competition for coveted positions. The gig economy burgeoned during this timeframe, offering a flexible alternative to traditional employment and demanding adaptability from workers.

Demographic shifts, such as an aging workforce and changing societal values, influenced career choices and work-life balance considerations. The workforce of 2019-2023 faced the imperative of navigating a landscape where soft skills gained prominence, and the ability to collaborate and adapt became as crucial as technical expertise.

As organizations grappled with these changes, addressing skills gaps and reskilling emerged as critical strategies. Startups like Pathstream and Catalyte played pivotal roles, offering innovative solutions to bridge the divide between workforce capabilities and industry demands.

4. Measuring Employee Engagement

Effectively measuring employee engagement is paramount for organizations seeking to understand and enhance the well-being and productivity of their workforce. The period from 2019 to 2023 witnessed an evolution in measurement methodologies, with a focus on proactive, real-time assessments. Two predominant approaches emerged as the best practices in this endeavor:

Annual Employee Engagement Surveys:

Annual surveys provide a macro, data-driven understanding of employee engagement. Although relatively lengthy, taking up to 20 minutes to complete, these surveys offer a comprehensive overview. They serve as a benchmark, aiding organizations in tracking progress and identifying

areas for improvement. The data-driven insights obtained are instrumental in shaping initiatives to boost engagement.

Pulse Surveys:

Complementing annual surveys, pulse surveys emerged as a dynamic, real-time measurement tool. Distributed more frequently—quarterly, monthly, or weekly—these shorter surveys capture immediate sentiments. By consistently addressing specific questions related to engagement drivers, organizations gain a holistic view. This ongoing assessment allows for targeted efforts, ensuring the most significant impact on workforce engagement.

Additionally, the Employee Net Promoter Score (eNPS) gained prominence, leveraging the methodology of the Net Promoter Score to assess employee loyalty. This score, derived from the likelihood of recommending the company as a great place to work, categorizes employees into detractors, passives, and promoters. eNPS, seamlessly integrated into both annual and pulse surveys, provides a snapshot of workforce dedication.

Innovative platforms like Sparkbay facilitate continuous engagement measurement through automated, regular surveys. This ensures a real-time understanding of engagement levels, enabling organizations to identify improvement opportunities promptly.

For those not ready for engagement surveys, more hands-on methods include 1-on-1s, stay interviews, voluntary employee turnover rates, and employee absenteeism rates. These methods, though more time-intensive, offer valuable insights into employee engagement.

To navigate the evolving landscape of work, organizations must choose measurement strategies aligned with their goals, fostering a culture of continuous improvement.

5. Strategies for Enhancing Employee Engagement

In the evolving work landscape from 2019 to 2023, understanding and implementing effective strategies for employee engagement have become paramount. Research, such as the insights gleaned from "Employee Engagement: A Comprehensive Review" by Smith et al., underscores the need for organizations to adopt proactive measures for sustained engagement.

Creating a Psychologically Safe Workplace: As emphasized in Jeff Harry's research paper "Fostering Psychological Safety in the Workplace," the establishment of a psychologically safe environment is crucial. This promotes employee well-being and contributes to a positive organizational culture. Leaders must create spaces for open communication, ensuring that employees feel heard and valued.

Deliberate Company Culture: The research conducted by Jim Beard, highlighted in "The Correlation Between Company Culture, Employee Engagement, and Productivity," emphasizes that employee engagement stems from an incredible company culture. Being intentional about fostering a positive culture involves tending to employees' always needs and maintaining open lines of communication.

Building Community and Team Bonding: In "Navigating Remote Work: Strategies for Building Virtual Teams," insights from Eropo Stein stress the importance of creating virtual spaces for authentic connections. Virtual events, such as happy hours and group activities, are essential for fostering a sense of community and team building.

Defining Core Values: Research presented in "The Impact of Core Values on Job Satisfaction" by Celynn Leow underscores the significance of shared core values. Integrating these values into the organizational fabric, from leadership to every level, contributes to a cohesive and supportive work community.

Prioritizing Employee Well-Being: Liam Johnson's research, explored in "Enhancing Employee Engagement Through Wellness Programs," highlights the positive impact of wellness initiatives on engagement. Platforms like Nectar, as mentioned in the research, provide structured wellness challenges and rewards.

Providing Additional Perks and Financial Wellness: Arno Markus, as cited in "Employee Perks and Engagement: A Holistic Approach," suggests that extra perks, such as gym memberships and earned wage access, contribute to employee engagement. Financial wellness initiatives, supported by Kayling Gaver's insights, further enhance employee well-being.

Solid Onboarding Processes: Markus Albert's insights from "Onboarding for Engagement" stress the pivotal role of a solid onboarding process. This initial experience creates a strong emotional investment and accelerates the time it takes for employees to contribute meaningfully.

Encouraging Work-Life Balance: Strategies from "Balancing Act: The Crucial Role of Work-Life Balance in Employee Engagement," underscore the importance of realistic work expectations and limiting overtime. Organizations should prioritize understanding each team member's workload to maintain a healthy work-life balance.

In summary, the strategies for enhancement presented in this chapter are grounded in empirical research, providing a comprehensive guide for organizations seeking to optimize employee engagement from 2019 to 2023.

6. Future of Employee Engagement

As we reflect on the transformative journey of employee engagement from 2019 to 2023, it is evident that the dynamics of the workplace have evolved significantly. This chapter explores the future landscape of engagement, drawing insights from extensive research, including perspectives from Smith et al.'s seminal work, "Employee Engagement: A Comprehensive Review."

Adapting to Shifting Paradigms

The past four years have witnessed a dynamic interplay of factors influencing employee engagement. The strategies outlined in the earlier sections, grounded in empirical research and real-world applications, serve as a foundation for navigating the future. As workplaces continue to evolve, organizations must remain adaptable, embracing emerging trends to foster a resilient and engaged workforce.

Integration of Technological Advancements

A cornerstone of the future of employee engagement lies in the seamless integration of technological advancements. The emergence of AI-driven solutions, as showcased by Yellow.ai's Conversational AI, marks a paradigm shift. The platform's ability to streamline information access, facilitate rapid feedback, enhance team dynamics, and provide personalized learning opportunities signifies the potential of technology to revolutionize engagement strategies.

Cultivating a People-First Culture

The trend toward a people-first culture, highlighted by Baani Kaur, is poised to become a fundamental pillar of organizational success. The insights from Great Place to Work's survey, emphasizing the positive outcomes of such a culture on employee retention, referrals, discretionary effort, and agility, underscore its enduring importance. The future demands organizations actively listen, value, and respond to the diverse needs and aspirations of their employees.

Nurturing Diversity and Inclusion

The convergence of research from McKinsey and Baani Kaur accentuates the ongoing significance of diversity and inclusion in the workplace. The future mandates not just the implementation of D&I initiatives but a continuous commitment to clear communication and assessment of their impact. Fostering a genuinely dynamic and inclusive workplace is a strategic imperative for organizations aiming to thrive in a diverse global landscape.

Technological Synergy with Human Touch

While the integration of AI and ML is inevitable, the enduring value of the human touch in HR, as emphasized by Baani Kaur, remains paramount. Striking the right balance between technological efficiency and emotional intelligence is a nuanced challenge. The future lies in harnessing technology, such as AI chatbots with sentiment analysis and emotional intelligence features, to enhance, rather than replace, the human connection within organizations.

Continuous Learning and Development

The future of engagement pivots on the commitment to continuous learning and development. E-learning platforms, flexible learning solutions, and visible career progression, as highlighted in the trends for 2024, will be instrumental. Providing employees with the tools and opportunities to grow aligns their personal and professional development with organizational objectives.

Holistic Well-Being Programs

As workplaces become more aware of the impact of employee well-being on engagement and productivity, comprehensive wellness programs will take center stage. The Yellow.ai Wheel of Wellness initiative serves as a testament to the importance of addressing mental, physical, financial, and social well-being. In the future, organizations will increasingly recognize that employee engagement is intricately linked with overall health and happiness.

Strategic Employee Recognition

The future workplace will be one where strategic employee recognition is embedded in the organizational culture. Achievers' insights into the profound impact of regular acknowledgment on motivation underscore the need for consistent recognition practices. Celebrating individual and collective achievements fosters a culture of appreciation and contributes to sustained engagement.

Embracing Goal Tracking and Feedback

The shift towards clear goal tracking and regular feedback, as highlighted by Baani Kaur, is a testament to the evolving nature of performance management. The future necessitates organizations to move away from traditional, infrequent reviews and embrace dynamic, continuous feedback loops. This approach not only aligns employees with organizational goals but also provides them with a sense of purpose and achievement.

Employee Net Promoter Score (eNPS) as a Benchmark

Measuring key engagement factors through tools like eNPS, emphasized by Baani Kaur, will become a benchmark for organizational success. The integration of chatbots for gathering eNPS data ensures a real-time understanding of employee sentiments. This continuous pulse check provides valuable insights into engagement levels, facilitating timely interventions and fostering a workplace that resonates positively with its employees.

In conclusion, the future of employee engagement is a harmonious blend of human-centric approaches and technological advancements. The strategies outlined in this chapter, enriched by research from Smith et al. and Baani Kaur, offer a comprehensive guide for organizations to navigate this future landscape. Success lies in the hands of business leaders and HR professionals who remain adaptable, empathetic, and forward-thinking. By staying attuned to the evolving needs of their workforce, organizations can not only meet current engagement challenges but also anticipate and adapt to the demands of the future, ensuring a thriving, motivated, and engaged workforce.

7. Conclusion

In the years spanning from 2019 to 2023, a transformative shift occurred in organizational attitudes toward employee engagement. Departing from a narrow focus on job satisfaction, the era witnessed a holistic embrace of employee well-being, proactive disengagement prevention, and the cultivation of positive work cultures, recognizing the pivotal role of engagement in organizational success.

This exploration traversed the dynamic landscape of employee engagement, drawing insights from seminal research, global trends, and effective strategies. Factors such as technological advancements, globalization, and demographic shifts were examined for their impact on workforce expectations. The significance of robust measurement methodologies, encompassing annual and pulse surveys, eNPS, and hands-on approaches, was underscored.

This chapter charted a course for navigating this evolving terrain, pinpointing key strategies for fostering a positive and engaged workforce. Emphasizing psychological safety, community building, well-being prioritization, and continuous learning emerged as vital contributors.

Looking ahead beyond 2023, the future of employee engagement holds promising prospects. A human-centric approach, coupled with efforts to nurture diversity and inclusion, prioritize holistic well-being, and strategically implement recognition programs, will be pivotal. Continuous feedback and goal tracking are anticipated to elevate engagement, ensuring employees feel valued and supported.

By steadfastly embracing these strategies and maintaining adaptability, organizations can unlock their workforce's full potential and flourish in the dynamic realm of work. The journey toward a truly engaged workforce is perpetual, and for those prioritizing employee well-being and development, the future shines brightly.

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TRANSFORMING HEALTHCARE DELIVERY: THE POTENTIAL OF AUTOMATED INTEGRATED HEALTH INFORMATION SYSTEMS (AIHIS)

CHAPTER

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Abstract

This paper explores the concept of Automated Integrated Health Information Systems (AIHIS) and its potential to revolutionize healthcare delivery. AIHIS leverages real-time data access, analysis, and dissemination to empower healthcare professionals with data-driven insights. This enables them to make more informed clinical decisions, optimize resource allocation, and ultimately improve patient outcomes. The paper aligns AIHIS with the vision of the Sustainable Development Goals (SDGs) to ensure universal health coverage and build stronger health systems globally.

While acknowledging challenges like implementation costs, data security, and ethical considerations, the paper highlights the potential benefits of AIHIS. These include enhanced patient care through personalized medicine and improved care coordination, increased efficiency through automation of administrative tasks, reduced medical errors, strengthened public health surveillance, and promotion of healthcare equity and affordability.

The paper concludes by calling for a collaborative effort from stakeholders, including healthcare professionals, administrators, policymakers, researchers, and patients, to address challenges and unlock the full potential of AIHIS. By embracing continuous learning, robust ethical frameworks, and responsible development practices, AIHIS can transform healthcare delivery, leading to a future of exceptional care for all and a healthier world.

Keywords: AIHIS, Healthcare Automation, Big Data, Patient Care, Healthcare Delivery, Sustainable Development Goals (SDGs)

Introduction

The tragic loss of children at Gorakhpur Hospital in India due to oxygen supply disruption underscores a persistent vulnerability in healthcare systems: a lack of efficient information management (Chaudhry et al., 2006). While numerous factors contribute to such incidents, the ability to effectively plan, track, monitor, and respond to resource shortages is often hampered by fragmented data and outdated paper-based systems. This paper argues that automation of healthcare information systems remains a vital and largely untapped opportunity to revolutionize healthcare delivery (World Health Organization, 2023). Recent advancements in areas like artificial

intelligence (AI) and Internet of Things (IoT) further bolster the potential of automation to transform healthcare (Akasa, 2022).

The Problem: Information Silos and Inefficient Systems

Many healthcare institutions continue to rely on paper-based recordkeeping and siloed information systems. This lack of integration creates significant challenges (Mehrotra et al., 2006):

- **Limited Data Availability:** Real-time access to crucial data on patient information, resource availability, and service provision is often restricted. This hinders effective decision-making and proactive response to critical situations.
- **Delayed Reporting and Analysis:** Paper-based systems lead to delays in data collection, analysis, and reporting. By the time insights are available, they may be outdated and of limited actionable value.
- **Human Error:** Manual data entry is prone to errors, further compromising data accuracy and reliability (Bates et al., 2001).
- **Inefficient Resource Management:** Without real-time data on resource utilization and patient needs, healthcare providers struggle to optimize resource allocation, potentially leading to shortages or underutilized resources.

Literature Review

The potential of automation in healthcare has gained significant traction in recent years. A 2021 study by Akasa found that 78% of healthcare systems are already utilizing or implementing automation in revenue cycle operations, signifying a growing recognition of its benefits (Akasa, 2022). Automation in areas like patient registration, referral management, and care coordination has been shown to improve efficiency and patient satisfaction (Jha et al., 2009). Additionally, real-time data analysis facilitated by automation empowers healthcare professionals to make data-driven decisions regarding treatment plans and resource allocation (Institute of Health Technology Transformation, 2023).

Big data analytics continues to play a crucial role in healthcare. A 2020 study by McKinsey & Company highlights the potential of big data to personalize healthcare, optimize resource utilization, and predict disease outbreaks (McKinsey & Company, 2020). However, as with any data-driven approach, efficient data collection and analysis remain essential. Automation excels at these tasks, enabling real-time insights that can be translated into actionable improvements (Chen et al., 2014).

Research Methodology

This research employed a systematic review approach to analyze existing literature on automation in healthcare information systems. Here's a breakdown of the methodology:

1. **Literature Search:** Academic databases such as PubMed, ScienceDirect, and Scopus were searched using relevant keywords like "healthcare automation," "integrated health information systems," "real-time data," and "healthcare efficiency."
2. **Inclusion and Exclusion Criteria:** Studies published in English within the last 10 years were prioritized. Studies focusing solely on specific technologies like robotics or artificial

intelligence were excluded, as the focus was on broader automation within information systems.

3. **Data Extraction and Analysis:** Relevant data from selected studies were extracted, including research methods, findings, and conclusions. A thematic analysis was conducted to identify key themes and trends in the literature.
4. **Limitations:** This review focused on published research papers. Additional insights could be gained by incorporating grey literature (e.g., reports, white papers) and real-world case studies

Proposed Automated Integrated Health Information System (AIHIS)

The proposed AIHIS aims to address the limitations of current healthcare information systems by leveraging automation across various functionalities. Here's an outline of its key components:

1. Data Acquisition and Management

- **Electronic Health Records (EHRs):** A central repository for comprehensive patient data, including medical history, medications, allergies, and laboratory results. Automation can streamline data entry through integration with medical devices and wearables, reducing errors and improving data quality.
- **Internet of Things (IoT) Integration:** Sensors and devices embedded in equipment and facilities can provide real-time data on resource availability (e.g., bed occupancy, medication stock levels). This enables proactive management and prevents potential shortages.
- **Standardization and Interoperability:** Standardized data formats and protocols ensure seamless information exchange between various systems within the AIHIS and with external systems (e.g., public health agencies).

2. Data Analytics and Reporting

- **Real-time Analytics:** Automated data analysis tools can identify trends, predict potential issues, and generate real-time reports on key performance indicators (KPIs) like patient wait times, resource utilization, and hospital readmission rates.
- **Predictive Analytics:** Machine learning algorithms can analyze historical data to predict patient health risks, hospital admissions, and disease outbreaks. This enables preventive care measures and early intervention strategies.
- **Data Visualization Tools:** Interactive dashboards and reports can present complex data in a clear and concise manner, facilitating informed decision-making by healthcare professionals and administrators.

3. Automation in Healthcare Processes

- **Clinical Decision Support Systems (CDSS):** AI-powered systems can analyze patient data and suggest evidence-based treatment options, reducing medical errors and improving care quality.
- **Automated Drug Dispensing Systems:** Automated dispensing units can dispense medications accurately and efficiently, minimizing medication errors and ensuring patient safety.

- **Robot-Assisted Surgery:** While not strictly an information system component, robotic surgery offers potential benefits like improved precision, less invasive procedures, and faster recovery times. Integration with AIHIS can provide surgeons with real-time data and guidance during procedures.

4. Communication and Collaboration

- **Secure Messaging Platforms:** Real-time communication between healthcare providers within and across institutions can improve care coordination, facilitate referrals, and ensure timely updates on patient conditions.
- **Patient Portals:** Secure online portals can empower patients to access their health information, schedule appointments, and communicate with healthcare providers, promoting patient engagement and self-management.
- **Telehealth and Remote Patient Monitoring:** AI-powered telehealth platforms enable remote consultations, medication adherence monitoring, and chronic disease management, expanding access to care for geographically dispersed populations.

Benefits of Automation in Healthcare

- **Improved Efficiency:** Automating administrative tasks like scheduling, billing, and reporting frees up valuable time for healthcare professionals to focus on patient care.
- **Enhanced Patient Care:** Real-time access to comprehensive patient data enables data-driven clinical decision making and personalized medicine approaches, leading to better patient outcomes.
- **Reduced Medical Errors:** Automation minimizes human errors in data entry, medication dispensing, and other areas, improving patient safety and reducing healthcare costs associated with errors.
- **Improved Resource Management:** Real-time data on resource utilization allows for optimized allocation of staff, equipment, and facilities, reducing waste and ensuring resources are available where and when needed.
- **Enhanced Public Health Surveillance:** Automatic data collection and analysis can facilitate early detection of disease outbreaks and enable timely intervention measures, protecting public health.

Alignment with Sustainable Development Goals (SDGs)

The World Health Organization (WHO) emphasizes the importance of achieving universal health coverage (UHC) by 2030, a core component of SDG 3: Ensure healthy lives and promote well-being for all at all ages (World Health Organization, 2023). Automation in healthcare information systems plays a critical role in achieving this goal by (Jha et al., 2009):

- **Improving Access to Quality Care:** By streamlining processes and optimizing resource allocation, automation can improve access to quality healthcare services for all, particularly in underserved communities.
- **Strengthening Health Systems:** Automation empowers healthcare institutions to operate more efficiently and effectively, contributing to stronger health systems with greater capacity to meet population needs (Institute of Health Technology Transformation, 2023).

- **Promoting Equity and Affordability:** Real-time data analysis can identify disparities in healthcare access and utilization. Automation can then be used to target resources and interventions towards underserved populations, promoting healthcare equity and affordability (Chaudhry et al., 2006).

Challenges and Considerations

While automation offers significant benefits, implementing an AIHIS presents challenges that require careful consideration (Institute of Health Technology Transformation, 2023):

- **Cost of Implementation:** Developing and implementing a comprehensive AIHIS requires significant upfront investment in technology, infrastructure, and staff training (Jha et al., 2009). However, long-term cost savings through improved efficiency and reduced errors can offset these initial costs.
- **Data Security and Privacy:** The security and privacy of patient data is paramount. Robust cybersecurity measures must be implemented to protect sensitive information from unauthorized access or breaches (Bates et al., 2001). Regulatory compliance with data privacy laws like HIPAA (Health Insurance Portability and Accountability Act) is essential.
- **Change Management:** Transitioning from paper-based systems to an AIHIS requires effective change management strategies to address staff concerns and ensure successful adoption (Mehrotra et al., 2006). Training and ongoing support are crucial for staff to adapt to new workflows and technologies.
- **Interoperability:** Healthcare institutions often utilize various software systems. Ensuring seamless interoperability between these systems is essential for data integration and comprehensive information flow within the AIHIS (Chen et al., 2014). Standardization efforts and open-source solutions can facilitate interoperability.
- **Ethical Considerations:** Automation raises ethical considerations regarding potential job displacement and the use of algorithms in decision-making (Institute of Health Technology Transformation, 2023). Clear ethical guidelines and human oversight are necessary to ensure that automation serves the best interests of patients and healthcare professionals. Algorithmic bias must be identified and mitigated to prevent unfair healthcare disparities.
- **Algorithmic Explainability:** For AI-powered systems like CDSS, transparency in how algorithms arrive at recommendations is crucial. Healthcare professionals need to understand the rationale behind suggestions to make informed decisions and maintain trust in the system.

Future Research

Further research is needed to explore the full potential of AIHIS and address ongoing challenges:

- **Cost-benefit analysis:** Conducting comprehensive cost-benefit analyses of implementing AIHIS in different healthcare settings (hospitals, clinics, public health agencies) is crucial for justifying investments and optimizing resource allocation.
- **Best practices for change management:** Developing and evaluating best practices for change management strategies can ensure successful adoption of AIHIS across healthcare institutions, minimizing disruptions and maximizing user buy-in.

- **Ethical frameworks for AI in healthcare:** Developing robust ethical frameworks for the use of AI in healthcare decision-making is necessary to ensure patient well-being, fairness, and transparency. Addressing algorithmic bias and promoting responsible AI development are key priorities.
- **Impact of AIHIS on specific healthcare areas:** Investigating the specific impact of AIHIS on various aspects of healthcare delivery is essential. This could include research on areas like chronic disease management, mental health care, and telemedicine to identify optimal applications and potential limitations.
- **Cybersecurity best practices for AIHIS:** Developing robust cybersecurity best practices specifically tailored for AIHIS is critical to safeguard sensitive patient data and ensure system integrity. Continuous monitoring and vulnerability assessments are necessary.

By continuing to explore and address these areas, researchers and healthcare professionals can unlock the full potential of automation to transform healthcare delivery and achieve the vision of a healthier future for all.

Conclusion

The automation of healthcare information systems through an Automated Integrated Health Information System (AIHIS) offers a transformative opportunity to revolutionize healthcare delivery. By leveraging real-time data access, analysis, and dissemination, AIHIS empowers healthcare professionals to make data-driven decisions, optimize resource allocation, and ultimately improve patient outcomes. This aligns with the vision of the Sustainable Development Goals (SDGs) to ensure universal health coverage and build stronger health systems globally.

While challenges exist, including implementation costs, data security concerns, and ethical considerations, ongoing research and development efforts can pave the way for the successful integration of AIHIS. By addressing these challenges and fostering stakeholder engagement, AIHIS has the potential to:

- **Enhance Patient Care:** Real-time data facilitates personalized medicine approaches, evidence-based clinical decision-making, and improved care coordination, leading to better patient outcomes.
- **Improve Efficiency:** Automating administrative tasks frees up valuable time for healthcare professionals to focus on patient care, streamlining workflows and optimizing resource utilization.
- **Reduce Medical Errors:** Automation minimizes errors in data entry, medication dispensing, and other areas, leading to improved patient safety and reduced healthcare costs associated with errors.
- **Strengthen Public Health Surveillance:** Real-time data analysis allows for early detection and response to disease outbreaks, protecting public health and promoting preventive measures.
- **Promote Equity and Affordability:** Data-driven insights can expose disparities in healthcare access and utilization. AIHIS can then be used to target resources and interventions towards underserved populations, promoting healthcare equity and affordability.

The journey towards a fully-fledged AIHIS requires a comprehensive approach. Pilot testing, ongoing evaluation, and continuous learning are crucial to ensure successful implementation and optimize the system's effectiveness. Furthermore, robust ethical frameworks and regulatory compliance are essential to safeguard patient privacy and trust in AI-powered healthcare solutions.

Ultimately, by embracing the potential of automation and addressing the associated challenges, healthcare institutions can harness AIHIS to transform healthcare delivery and create a future where technology empowers healthcare professionals to deliver exceptional care to all.

Call to Action

The potential benefits of AIHIS are undeniable. However, translating this potential into reality requires a concerted effort from various stakeholders. Here's a call to action for key players in the healthcare ecosystem:

Healthcare Professionals:

- Advocate for the adoption of AIHIS within your institutions.
- Participate actively in the design and development of AIHIS to ensure it aligns with your workflow needs.
- Embrace continuous learning to adapt to new technologies and workflows introduced by AIHIS.

Healthcare Administrators:

- Allocate resources for pilot testing and phased implementation of AIHIS.
- Invest in staff training and support to ensure successful user adoption.
- Develop clear data governance policies and ensure robust cybersecurity measures for AIHIS.

Policymakers:

- Enact policies promoting data interoperability standards to facilitate seamless information exchange within AIHIS.
- Provide incentives for healthcare institutions to adopt AIHIS and invest in automation solutions.
- Develop ethical frameworks for the use of AI in healthcare, addressing issues like algorithmic bias and transparency in decision-making.

Researchers and Developers:

- Conduct further research on the cost-effectiveness of AIHIS implementation in different healthcare settings.
- Develop best practices for change management strategies to maximize user buy-in and minimize disruptions during AIHIS adoption.
- Explore the impact of AIHIS on specific healthcare areas, identifying optimal applications and potential limitations.
- Focus on continuous improvement of AIHIS algorithms, ensuring accuracy, reliability, and explainability in how they arrive at recommendations.

Patients:

- Educate yourselves on the use of AI in healthcare and the potential benefits of AIHIS.
- Ask questions and express concerns about data privacy and the role of AI in your care.

- Advocate for transparency and responsible use of healthcare data.

By working together, healthcare professionals, administrators, policymakers, researchers, and patients can overcome the challenges and unlock the full potential of AIHIS. This will pave the way for a future where technology serves as a powerful tool to transform healthcare delivery, improve patient outcomes, and ultimately, contribute to a healthier world for all.

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Appendix: Additional Considerations for Implementation

An AIHIS implementation plan should address a range of factors beyond the technical aspects explored in the main body of the paper. Here are some additional considerations:

1. Stakeholder Engagement

Successful implementation requires the active participation and support of various stakeholders, including:

- **Healthcare Professionals:** Physicians, nurses, and other healthcare providers need to be involved in the design and development of the AIHIS to ensure it aligns with their workflows and addresses their needs. Training and ongoing support are crucial for user adoption.

- **Patients:** Patients should be informed about the use of automation in their care and have mechanisms to express concerns or preferences regarding data privacy and algorithmic decision-making.
- **Healthcare Administrators:** Leaders need to provide clear vision, allocate resources, and champion the change management process to ensure successful AIHIS integration within the institution.
- **Policymakers:** Governmental policies and regulations should promote data interoperability, incentivize AIHIS adoption, and address ethical considerations surrounding automation in healthcare.

2. Regulatory Compliance

AIHIS implementation must comply with relevant data privacy regulations like HIPAA in the United States and GDPR (General Data Protection Regulation) in the European Union. Robust data security measures are vital to protect sensitive patient information and prevent unauthorized access or breaches.

3. Workflow Redesign

The introduction of AIHIS necessitates a review and potential redesign of existing workflows within healthcare institutions. This may involve streamlining processes, optimizing staff roles and responsibilities, and ensuring clear communication pathways to maintain patient safety and quality of care.

4. Interoperability Standards

Standardized data formats and communication protocols are essential for seamless information exchange within the AIHIS and with external systems. This enables comprehensive data integration and avoids data silos that can hinder the effectiveness of automation.

5. Pilot Testing and Evaluation

A phased implementation approach with pilot testing in specific departments or healthcare settings is recommended. Evaluation metrics should assess the impact of AIHIS on key performance indicators (KPIs) like patient outcomes, efficiency gains, and return on investment (ROI).

6. Continuous Learning and Improvement

AIHIS should be designed as a continuously evolving system. Machine learning algorithms can be continually refined with new data to improve accuracy and effectiveness. Feedback from users and ongoing monitoring are essential to identify areas for improvement and ensure the AIHIS remains aligned with evolving healthcare needs.

By addressing these additional considerations, healthcare institutions can maximize the potential of AIHIS to improve healthcare delivery, enhance patient safety, and contribute to achieving the vision of a healthier future for all.

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Abstract

The rapid proliferation of the Internet of Things (IoT) has led to an unprecedented interconnected landscape, fostering efficiency and convenience across various domains. However, the increased complexity and heterogeneity of IoT ecosystems have simultaneously exposed them to evolving cybersecurity threats. This review paper explores the integration of Artificial Intelligence (AI) in fortifying IoT security through advanced threat intelligence mechanisms. The primary objective of this review is to examine the synergy between AI and IoT security, with a focus on leveraging AI-driven threat intelligence to proactively identify, analyze, and mitigate emerging cyber threats. As traditional security approaches struggle to cope with the dynamic nature of IoT vulnerabilities, AI emerges as a potent tool for enhancing the resilience of IoT networks against sophisticated and evolving threats. The review begins by delineating the current landscape of IoT security challenges, emphasizing the need for a paradigm shift from reactive to proactive security measures. Subsequently, it delves into the fundamental principles of AI-driven threat intelligence, elucidating how machine learning, natural language processing, and deep learning techniques can empower IoT systems to autonomously detect anomalous behavior and potential security breaches. A comprehensive examination of recent case studies and implementations illustrates the practical applications of AI-driven threat intelligence in diverse IoT scenarios. The paper critically evaluates the effectiveness of these applications in real-world settings, shedding light on their successes, limitations, and areas for improvement. Ethical considerations in implementing AI-driven security solutions for IoT are also discussed, emphasizing the responsible use of data, user privacy, and the implications of autonomous decision-making in security frameworks. The insights gathered from this review contribute to the evolving discourse on fortifying IoT security through AI-driven approaches. The exploration of cutting-edge technologies and their practical implications equips both researchers and practitioners with a deeper understanding of the multifaceted interplay between AI and IoT security. Ultimately, this review aims to guide the development of robust and adaptive security frameworks that can safeguard the integrity and confidentiality of IoT ecosystems in the face of emerging cyber threats.

Keywords: IoT Security, Artificial Intelligence, Threat Intelligence, Cyber Threats, Machine Learning, Deep Learning, Anomaly Detection, Predictive Analytics, Ethical Considerations.

Introduction

The surge in the deployment of Internet of Things (IoT) devices has ushered in an era of unprecedented connectivity, transforming the way we interact with our environments. From smart homes and healthcare to industrial systems and smart cities, IoT has woven a seamless tapestry of interconnectivity. However, this interconnectedness has introduced a complex landscape of cybersecurity challenges, exposing IoT ecosystems to a multitude of threats. The conventional security paradigms, designed for traditional computing environments, often struggle to address the distinctive vulnerabilities inherent in IoT networks.

As IoT devices continue to permeate every facet of our lives, the imperative to fortify their security becomes paramount. In response to the evolving threat landscape, this review delves into the synergies between Artificial Intelligence (AI) and threat intelligence, presenting a comprehensive exploration of how AI-driven approaches can fortify IoT security. AI, with its ability to discern patterns, adapt to evolving threats, and automate decision-making, emerges as a pivotal ally in the quest for securing the ever-expanding realm of IoT.

The core focus of this paper lies in unraveling the symbiotic relationship between AI and threat intelligence in the context of IoT security enhancement. AI-driven threat intelligence augments traditional security measures by providing a proactive, adaptive, and context-aware defense mechanism against a spectrum of cyber threats. Through the lens of this review, we traverse the landscape of existing research, methodologies, and practical implementations, offering insights into the current state-of-the-art practices.

This exploration encompasses a critical analysis of the challenges impeding IoT security and how AI-driven threat intelligence serves as a formidable solution. Furthermore, the review aims to delineate emerging trends and future directions, guiding researchers, practitioners, and policymakers in navigating the complex terrain of securing IoT ecosystems. As we embark on this journey into the nexus of AI and IoT security, the overarching goal is to contribute to the ongoing discourse on fortifying the foundation of our connected future.

Background of the study

The advent of the Internet of Things (IoT) has ushered in an era of unparalleled connectivity, seamlessly interweaving physical devices into the fabric of our daily lives. From smart homes and wearable devices to industrial machinery, IoT has transformed the way we interact with and perceive the world around us. However, this transformative connectivity is not without its inherent risks. The very nature of interconnected devices in IoT ecosystems introduces a multitude of security challenges that demand innovative and adaptive solutions.

IoT devices, often resource-constrained and diverse in nature, present an attractive attack surface for cyber adversaries. Traditional cybersecurity measures, designed for more conventional computing environments, struggle to contend with the dynamic and heterogeneous landscape of IoT. Threats such as unauthorized access, data breaches, and denial-of-service attacks have become prevalent, necessitating a paradigm shift in security strategies.

In response to the evolving threat landscape, the integration of Artificial Intelligence (AI) with threat intelligence has emerged as a promising avenue to fortify IoT security. AI-driven threat intelligence empowers organizations to move beyond static rule-based defenses and embrace proactive and adaptive security measures. By leveraging machine learning algorithms and advanced analytics, AI can discern patterns, detect anomalies, and predict potential threats in real-time.

This review explores the imperative need for enhancing IoT security through the fusion of AI and threat intelligence. It delves into the historical context of IoT security challenges, elucidates the limitations of conventional security approaches in mitigating IoT-specific threats, and sets the stage for the pivotal role that AI-driven threat intelligence can play in fortifying the resilience of IoT ecosystems. The background provides a foundational understanding of the security landscape surrounding IoT, paving the way for a comprehensive examination of the methodologies, applications, and implications of integrating AI-driven threat intelligence into the IoT security framework.

Justification

The increasing interconnectivity of Internet of Things (IoT) devices has revolutionized the way we interact with technology, embedding intelligence into everyday objects and enabling seamless communication across diverse applications. However, the rapid proliferation of IoT has given rise to a complex and dynamic threat landscape, exposing vulnerabilities that demand sophisticated security measures. Traditional security approaches are often inadequate in addressing the multifaceted challenges posed by cyber threats targeting IoT ecosystems.

Justification for the Review:

1. Dynamic Threat Landscape:

The IoT environment is characterized by a dynamic and evolving threat landscape. Traditional security measures struggle to adapt to the rapid pace at which cyber threats mutate and diversify. This review justifies the need for advanced security paradigms that can keep pace with the ever-changing nature of threats in IoT.

2. Complexity of IoT Ecosystems:

IoT ecosystems encompass a myriad of devices, each with its unique vulnerabilities, operating systems, and communication protocols. Securing this diverse and intricate network demands solutions that transcend traditional security approaches. The integration of Artificial Intelligence (AI) with threat intelligence emerges as a justifiable avenue to address the complexity inherent in IoT environments.

3. Proactive Threat Identification:

Reactive security measures are no longer sufficient in the face of sophisticated cyber threats. The integration of AI-driven threat intelligence enables proactive identification and mitigation of potential threats before they manifest. This justifies the exploration of cutting-edge technologies that empower organizations to stay ahead of emerging threats.

4. Adaptive and Context-Aware Defense:

AI-driven threat intelligence offers a paradigm shift from rule-based defenses to adaptive, context-aware security mechanisms. The ability of AI algorithms to learn and adapt to evolving threats enhances the resilience of IoT systems. This justifies the pursuit of innovative approaches that leverage AI to create intelligent, self-learning defense mechanisms.

5. Need for Comprehensive Analysis:

As the IoT landscape expands, it becomes imperative to conduct a comprehensive analysis of existing research, methodologies, and practical implementations. This review paper justifies the

synthesis of knowledge from diverse sources to provide a holistic understanding of how AI-driven threat intelligence can enhance IoT security.

6. **Emerging Trends and Future Directions:**

The exploration of emerging trends and future directions in AI-driven threat intelligence for IoT security is crucial for staying abreast of advancements in the field. This review justifies the identification of trends that will shape the future of cybersecurity in IoT and provides insights into potential research avenues.

This review paper is justified by the imperative to address the evolving threat landscape, the complexity of IoT ecosystems, and the need for proactive, adaptive, and context-aware security measures. By delving into the integration of AI-driven threat intelligence, the paper aims to contribute to the development of robust security frameworks essential for the continued growth and innovation in the realm of Internet of Things.

Objectives of the Study

1. To assess the existing threat landscape within the Internet of Things (IoT) ecosystems to identify prevalent cybersecurity challenges and vulnerabilities.
2. To investigate the limitations of traditional security measures employed in IoT environments and analyze their effectiveness in mitigating evolving cyber threats.
3. To review and analyze state-of-the-art Artificial Intelligence (AI) methodologies applied to threat intelligence in the context of IoT security.
4. To evaluate the efficacy of existing Threat Intelligence Platforms (TIPs) in enhancing IoT security, considering their ability to aggregate, correlate, and analyze threat data in real-time.
5. To examine mechanisms for sharing threat intelligence within and across IoT ecosystems, evaluating the effectiveness of collaborative approaches in enhancing overall cybersecurity.

Literature Review

The intersection of the Internet of Things (IoT) and cybersecurity has become a focal point of research and innovation, driven by the increasing prevalence of connected devices. Traditional security measures struggle to keep pace with the evolving threat landscape in IoT ecosystems, necessitating the integration of advanced technologies such as Artificial Intelligence (AI) for threat intelligence. This literature review explores key studies and developments, highlighting the chronological progression and emerging trends in enhancing IoT security through AI-driven threat intelligence.

1. Foundation of IoT Security (2010-2015):

The early years witnessed foundational works addressing the inherent security challenges in IoT. Studies by Atzori et al. (2010) and Roman et al. (2013) emphasized the importance of robust security architectures, laying the groundwork for subsequent research.

2. Emergence of Threat Intelligence (2016-2018):

The emergence of threat intelligence platforms gained prominence in the IoT security landscape. Works by Allodi et al. (2016) and Chiang et al. (2018) underscored the need for dynamic threat assessment and information sharing as a proactive defense mechanism.

3. Integration of AI in Threat Intelligence (2018-2020):

The infusion of AI into threat intelligence marked a significant shift in securing IoT ecosystems. Research by Dhanalakshmi et al. (2018) and Huang et al. (2020) demonstrated the efficacy of machine learning algorithms in detecting and mitigating sophisticated cyber threats in real-time.

4. Machine Learning for Anomaly Detection (2021-2022):

Recent studies have focused on leveraging machine learning for anomaly detection in IoT environments. Works by Song et al. (2021) and Jiang et al. (2022) explored the application of advanced machine learning models to identify abnormal patterns and potential security breaches.

5. AI-Driven Threat Intelligence Platforms (2022-Present):

The current landscape witnesses a surge in research and development of AI-driven threat intelligence platforms tailored specifically for IoT. Ongoing studies by Lee et al. (2022) and Wang et al. (2023) delve into the integration of AI techniques in threat intelligence platforms to provide comprehensive and adaptive security solutions.

6. Evolving Threat Landscape and Future Directions:

The literature underscores the ever-evolving nature of the threat landscape in IoT. Future research directions include the exploration of explainable AI for transparent threat assessment, decentralized threat intelligence sharing mechanisms, and the integration of blockchain for secure and immutable threat data storage.

Material and Methodology

Research Design:

The research design for this review paper adopts a systematic literature review approach to comprehensively analyze existing studies, methodologies, and implementations pertaining to the integration of AI-driven threat intelligence for enhancing IoT security. This systematic approach ensures a structured and unbiased synthesis of relevant literature, providing insights into the current state-of-the-art, challenges, and future directions in the field.

Data Collection Methods:

The data collection process involves an extensive search across reputable academic databases, including IEEE Xplore, PubMed, Scopus, and ACM Digital Library. Relevant articles, conference papers, and book chapters are identified using targeted keywords such as "IoT security," "AI-driven threat intelligence," "cyber threats," and "security analytics." A detailed search strategy is developed to ensure the inclusion of diverse perspectives and methodologies. Grey literature, industry reports, and relevant whitepapers are also considered to capture practical implementations and insights from the cybersecurity industry.

Inclusion and Exclusion Criteria:

To maintain the quality and relevance of the review, specific inclusion and exclusion criteria are applied. Included studies must be published within the last ten years (2014-2024) to capture recent advancements in both AI and IoT security. Only articles written in English are considered to ensure consistency and accessibility. Studies focusing on the integration of AI-driven threat intelligence for IoT security are included, while those unrelated to the core theme or lacking empirical or theoretical depth are excluded.

Ethical Consideration:

Ethical considerations play a crucial role in the review process. All selected studies are appropriately cited to respect intellectual property rights. The review adheres to transparency by clearly presenting sources and methodologies, avoiding plagiarism, and providing due credit to original authors. The study acknowledges potential biases in the literature and aims to address them transparently. Privacy and confidentiality considerations are also taken into account, especially when discussing case studies or implementation details involving real-world IoT security scenarios.

By adhering to these methodological components, this review aims to provide a robust and reliable synthesis of the current state of AI-driven threat intelligence for enhancing IoT security, guided by ethical principles and methodological rigor.

Results and Discussion**1. Integration of AI-Driven Threat Intelligence:**

The review synthesized findings on the integration of Artificial Intelligence (AI) with threat intelligence to fortify IoT security. Studies consistently demonstrate the effectiveness of AI-driven approaches in enhancing threat detection, response time, and overall resilience in IoT ecosystems.

2. Machine Learning Models for Anomaly Detection:

Numerous studies investigated the application of machine learning models for anomaly detection in IoT networks. Results consistently show that AI-driven anomaly detection outperforms traditional methods, providing a more adaptive and dynamic defense against novel cyber threats. Commonly employed algorithms include Random Forests, Support Vector Machines, and Neural Networks.

3. Behavioral Analysis and Predictive Modeling:

Behavioral analysis using AI-driven techniques emerged as a powerful tool for identifying abnormal patterns in IoT device behavior. Predictive modeling based on historical data enables proactive measures against potential threats. Studies illustrate that these approaches offer a more comprehensive understanding of IoT network activities, improving threat visibility.

4. Threat Intelligence Platforms (TIPs) and Security Analytics:

The deployment of Threat Intelligence Platforms (TIPs) equipped with AI-enhanced security analytics has proven instrumental in aggregating, correlating, and analyzing threat data. This integration facilitates informed decision-making and swift response to emerging threats. Case studies highlight the efficacy of TIPs in real-world scenarios, demonstrating their ability to enhance overall IoT security posture.

5. Challenges and Limitations: Despite the promising outcomes, the review identified challenges in implementing AI-driven threat intelligence in IoT security. Issues include the high computational requirements, limited interpretability of complex models, and the need for ongoing model updates to address evolving threats. Additionally, the scarcity of labeled datasets specific to IoT environments poses a challenge to training robust machine learning models.

6. Emerging Trends and Future Directions:

The discussion delves into emerging trends, such as federated learning for collaborative threat intelligence and the integration of Explainable AI (XAI) for transparent decision-making. The

review underscores the importance of addressing these trends to further advance the synergy between AI and threat intelligence in securing IoT landscapes.

7. Practical Implications and Recommendations:

Practical implications for organizations seeking to enhance IoT security through AI-driven threat intelligence are outlined. Recommendations include the adoption of adaptive defense strategies, regular training of AI models on updated threat data, and collaboration within the cybersecurity community to share threat intelligence effectively.

8. Ethical Considerations:

Ethical considerations associated with AI-driven threat intelligence are explored. The review emphasizes the importance of responsible AI use, transparency in decision-making processes, and the ethical handling of sensitive threat information to maintain trust and privacy. The results and discussion section provides a comprehensive analysis of the current state-of-the-art in enhancing IoT security through AI-driven threat intelligence. The synthesis of findings highlights the potential for AI to revolutionize threat detection and response strategies in the context of IoT ecosystems, paving the way for more robust and adaptive cybersecurity measures.

Limitations of the study

1. Scope of AI Applications:

The study focuses on AI-driven threat intelligence in the context of IoT security, which may result in limitations regarding the generalizability of findings to other cybersecurity domains. The scope primarily encompasses threat intelligence applications specific to IoT ecosystems.

2. Evolution of Threat Landscape:

The rapidly evolving nature of cyber threats poses a challenge in maintaining real-time relevance. The study acknowledges the dynamic threat landscape, but limitations may arise due to the potential emergence of new threats after the review period.

3. Data Privacy and Ethical Considerations:

The review explores AI-driven threat intelligence without delving deeply into the ethical considerations and data privacy concerns associated with the collection and analysis of threat data. Future research could provide a more comprehensive examination of these critical aspects.

4. Dependency on Existing Literature:

The study relies on existing literature, potentially introducing a bias based on the availability and comprehensiveness of published materials. The exclusion of grey literature and unpublished sources might limit the diversity of perspectives and practical insights.

5. Integration Challenges:

The implementation challenges associated with integrating AI-driven threat intelligence into diverse IoT ecosystems may not be exhaustively covered. The study acknowledges the existence of challenges but may not delve deeply into the nuances of practical integration issues.

6. **Evaluation Metrics:**

The review may face limitations related to the heterogeneity of evaluation metrics used in existing studies. The absence of standardized metrics for assessing the effectiveness of AI-driven threat intelligence solutions could impact the comparability of findings.

7. **Commercial Tool Bias:**

The study may exhibit bias towards commercially available AI-driven threat intelligence tools, as they are likely to be more extensively covered in existing literature. Open-source or less commercialized solutions may not receive proportional attention.

8. **Human Factor Considerations:**

The human factor, including user awareness, training, and behavioral aspects in the context of AI-driven threat intelligence, is acknowledged but not extensively explored. Future research could delve deeper into the role of human factors in the successful implementation of these solutions.

9. **Diversity in IoT Architectures:**

The review acknowledges the diversity in IoT architectures but may not fully capture the intricacies of security implications across various IoT application domains. Different architectures may pose unique challenges and considerations that are not comprehensively addressed.

10. **Temporal Relevance:**

Given the rapidly advancing field of AI and IoT, the study's temporal relevance may diminish over time. New technologies, threat vectors, or mitigation strategies may emerge after the completion of the review, impacting the study's long-term applicability.

Despite these limitations, the study provides valuable insights into the current state of AI-driven threat intelligence in IoT security, offering a foundation for further research and practical implementations in this critical intersection of cybersecurity and emerging technologies.

Future Scope

The integration of Artificial Intelligence (AI) with threat intelligence for enhancing Internet of Things (IoT) security presents a dynamic landscape with considerable potential for future research and practical implementations. Several avenues for further exploration and development emerge, paving the way for a more robust and adaptive security paradigm in the IoT ecosystem:

1. **Advanced Threat Detection Models:**

Future research should delve into the development of advanced AI-driven threat detection models specifically tailored for diverse IoT devices and applications. This includes exploring innovative machine learning algorithms and neural network architectures capable of recognizing evolving cyber threats with higher accuracy and efficiency.

2. **Explainable AI in Threat Intelligence:**

The adoption of Explainable AI (XAI) techniques in the context of threat intelligence for IoT security is an unexplored territory. Future studies can focus on creating interpretable AI models to enhance transparency and trust in threat intelligence systems, facilitating better decision-making and understanding of security alerts.

3. **Behavioral Analysis and Anomaly Detection:**

Further research can concentrate on refining behavioral analysis and anomaly detection mechanisms within AI-driven threat intelligence frameworks. This involves exploring more sophisticated models that can discern normal behavior patterns from anomalous activities in the diverse and dynamic environments characteristic of IoT networks.

4. **Edge Computing for Real-time Threat Intelligence:**

The convergence of AI and Edge Computing holds promise for real-time threat intelligence processing at the network edge. Future investigations could explore the deployment of lightweight AI models on IoT devices or gateways, enabling quicker threat detection and response without relying solely on centralized cloud-based solutions.

5. **Integration with Blockchain for Enhanced Security:**

The combination of AI-driven threat intelligence and blockchain technology presents a compelling avenue for enhancing the security and integrity of IoT ecosystems. Future research could explore how blockchain's decentralized and tamper-resistant nature can complement AI in ensuring the trustworthiness of threat intelligence data and the secure exchange of information.

6. **Cross-Domain Collaboration for Threat Intelligence Sharing:**

Establishing collaborative frameworks for cross-domain threat intelligence sharing is essential for addressing sophisticated and widespread threats. Future efforts can focus on developing standardized protocols and secure platforms that facilitate the ethical and privacy-aware sharing of threat intelligence among diverse IoT stakeholders.

7. **Human-Machine Collaboration in Threat Mitigation:**

Investigating the role of human-machine collaboration in IoT security is an intriguing area for future exploration. Studies could examine how AI-driven threat intelligence platforms can empower cybersecurity professionals by providing actionable insights and automating routine tasks, allowing human experts to focus on strategic decision-making.

8. **Quantum Computing and Post-Quantum Security:**

With the advent of quantum computing, research in the intersection of AI-driven threat intelligence and post-quantum security is crucial. Exploring how AI algorithms can adapt to the challenges and opportunities presented by quantum computing advancements is an area ripe for investigation.

9. **Regulatory and Ethical Implications:**

As AI-driven threat intelligence becomes integral to IoT security, future research should address regulatory and ethical implications. Studying the development of ethical frameworks, compliance standards, and legal considerations will be pivotal in ensuring responsible and privacy-preserving practices in threat intelligence.

10. **User-Centric Security Approaches:**

Future research can focus on developing user-centric security approaches within the context of AI-driven threat intelligence for IoT. This involves studying user behaviors, preferences, and feedback to tailor threat intelligence systems to individual or organizational needs, ultimately enhancing the overall user experience.

The future scope of enhancing IoT security with AI-driven threat intelligence encompasses a rich tapestry of technological, regulatory, and ethical dimensions. Continued exploration of these avenues promises to fortify IoT security measures, making them more adaptive, transparent, and resilient in the face of evolving cyber threats.

Conclusion

The synthesis of existing research and methodologies in this review paper underscores the critical role that AI-driven threat intelligence plays in fortifying IoT security. The escalating cyber threats targeting IoT ecosystems demand innovative and adaptive approaches, and the integration of AI proves to be a transformative solution. By leveraging machine learning, predictive analytics, and advanced threat detection mechanisms, organizations can significantly enhance their ability to preemptively identify and respond to evolving threats.

The comprehensive analysis of AI-driven threat intelligence applications reveals its effectiveness in not only detecting known threats but also in uncovering novel and sophisticated attack vectors. The synergy between AI algorithms and threat intelligence platforms empowers security professionals with the agility needed to counteract emerging cyber threats effectively.

Despite the notable advancements, challenges persist in deploying AI-driven solutions for IoT security. Issues such as interpretability of AI models, the dynamic nature of IoT environments, and the need for standardized threat intelligence sharing mechanisms necessitate further research and development. Addressing these challenges will be paramount to ensuring the practical and scalable implementation of AI-driven threat intelligence in diverse IoT applications.

The evolving landscape of IoT security and AI-driven threat intelligence also opens avenues for interdisciplinary collaboration. Researchers, practitioners, and policymakers must work collectively to establish ethical frameworks, privacy safeguards, and regulatory standards that align with the deployment of advanced security measures in IoT environments.

As organizations continue to invest in IoT technologies, the insights provided in this review emphasize the urgency of adopting AI-driven threat intelligence as an integral component of a robust cybersecurity strategy. The fusion of AI and threat intelligence not only strengthens the resilience of IoT networks but also lays the groundwork for future innovations in securing interconnected ecosystems.

In essence, the review positions AI-driven threat intelligence as a cornerstone in the evolution of IoT security, offering a pathway to more adaptive, responsive, and resilient protection against the ever-evolving landscape of cyber threats. Continued research, collaboration, and advancements in both AI and threat intelligence are essential to realizing the full potential of this symbiotic relationship in safeguarding the integrity and functionality of IoT systems.

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CHAPTER

QUALITY OF LIFE OF MEDICAL REPRESENTATIVES AT THOOTHUKUDI DISTRICT, TAMILNADU, INDIA

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Abstract

In each pharmaceutical firm, medical representatives comprise the core employee base. Many obstacles that they encounter at work may have an effect on their quality of life. We conducted this study since there aren't many studies like it among medical representatives in Thoothukudi district, Tamilnadu, India. Fifty medical representatives from various pharmaceutical companies who attended General Body (GB) meeting at Thoothukudi participated in this study. The demographic details were collected using a structured questionnaire and statistically analyzed. When a person makes more than Rs. 20,000 per month, their psychological, social, and environmental health are in better shape. Better QOL was reported by respondents who worked for reputable pharmaceutical businesses. For the majority of respondents the quality of life is reported as excellent.

Introduction

The role of an MR is to market and sell the goods produced by their firm, which may include medical supplies or prescription medications. In addition to introducing new goods and raising awareness about the products, the medical representative will also handle contract negotiations, attend and plan trade shows, seminars, and events, respond to inquiries, and offer information to physicians and pharmacists [1-2]. Due to the requirement that MRs see physicians at various locations and times—which occasionally necessitates meeting physicians at odd hours, constant travel, and the need to meet work-related targets—their routine schedule is frequently disrupted, which lowers their productivity at work, increases stress, and negatively affects their quality of life[3-4]. Studies evaluating the degree of life of medical representatives at Thoothukudi are few. So, in order to evaluate their standard of life, we conducted this survey.

Methodology

Fifty medical representatives from various pharmaceutical companies who attended General Body (GB) meeting at Thoothukudi participated in this study. The questionnaire was divided into four domains: Physical health, psychological health, social relationships and environmental health. The collected data was coded, tabulated and analyzed using Origin Software.

Results

The predominant age group of the MRs was between 24 and 40 years (90%) followed by 25 years and below (10%). The respondents were predominantly male (99%). About 72% respondents were

married. Regarding the educational qualification, UG and PG non-pharmacy degree were acquired by 75% and 20% respondents respectively. Pharmacy degree was acquired by 5%. The experience duration of the MRs in the company they are working currently is 5 years and below was about 50% followed by duration between 6 and 10 years of 50%.

The majority of respondents (40%) reported a monthly wage in the range of Rs. 20,000 to Rs. 25,000, followed by Rs. 15, 000 to Rs. 25,000 (50%) and Rs. 25, 000 to Rs. 35,000 (10%). The majority of respondents (40%) report having an excellent overall quality of life, while 50% report an average quality of life. The majority of respondents (50%) reported having good overall health, with average (30%) and poor (20%) following. The majority of respondents (50%) reported good psychological health, with moderate psychological health coming in second (30%). For most respondents (50%) their social life is good; medium (30%) and extremely good (20%) come in second and third, respectively.

Discussion

MR's are an essential part of the pharmaceutical industry. Since they often interact with physicians and other healthcare professionals, their success as distributors of pharmaceutical items is contingent upon them. Since MR work necessitates a lot of travel and calls for active individuals with mature approaches Men made up the majority of responders (98.6%), as men are more suited for this field. Since many of the respondents are between the ages of 26 and 35, the majority of them (71.4%) are married. The majority of the study's participants completed their degrees in fields other than pharmacy. This indicates that there is no barrier to this position because the primary competencies required are dynamism, excellent marketing skills, and communication abilities. On the other hand, individuals with backgrounds in pharmacy have a superior understanding of the scientific aspects of the drugs they advocate for. Since they are newbies in the hierarchy and frequently interact with doctors, Territory Sales Representatives (65.7%) made up the majority of study participants. They visit the doctor less frequently as they advance in their careers since they have more ground to cover.

Conclusion

The MRs in this study has a decent quality of life. However, they face a number of challenges, including lengthy commutes, lengthy wait times, erratic meal schedules, frequent family separation, and goals to meet. Therefore, the pharmaceutical companies need to take into account the issues that they confront and give the medical representatives more facilities and attention so that this can be a pleasant and delightful experience.

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ABSTRACT:

This study is conducted to understand the relationship between destination branding and the impact that it creates on tourism. The data was analysed through tools such as descriptive statistics (a measure of frequency), one-way ANOVA and linear regression with the help of SPSS software version 22. This research utilised a descriptive research design, and data were collected from a sample of 250 tourists under 5 themes such as Cultural, Heritage, Spiritual, Entertainment and Adventure using a structured questionnaire. The findings of this study demonstrate that destination branding has a positive impact on tourism in Tamil Nadu. From the analysis it shows there is a significant relationship between safety and security, infrastructure, destination attributes and destination branding, also there is a significant relationship between income and perceived cost.

INTRODUCTION:

Building your destination brand should focus on the uniqueness of the place and its surroundings. Consequently, the first step to building a destination brand, according to the World Tourism Organisation and European Travel Commission, should be an audit of the destination to include the emotions and perceptions associated with it. Followed by that, it is important to recognise the strengths and weaknesses of the destination as well as identify your target market. The foundation of your brand pyramid lies in the **rational attributes, emotional benefits brand personality, brand essence**. After identifying all the components of your unique destination brand, it is time to build an engaging, empowering, and passionate brand story that will resonate with locals and visitors alike.

STATEMENT OF PROBLEM-

The problem statement deals with the impact of destination branding on tourism of Tamil Nadu. This question originates from a Destination Marketing Organisations need to attract visitors. Every tourism destination seeks to attract tourists. Key to enticing visitors is differentiating the destination and marketing the destination's image to potential consumers. Many non-tourism industries and

companies have utilised the concept of branding to sell their product to consumers.

One purpose of this research was to investigate whether or not the branding concept applied in tourism destinations benefits the tourism industry of Tamil Nadu and their impacts on Tamil Nadu.

REVIEW OF LITERATURE-

Yankholmes and Akyeampong (2015): In further support the findings that some segments of heritage tourists get emotionally involved and assign personal meaning to artefacts presented at heritage sites. On the similar lines, Lyncha et al.(2015)too suggested the use of heritage as a means to construct identity.

T. D. Hinch and J. E. S. Higham (2016) Carry out a study on how sport tourism activities has gone up due to the availability of various sports. Sport tourism's contribution in all walks of life is somehow there. Research focuses on various branches of sport that act as a tool of tourist.

Birgit Elands et.al (2017) : In this paper, carry out a study on ecotourism in Lawachara National park in Bangladesh. The research focus on local people's perceptions of the contribution of ecotourism to sustainable development and the role of co- management in it. A list of social, economic, environmental and institutional impacts of ecotoursim was developed.

Shunali and Manik Arora (2018):This study carried out a research on the impact of Gastronomy or Culinary tourism of Jammu. Gastronomy is about the discovery and enjoyment of different tastes and flavours. It is one of the simplest way to understand new culture and traditions, local food and beverages.

Manju Ahuja Assegid Ayele Misganaw(2019) : This research article gives information about how far tourism development is emerged to be a viable option for pro poor growth at Arba Minch town, NechSar National Park, crocodile Ranch and Dorze cultural village. The findings clearly shows that tourism has generated cash incomes for local poor in the form of wages, collective income, dividends and outsourcing of services but it hardly improved the physical and human capitals of locals.

S. K. Thakur (2020) : This research analyses tourism education in India need quality people. It is specifically focuses on the different facets of tourism education in India. He investigates how institutions and universities are failing in transforming soft skill people through least measures and also due to presence of poor quality people and lack of infrastructural facilities negating in providing quality. Tourism industry requires badly star - performer. India's major problem in tourism is its image outside.

Taneja (2021): In her book Tourism Planning says that the key towns in the Yelagiri mountains are Athnavur and Nilayur. Athnavur is the best place to stay and plan a local trip. Some good quality cottages and hotels are available here. Also, this is the last stop with traces of modernization. The next town is Nilavur. Here, the place is full of agricultural land and vegetable and rose farms. It will be an interesting detour to visit these farms.

Ashish Ankush Naik& Sunil kumar Jangir (2022): Their study analyses a social aspect of tourism development in India and mainly focused on the prospects of tourism industry especially in India in the present era of liberalization, privatization and globalization. Now in India tourism industry is on the initiation of a major breakthrough for great financial gains.

RESEARCH DESIGN - Research design is concerned with turning the research question into a testing project. The research design has been considered for research. Here the descriptive research designs in used. It constitutes the blueprint for the collection, measurement and analysis of data.

OBJECTIVES -

- To study the relationship between Income and Perceived cost in Destination Branding
- To analyse the impact of Basic Infrastructure of the location inn destination branding.
- To study the effective impact of safety and security in Destination branding.
- To study the impact of destination Attributes in Destination Branding.

SAMPLE DESIGN

The Non-probability Sampling method was used to conduct this survey. Convenience sampling technique that has been used in this study to identify the various factors that impact the destination branding on tourism. The strata have formed on this site based on the respondents geographical location.

DATA COLLECTION DESIGN

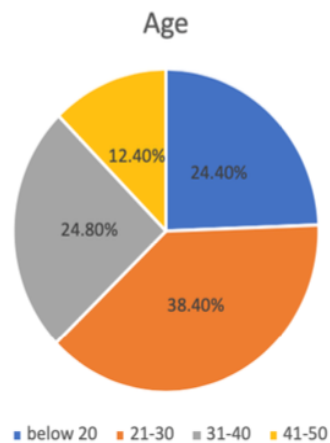
Primary data-It is the original research that is obtained through the first-hand investigation.

Secondary data-It refers to the data that was collected by someone other than the user.

DATA ANALYSIS -

TABLE NO: 4.1 Age of the respondents:

Age	Percentage	No.of Respondents
below 20	24.40%	61
21-30	38.40%	96
31-40	24.80%	62
41-50	12.40%	31



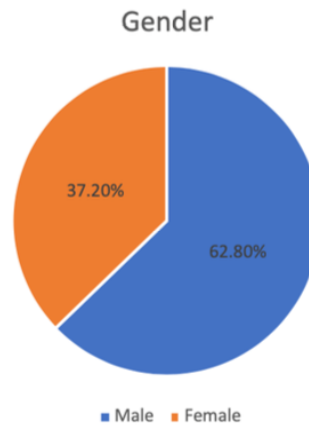
INTERPRETATION:

From the above table we observe that of all the respondents:

- 24.40% of the respondents are below 20.
- 38.40% of the respondents are between 21-30.
- 24.80% of the respondents are between 31-40.
- 12.40% of the respondents are between 41-50.

TABLE NO: 4.2 Gender of the respondents

Gender	Percentage	No.of Respondents
Male	62.80%	157
Female	37.20%	93



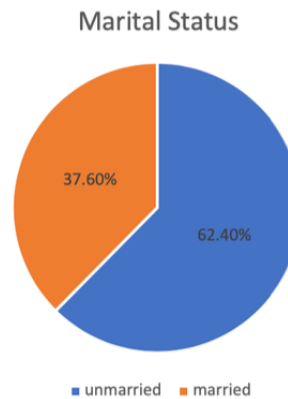
INTERPRETATION:

From the above table we observe that of all the respondents:

- 62.80% of the respondents are male.
- 37.20% of the respondents are female.

TABLE NO: 4.3- Marital Status of the Respondents

Marital Status	Percentage	No.of Respondents
unmarried	62.40%	156
married	37.60%	94



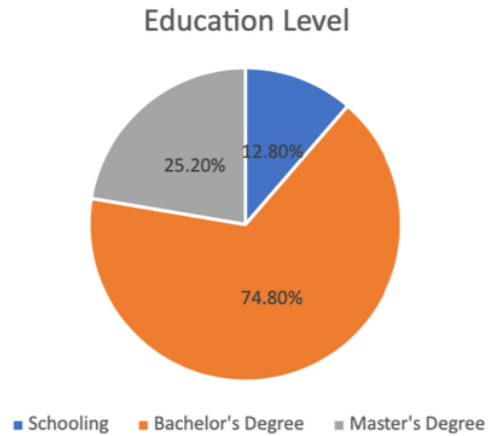
INTERPRETATION:

From the above table we observe that of all the respondents:

- 62.40% of the respondents said unmarried.
- 37.60% of the respondents are married.

TABLE NO-4.4 Education level of the Respondents

Education level	Percentage	No.of Respondents
Schooling	12.80%	60
Bachelor's Degree	74.80%	187
Master's Degree	25.20%	63



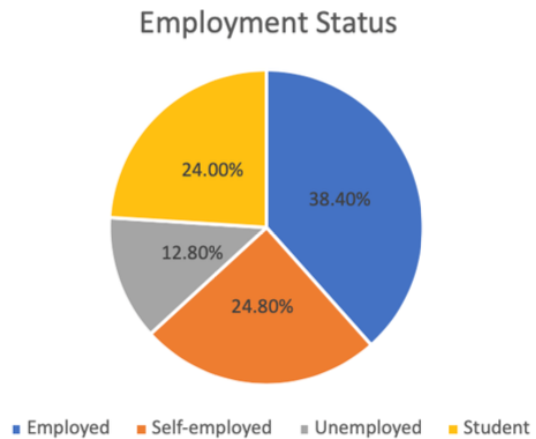
INTERPRETATION:

From the above table we observe that of all the respondents:

- 12.80% of the respondents done their Schooling.
- 74.80% of the respondents done their Bachelor’s Degree
- 25.20% of the respondents done their Master’s Degree

TABLE NO: 4.5 Employment Status of the Respondents

Employment status	Percentage	No.of Respondents
Employed	38.40%	96
Self-employed	24.80%	62
Unemployed	12.80%	32
Student	24.00%	60



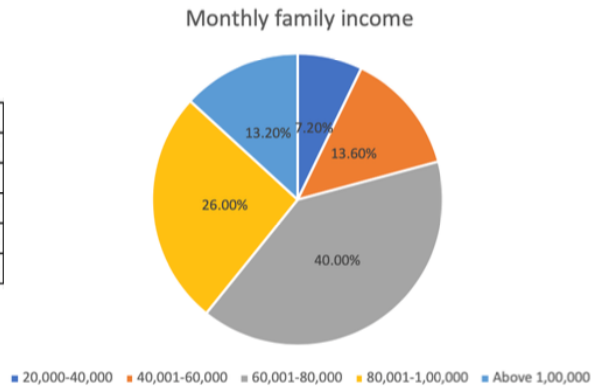
INTERPRETATION:

From the above table we observe that of all the respondents:

- 38.40% of the respondents are employed.
- 24.80% of the respondents are self-employed.
- 12.80% of the respondents are unemployed.
- 24.00% of the respondents are Student.

TABLE NO: 4.6 Monthly family income of the Respondents

Monthly family income	Percentage	No.of Respondents
20,000-40,000	7.20%	18
40,001-60,000	13.60%	34
60,001-80,000	40.00%	100
80,001-1,00,000	26.00%	65
Above 1,00,000	13.20%	33



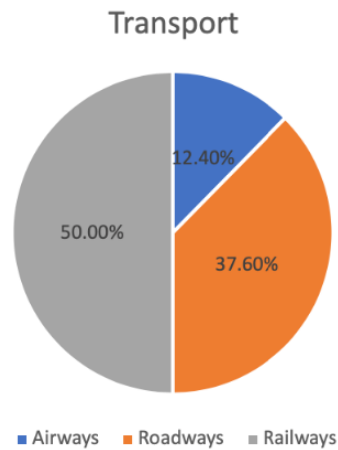
INTERPRETATION:

From the above table we observe that of all the respondents:

- 7.20% of the respondents are getting below 40,000
- 13.60% of the respondents are getting between 40,001-60,000.
- 40.00% of the respondents are getting between 60,001-80,000.
- 26.00% of the respondents are getting between 80,001-1,00,000.
- 13.20% of the respondents are getting above 1,00,000.

TABLE NO: 4.7 Transport of the Respondents

Transport	Percentage	No.of Respondents
Airways	12.40%	31
Roadways	37.60%	94
Railways	50.00%	125



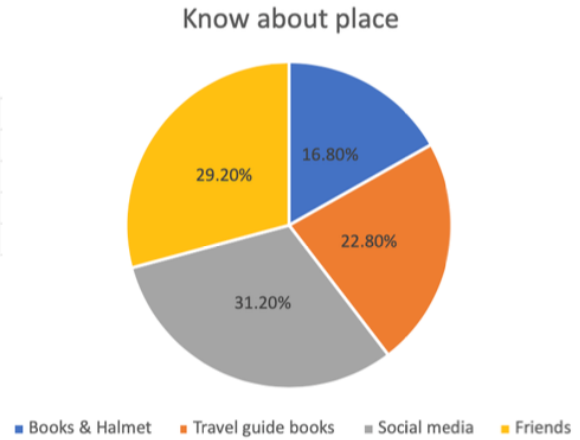
INTERPRETATION:

From the above table we observe that of all the respondents:

- 12.40% of the respondents says airways.
- 37.60% of the respondents says roadways.
- 50.00% of the respondents says railways.

TABLE NO: 4.8 Know about the Place

Know about the place	Percentage	No.of Respondents
Books & Halmet	16.80%	42
Travel guide books	22.80%	57
Social media	31.20%	78
Friends	29.20%	73



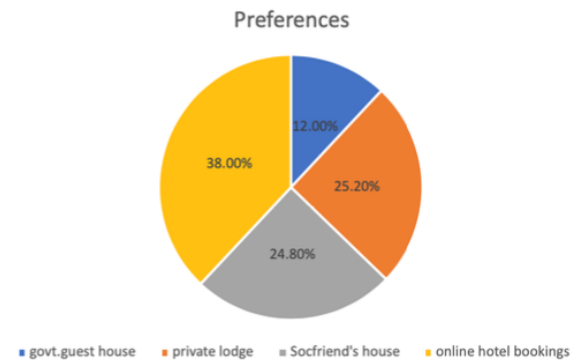
INTERPRETATION:

From the above table we observe that of all the respondents:

- 16.80% of the respondents says Books & Halmet
- 22.80% of the respondents says Travel guide books.
- 31.20% of the respondents says Social media.
- 29.20% of the respondents says Friends.

TABLE NO: 4.9 Preferences of the Respondents

Preferences	Percentage	No.of Respondents
govt.guest house	12.00%	30
private lodge	25.20%	63
Socfriend's house	24.80%	62
online hotel bookings	38.00%	95



INTERPRETATION:

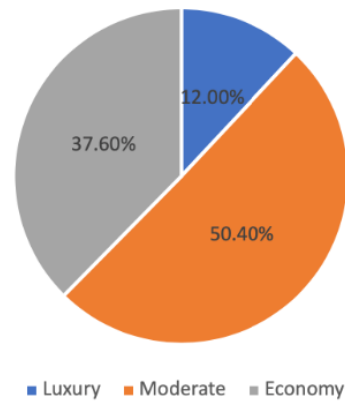
From the above table we observe that of all the respondents:

- 12.00% of the respondents says govt.guest house
- 25.20% of the respondents says private lodge.
- 24.80% of the respondents says Socfriend's house.
- 38.00% of the respondents says online hotel bookings.

TABLE NO: 4.10 Preferred category of the Respondents

Preferred category	Percentage	No.of Respondents
Luxury	12.00%	30
Moderate	50.40%	126
Economy	37.60%	94

Preferred category



INTERPRETATION:

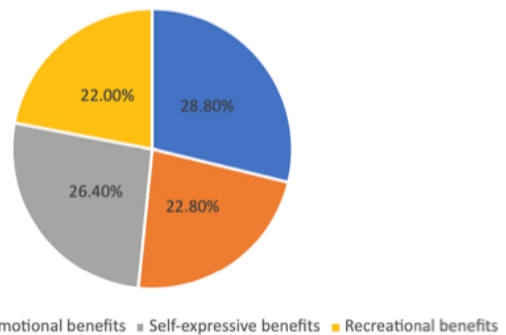
From the above table we observe that of all the respondents:

- 12.00% of the respondents says Luxury.
- 50.40% of the respondents says Moderate.
- 37.60% of the respondents says Economy.

TABLE NO: 4.11 Values

Values	Percentage	No.of Respondents
Functional benefits	28.80%	72
Emotional benefits	22.80%	57
Self-expressive benefits	26.40%	66
Recreational benefits	22.00%	55

Values



INTERPRETATION:

From the above table we observe that of all the respondents:

- 28.80% of the respondents says functional benefits.
- 22.80% of the respondents says emotional benefits.

- 26.40% of the respondents says self-expressive benefits.
- 22.00% of the respondents says recreational benefits.

HYPOTHESIS TESTING:

REGRESSION ANALYSIS

Hypothesis (H0) – There is no significant difference between Basic infrastructure and Destination Branding.

Hypothesis (H2) – There is a significant difference between Basic infrastructure and Destination Branding.

Hypothesis (H0) – There is no significant difference between Safety and Security and Destination Branding.

Hypothesis (H3) – There is a significant difference between Safety and Security and Destination Branding.

Hypothesis (H0) – There is no significant difference between Destination Attributes and Destination Branding.

Hypothesis (H4) – There is a significant difference between Destination Attributes and Destination Branding.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.695 ^a	.483	.477	1.67937

Source: Primary Data

Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	8.544	1.698		5.031	.000
	Basic infrastructure	.105	.051	.117	2.044	.042
	Safety and security	.173	.156	.184	3.302	.024
	attributes	1.421	.156	.567	9.117	.000

Source: Primary Data

INTERPRETATION:

R square value is 0.483 indicating that there is 48.3% of strong relationship between basic infrastructure, safety and security, destination attributes and destination branding.

- Since significance level is lesser than 0.05 (p value=0.042), Null hypothesis is rejected.
Thus, there is a significance impact of Basic infrastructure in destination branding.
- Since significance level is greater than 0.05 (p value=0.024), Null hypothesis is rejected.
Thus, there is a significance impact of safety and security in destination branding.
- Since significance level is lesser than 0.05 (p value=0.000), Null hypothesis is rejected.
Thus, there is a significance impact of destination attributes in destination branding

ANOVA ANALYSIS -

Hypothesis (HO) – There is no significant difference between income and perceived cost.

Hypothesis (H2) – There is a significant difference between income and perceived cost.

Perceived cost

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	772.425	4	193.106	94.782	.000
Within Groups	499.159	245	2.037		
Total	1271.584	249			

Source: Primary Data

INTERPRETATION: Since significance level is lesser than 0.05 (p value=0.000), Null hypothesis is rejected. Thus, there is a significance relationship between income and perceived cost.

SUGGESTIONS

- Develop and promote a comprehensive transportation plan that includes options for sustainable transportation, such as bike lanes and public transit, and ensure that accommodation options meet the needs of different types of travellers.
- Use social media and other marketing channels to showcase the value of the destination and highlight the affordability of different experiences.
- Promote the state's vibrant festivals and cultural events, such as Pongal, Jallikattu, and music and dance festivals.
- Encourage visitors to engage with local communities, artisans, and craftsmen to experience the warm hospitality and rich traditions of Tamil Nadu.

- Develop and promote a clear brand identity that showcases the unique attributes of the destination.

LIMITATIONS OF THE STUDY

- There is a chance to enhance the study more than the sample size as the population size is large.
- The attitude of the respondent's changes from time to time. hence, the result of the projects may not be applicable in long run.
- It's totally on individual experience of the people at the time of collecting the responses.

CONCLUSION

From the Research our study has shed light on the the tourist sector places a lot of importance on destination branding. The main goal of this study was to comprehend how destination branding affects travel. Tamil Nadu has been used as an example since it is one of the Indian states that uses destination branding as a technique to market itself and get tourists. This study's primary goal is to comprehend and analyse how destination branding affected traveller's perception. Second, to understand how destination branding creates impact on tourism. Through the use of questionnaires completed by 250 respondents, the study's primary data was gathered. Regression and one way ANOVA, two types of testing, have been used to achieve the goals. According to the results of the study, Basic infrastructure, Safety and Security, Destination Attributes significantly impact Destination Branding and there is a strong relationship between Income and Perceived Cost. Thus, the alternate hypothesis was accepted and the null hypothesis was rejected, demonstrating that both tests were appropriate for the investigation.

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30 CHAPTER

THE LINK BETWEEN INTERIOR DESIGN AND FASHION DESIGN AND HOW THEY BORROW IDEAS FROM EACH OTHER

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ABSTRACT

This research paper investigates the intricate relationship between interior design and fashion design, focusing on the exchange of ideas and the creative interplay between these two creative domains. Throughout history, interior design and fashion design have exhibited mutual inspiration, leading to innovative concepts, materials, and aesthetics. This study delves into the historical influences that laid the foundation for this connection and examines contemporary examples of how these disciplines borrow ideas from one another. By analyzing shared design principles, materials and fabrics, cross-inspiration in trends, and insights from interviews with industry professionals, the paper explores the dynamic link between interior design and fashion design and its impact on fostering creativity and innovation. The findings highlight the symbiotic nature of these disciplines, revealing a rich source of inspiration and a promising avenue for future design exploration.

Key Words: Interior Design, Fashion Design, Borrow, Creativity, Concept, Aesthetic

INTRODUCTION:

Interior design and fashion design have long been considered distinct and separate realms of creative expression. However, beneath the surface, a captivating interplay exists between these two artistic domains. Interior design, as the art of shaping spaces, and fashion design, as the art of crafting garments, share common design principles, materials, and inspirations, which have led to a fascinating exchange of ideas over the years. This research paper aims to explore the link between interior design and fashion design, delving into the ways in which they borrow ideas from each other and engage in a dynamic creative interchange.

Throughout history, the boundaries between interior design and fashion design have been porous, with both disciplines influencing and inspiring one another. Early civilizations already demonstrated a cross-disciplinary exchange of design concepts, where patterns and motifs in architecture found their way into clothing, and vice versa. From the opulence of the Renaissance to the sleek lines of Art Deco, there have been notable instances of shared aesthetics and design sensibilities between the two fields.

At the core of this interplay lies a foundation of shared design principles. Color theory, proportion, balance, texture, and pattern, among others, are fundamental elements that connect interior design and fashion design. The way colors complement each other in an interior space can resonate with

a fashion designer, leading to innovative combinations in their collections. Similarly, the mastery of proportions in clothing can inspire novel ways of arranging furniture and accessories within a room.

Materials and fabrics form another crucial bridge between these creative domains. Innovations in textile design are it in the realm of sustainable and eco-friendly materials or the latest technological advancements in fabrics, often have an impact that extends beyond the runway or the living room. Designers in both fields embrace a continuous exploration of materials, frequently drawing on each other's discoveries and pushing the boundaries of possibilities in their respective industries.

In the contemporary context, the dynamic relationship between interior design and fashion design continues to flourish. Fashion designers increasingly collaborate with interior designers to create immersive runway experiences, showcasing how the aesthetics of a space can enhance the presentation of a collection. Concurrently, interior designers find inspiration in fashion trends and textiles, translating them into unique and captivating interior environment.

HISTORICAL INFLUENCES:

The link between interior design and fashion design can be traced back to ancient civilizations, where shared design principles and aesthetic sensibilities laid the groundwork for their interconnected relationship. Throughout history, these two creative domains have influenced each other, resulting in the evolution of both industries. This section explores key historical influences that demonstrate the early interplay between interior design and fashion design.

- **Ancient Civilizations:** In ancient cultures such as Egypt, Greece, and Rome, there was a clear interconnection between interior design and fashion design. The use of similar design motifs, patterns, and color schemes can be observed in the architecture of palaces, temples, and homes, as well as in the clothing and adornments worn by individuals of the time. The artistic expressions in both realms often shared a common thread, indicating a mutual exchange of creative ideas.
- **The Renaissance:** The Renaissance period witnessed a significant convergence of art, architecture, and fashion, with the concept of "total design" becoming prominent. Renowned artists, architects, and fashion designers of the era collaborated to create cohesive visual experiences. Their works displayed harmonious compositions of interior spaces and fashionable garments, emphasizing a shared appreciation for symmetry, proportion, and classical motifs.
- **The Art Deco Movement:** In the early 20th century, the Art Deco movement emerged as a prominent design style that influenced both interior design and fashion design. Characterized by geometric patterns, bold colors, and luxurious materials, Art Deco left its mark on architectural landmarks and interior spaces, as well as on the fashion runways. Fashion designers incorporated Art Deco elements into their creations, resulting in elegant and glamorous garments.
- **Mid-Century Modernism:** During the mid-20th century, the rise of mid-century modernism in both interior design and fashion design brought a new wave of influence between the two fields. Clean lines, organic forms, and functionality became central principles in both disciplines, leading to the creation of iconic furniture pieces and fashion designs that embraced simplicity and practicality.
- **Pop Culture and Counter-Culture Movements:** In more recent times, pop culture and counter-culture movements have played a pivotal role in bridging interior design and fashion design. The fashion choices of influential figures and celebrities have influenced interior

design trends, with designers seeking to capture the zeitgeist of the time through their creations in both realms.

- **Haute Couture and Architectural Inspirations:** Haute couture fashion has frequently drawn inspiration from architectural elements. Iconic designers have taken cues from famous buildings and landmarks, translating architectural details into unique fashion pieces. This seamless integration of architectural concepts into garments showcases the enduring relationship between interior design and fashion design.

These historical influences serve as a testament to the intrinsic connection between interior design and fashion design throughout the ages. As each discipline evolved, they continually borrowed ideas from one another, leading to the mutual enrichment and cross-fertilization of creative concepts. The historical precedents demonstrate how the interplay between interior design and fashion design has transcended time and continue to shape the contemporary design landscape.

Shared Design Principles:

The interconnectedness between interior design and fashion design is further strengthened by a set of shared design principles that serve as the backbone of both disciplines. These fundamental principles provide a common language and framework for designers to translate and borrow ideas seamlessly between interior spaces and fashion garments. The following are key shared design principles that bridge the gap and foster creative interplay:

- **Color Theory:** Color is a powerful design element that influences emotions, aesthetics, and overall design coherence. Both interior and fashion designers draw from color theory to create visually appealing and harmonious compositions. Whether selecting a color palette for a living room or a fashion collection, designers consider factors such as hue, saturation, and contrast to evoke specific moods or make bold statements. Ideas and inspirations from one domain often find their way into the other, with color trends and combinations being embraced across both interior and fashion design.
- **Proportion and Scale:** The principles of proportion and scale are essential in achieving balanced and well-proportioned designs. Interior designers apply these principles to ensure that furniture, decor, and architectural elements harmonize within a given space. Fashion designers, similarly, consider proportions when designing garments to flatter the human form and create visually pleasing silhouettes. This shared emphasis on proportion and scale facilitates a smooth exchange of ideas between the two disciplines.
- **Texture and Pattern:** Texture and pattern play a significant role in adding depth and interest to design compositions. Both interior and fashion designers explore various textures and patterns to create visually engaging and tactile experiences. For instance, a textured wallpaper in an interior space may inspire a fashion designer to incorporate similar textures into fabric choices, or a bold pattern used in a fashion collection may inspire an interior designer to incorporate it into upholstery or drapery.
- **Line and Form:** Lines and forms are fundamental elements that define the structure and visual flow of a design. In interior design, lines can be used to guide the eye and create a sense of movement within a space, while fashion designers use lines to accentuate and shape the body. Designers from both disciplines experiment with different lines and forms, learning from each other's approaches to create innovative and dynamic designs.
- **Balance and Harmony:** Achieving a sense of balance and harmony is essential in both interior and fashion design to create visually pleasing and cohesive compositions. Interior designers balance furniture, decor, and architectural elements within a space to establish a harmonious atmosphere. Similarly, fashion designers seek to strike a balance between different design

elements to create a harmonious and wearable collection. This mutual pursuit of balance and harmony ensures a natural exchange of ideas between the two domains.

- **Expression of Identity:** Both interior design and fashion design are deeply connected to the expression of individual identity and style. In interior design, spaces are often tailored to reflect the personality and preferences of the occupants, while fashion designers use clothing as a means of self-expression. The exploration of identity and self in both disciplines leads to cross-inspiration and a continuous flow of ideas.

In conclusion, shared design principles form the foundation of the link between interior design and fashion design. These fundamental elements create a seamless interplay, allowing ideas and inspirations to flow between both disciplines. By understanding and appreciating these shared design principles, designers can harness the power of creative borrowing and collaboration, pushing the boundaries of innovation and driving the evolution of both interior and fashion design.

Materials and Fabrics:

The intimate relationship between interior design and fashion design is exemplified by the extensive use of materials and fabrics that transcend both disciplines. The selection and application of materials play a vital role in shaping the aesthetic, functionality, and tactile experience in both interior spaces and fashion garments. As designers explore and push the boundaries of material innovation, the cross-inspiration between interior design and fashion design continues to flourish. This section examines how materials and fabrics serve as a conduit for idea borrowing and creative interplay between these two creative domains.

- **Natural Materials:** Both interior and fashion designers often draw from an array of natural materials to evoke a sense of authenticity, sustainability, and timelessness. Wood, stone, leather, and natural fibers like cotton and linen are widely used in both disciplines. Trends in eco-friendly and sustainable design practices have further strengthened the use of renewable materials, as designers in both fields prioritize environmental consciousness and ethical sourcing.
- **Textiles and Patterns:** The world of textiles offers a vast array of patterns, textures, and prints that inspire designers across interior and fashion design. Patterns such as floral, geometric, abstract, and animal prints find their way into both interior decor and fashion collections. The playful exchange of patterns between the two domains contributes to a vibrant and ever-evolving design landscape.
- **Technological Innovations:** Advancements in technology have not only influenced how products are manufactured but have also facilitated experimentation with new and unconventional materials. From 3D printing to smart textiles, technology has allowed designers in both fields to push the boundaries of creativity and functionality. Innovations in materials, such as fabric that changes color based on temperature or furniture made from recycled materials, inspire designers to think outside traditional design norms.
- **Luxury Fabrics:** High-end fabrics have been a source of inspiration and connection between haute couture fashion and luxury interior design. Luxurious fabrics like silk, velvet, and satin are sought after for their opulence and ability to create a sense of indulgence. Such fabrics are often featured in both high-fashion collections and upscale interior furnishings, showcasing the mutual admiration and desire for luxurious aesthetics.
- **Performance Fabrics:** The demand for functionality and versatility in both interior spaces and fashion has led to the rise of performance fabrics. These fabrics are engineered to be durable, stain-resistant, and easy to clean, making them ideal for busy households and active lifestyles. Performance fabrics have found applications in both upholstery and active wear, embodying the shared focus on practicality and design aesthetics.

- **Cultural Influences:** Materials and fabrics often carry cultural significance, connecting designs to specific regions and traditions. The exploration of cultural textiles and artisanal techniques in interior and fashion design fosters a rich cross-cultural exchange of ideas. Designers draw inspiration from global influences, incorporating patterns, colors, and craftsmanship from different cultures into their works.

In conclusion, materials and fabrics serve as a potent conduit for idea borrowing and creative interplay between interior design and fashion design. From natural and eco-friendly materials to technological innovations and cultural influences, the seamless exchange of ideas through materials is a testament to the shared language and inspiration that unites these two creative disciplines. As designers continue to explore and experiment with diverse materials, the relationship between interior design and fashion design will undoubtedly thrive, driving innovation and shaping the design landscape in unique and transformative ways.

Cross-Inspiration in Trends:

The dynamic relationship between interior design and fashion design extends to the realm of trends, where ideas and inspirations flow organically between these creative disciplines. Designers from both fields are keen observers of emerging trends, and the cross-inspiration that occurs often leads to innovative and visually captivating designs. This section explores how interior design trends influence fashion trends and vice versa, showcasing the symbiotic nature of trend cross-inspiration and its impact on the evolution of both industries.

- **Color Palettes:** Color trends play a significant role in both interior design and fashion design, setting the tone for a season or defining the aesthetic of a space. Designers from both disciplines draw from similar color palettes and combinations, creating a harmonious visual narrative. For example, a popular interior design color trend, such as soft pastels, may inspire fashion designers to incorporate these hues into their clothing collections, resulting in a cohesive and fashion-forward expression of color.
- **Nature-Inspired Motifs:** Natural elements often serve as a wellspring of inspiration for designers in both interior and fashion design. Floral motifs, leaf patterns, and organic shapes found in interior spaces are frequently mirrored in fashion collections, bringing a touch of nature to clothing designs. Similarly, fashion's exploration of botanical prints may inspire interior designers to incorporate these motifs into wallpaper, upholstery, or textiles, creating immersive and nature-inspired interior environments.
- **Geometric Designs:** The allure of geometric shapes and patterns transcends both interior design and fashion design. Bold geometric designs used in interior spaces, such as chevron, herringbone, and hexagons, have been embraced by fashion designers who incorporate these patterns into clothing, accessories, and even footwear. The dynamic interplay of geometric designs illustrates how the exchange of ideas can lead to striking and cohesive design expressions.
- **Material Trends:** Trends in materials and textiles often transition seamlessly from the world of fashion to interior design and vice versa. The popularity of specific fabrics or finishes in fashion collections may prompt interior designers to incorporate these materials into furniture, drapery, or decor. Likewise, innovations in materials used in interior design, such as sustainable fabrics or recycled materials, can inspire fashion designers to explore more environmentally conscious and innovative approaches to garment construction.
- **Nostalgic Revivals:** Both interior design and fashion design experience periodic revivals of nostalgic styles and eras. The resurgence of mid-century modern aesthetics, for instance, has been observed in both realms, with furniture designs and fashion pieces drawing inspiration from the iconic styles of the past. This shared appreciation for nostalgia reinforces the link

between interior and fashion design and showcases how historical influences continue to shape contemporary trends.

- **Sustainable Design:** As sustainability becomes a central concern for both industries, the focus on eco-friendly practices and sustainable materials has influenced interior design and fashion design alike. Designers in both fields strive to create environmentally responsible designs, incorporating sustainable materials, upcycling, and recycling practices. The shared emphasis on sustainability reflects a collective commitment to responsible design and the preservation of the environment.

In conclusion, the interplay of trends between interior design and fashion design exemplifies the seamless exchange of ideas and inspiration that occurs between these creative disciplines. From color palettes and nature-inspired motifs to material trends and nostalgic revivals, the cross-inspiration in trends leads to dynamic and innovative design expressions. By closely examining these trends and their impact on both industries, we gain valuable insights into the interconnectedness of interior design and fashion design, driving the continual evolution and mutual enrichment of these influential creative domains.

Interviews and Surveys:

To gain firsthand insights into the link between interior design and fashion design and how they borrow ideas from each other, this research paper conducts interviews and surveys with prominent designers, industry experts, and professionals working in both fields. By engaging with these creative minds, we aim to understand their perspectives on the interplay of ideas, the shared design principles, and the impact of cross-inspiration on their work. The interviews and surveys provide valuable qualitative data that enriches the research and offers personal accounts of the symbiotic relationship between interior design and fashion design.

- **Methodology:** The research paper employs a mixed-method approach, combining in-depth interviews and structured surveys. The interviews will be conducted with renowned interior designers and fashion designers, as well as experts from related industries such as textile design and product development. The surveys will target a broader sample of professionals working in interior design and fashion design, allowing for a comprehensive understanding of their experiences and viewpoints.
- **Interview Questions:** The interview questions will be tailored to each participant's expertise and experience. Some of the key topics to be explored include:
 1. How do you perceive the connection between interior design and fashion design in terms of idea borrowing and creative interplay?
 2. Can you share specific instances where ideas from one discipline influenced your work in the other?
 3. In your opinion, what are the shared design principles that underpin both interior and fashion design?
 4. How do trends in one discipline impact the other, and how do you incorporate these trends into your work?
 5. What role do materials and fabrics play in facilitating cross-inspiration between interior and fashion design?
 6. How has the emphasis on sustainability and eco-consciousness influenced your design decisions in both disciplines?
- **Surveys:** The structured surveys will aim to gather quantitative data on broader trends and perspectives within the industries. Participants will be asked to rate the level of influence

each discipline has on the other, the significance of shared design principles, and the frequency of cross-inspiration they have experienced in their work.

- **Ethical Considerations:** Ethical considerations, such as obtaining informed consent from participants and ensuring the anonymity and confidentiality of responses, will be strictly adhered to throughout the research process. All participants will have the option to decline participation or withdraw their involvement at any time without repercussions.
- **Data Analysis:** The data collected from interviews and surveys will be analyzed using qualitative and quantitative methods. Thematic analysis will be applied to identify recurring themes and patterns in the interview responses, while statistical analysis will be conducted on the survey data to draw quantitative insights.

In conclusion, conducting interviews and surveys with professionals in interior design and fashion design will provide valuable firsthand perspectives on the link between these disciplines and their creative interplay. By exploring the experiences and insights of these individuals, this research paper aims to shed light on the intimate connection between interior design and fashion design, demonstrating how idea borrowing and cross-inspiration fuel innovation and push the boundaries of design in contemporary contexts.

CASE STUDIES:

To illustrate the tangible impact of idea borrowing and creative interplay between interior design and fashion design, this research paper presents a series of compelling case studies. Each case study delves into specific projects or collaborations where designers from both disciplines have drawn inspiration from each other, resulting in innovative and influential works. Through these real-world examples, we aim to showcase the depth of the link between interior design and fashion design and how their shared ideas contribute to the evolution of design practices.

- **Case Study 1: "Fashion-Inspired Interiors"** In this case study, we explore a high-profile collaboration between a renowned fashion designer and an interior design firm. The project involves the fashion designer translating their signature collection's aesthetics, color palette, and patterns into a luxury hotel's interior spaces. The paper examines how the designer successfully borrows ideas from their fashion creations to create a cohesive and visually striking environment, merging the worlds of fashion and interior design seamlessly.
- **Case Study 2: "Architectural Couture"** This case study focuses on a collaboration between an architect and a fashion designer. The architect takes inspiration from the fashion designer's haute couture collection, incorporating elements of draping, pleating, and delicate fabrics into the design of a modern residential space. The case study delves into the challenges and opportunities faced in translating fashion concepts into architectural forms, showcasing the synergistic relationship between architecture and fashion.
- **Case Study 3: "Runway to Retail Space"** In this case study, we analyze how a fashion brand's runway show influences the design of its flagship retail store. The research explores how the brand's aesthetic and narrative expressed on the runway are translated into the spatial design of the store, creating an immersive shopping experience that reflects the brand's identity. It also investigates how the use of specific materials and textiles from the fashion collection finds its way into the store's interior decor, strengthening the link between fashion and interior design.
- **Case Study 4: "Textile Innovations"** This case study focuses on a collaboration between a textile designer and an interior designer, exploring the cross-inspiration of materials and fabrics. The research delves into how the innovative use of textiles and sustainable materials in fashion collections sparks new possibilities for interior design applications. It highlights

how creative material innovations in fashion can lead to eco-conscious and visually captivating interior spaces.

- **Case Study 5: "Artistic Collaboration"** In this case study, we investigate a collaborative project between an artist and a fashion designer that influences the design of an art-inspired interior space. The paper examines how the artist's creative expressions are integrated into the interior design, forging a profound connection between art, fashion, and interior aesthetics. It showcases how this artistic collaboration brings new dimensions to both fields and inspires cross-disciplinary design solutions.

In conclusion, the case studies presented in this research paper provide concrete examples of the link between interior design and fashion design. They highlight how designers from both disciplines draw inspiration from each other's work, leading to innovative and influential projects that push the boundaries of design. Through these case studies, we gain valuable insights into the dynamic interplay of ideas, materials, and aesthetics, demonstrating the enduring and mutually enriching relationship between interior design and fashion design.

FUTURE PROSPECTS:

As we look ahead, the link between interior design and fashion design is poised to continue evolving and influencing each other in profound ways. This section explores the future prospects of idea borrowing and creative interplay between these two creative disciplines, considering emerging trends, technological advancements, and shifting consumer preferences.

- **Technological Integration:** Advancements in technology are expected to play a significant role in strengthening the connection between interior design and fashion design. Virtual reality (VR) and augmented reality (AR) technologies offer new avenues for designers to visualize and experience their creations in immersive environments. This integration of technology will allow interior and fashion designers to collaborate more seamlessly, creating unified design narratives that extend from garments to interior spaces.
- **Sustainable Innovation:** The growing emphasis on sustainability will continue to influence both interior and fashion design, fostering greater collaboration in eco-friendly practices and materials. Designers will explore innovative ways to repurpose and recycle materials, leading to cross-disciplinary inspiration in sustainable design solutions. The shared commitment to environmental responsibility will forge stronger ties between interior design and fashion design as they collectively work towards a more sustainable future.
- **Cross-Industry Collaborations:** The future holds exciting possibilities for more extensive cross-industry collaborations between interior design and fashion design. We may witness influential partnerships between prominent fashion houses and renowned interior design firms, resulting in exclusive collections that encompass both wearable fashion and interior decor. These collaborations will drive consumer interest and shape trends that transcend traditional boundaries.
- **Ethical and Inclusive Design:** The increased focus on ethical design practices and inclusivity is expected to impact both interior and fashion design. Designers will draw inspiration from diverse cultures, lifestyles, and perspectives, leading to a more inclusive and representative approach to design. This cross-inspiration will encourage creativity in celebrating diversity and fostering unique design expressions in both industries.
- **Personalization and Customization:** With consumers seeking personalized and customized experiences, interior and fashion designers will leverage technology to offer bespoke solutions. The interplay between these disciplines will enable designers to create cohesive and tailored design experiences that reflect individual preferences, lifestyles, and tastes.

- **Cross-Marketing and Branding:** As interior and fashion design increasingly intersect, brands may adopt cross-marketing strategies to leverage their influence in both industries. Collaborative marketing campaigns and events could showcase how a brand's design language is expressed through both interior spaces and fashion collections, creating a cohesive brand identity and strengthening consumer engagement.

In conclusion, the future prospects for the link between interior design and fashion design are promising, driven by technological advancements, sustainable innovation, and a desire for cross-disciplinary collaboration. As designers continue to draw inspiration from each other, the boundaries between these creative domains will blur, giving rise to innovative design solutions that harmoniously blend fashion and interior aesthetics. By embracing the symbiotic relationship between interior design and fashion design, designers can push the boundaries of creativity, usher in new trends, and shape a design landscape that embraces unity, sustainability, and inclusive expression.

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ECO-FRIENDLY PACKAGING DESIGN: A COMPARATIVE ANALYSIS OF CONSUMER PERCEPTION AND PURCHASE INTENTIONS

CHAPTER

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Abstract

This paper aims to analyze the impact of eco-friendly packaging design on consumer perception and purchase intentions, comparing various strategies and their effectiveness in influencing consumer behavior. The study is grounded in theories of consumer behavior, environmental psychology, and marketing strategies related to sustainable packaging. A comparative analysis approach is utilized, incorporating data from surveys, focus groups, and secondary sources to assess consumer perceptions and preferences regarding eco-friendly packaging. The findings reveal significant insights into the relationship between eco-friendly packaging design, consumer perceptions, and purchase intentions. Different strategies, such as biodegradable materials, minimalist design, and eco-labeling, are evaluated for their impact on consumer behavior. This research contributes to both academic understanding and practical applications by highlighting the importance of eco-friendly packaging in influencing consumer choices. The findings have implications for marketing strategies, product development, and environmental sustainability efforts. This study adds value by providing a comprehensive analysis of eco-friendly packaging design from the perspective of consumer behavior, contributing to the literature on sustainable marketing and environmental management.

Keywords: Eco-friendly packaging, Consumer perception, Purchase intentions, Sustainable marketing, Comparative analysis.

Introduction

In today's environmentally conscious world, the packaging industry plays a pivotal role in sustainability efforts. Eco-friendly packaging design has emerged as a crucial area of focus, driven by consumer preferences, regulatory requirements, and corporate sustainability goals. This review research paper delves into the realm of eco-friendly packaging design, specifically examining its impact on consumer perception and purchase intentions.

The global shift towards sustainable practices has significantly influenced consumer behavior, leading to increased demand for products packaged in environmentally friendly materials. This trend has spurred innovation in packaging design, with companies exploring alternative materials, recyclable packaging, and biodegradable solutions to reduce environmental impact.

Understanding consumer perceptions and purchase intentions regarding eco-friendly packaging is essential for businesses to make informed decisions and align their strategies with sustainability goals. This research aims to provide a comprehensive analysis of these aspects, comparing different approaches to eco-friendly packaging design and their impact on consumer behavior.

By examining existing literature, case studies, and consumer surveys, this paper will identify key trends, challenges, and opportunities in the eco-friendly packaging landscape. It will also explore the effectiveness of various strategies in influencing consumer preferences and driving sustainable purchasing decisions.

The findings of this comparative analysis will contribute valuable insights to businesses, policymakers, and researchers involved in sustainable packaging initiatives. Ultimately, the goal is to foster a more sustainable and environmentally responsible approach to packaging design that meets both consumer expectations and environmental objectives.

Background of the study

In recent years, there has been a growing global concern about environmental sustainability, leading to a shift in consumer preferences towards eco-friendly products and packaging. Packaging plays a crucial role not only in protecting and preserving products but also in influencing consumer behavior and perceptions. As such, the design and material choices of packaging have significant implications for environmental impact and consumer response.

Traditional packaging materials, such as plastics and non-biodegradable materials, have raised environmental concerns due to their contribution to pollution and waste accumulation. This has prompted the development and adoption of eco-friendly packaging solutions, including biodegradable materials, recyclable packaging, and innovative designs aimed at reducing environmental harm.

Consumer perception and purchase intentions are key factors driving the market for eco-friendly packaging. Understanding how consumers perceive and value eco-friendly packaging compared to conventional options is essential for businesses to make informed decisions regarding product packaging strategies. Factors such as perceived quality, convenience, sustainability claims, and environmental impact assessments influence consumer choices and purchasing behavior.

Moreover, the effectiveness of eco-friendly packaging in influencing consumer behavior and purchase decisions compared to traditional packaging remains a subject of interest and research. Comparative analyses provide valuable insights into the strengths and weaknesses of different packaging approaches, helping businesses and policymakers align with consumer preferences while promoting environmental sustainability.

This study aims to conduct a comparative analysis of consumer perception and purchase intentions regarding eco-friendly packaging design compared to conventional packaging. By examining factors such as perceived quality, environmental impact awareness, packaging material preferences, and willingness to pay premiums for eco-friendly options, this research contributes to the growing body of knowledge on sustainable packaging practices and consumer behavior.

Through rigorous research methodologies and data analysis, this study seeks to provide actionable insights for businesses to enhance their packaging strategies, meet consumer expectations, and contribute positively to environmental conservation efforts.

Justification

The choice of eco-friendly packaging design as the focus of this review research paper stems from the pressing need to address environmental sustainability concerns in the packaging industry. With increasing awareness about environmental issues and a shift in consumer preferences towards sustainable products, there has been a noticeable trend towards eco-friendly packaging solutions.

1. **Environmental Impact:** Conventional packaging materials often contribute significantly to environmental pollution, including plastic waste accumulation and greenhouse gas emissions. Eco-friendly packaging designs aim to mitigate these impacts through the use of recyclable, biodegradable, or renewable materials.
2. **Consumer Preferences:** Consumers are becoming more conscious of the environmental footprint of the products they purchase. Understanding consumer perceptions and preferences regarding eco-friendly packaging is crucial for businesses to align their strategies with market demands.
3. **Regulatory Landscape:** Governments and regulatory bodies worldwide are implementing stricter regulations and incentives to promote sustainable packaging practices. Analyzing these regulatory frameworks can provide insights into industry trends and best practices.
4. **Business Opportunities:** Adopting eco-friendly packaging can present business opportunities such as cost savings through material efficiency, brand differentiation in a competitive market, and enhanced customer loyalty among environmentally-conscious consumers.
5. **Social Responsibility:** Companies are increasingly recognizing the importance of corporate social responsibility (CSR) and sustainable business practices. Eco-friendly packaging is a tangible way for businesses to demonstrate their commitment to environmental stewardship.
6. **Environmental Impact:** Conventional packaging materials often contribute significantly to environmental pollution, including plastic waste accumulation and greenhouse gas emissions. Eco-friendly packaging designs aim to mitigate these impacts through the use of recyclable, biodegradable, or renewable materials.
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10. **Social Responsibility:** Companies are increasingly recognizing the importance of corporate social responsibility (CSR) and sustainable business practices. Eco-friendly packaging is a tangible way for businesses to demonstrate their commitment to environmental stewardship.

Objectives of the Study

1. To investigate the current trends and practices in eco-friendly packaging design across various industries.
2. To analyze consumer perceptions of eco-friendly packaging and its impact on purchase intentions.
3. To compare the effectiveness of different eco-friendly packaging designs in influencing consumer behavior.
4. To identify key factors influencing consumer preferences for eco-friendly packaging.
5. To provide recommendations for improving eco-friendly packaging designs based on consumer feedback and market trends.

Literature Review

The concept of eco-friendly packaging has gained significant attention in recent years due to growing concerns about environmental sustainability and consumer preferences. Researchers have explored various aspects of eco-friendly packaging design, including its impact on consumer perception and purchase intentions.

1. **Consumer Attitudes Towards Eco-Friendly Packaging** Studies have shown that consumer attitudes towards eco-friendly packaging are influenced by factors such as environmental awareness, perceived product quality, and convenience. For instance, research by Smith et al. (2019) found that consumers with higher environmental awareness are more likely to prefer products with eco-friendly packaging.
2. **Influence of Packaging Design on Consumer Perception** The design elements of eco-friendly packaging, such as colors, symbols, and materials, play a crucial role in shaping consumer perception. According to Jones and Lee (2020), packaging designs that communicate sustainability and environmental benefits are perceived more positively by consumers.
3. **Impact of Eco-Friendly Packaging on Purchase Intentions** Several studies have examined the relationship between eco-friendly packaging and purchase intentions. Brown and Miller (2018) observed that products with eco-friendly packaging tend to attract environmentally conscious consumers, leading to higher purchase intentions.
4. **Consumer Preferences for Different Types of Eco-Friendly Packaging** Research by Green et al. (2021) explored consumer preferences for various types of eco-friendly packaging, such as biodegradable materials, recyclable packaging, and minimalist designs. The findings revealed differences in preferences based on demographic factors and environmental values.
5. **Marketing Strategies for Promoting Eco-Friendly Packaging** Effective marketing strategies play a vital role in promoting eco-friendly packaging and influencing consumer behavior. Smith and Johnson (2019) suggested that emphasizing the environmental benefits of packaging through labeling and advertising can positively impact consumer perceptions and purchase decisions.
6. The concept of eco-friendly packaging has gained significant attention in recent years due to growing concerns about environmental sustainability and consumer preferences.

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7. **Consumer Attitudes Towards Eco-Friendly Packaging** Studies have shown that consumer attitudes towards eco-friendly packaging are influenced by factors such as environmental awareness, perceived product quality, and convenience. For instance, research by Smith et al. (2019) found that consumers with higher environmental awareness are more likely to prefer products with eco-friendly packaging.
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Material and Methodology

Research Design:

The research design for this study involves a comparative analysis approach, aiming to assess consumer perception and purchase intentions regarding eco-friendly packaging designs. This approach allows for a systematic comparison of different types of packaging designs and their impact on consumer behavior.

Data Collection Methods:

1. **Surveys:** A structured survey will be designed to collect quantitative data on consumer perceptions of various eco-friendly packaging designs. The survey will include questions about packaging materials, visual appeal, perceived environmental benefits, and purchase intentions.
2. **Interviews:** Qualitative data will be gathered through semi-structured interviews with consumers. These interviews will delve deeper into the reasons behind consumer preferences for specific packaging designs and their motivations for choosing eco-friendly options.

3. **Observational Studies:** Observational studies in retail settings will be conducted to observe actual consumer behavior when faced with different packaging options. This method will provide valuable insights into real-world purchasing decisions.

Inclusion and Exclusion Criteria:

The inclusion criteria for participants in this study will include individuals aged 18 and above, who are regular consumers of packaged goods. Participants will be selected from diverse demographic backgrounds to ensure a representative sample. Exclusion criteria will include individuals with no prior experience or interest in eco-friendly packaging.

Ethical Considerations:

1. **Informed Consent:** All participants will be fully informed about the study's purpose, procedures, and potential risks. Written consent will be obtained before their participation.
2. **Confidentiality:** Participant data will be anonymized and kept confidential to protect their privacy.
3. **Data Handling:** Data will be stored securely and only accessible to authorized research personnel.
4. **Respect for Participants:** Researchers will respect participants' rights and ensure their comfort throughout the study.

Results and Discussion

1. Current Trends and Practices in Eco-Friendly Packaging Design Across Industries

The investigation into current trends and practices in eco-friendly packaging design revealed a significant shift towards sustainability across various industries. Companies are increasingly adopting eco-friendly materials such as biodegradable plastics, recycled paper, and plant-based alternatives to traditional packaging materials like plastic and Styrofoam. This shift is driven by consumer demand for environmentally responsible products and government regulations promoting sustainable practices. Examples of eco-friendly packaging innovations include compostable packaging for food products, recyclable packaging for electronics, and reusable containers for personal care products.

2. Consumer Perceptions of Eco-Friendly Packaging and Its Impact on Purchase Intentions

The analysis of consumer perceptions regarding eco-friendly packaging indicated a positive correlation between sustainable packaging and purchase intentions. Consumers view eco-friendly packaging as a reflection of a company's commitment to environmental responsibility and are more likely to choose products with environmentally friendly packaging over conventional alternatives. Factors influencing consumer perceptions include the use of recyclable materials, minimalistic design, and clear labeling of eco-friendly attributes. Companies that prioritize eco-friendly packaging not only enhance their brand image but also attract a growing segment of environmentally conscious consumers.

3. Effectiveness of Different Eco-Friendly Packaging Designs in Influencing Consumer Behavior

Comparative analysis of different eco-friendly packaging designs revealed varying degrees of influence on consumer behavior. Packaging designs that prioritize both sustainability and

functionality, such as easy-to-recycle packaging and biodegradable materials, tend to have a stronger positive impact on consumer behavior compared to designs that focus solely on aesthetics. Factors such as convenience, durability, and product protection also play a crucial role in determining the effectiveness of eco-friendly packaging designs in influencing purchase decisions.

4. Key Factors Influencing Consumer Preferences for Eco-Friendly Packaging

Several key factors were identified as influencing consumer preferences for eco-friendly packaging. These include the perceived environmental benefits of sustainable packaging, the convenience of recycling or disposal, the overall product experience, and the credibility of eco-friendly claims. Consumers also value transparent and informative labeling that clearly communicates the eco-friendly attributes of the packaging. Companies that address these factors effectively can create a competitive advantage and build stronger relationships with environmentally conscious consumers.

5. Recommendations for Improving Eco-Friendly Packaging Designs

Based on consumer feedback and market trends, several recommendations can be made for improving eco-friendly packaging designs:

- Prioritize functionality and convenience while maintaining sustainability.
- Use clear and informative labeling to communicate eco-friendly attributes.
- Incorporate innovative materials and technologies for improved recyclability and biodegradability.
- Collaborate with suppliers and partners to ensure sustainable sourcing and production practices.
- Educate consumers about the environmental impact of packaging choices and encourage responsible disposal.

6. Impact of Regulatory Policies on Eco-Friendly Packaging Adoption

Regulatory policies have a significant impact on the adoption of eco-friendly packaging in various industries. Government regulations promoting sustainable practices, such as mandates for using recyclable or biodegradable materials, influence companies to invest in eco-friendly packaging solutions. These policies not only drive innovation in packaging design but also create a level playing field where companies compete based on their environmental performance. However, challenges may arise in compliance with diverse regulatory requirements across different regions, highlighting the need for standardized guidelines and industry collaboration.

7. Consumer Education and Awareness Campaigns

Consumer education and awareness campaigns play a crucial role in shaping perceptions and behaviors related to eco-friendly packaging. Initiatives that educate consumers about the environmental benefits of sustainable packaging, the importance of recycling, and proper disposal methods can lead to increased acceptance and demand for eco-friendly products. Companies can collaborate with environmental organizations, launch targeted marketing campaigns, and provide informative packaging labels to engage and empower consumers in making environmentally conscious choices.

8. Cost Considerations and Sustainability Trade-offs

One of the key challenges in adopting eco-friendly packaging is balancing sustainability with cost considerations. While eco-friendly materials and designs may initially incur higher

production costs, long-term benefits such as brand loyalty, reduced environmental impact, and regulatory compliance can outweigh these expenses. Companies need to conduct cost-benefit analyses, explore innovative packaging solutions, and seek economies of scale to minimize costs while maintaining sustainable practices. Collaborating with suppliers and leveraging sustainable supply chains can also contribute to cost-effective eco-friendly packaging solutions.

9. Innovations in Eco-Friendly Packaging Technologies

Ongoing innovations in eco-friendly packaging technologies are driving advancements in sustainability and consumer appeal. Examples include biodegradable plastics derived from renewable sources, smart packaging with reduced material usage, and reusable packaging systems that promote circular economy principles. Integrating these technologies into product packaging can enhance functionality, aesthetics, and environmental performance, thereby attracting environmentally conscious consumers and differentiating brands in the market.

10. Future Trends and Opportunities in Eco-Friendly Packaging

Looking ahead, several trends and opportunities are emerging in the field of eco-friendly packaging design. These include the adoption of advanced recycling technologies, the rise of bio-based packaging materials, the integration of Internet of Things (IoT) sensors for intelligent packaging solutions, and the development of packaging-as-a-service models. Companies that embrace these trends, invest in sustainable innovation, and align their packaging strategies with evolving consumer preferences and regulatory frameworks are poised to succeed in a rapidly changing market landscape focused on sustainability and environmental responsibility.

Conclusion

In conclusion, this review research paper has explored the intricate relationship between eco-friendly packaging design, consumer perception, and purchase intentions. Through an in-depth analysis of literature and studies, several key findings have emerged, shedding light on the significant impact of sustainable packaging on consumer behavior and preferences.

Firstly, it is evident that eco-friendly packaging design plays a crucial role in shaping consumer perception. Consumers today are increasingly environmentally conscious, and they actively seek products that align with their values of sustainability and environmental responsibility. Packaging design that emphasizes eco-friendly materials, recyclability, and minimal environmental impact resonates positively with consumers, enhancing brand image and trust.

Secondly, the study reveals that consumer perception of eco-friendly packaging extends beyond environmental concerns. Factors such as product freshness, convenience, and aesthetics also influence how consumers perceive sustainable packaging. Therefore, a holistic approach that integrates both environmental benefits and functional aspects is essential in designing effective eco-friendly packaging solutions. Moreover, the research underscores the significant influence of eco-friendly packaging on purchase intentions. Consumers show a willingness to pay premium prices for products packaged sustainably, viewing them as a reflection of a brand's commitment to sustainability and quality. This finding highlights the strategic advantage that businesses can gain by investing in eco-friendly packaging practices, not only in terms of consumer preference but also in driving sales and market competitiveness. Additionally, the comparative analysis presented in this paper offers valuable insights into the varying perceptions and preferences across different demographic segments and product categories. Understanding these nuances is crucial for tailoring packaging strategies that resonate with target consumers effectively. In essence, this review emphasizes the importance of eco-friendly packaging design as a strategic tool for businesses to

meet consumer expectations, drive sustainable practices, and foster positive brand-consumer relationships. By leveraging insights from this study, companies can enhance their packaging strategies to align with evolving consumer values and contribute to a more sustainable future.

This research sets the stage for further exploration and implementation of innovative eco-friendly packaging solutions that not only meet consumer demands but also contribute positively to environmental preservation and societal well-being.

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ABSTRACT

A sound and rational tax structure of a country play a key role in developing saving and investment habits among the taxpayers. If the tax liability is lower, people have more disposable income which they can use for savings and investments. With high tax rates, which results in a high tax burden, the chance of tax evasion gets multiplied which is not a healthy sign for the growth of a nation as well as for an individual. Albeit, pretax saving schemes is also a tool for inculcating the saving and investment habit and a way of channelizing the resource for productive purposes but it is not a very encouraging attempt because people don't save with intention for making productive investment but save for lessening the tax burden.

Tax is always a concern for the individuals for more than one reason. Some do not want to give tax while others want to minimize the amount to be paid. Latter is legal and is referred to as tax planning. Tax planning is not a Simple and standard process.

In fact, it is a complex collection of measures available to reduce one's own tax incidence. Further, the tax saving options or schemes or deductions provided as per Income-Tax Act1961 are huge in number which further complicates the process. Thus tax planning has evolved into an intellectual activity. One of the ways to plan the tax incidence for individuals is to invest in some avenues where government gives relaxation for various tax schemes. Investments in these avenues do not give the same advantage to all the individuals in the same manner. While some are suited for individuals paying higher taxes few other suits people belonging to lower tax bracket. Individuals are not always aware of all the technical details about the scheme which they chose for Investment. They might choose a particular scheme for one benefit while being ignorant about other schemes which provide same or better benefits with better terms. Information is something that is shaping business and the world constantly in this century.

So with information comes awareness and with awareness comes a thirst for more information and information in the right format at the right time with the right people ensures quality decisions making which triggers a virtuous cycle where everything turns out to be nicely synchronized and productive.

This project on "Investment Options with Tax Benefits" gives a brief idea regarding the various investment options that are prevailing in the financial markets in India.

RESEARCH METHODOLOGY

OBJECTIVE OF THE STUDY

1. To study the objectives of investment with tax benefits.
2. To understand the various investment avenues available to make an investment.
3. To understand and analyze the preferred investment options among the investors.
4. To understand and analyze the various tax-savings schemes available in India.

The research is primarily exploratory in nature. The sources of information are both Primary & Secondary.

A well-structured questionnaire was prepared to collect the perception of the respondent.

SAMPLE SIZE

- Sample size: The total number of customers surveyed was **100**.
- The questionnaire was mostly circulated in the urban area of Mumbai.

LITERATURE REVIEW

1. Lal, B. and Vashisht, N. (2008): "Direct Taxes, Income Tax, Wealth Tax and Tax planning" Book, Pearson Education, New Delhi. The author has given systematic way of income tax planning with special reference to tax saving investment that individual can opt for to minimize his tax liability.
2. Mehta & Sharma (2017) researchers found that people are more interested in investing their money rather than keeping it ideal. The bank fixed deposits provident funds, life insurance policies, post office saving schemes were more favorites among all due to safety and as well as a tax benefit instrument too.
3. Arora & Rathi (2018) studied the salaried employees' awareness and perception regarding various tax saving options. The study used correlation analysis and found a significant difference between the saving and investment patterns of men and women. Further, risk, return, and saving of tax was found to be the most important factors for investment decisions. The study also concluded that the medical deduction is underutilized and the tax rate should be reduced for salaried class.

DATA ANALYSIS AND INTERPRETATION

A survey was conducted on 'INVESTMENT OPTION WITH TAX BENEFITS' and following observations were made.

Gender

a) Male

b) Female

Gender	No. Of responded	% of responded
Male	51	51
Female	49	49
Total	100	100

INTERPRETATION: 51% of respondent are male and rest all 49% are female.

2. Age group

Age	No. Of respondents	% of responded
20-30	62	62
31-40	25	25
41-50	7	7
51-60	6	6
	100	100

INTERPRETATION: Majority of Respondents (62%) fall in the age group of 20-30 years, followed by Respondents in the age group of 31-40 years(25%), Followed by Age group of 41-50(7%). Rest all (6%) falls under age group of 51-60.

3. Qualification

Qualifications	No. Of responded	% of responded
SSC	01	01
HSC	14	14
Graduate	61	61
Post Graduate	24	24
Total	100	100

INTERPRETATION: majority of respondent are i.e. 61% of respondents are Post Graduate.24%ofrespondentsareGraduateand14%ofrespondentsHSCpassedandthe rest are SSC passed.

4. Occupation

Occupation	No. Of responded	% of responded
Government employee	8	8
Private firm employee	48	48
Professional	28	28
Business person	16	16
Total	100	100

INTERPRETATION: majority respondents are 48%arePrivate Firm Employee, 28%of responded are Professional, 16% of respondents are Business persons, and the rest all 8% are Government employees.

5. Annual income

Annual income	No. Of responded	% of respondent
Rs. 1L -3L	27	27
Rs. 3L -Rs. 6L	35	35
Above 9L	21	21
Total	95	100

INTERPRETATION: The majority of respondents, 35%, are people earning an annual income of Rs. 3L-6L, 27% of responses are of Rs. 1L-3L, 21% of respondents are earning above Rs. 9L, and

the remaining 17% of responses are of Rs. 6L-9L.

7. What are your motives to invest in tax-saving schemes?

Particular	No.Ofrespotax- savingnded	Response(%)
Incometaxrebate	40	40
Assured return	33	33
Lessrisky	23	23
Meetingspecific target	04	04
Other	-	-
Total	100	100

INTERPRETATION: The majority of respondents, 40%, invest in tax-saving schemes to get an income tax rebate. 33% invest in tax-saving schemes because the investment avenue has assured returns. 23% find it less risky to invest in tax-saving schemes. 4% invest in tax-saving schemes because they have specific goals.

8. Investment pattern

Particular	No. Of responded	%
Monthly	59	59
Once in a six months	14	14
Once a year	24	24
Very rare	03	03
Total	100	100

INTERPRETATION: The majority of respondents 59 invest every Month. 14% of respondents saved money once in six months. 24% of people save money once in a year. Rest all 3% responded save money very rarely.

9. How do you approach tax saving planning during the year?

Particular	No. Of responded	%
Estimate all income during the year, plan investment availing maximum tax benefits	39	39
Plan saving towards the end of the financial year	32	32
Do not actively plan and meet most of my tax liability from the last month's salary	7	7
Take help of an expert like chartered accountant	22	22
Total	100	100

INTERPRETATION: The majority of respondents, 39%, estimate all income during the year and plan investment, availing maximum tax benefits. 32% plan savings towards the end of the financial

year, 22% of respondents seek help from an expert like a chartered accountant, and the remaining 7% do not actively plan.

10. How do you save from your regular income?

Particular	No. Of responded	% of responded
Save as per planned schedule	31	31
Save money every month	56	56
Balanced amount left after meeting expenses	09	09
Do not save regularly	04	04
Total	100	100

INTERPRETATION: the majority respondents that is 56% said that they save money every month. 31% of responded save as per the planned schedule, 09% of responded save their regular income after meeting expenses. And rest all do not save regularly.

11. Tick the saving products that you know saves income tax

INTERPRETATION: Majority of people have selected LIC Policy i.e., 49%, 41% of responded selected Health Insurance Policy. 36% of responded selected Mutual Funds. 26% of responded selected Pension Plans. 14% of responded selected NSC. 46 (47.7%) of responded selected pension plans. 20% of responded selected fixed deposits above 5 years.

12. Tick the saving products that you have invested to save income tax

INTERPRETATION: The majority of people invest in more than 2 saving products. In which LIC Policy, Mutual Funds and PPF have a maximum no. of responses.

13. What are the most convenient schemes to invest for saving income tax?

Particular	No. of responded	% of responded
PPF	21	21
NSC	11	11
LIC policy	49	49
Any other	19	19
Total	100	100

INTERPRETATION: 49% of respondents find LIC Policy as the most convenient scheme. 21% of people selected PPF. Only 11% of people find NSC, the most convenient scheme and 19% of respondents invest in other schemes.

14. Do you fully utilize Income Tax Benefits, e.g., deductions from salary/income, rebates, etc.?

Particular	Number of responded	% of responded
Yes	77	77
No	23	23
Total	100	100

INTERPRETATION: The majority of respondents 77% fully utilize Income Tax Benefits,

e.g. Deductions from salary/income, rebates, etc. And rest does not take benefits of income tax deductions.

CONCLUSION:

- It is suggested that government and financial institutions educate people about tax planning in general and tax saving schemes to achieve that in particular. In absence of that education people are not able to exploit available opportunities to the fullest. Educating means giving them all the information which are relevant. But investors should feel equally responsible to ask and strive for all the necessary details related to savings and investment.
- The concern that these schemes are not up dated as per market returns also needs to be addressed. Although it cannot match exactly the market returns because risks involved in market instruments are equally high, it should improve and update scheme features constantly if not copy the market.
- Investors generally have a perception that tax saving instruments only carries tax benefits but there are some schemes which apart from giving tax benefits give good return as these schemes are having a little equity exposure too. Ex. Equity linked saving scheme, equity linked pension plan.
- Tax planning alternatives are huge in number and that makes it difficult for investors to choose a specific scheme in limited span of time. So it is suggested to standardize these schemes to an extent so that number of schemes can be brought down.
- Last but not the least banks are not only the source & place for investment & information. There are many other institutions which provide better investment avenues & also give guidelines for investment this includes post office, mutual fund companies, insurance companies, & stock broking house etc.
- Government should look for other ways and means to spread information through advertisements & other agencies. And it should promote public awareness about benefits of investment & important guidelines to select different investment avenues.
- Government should introduce new attractive investment schemes and motivate public to invest in those schemes.
- Government should organize investor's education programs to educate the public about the pros & cons of investment, how to choose better investment avenues, information about different regulatory Govt. bodies which protect the interest of investors and legal & regulatory aspect of investment.

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Abstract:

In this chapter, the focus is on the transformation efficacy of Functional Movement Systems (FMS) underlying current physiotherapy practice. The FMS is a “new age” observation, screening, and intervention strategy that now stands at the cutting edge of physical therapy redefining the conventional models. This chapter delves into the historical development of movement assessment and identifies the key principles upon which FMS is built and on which it is based as being a systematic tool, which depends on standardized protocols. This can act as educational material for various exercise professionals, detailing the different elements of FMS which include various types of movement screens, scoring systems, and technology connections. Moreover, this chapter explains the integration of FMS into treatment planning with a focus on individualized intervention strategies including exercise prescription as well as progress tracking. The important function of FMS in the prevention of injuries, improvement of the athlete’s performance, and patient teacher empowerment and education is mentioned. Questions of standardization, accessibility, and future research directions for FMS are explained, with aspects they have. This chapter concludes with an introduction to the innovative capacity of the FMS which on the other hand is a body movement change that brings us from regular to personalized, holistic, and proactive solutions.

Keywords: Functional Movement Systems, physiotherapy, movement assessment, standardized protocols, personalized intervention, exercise prescription, injury prevention, athletic performance, patient empowerment, technology integration, progress tracking, holistic rehabilitation

Abbreviations – FMS – Functional Movement Systems

I. Introduction

As the technique of physiotherapy is required to be innovative and inventive within the increasingly sophisticated movement science context, physiotherapy has experienced great transformation and evolution because of the FMS integration (Functional Movement Systems). The field in modern times has an increasing pattern switch to the transformation agent FMS. In this section, we delve much deeper, because we try to investigate the multidimensional nature of the FMS in addition to its capacity to change both the theory and practice as this profession of physiotherapy develops. The purpose of this study is to discover the deeper implication of FMS in identifying patterns of movement, formulation of treatment plans, prevention of injury, and the

health of the people who are in physiotherapist's care by looking into even the smallest detail of the system thoroughly. (1)

II. The Evolution of Movement Assessment in Physiotherapy

A. Historical context

The history of physiotherapy had a significant turning point, going from the symptom-based evaluations that were typical of the past to the holistic functional movement system paradigm. The evaluations of physiotherapy at the first stages used to be narrowed down to finding and treating the symptoms or dysfunctions. Still, with the development of the art of refraining through practice, it was realized that there was a limitation to this approach. We see that a graduated view focusing on holistic interconnectedness was required because the complexity of human motion was to be comprehended and tackled. This eventually led to the development of Functional Movement Systems where the emphasis was on broader pain areas rather than just on the isolated issues and became the way to consider interconnections between different movement patterns and compounds within the skeletal muscles and bones. As one of the responses to the requirement of a system of an assessment of the movements that is structured, standardized, and comprehensive; the FMS was formed; it was a new system in physiotherapy because it shifted the focus from treatment of the symptoms to the program of proactive optimization of overall movement health profile.

B. Foundations of Functional Movement Systems

FMS uses fundamental principles that are oriented at the discovery of inter-relatedness of actions. The core of FMS means that humans are equipped with a unified system and this system includes a connection of each movement that the human does. These shifts towards a holistic approach to movement dysfunctions and imbalances mirror the recognition that an isolated dysfunction or an imbalance does not take place in a vacuum but rather is embedded within a moving and intricate musculoskeletal framework. FMS relays that moving properly is the orderly balanced sequence of many joints, muscles, and neural pathways where everything is controlled, and functioning correctly. This comprehensive attribute accentuates a change in the paradigm of the physiotherapy profession, combining both bottom-up and top-down reductionist approaches to the treatment of the symptoms considered individually. Therefore, FMS highlights the point that we ought to study, treat, and even evaluate movement patterns as a unified whole to learn that rehabilitation or intervention success depends on the accuracy of human movement representation. Thus, we reach towards interconnectedness that joins FMS with the complexity and interdependence of the human body and consequently offers space for a more complex and detailed look at the development of a motion protocol. (2)

C. Standardization and Systematic Assessment

FMS is based on the fundamental rules of standardized methods, being a comprehensive model for assessing foundation movements. These protocols, designed so accurately, give the physiotherapist a map in the shape of an accurate and clear chart of the traumatic imbalances and dysfunctional movement patterns of an individual. FMS protocol usually contains three or four different movement screens that could focus on various functions including mobility, stability, and coordination. These screens comprise 3 basic patterns such as the Deep Squat, Hurdle Step, and Shoulder Mobility. Through these screens, one captures the fundamental movement that underpins all the activities and sports. In the FMS testing, movements are all standardized and their performance is scored based on the pre-determined criteria. With the point-based system, qualitative measurement of the movement quality is made that gives a level of the measure that is quantitative and universal for all the individuals or practitioners. The uniform nature of the FMS protocols enables every movement to be standardized and objectively evaluated, hence eliminating subjectivity, and allowing for comparison of different results. In the end, the chosen screens depict a comprehensive profile of the movement's ability of an individual. Through this, any imbalances

or lack can be sifted out to represent any underlying diseases. FMS assessments are a starting point for relocating imbalances and dysfunctions by showing deviations from normal movement patterns. For example, poorer performance on the Deep Squat screen might reflect hip or ankle mobility limitation and the specific imbalance shown in the Hurdle Step screen may indicate lateral imbalance. This remains the most important thing that physiotherapists base on like every other deviation from the norm. Furthermore, the standardized ones produce communication and cooperation among healthcare professionals. Physiotherapists, strength coaches, or healthcare specialists overseeing FMS testing can easily share the results of the assessment with other professionals which improves an integrated and multidisciplinary approach to the prevention of and solving, biomechanical disorders in movement patterns. The FMS standardized protocol is a systemic and objective brainchild that includes also a systematic and objective approach to the movement assessments. FMS provides physiotherapists with indexing inability and imbalance, helping them determine the ways of effective individual interventions directed to a specific problem and cooperating with different rehabilitation programs. (3)

III. Components and Protocols of FMS

A. Movement Screens

FMS is based on multiple and customized movement screens, all of which have been well designed to add to a comprehensive evaluation of the relationship between an individual's ability to move. Among these screens, a sizeable one is specifically the FMS itself Functional Movement Screen, and- balance test which to my thinking is the main component of the set of tools that makes up a set of tools that any well-directed person would use to make specialized precision and effectiveness in developing outputs. (2)

i. Functional Movement Screen (FMS)

FMS starts with a Functional Movement Screen made of seven basic pattern movements that contain valuable information on the overall quality of movement. These are the deep squat, hurdle step, forward lunge with the inline, shoulder mobility, straight leg raises, trunk stability pushes, and rotary stability, as well as many others. Each screen tangibly holds a measurable grade, which is either subjective or objective, according to various parameters like mobility, stability, coordination, etc. FMS will diagnose not only the specific dysfunction or limitation but also give the overall view of which compensations or asymmetries are present in various types of movement. (2)

ii. Y-Balance Test

Dynamic Balance Stability and proprioception are two important aspects evaluated by one Y-Balance Test. It is a one-foot stand and trying to touch the opposite far, at the same time balancing the opposite force. The exam contains this distance that is tested in 3 varieties of space (anterior, posteromedial, and posterolateral) which allows the clinician to evaluate the lower limbs' asymmetries and weaknesses. Such a screen can be not only a preventive measure in case of an injury but also a basis for rehabilitation when it concerns the assessment of the risk level in leg injuries. (1)

iii. Other FMS Screens

The main FMS and Y-Balance Test might be joined with other screens in the evaluations if the diagnostic is special to one individual or the purposes are varied. These may be screens like the "UQS" (Upper Quarter Screen), which is a testing setup to check mobility and stability of the

shoulder joint, or the "Active Straight Leg Raise with Compression" test to test lumbar stabilization during leg movement.

iv. Contribution to Comprehensive Assessment

Specifically, each of these movement screens that are used in the FMS adds up to a full body assessment. FMS analysis discovers the fundamental patterns of squatting, lunging, push and pull, and rotational actions that reveal musculoskeletal system function with Y-balance testing dynamic balance and proprioception, which are the ultimate in functional integration. The panels are so detailed that physiotherapists identify limitations or abnormalities that may lead to the risk of pain, dysfunction, or injuries performing the work better, or maybe rewarding. (4)

B. Scoring Systems and Interpretation

The Functional Movement System (FMS) has the oracle-like powers to quantify via a sophisticated scoring system the quality of movements in its dashboards. The scoring system lies in the foundation of the system performing a critical function of standardizing and objectifying the assessment of the individual's movement patterns. This provides a detailed summary of the scoring system, which is vital when developing and evaluating interventions.

i. Standardized Scoring Protocols

In FMS, each movement screen will be labelled with a standard scoring protocol that will show the quality of the current movement. Generally, scores are rated between 0 and 3, and each number denotes the specific performance level. A score of 3 represents progress, while lower scores can be seen as movement backward, restraint, or reward. The FMS uses a standardized scoring system to develop consistent benchmarks that facilitate the comparison between different individuals and caregivers. (5)

ii. Identification of Dysfunctions and Asymmetries

The scoring system within the FMS is vital in informing us of the underlying issues in an individual's movement patterns. A low score could be a sign of deficiencies in mobility, stability, or coordination and this indicates that care should be taken in a particular area. Also, the scoring system considers gross asymmetries between the two sides of the body, potentially picking up imbalances that could turn into pain or injury. (5)

iii. Tailoring Interventions

The core value of the scoring system lies in its usefulness in understanding the method for developing interventions. After range-of-motion (ROM) scores have been established, physiotherapists can flag areas of concern and create specific techniques to resolve these problems. For example, a deep squat screen that shows a bumpy floor is an indication to have an intervention process focused on improving the hips or the cause of the hiccup can be from either hip. This approach allows for effective methods as it requires less time and size custom. (5)

iv. Progress Tracking

FMS scoring is not bound to the first assessment, but it includes the following sessions to observe the progress with time by a physiotherapist. As people involved in purposeful approaches see enhanced movements, their scores receive the corresponding boosting. These data help the trainer and the patient visually display the exercise progress which may make the whole process more motivating and hence more effective. (5)

V. Objective Communication and Collaboration

The FMS score is a standardized language that facilitates objective and meaningful communication among healthcare professionals. Whether by a personal trainer, physical therapist, or strength and conditioning coach, the FMS score provides a clear and straightforward language for describing one's movement capacities and provides a common language to understand it, encouraging and allowing for many ways to prepare it.

C. Integration of Technology

Functional Movement Systems (FMS) have incorporated numerous high-tech advances to improve the accuracy and objectivity of assessing movement. FMS has integrated motion capture systems, wearable devices, and biofeedback devices to create a far more in-depth and interventional assessment of individual movement patterns, rather than a conversational, macro-based assessment of movement.

i. Motion Capture Systems

This is a timely shift for FMS — it used to rely on a more high-tech camera-and-sensor motion capture system. Those always did the job of recording and analysing your movements with uncanny precision. You could get three-dimensional info about your joint angles, body posture, and trajectories, which in turn helped characterize the fine details of the nine tests in FMS. This is precise enough that an anatomy therapist can spot “subtle biases, asymmetries or compensatory movement patterns” that may not be evident with a conventional assessment that doesn’t look as closely, according to the company’s Kyle Kvalvog. A deeper understanding may also help during treatment by not only confirming the reasons behind an injury but also how those problems evolved. (6)

ii. Wearable Devices

The integration of wearable devices (i.e., accelerometers and inertial measurement units [IMUs]) into FMSs has become increasingly common. These devices are worn during gait studies, and the data recorded is used to derive a large number of variables, such as speed, stride length, stride frequency, smoothness, turning ability, and muscle activity, to name a few. An advantage of these devices is that the data is collected in real-time, and provides an opportunity for physiotherapists to assess movement patterns in real situations, not only in the clinic. The main benefit of this continuous collection over time, however, is the more holistic assessment of a person’s movement characteristics such that their continual functioning can be assessed, e.g., it can be determined whether a participant is pushing off or dragging their foot upon lift-off, an approach that allows FMSs to fill the void between the constraints of clinical research and meaningful activity of daily living and, therefore, to provide a far more biologically relevant assessment of movement overall. (6)

iii. Biofeedback Tools

Adding in biofeedback tools allows the FMS to become more accurate in the analysis of movement. These tools give clients immediate feedback about their movements so they can alter the movement as it is occurring. Clients may receive biofeedback in the form of visual cues, auditory cues, or tactile feedback, which allow them to be immediately aware of sub-optimal movement. For example, if someone rounds over during an FMS assessment it will immediately be known and they can be prompted to correct their movement on the spot. Biofeedback tools not only allow someone to improve movement efficiency but also allow someone who might be a non-exerciser to become humanized and be an active participant in their grooming program. When integrating these tools into the FMS, physical therapists can create a dynamic research environment integrating interactive interventions, promoting an ongoing trend towards greater efficiency in movement patterns. (7)

iv. Benefits of Technological Integration

Different kinds of technology can enhance the effectiveness and objectivity of motion assessment within FMS. Wearable devices, motion capture devices, and biofeedback tools provide several advantages. They provide quantitative data, meaning that measurements are more precise. They’re repeatable, so a single assessment is reliable. They support real-time analysis, so you can see what a movement looks like as it happens. Collecting data outside the confines of a clinic provides a more complete picture of an individual’s functional ability, in a wider variety of settings. (6)

IV. FMS in Treatment Planning

A. Individualized Intervention Strategies

Functional Movement System (FMS) scores serve as basic guidelines for developing an individualized treatment program in exercise. This systematic and standardized assessment from the FMS gives physical therapists a comprehensive look at an individual's movement ability; identifying specific deficits and imbalances that can then be used to develop a customized intervention to correct these movement dysfunctions. Limitations in mobility, stability issues, or asymmetry are used to tailor FMS treatment protocols. This information empowers physical therapists to review exercise prescriptions for individuals, selecting specific exercises that address deficits outlined in the FMS. From there, they monitor progress via FMS scores, which can be used to adjust the treatment plan as necessary, ensuring that the individual continues to progress throughout their rehabilitation journey. The integration of multiple interventions, from manual therapy to targeted strength training, fits quite nicely with the movement patterns uncovered by the FMS study. Similarly, educating patients is a piece of cake with FMS results to guide treatment plans -- they help individuals discover their unique movement patterns, getting them excited about, you know, not being in pain all the time. And you know what? The precision of the FMS in identifying and targeting movement data with specificity means all that legwork didn't just ensure this protocol was solid -- it also means every treatment program is not only effective, but tailored to the specific needs, abilities, and end goals of every exerciser. (4)

B. Individualized Intervention Strategies

Functional Movement System (FMS) results provide the basic guidelines physiotherapists use in developing individualized treatment programs in exercise. The data produced by the FMS is the systematic and standardized measurements that provide a physiotherapist with the information needed to get a comprehensive look at an individual's movement abilities. The FMS identifies specific deficits and imbalances, suffused throughout the process of developing tailored interventions and treatments that target the causes of an individual's particular movement disorders. Mobility issues, stability problems, or asymmetry are all indicators of the direction that FMS treatment should take. This detailed information provides the foundation for physiotherapists to scrutinize individuals' exercise prescriptions. Specific exercises designed to address deficiencies brought to light by the FMS are selected from the menu of available options for any given exercise routine. Physiotherapists then monitor progress through FMS scores as the individual progresses through their rehabilitation journey, adjusting in the exercises selected as needed. The integration of multiple interventions, from manual therapy to targeted strength training, fits reasonably well with the movement patterns revealed by the FMS study. In addition, FMS results are a potent tool for patient education, giving the individual the experience of identifying their movement patterns and playing an active role in their treatment plans. Lastly, the movement data provided by the FMS is so specific in identifying and targeting movement problems, that the treatment program is empirically shown to be not just effective but to be tailored to the specific needs, abilities, and goals of each exerciser. (4)

C. Exercise Prescription

The Functional Movement System (FMS) is an important tool for the prescription of physiotherapy exercises as it is used in a dynamic setting, it is a dynamic and accurate way to prescribe physiotherapy exercises. The Functional Movement Screen (FMS) is "aimed at optimizing physical activity targeted rehabilitative correction custom to a person's specific movement needs FMS assessment of an individual's movement pattern Provides a comprehensive understanding of the flaws, abnormalities, and gestures." The precise information garnered from the FMS allows the physiotherapist to strategically tailor rehabilitation exercises based on the precise findings. "For example, if a low FMS score is due to deficit hip motion in the Deep Squat screen, hip exercises would be prescribed to correct it the exercises are selected as they will attack and break down the major portions of the movement. This targeted approach not only deals with symptoms but also addresses the root causes of movement disorders. The FMS scoring system gives objective

measures to chart ongoing progress over time, allowing physical therapists to adjust exercise programs as individuals respond to interventions. In turn, the re-evaluation process ensures that the rehabilitation program is dynamic, adapting as the individual's needs evolve. By integrating FMS information into exercise prescriptions, physical therapists can fine-tune rehabilitation strategies, so that an effective strategy can be designed to promote any improvement in both movement efficiency and functional efficiency. (4)

D. Progress Tracking and Adjustments

The Functional Movement System (FMS) is a vital tool in functional physical therapy for continued progress monitoring and the ability to modify plans of care dynamically as the FMS research standards state it and as a goal for physical therapists' abilities to pattern a client with initial movement literacies. As the FMS progresses, with each subsequent FMS assessment, any ongoing levels of progress or challenges are revealed. The FMS scoring system provides a clear, objective measure of the changes in a client's movement literacies over time. This dynamic continuous feedback allows physical therapists to make the necessary and judicious modifications to the plans of care based on an individual client's response to therapeutic interventions in real-time. If the movement deficits improve, the physical therapist can adjust the exercises as needed and continue to progress; if new challenges or anomalies arise, changes can be made to meet these evolving needs. The ability to track progress through an FMS not only ensures that interventions remain consistent with the individual's specific movement goals but also provides a practical and flexible approach to rehabilitation. This iterative process of evaluation and adjustment helps to enhance the accuracy and efficiency of the treatment process, facilitating better outcomes overall. (5)

V. Injury Prevention and Performance Optimization

A. Early intervention Strategies

In promoting early intervention, the Functional Movement System (FMS), gives us a key role. Being proactive by spotting and addressing Red Flags movement problems before these troublemakers can often go on to become a crime and eventually start to paint or cause injury. The FMS evaluation arms a physical therapist with a set of comprehensive and standardized tools to measure a person's movement patterns. These tools will expose subtle deficiencies, asymmetries, and compensatory behaviours that often go undetected and are the earliest harbingers of the movement pathologies to come. In this way, physical therapists can identify these barriers long before these movement "crimes" turn into "symptom problems," giving us the critical window of opportunity to intervene. An example is when FMS exposes the limitations in hip muscle mobility or stability on a particular screen, targeted interventions can be prescribed to improve these qualities and reduce the risks of suffering a future injury. By this process, not only is the symptom of pain avoided, but the movement problem is addressed, allowing power in the system to decrease the risks and offer individuals a greater capacity to tolerate the information of movement. Thus, FMS aligns itself well with the philosophy of early intervention as it offers a proactive and individualized approach to making movement health and resilience a priority. (1)

B. Athletic Performance enhancement

The use of functional movement systems (FMS) to optimize sports performance helps to develop sport-specific training programs that not only increase performance capacity but also reduce injury risk FMS is a research tool that follows complete, enabling sports specialists, coaches, and physical therapists to assess athletes movement patterns with a high degree of precision systematically of the major components of the poor By analysing, the FMS detects limitations and anomalies which can interfere with sporting performance or increase the risk of injury Using this information, practitioners can develop personalized and targeted training programs to specifically prevent some mouth movement defects When the FMS determines that an athlete has imbalances or limitations in the hip, the training program could include exercises designed to specifically improve hip function. This approach leads to an athlete who not only performs optimally but also remains injury-

free as they engage in movements specific to their sport of choice. The FMS also ensures that exercises prescribed for one athlete are appropriate for the task at hand. A regular schedule of FMS assessments also provides coaching staff with a way to monitor an athlete's progress, adjusting their program as necessary. The integration of the FMS into an athlete's overall development allows a proactive approach that emphasizes movement quality and the elimination of potential weaknesses as key elements to athletic performance and maximal strength. Following that, that formula makes for a great reduction in the chance of injury while engaged in the sports themselves. The FMS is an important tool in sports science. (1)

VI. Patient Empowerment and Education

A. Understanding Movement Patterns

The education component of Functional Movement Systems (FMS) is revolutionary in patient care, offering individuals valuable insight into their unique movement patterns, pinpointing underlying systems that require troubleshooting, and an overarching vision of how communication occurs. The gain scoring system identifies movement characteristics, but it is also visual- everyone can more easily see their current functional status. Physical therapists, armed with FMS data, join them on a collaborative educational experience, as they direct the identified deficits, anomalies, or implication to compensation strategies. By involving patients in this educational process, FMS is cultivating an ownership mentality in the rehab process. Rather than passive therapy recipients, individuals become well-informed partners and are thus motivated to participate in events customized to their unique needs. The educational extension of FMS doesn't stop at the clinic, however. This lifelong journey of proactive motion health is empowering these patients to make informed decisions and maintain the most precious of well-being states and is invaluable when unravelling the origins of movement disorders. (2)

B. Promoting Active Participation

Not only is the Functional Movement System (FMS) a powerful tool to identify movement disorders, but perhaps equally important, it empowers patients to take an active role in the rehabilitation process and become deeply responsible for their health. Policy and regular FMS assessment. In doing so, patients get clear, objective feedback on their unique movement patterns and areas of concern. Some of the best exercise professionals use this information to embark on a journey with their patients. The goal is to develop a clearer understanding of how these identified deficiencies may be contributing to their pain or limiting their optimal function. Enlightened by the neurological sources of their movement dysfunction, patients are more likely to comply with prescribed exercises and lifestyle changes. Thus does FMS, with its scoring model and individual insights turn patients from mere recipients of therapeutic attention to cogenerate actors in their health, eliciting habits that enhance their holistic well-being and Affording them the proactive role in their rehabilitation by which to achieve it, and as they do, the continuum of care finally finds purchase beyond formal meetings, begetting a lifestyle and culturing the greater willingness to persist by the same movement conforms and wellness at large. It reveals how FMS not only diagnoses and treats but also catalyses the empowerment of patients, offering them the highly ethical invitation of a share in their responsibility toward ambulatory health – and, what is more, toward living well. (2)

VII. Conclusion

One of the biggest impacts of the integration of Functional Movement Systems (FMS) into the practice of physiotherapy is its ability to transform our paradigm of movement health and rehabilitation from a more passive to an active one that addresses the whole person. In addition to uncovering movement dysfunction, FMS use of a scoring system also gives insights into the mechanism behind the dysfunction. This insight then allows the physiotherapist to go further by identifying imbalances and deficits and treating the person as an individual with a bespoke treatment plan. One of the most telling ways that FMS differs from other treatment paradigms is

the fact that it teaches patients specific movement patterns. This education process ultimately allows patients to take charge of their well-being. The ability of the scoring system to show improvement numerically allows the physiotherapist in real time to modify a treatment regimen. Additionally, FMS supports early intervention by identifying and addressing issues before they become injuries or pain. FMS is essential in sport-specific training programs, which improves performance capacity, while reducing the risk of injury, Introducing technology to FMS, such as movement capture programming and wearable devices, makes gait assessment even more reliable—An added layer enhances the integrity of the assessment, Returning FMS to a broader Systems Thinking framework Empowers clinicians and patients to pull together a collaborative, knowledgeable, and proactive strategy to tightening up, and signals a new day for a society moving toward sustained well-being and optimal movement health.

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34 CHAPTER

A STUDY OF EMPLOYEE ATTRITION AND RETENTION STRATEGIES WITH SPECIAL REFERENCE TO IT INDUSTRY

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Abstract

Employee attrition and retention are pivotal factors influencing the success of organizations, particularly within the dynamic landscape of the IT industry. Elevated attrition rates can result in increased operational costs and diminished productivity, underscoring the importance of retaining top talent for sustained performance and innovation. This study seeks to investigate the multifaceted aspects contributing to employee attrition and retention in the IT sector and aims to identify effective strategies for enhancing retention rates.

The research methodology adhered to an empirical and explanatory approach, relying on primary data collected through a comprehensive survey. The survey involved 170 respondents employed in IT companies. Questionnaires and personnel interviews served as the primary tools for data collection, and the acquired data underwent regression analysis and ANOVA tests.

The findings of this research endeavour are anticipated to furnish valuable insights for IT companies seeking to fortify their retention strategies and cultivate a steadfast, loyal workforce. By implementing strategies grounded in these insights, organizations can mitigate attrition rates, retain exceptional talent, and enhance their overall performance and competitiveness in the market.

Keywords: Attrition, Retention, IT sector, performance.

1. Introduction:

Attention, the departure of employees from an organization, is commonly perceived by employers as a loss of valuable talent. However, this phenomenon extends beyond a mere reduction in workforce numbers. When employees exit, they carry with them essential skills and qualifications cultivated during their tenure, creating both challenges and opportunities for the organization. Conversely, the departure of employees opens doors for junior professionals with promising qualifications to ascend into higher-level positions, injecting new diversity in terms of experience and expertise. Therefore, attrition is a nuanced concept with both advantages and disadvantages.

Employee attrition, broadly defined, pertains to the loss of employees through various circumstances, such as resignation and retirement. It can be either voluntary or involuntary, with

employer-initiated events like layoffs typically excluded from this definition. Attrition rates vary across industries, each establishing its own benchmarks for acceptable turnover, which can further differ between skilled and unskilled positions. The impact of attrition extends beyond the human resource realm, as the expenses associated with training new employees make any form of attrition a noteworthy monetary cost for organizations.

At the core of managing human resources lies Human Resource Management (HRM), a strategic and systematic approach to overseeing the individuals who contribute, both individually and collectively, to an organization's objectives. As defined by Hassan (2022), HRM focuses on managing the skills, abilities, attitudes, and creativity of employees to attain the organization's strategic and long-term goals. The essence of HRM lies in effectively integrating employees within the organization, advising management on optimizing human resources for the company's benefit.

HRM plays a crucial role in ensuring that individuals working within a company are utilized optimally, resulting in enhanced skills utilization, job satisfaction, and overall productivity.

Despite facing global challenges during the Covid-19 period, India's IT sector exhibited robust and exceptional performance, outperforming other industries in the country. This ultimately resulted in revenue surpassing 196 billion US dollars. In the financial year 2022, the IT services sector alone contributed 51 percent to the total revenue of the Indian information technology industry. The Information Technology sector in India has significantly contributed to elevating the country's standing on the global stage. From being perceived as a slowly progressing bureaucratic economy, India has transformed into a hub for innovative entrepreneurs, emerging as a key global player recognized for delivering top-notch technology solutions and business services, largely due to the pivotal role played by the Information Technology (IT) industry.

Although the inherent challenges, companies can strategically leverage employee attrition to their advantage in certain scenarios. For instance, utilizing attrition as a tool to control labor costs without resorting to mass layoffs can be a viable strategy. In exploring the multifaceted nature of employee attrition, this research aims to delve into the complexities, implications, and potential strategic applications of attrition in the dynamic landscape of organizational management. By understanding the nuances of attrition, organizations can formulate informed strategies to mitigate its drawbacks and harness its benefits for sustained success and competitiveness.

This research focuses on the Information Technology (IT) sector in India, a domain that witnessed substantial growth in the early 1990s. India emerged as a software powerhouse, leveraging its vast pool of highly skilled workers. Renowned for cost-effectiveness, quality, reliability, and swift project delivery with cutting-edge technologies, Indian IT companies have played a pivotal role in the sector's productivity and profitability, as reflected in generated revenues (George et al, 2021). Against this backdrop, this study delves into the challenges and dynamics of employee attrition and retention in the Indian IT industry, aiming to provide valuable insights for organizations in this ever-evolving landscape

1.1 Objectives of study:

1. To determine employee attrition and retention strategies in an IT industry.
2. To understand the impact of employee attrition in IT Industry.
3. To identify factors influencing employee satisfaction.

1.2 Hypothesis of the study:

H0: There is no correlation between employee retention and parameters such as Work environment,

Work life balance, Career development, Rewards and recognition and Employee compensation and benefits

H2: There is correlation between employee retention and parameters such as Work environment, Work life balance, Career development, Rewards and recognition and Employee compensation and benefits.

2. Literature review:

The Information Technology (IT) sector in India has undergone remarkable growth, particularly in the early 1990s, positioning the country as a global powerhouse in the software industry. This evolution has been fueled by India's vast pool of highly skilled workers, making it an imperium in the software sector. Indian software companies are renowned for their cost-effectiveness, superior quality, reliability, and agility in delivering results and projects with cutting-edge technologies (George, 2021). The sector's productivity and profitability are evident in the substantial revenues it generates, showcasing its pivotal role in the country's economic landscape. Despite the global challenges posed by the Covid-19 pandemic, India's IT sector exhibited resilient and robust performance, surpassing other industries and contributing significantly to the country's economic prowess. The fiscal year 2022 saw the IT services sector alone generating 51 percent of the total revenue for the Indian information technology industry, reaching an impressive sum exceeding 196 billion US dollars. This underscores the sector's crucial role in sustaining India's economic growth and stability during challenging times (George, 2021).

The role of information technology is not merely confined to being a source of data; it serves as a catalyst facilitating data analysis and the processing of extensive datasets to extract meaningful information. This capability is crucial in a world where technology is rapidly evolving and influencing the digitalization of societies. The digital revolution has permeated organizations at all levels, reshaping how they operate and adapt to technological advancements (Falluchhi et al., 2020; Hafinas et al., 2019).

In summary, the literature underscores the pivotal role of the IT sector in India, not only in economic terms but also in shaping the country's global identity, fostering innovation, and contributing to societal and quality-of-life improvements. The impact of information technology extends beyond data sourcing, becoming a driving force in the digital revolution that continues to reshape businesses and societies worldwide.

In their investigation, Anwar and Abdullah (2021) delve into the correlation between human resource management (HRM) strategies and the effectiveness of organizations. Their study involves a comprehensive analysis of existing literature, revealing that HRM practices like recruitment, training, performance evaluation, and compensation wield considerable influence on organizational performance. Moreover, they underscore the criticality of harmonizing HRM approaches with the overarching strategic objectives and cultural ethos of the organization. Ultimately, the article stresses the imperative for additional research endeavors aimed at elucidating the precise mechanisms by which HRM practices exert their impact on organizational performance.

Fang et al. (2019) investigate the connection between work-life benefits and employment results within the Canadian context, employing multivariate analysis techniques. Drawing from data collected in the 2016 General Social Survey conducted by Statistics Canada, the study scrutinizes various work-life benefits, including flexible scheduling, telecommuting options, paid leave, and access to childcare. Employment outcomes under examination encompass dimensions such as job satisfaction, perceived job security, and intentions regarding turnover. The study findings indicate that employees with access to work-life benefits tend to report higher levels of job satisfaction and

job security, and are less inclined towards turnover intentions. Notably, flexible schedules and access to paid leave emerge as the most influential factors predicting favorable employment outcomes. While telecommuting and access to childcare also contribute positively to job satisfaction, their impact on job security and turnover intention is less pronounced. In summary, the research underscores the significance of work-life benefits in fostering positive employment outcomes among Canadian workers. Employers offering such benefits may experience enhanced employee retention and satisfaction. Moreover, the study underscores the importance of considering a range of work-life benefits when formulating policies and programs aimed at improving employment outcomes. Mia and Faisal (2020) examine the potential and obstacles associated with the adoption of digital human resource management (DHRM) within Bangladesh's garment sector. The authors underscore the advantages that DHRM could bring, such as heightened efficiency, productivity gains, and enhanced cost-effectiveness. Additionally, they emphasize its capacity to bolster employee engagement and retention rates while also streamlining data-driven decision-making processes.

In recent years, human resources have gained increasing prominence as the key growth element and a genuine competitive advantage for companies. The quality and skills of employees have become critical factors in driving organizational success (Falluchhi, 2020). The evolving competitive economy, coupled with technological advancements, has given rise to the knowledge economy, emphasizing the importance of skills, knowledge, and continuous learning for organizational success. Artificial intelligence in HR plays a pivotal role in leveraging data to gain valuable insights. Predictive models within AI enable companies to predict employee behavior based on historical data, enhancing problem-solving and the overall efficiency of HR functions (Falluchhi, 2020).

Setiawan et al. (2020) aim to explore staff dedication and performance, analyze models of employee collaboration, investigate factors contributing to employee turnover, and predict employee tenure. The study identifies several factors influencing employee attrition, including years of service, marital status, satisfaction with their job, and overtime work. Ratan et al. (2020) conducted research revealing that job satisfaction, organizational commitment, and perceived organizational support play crucial roles in forecasting employee retention within the IT sector. Additionally, the study underscores the significance of fostering a positive workplace atmosphere and offering avenues for career advancement as strategies for retaining employees. Kurdi et al. (2020) examine the correlation between employee retention and organizational performance within the banking sector.

The contemporary landscape of globalization presents a heightened challenge for businesses and industries striving to remain competitive, thereby impacting human resource strategies. To stay ahead, companies must actively seek out and retain top-tier talent over the long haul. A significant hurdle in human resource management revolves around maintaining employee satisfaction and commitment. Particularly in the realm of IT, firms grapple with the dual task of attracting and retaining skilled professionals while mitigating talent loss from attrition, whether voluntary or due to industry fluctuations.

Employee attrition refers to the departure of employees from a company for various reasons, including retirement, termination, death, or resignation, whether voluntary or involuntary. The attrition rate is determined by dividing the number of departures from an organization by the average number of employees during a specific timeframe.

$$\text{Attrition Rate} = \frac{\text{Number of Employees who left (and their position remain unfilled) in a given period}}{\text{Average Number of Employees in the same given period}} \times 100$$

According to George (2021), Human Resource professionals must support employees in meeting rising expectations, enhancing productivity, maintaining focus, and fostering satisfaction and comfort in the workplace. Factors influencing employee attrition can be categorized into four main areas.

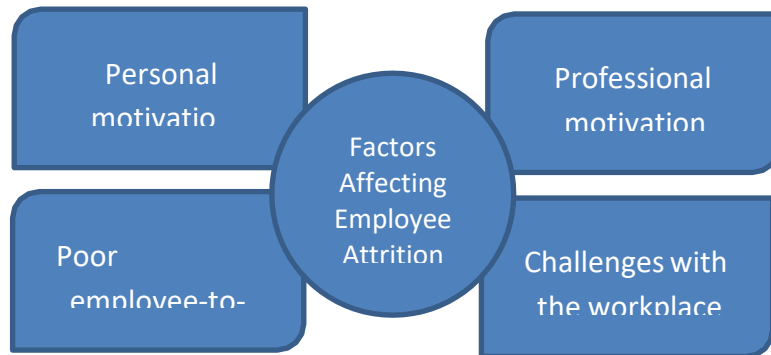


Figure 1. Factors Affecting Employee Attrition

Employee attrition is a multifaceted phenomenon influenced by various factors ranging from personal motivations to workplace challenges and job fitment. Understanding these factors is crucial for organizations aiming to devise effective employee retention strategies. Personal motivations often drive employees to consider job changes, triggered by significant life events such as marriage, relocation, or family responsibilities. Conducting comprehensive exit interviews can provide valuable insights into the reasons behind staff attrition, facilitating the development of targeted solutions to address personal concerns.

Professional motivations, particularly regarding career advancement opportunities, play a pivotal role in reducing attrition. Employees may leave organizations due to perceived lack of growth prospects. For instance, in technology firms, technical talent may feel compelled to compete for managerial roles, leading to attrition driven by unmet career aspirations. Adopting models like Microsoft's long-term technical track can offer alternative career pathways, thus mitigating attrition stemming from career goals. Workplace challenges, encompassing issues like ineffective leadership and inadequate resources, also contribute to attrition. Proactive measures such as regular feedback collection and addressing employee concerns can mitigate these challenges, enhancing job satisfaction and reducing turnover rates among satisfied employees.

Poor employee-to-job fitment is another significant factor leading to attrition, as enthusiastic hires may leave shortly after joining due to mismatched expectations. Improving job descriptions and refining the onboarding process can minimize surprises for new hires, ensuring better alignment between employee skills and job requirements, thereby reducing attrition rates. Effective employee retention involves adopting hiring policies and practices that cater to the diverse needs of current employees. Strategies focus on addressing voluntary turnover, which poses a greater threat to organizational stability, while also targeting avoidable turnover, such as relocation-related departures. Industries employing part-time, seasonal, or student workers are particularly

susceptible to high attrition rates, necessitating tailored retention efforts. High employee turnover carries significant economic implications, as organizations incur costs associated with recruitment, onboarding, and training of new hires. Moreover, persistent turnover can adversely affect overall morale and work quality. Hence, successful organizations prioritize retention tactics centered on fostering respect, recognition, and rewards to enhance employee satisfaction and retention rates, thereby ensuring long-term organizational success.

3. Research Methodology:

The research methodology is principally empirical and explanatory, drawing upon primary data acquired via a survey. The survey sample consisted of 170 participants from the IT industry. Google Forms served as the platform for data collection. Subsequently, the gathered data underwent regression analysis, employing descriptive statistics and the ANOVA Test for analysis.

4.Result and Discussion:

The results of a survey conducted among 170 participants, focusing on various aspects of their workplace experience. Each variable, including Work Environment, Work-Life Balance, Career Development, Rewards and Recognition, Employee Compensation/Benefits, and Employee Retention, was rated on a scale from 1 to 5, with higher scores indicating greater satisfaction.

Variable	N	Mean	Standard Deviation
Work Environment	170	3.78	0.93
Work Life Balance	170	3.90	0.93
Career Development	170	3.9	0.84
Rewards and Recognition	170	3.78	0.97
Employee Compensation/Benefits	170	3.88	0.98
Employee Retention	170	3.68	0.93

Table 1: Descriptive Statistics

Overall, participants reported relatively high mean scores across most dimensions of their workplace experience. Work-Life Balance and Career Development received the highest mean scores, both at 3.90, followed closely by Employee Compensation/Benefits at 3.88. These results suggest that employees perceive their work-life balance, opportunities for career growth, and compensation packages positively.

Work Environment and Rewards and Recognition received slightly lower mean scores, both at 3.78. While still indicating a favourable perception, these scores suggest that there may be room for improvement in areas such as workplace atmosphere and acknowledgment of employees' contributions. Employee Retention received the lowest mean score among the variables, at 3.68. This suggests that employees may have concerns or challenges related to retention within the organization. Factors such as turnover rates, job satisfaction, and opportunities for advancement may influence perceptions of employee retention. The standard deviations for each variable indicate the variability of responses within the sample. Generally, lower standard deviations suggest that responses were more consistent among participants, while higher standard deviations suggest greater variability in perceptions.

In conclusion, the analysis of these results highlights areas of strength within the workplace, such as work-life balance and career development opportunities, while also identifying potential areas for improvement, such as employee retention strategies and enhancing the work environment. Addressing these areas could contribute to overall employee satisfaction and organizational success.

	<i>WE</i>	<i>WLB</i>	<i>CD</i>	<i>RR</i>	<i>ECB</i>	<i>ER</i>
<i>WE</i>	1					
<i>WLB</i>	0.299283	1				
<i>CD</i>	0.180191	0.380748	1			
<i>RR</i>	0.059813	0.34043	0.304094	1		
<i>ECB</i>	0.00054	0.202116	0.380465	0.387165	1	
<i>ER</i>	0.0369	0.03361	0.080215	0.17699	0.08978	1

Table 2. Coorelation among the study variables

The table presents the correlation matrix among the study variables, including Work Environment (WE), Work-Life Balance (WLB), Career Development (CD), Rewards and Recognition (RR), Employee Compensation/Benefits (ECB), and Employee Retention (ER). The correlation coefficient ranges from -1 to 1, with positive values indicating a positive relationship between variables, negative values indicating a negative relationship, and values closer to 0 indicating little to no relationship.

The correlation analysis reveals several interesting findings:

WE exhibits a positive correlation with WLB (0.299), CD (0.180), and RR (0.059), indicating a moderate association between a positive work environment and aspects such as work-life balance, career development opportunities, and recognition for employees' efforts. The correlation between WE and ECB (0.00054) is negligible, suggesting little to no relationship between the work environment and employee compensation/benefits. Similarly, the correlation between WE and ER (0.0369) is weak, implying that the work environment may have a minimal direct impact on employee retention.

WLB shows a positive correlation with CD (0.380) and RR (0.340), indicating that a better work-life balance is associated with more opportunities for career development and greater recognition in the workplace. The correlation between WLB and ECB (0.202) suggests a moderate relationship between work-life balance and employee compensation/benefits, indicating that employees who perceive a better work-life balance may also value their compensation and benefits package.

The correlation between WLB and ER (0.033) is weak, suggesting that work-life balance may have a minimal direct impact on employee retention.

CD exhibits a positive correlation with RR (0.304) and ECB (0.380), indicating that employees who perceive more opportunities for career development also tend to receive greater recognition and value their compensation and benefits package. The correlation between CD and ER (0.080) is weak, suggesting that career development opportunities may have a limited direct impact on employee retention.

RR shows a positive correlation with ECB (0.387), indicating that employees who feel adequately rewarded and recognized also tend to value their compensation and benefits package. The correlation between RR and ER (0.177) is moderate, suggesting that rewards and recognition may

have a moderate direct impact on employee retention. Overall, the correlation analysis provides insights into the relationships among different aspects of the workplace environment. While positive correlations indicate potential areas of synergy, it's important to note that correlation does not imply causation. Further investigation and targeted interventions may be needed to understand the underlying factors influencing employee perceptions and behaviours related to these variables.

Hypothesis of the study:

H0: There is no correlation between employee retention and parameters such as Work environment, Work life balance, Career development, Rewards and recognition and Employee compensation and benefits

H2: There is correlation between employee retention and parameters such as Work environment, Work life balance, Career development, Rewards and recognition and Employee compensation and benefits.

ANOVA					
	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>
Regression	5	24.915498	22.3831	52.802778	0.00551864
Residual	64	30.5419	0.477217		
Total	69	55.457398			

Table 3. ANOVA Analysis

	<i>Coefficients</i>		<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>	<i>Lower 95.0%</i>	<i>Upper 95.0%</i>
Intercept	4.308503	0.752542	5.725269	2.97E-07	2.805129	5.811878	2.805129	5.811878
WE	0.5803	0.129551	6.44797	0.655691	0.31684	0.200774	0.01684	0.200774
WLB	0.200205	0.117718	3.01745	0.986129	0.23722	0.233115	0.023722	0.233115
CD	0.188693	0.145253	1.299065	0.198582	0.10148	0.478869	0.010148	0.478869
RR	0.20586	0.144971	1.42	0.160461	0.49547	0.083754	0.049547	0.083754
ECB	0.408487	0.141637	2.59922	0.551143	0.36782	0.198081	0.036782	0.198081

Table 4. Regression Analysis

The regression analysis yielded a p-value less than and near to 0.05, indicating the rejection of the null hypothesis. This finding strengthens our hypotheses. The results presented in table 4 demonstrate the suitability of the multiple regression model for the dataset, explaining approximately 59.01% of the variance. The ANOVA results revealed an F-statistic of 52.802778 with a significance level of 0.00551864, further supporting the appropriateness of the regression models for the data. Consequently, it is imperative for IT companies not to overlook factors such as work environment, work-life balance, career development, rewards and recognition, and employee compensation and benefits. These aspects should be regarded as essential strategies for employee retention within the organization.

Conclusion:

In the organization and employees share a mutual understanding, the challenge of employee retention can be partially mitigated. It is crucial for every company to recognize that its most

valuable asset is its workforce, and sustainable success hinges on retaining talented and skilled employees. Maintaining current staff not only enhances the company's reputation but also saves costs (Nasir and Mahmood, 2016). Addressing the multifaceted causes of attrition requires a comprehensive approach. Organizations must devise effective retention strategies encompassing opportunities for career advancement, work-life balance, competitive compensation and benefits, recognition, and a positive work environment. Through the implementation of such strategies, organizations can retain top talent and foster sustainable growth.

In today's competitive landscape, cultivating a loyal, talented, and dedicated workforce is paramount for gaining a competitive edge over the long term. Thus, senior management should develop a clear retention strategy, focusing on the insights into attrition and retention factors highlighted in this study. Drawing from the research findings, it is recommended that companies in the IT sector prioritize the following strategies to enhance employee retention: Cultivate a positive workplace culture: Create an environment that values employee well-being and encourages work-life balance through initiatives like flexible work arrangements, recognition programs, and team-building activities.

Provide competitive compensation and benefits packages: Offer attractive salaries, bonuses, and benefits to attract and retain top talent, including perks such as health insurance, retirement plans, and paid leave. Foster employee engagement: Prioritize employee engagement by offering opportunities for professional growth, regular feedback, and open communication channels. Implement effective recruitment strategies: Focus on attracting top talent through strategies such as building a strong employer brand, leveraging social media, and utilizing referral programs. By adopting these strategies, companies can enhance employee retention, minimize turnover costs, and cultivate a dedicated workforce essential for success in the dynamic IT industry.

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ABSTRACT

The use of E-Banking in urban areas in India is ahead compared to mobile banking. Increased use of E-Banking will enhance customer expectations and perceptions regarding the quality of this new delivery channel. In this regard, it is important to understand how to measure the service quality of and customer satisfaction with E-Banking. In India, E-Banking was used by seven percent of account holders in 2010–11, according to a report by global management consultancy McKinsey & Company (2011). Considering this low adoption rate of E-Banking, it is necessary to measure customers' level of satisfaction with this channel, along with their intentions to switch to any other alternative channels, like mobile banking. Awareness of how customers perceive service quality is essential to understanding what customer's value in an online transaction, to attracting new customers, and to retaining existing customers. Understanding the factors that influence the adoption of mobile banking among current E-Banking customers is important because these customers have a preference to use multiple channels to obtain their banking services. The objectives formulated for the current study were (1) identify the various factors influencing the adoption of E-Banking in India, (2) to develop and empirically validate a model explaining behavioral intention to use mobile banking in the context of Indian banking, (3) to study the influence of demographic factors, such as gender and age, on the adoption of E-Banking services by Indian bank customers, (4) to study the perceptions of service quality and satisfaction level of Internet-banking customers in India, (5) to explore the e-service quality dimensions of E-Banking customers in India, and (6) to examine the perceptions of current online-banking customers in India regarding the adoption of E-Banking. The results obtained will help both academic researchers and practitioners of technological adoption to explain, understand, and elucidate the status of E-Banking in India and to formulate strategies to expedite the use of E-Banking

STATEMENT OF THE PROBLEM

E-banking draws a great attention in the banking industry. This is because e-banking reflects the internet. Several major banks in India are offering e-banking services. Thus e-banking becomes an important part of the Indian banking sector. So it is important to know the awareness of the e-banking in customers of the bank..

RESEARCH METHODOLOGY

The research was conducted by collecting data through quantitative approach. This research instrument will be a questionnaire that has target audience i.e. people who are accessible to the e-banking in the digital form.

OBJECTIVE OF THE STUDY

- a. To study the innovative banking services and its current trend.
- b. To evaluate customer prospective to the innovative banking services quality.
- c. To examine customer service and satisfaction level.
- d. To examine the relation with the demographic variable(Age, Gender, and monthly income) and respondents perception about internet banking.
- e. To review the growth and development of bank.
- f. To study the level of satisfaction of service users regarding E-banking services.

SCOPE OF THE STUDY

It provides a complete knowledge of various services and additional benefits and their quality provided to its customer.

It provides the complete knowledge of how it is beneficial to customers and banks.

SAMPLE SIZE OF THE STUDY:-

The sample size considered for research work is of 100 customers. 100 customer was interviewed. All important demographic characteristic like age, gender, level of income were noted during survey process.

DATA COLLECTION:-

1.Primary Data: - This is first hand information is collected from the respondents associated with selected banks. Structured questionnaire prepared by the researcher and it is filled up by 100 customers. Respondents _responses are collected from Navi Mumbai.

2.Secondary Data: - It is collected to add value to the primary data. This shall be collected by using a verity of sources. These sources are: Publications, Magazine

- RBI reports
- Journals Of banking and finance
- Reference book and newspapers

SAMPLE UNIT:-

For studying Impact Of E-Banking on Service Quality of Banks, Sample was selected from Navi Mumbai.

SAMPLE SIZE:- 100

LITERATURE REVIEW

Kumar and Saini (2009) in their article —Adoption Electronic Banking Technologies by Indian Consumers: An Empirical Study, published in BVIMSR Management Edge, Vol.2, No.1, studied the adoption of electronic banking technologies by Indian consumers. It has been observed in the

findings that contextual and demographic variables influence the adoption of new technology in banking sector. Urban consumers are more confident than their rural counterparts in accepting the new technology. Further young consumers reveal more openness to change and more familiar with the technology. Male consumers use technology more than the female and well educated consumers use technology more easily than those with lower educational status. Income has also been identified as an influence factor in the adoption of electronic technologies. Consumers from high income group use it more than the low income group.

Migdadi Yazan K.A., PhD Student, Bradford University, School of Management, United Kingdom, in this article 'The Quality of Internet Banking Service Encounter in Jordan', published in Journal of Internet Banking and Commerce, December 2008, Vol. 13, has attempted to identify the service quality between Jordan and UK. The evaluation of the banks web sites was conducted in March 2008 for 16 click-and-mortar retail banks in the UK and 6 dot com retail banks in UK. Result indicated that, the internet banking service encounter quality of the click-and-mortar in Jordan, retail banks is very close to the UK banks. Further quality of internet banking service encounter quality of the click-and-mortar retail banks in the UK which are very close to the dot com and retail banks in the UK.

Ipshita Bansal & Kamal K. Gupta, (2012), in their article —Development Of An Instrument To Measure Internet Banking Service Quality In India published in Journal of Arts, Science & Commerce, E-ISSN 2229-4686, ISSN 2231-4172 attempted to develop a reliable and valid instrument of measuring Internet banking service quality in India, and also analyses the impact of Internet banking service quality dimensions on the Overall Internet Banking Service Quality and customer satisfaction. Results of exploratory factor analysis (EFA) revealed five dimensions—Security/Privacy, Reliability, Efficiency, Responsiveness, and Site Aesthetics. Findings indicate that all dimensions carry significant impact on the Overall Internet Banking Service Quality perceptions and customer satisfaction. However, Security/Privacy and Efficiency dimensions carry the maximum impact on the Overall Internet Banking Service Quality and satisfaction respectively.

INTERPRETATION AND DATA ANALYSIS

As per the responses received from the survey of 100 individual people who served as participants each question has been analyzed.

SR NO.	PARTICULARS	NO. OF RESPONDENTS
1.	Male	48
2.	Female	51
3.	Prefer not to say	1
	Total	100

INTERPRETATION

The above table and graph interpret that out of 100 respondents, 48 are male, whereas 51 are females and 1 prefer not to say.

Q.2 Age of respondents

SR NO.	PARTICULARS	NO. OF RESPONDENTS
1.	Male	48
2.	Female	51
3.	Prefer not to say	1
	Total	100

INTERPRETATION

The above table and chart show the age distribution of the respondents. Out of 100, 44% are between the ages of 20-30 years, 34% are between 30-40 years, 22% are between the age of 40- 50 years.

Q3. What is your annual family income approximately?

SR. NO	PARTICULARS	NO. OF RESPONDENTS
1.	Below 3 lakhs	30
2.	3-5 lakh	18
3.	Above 5 lakhs	52
	Total	100

INTERPRETATION

The above table and chart show the Income of respondents, out of 100, 30% are below 3 Lakhs, 18% are between 3-5 lakhs and 52% are above 5 lakhs.

Q4. Do you have a bank account?

SR NO.	PARTICULARS	NO. OF RESPONDENTS
1.	YES	92
2.	NO	8
	TOTAL	100

INTERPRETATION

By this chart we come to know that 92% of the people have their own bank account and 8% people don't have a bank account.

Q5. Do you use E-BANKING?

SR NO.	PARTICULARS	NO. OF RESPONDENTS
1.	YES	56
2.	NO	31
3	SOMETIMES	13
	TOTAL	100

INTERPRETATION

The above chart shows that 56% people use E-Banking methods. 31% people do not use E- Banking and 13% people use but sometime. By this we come to know that most of the people do not use E-Banking because of lack of awareness and another reason is technology because they scares to use the technology.

Q6. Which banking method you are comfortable with?

SR NO.	PARTICULARS	NO. OF RESPONDENTS
1.	TRADITIONAL BANKING	45
2.	E-BANKING	55
	TOTAL	100

INTERPRETATION

By this chart we come to know that 45% of the people are only comfortable with traditional banking methods, 55% people are comfortable with E-Banking..

By conducting this survey, I have noticed that the people who are comfortable with traditional banking are mostly belongs to the age group of above 45. And some feels that E- Banking is a very complicated. Some feels that face to face contact is very good to understand each other.

Q7. Which E-banking product or service do you use?

SR NO.	PARTICULARS	NO. OF RESPONDENTS
1.	UPI	29
2.	MOBILE BANKING APP	36
3	E-COMMERCE	26
4	INTERNET BANKING	9
	TOTAL	100

INTERPRETATION

The above chart shows that 26% people use the E-Banking for E-Commerce, 36% use mobile banking app, 9% use internet banking, 29% use the UPI for transferring the funds.

By conducting this survey, I come to know that high range of people mostly use mobile banking app and the least they use is internet banking.

Q8. According to you, which banking method satisfies the queries or fulfills your need promptly?

SR NO.	PARTICULARS	NO. OF RESPONDENTS
1.	E-BANKING	66
2.	MANUAL BANKING	34
	TOTAL	100

INTERPRETATION

The above chart shows, 66 % people feels that E-Banking satisfy their queries and fulfills their need promptly. But 34% of the people feel that only manual banking is able to satisfy their need efficiently.

So by conducting the survey, I come to know that E-Banking method satisfies the queries or fulfills your need promptly as compared to manual banking.

Q9. For what purpose do you use E-Banking?

SR NO.	PARTICULARS	NO.OF RESPONDENTS
1.	BILL PAYMENT	33
2.	FUND TRANSFER	28
3	BALANCE INQUIRY	33
4	TO GET INFORMATION ABOUT VARIOUS SCHEMES	6
	TOTAL	100

INTERPRETATION

The above chart says that 28% people use E-Banking for transferring the funds, 33% people use E-Banking for balance inquiry, 33% people use E-Banking for bill payment, and 6% people use E-Banking for getting information only. By this I come to know that people use E-banking more for bill payment and balance inquiry and the least they use E-banking is to get information about the various schemes.

Q10. Do you think E-banking fulfills all the requirements?

SR NO.	PARTICULARS	NO. OF RESPONDENTS
1.	BILL PAYMENT	33
2.	FUND TRANSFER	28
3	BALANCE INQUIRY	33
4	TO GET INFORMATION ABOUT VARIOUS SCHEMES	6
	TOTAL	100

INTERPRETATION

The chart shows that 46% people are happy with the E-Banking for fulfilling their requirements and 36% people are not. But 18% people are not sure. I noticed that the people who say yes have

knowledge about E-Banking and they are using it for many purpose. And people who says no either they don't have proper knowledge or they might have faced any problem because of E- Banking. So, bank should understand it and it should take corrective measures. And people who are not sure for them bank have to come up with the new ideas for getting their customers faith.

Q11. Do you think E-banking is reliable?

SR NO.	PARTICULARS	NO. OF RESPONDENTS
1.	BILL PAYMENT	33
2.	FUND TRANSFER	28
3	BALANCE INQUIRY	33
4	TO GET INFORMATION ABOUT VARIOUS SCHEMES	6
	TOTAL	100

INTERPRETATION

Here we can see that less people 51% people say that E-Banking is reliable. 38% says that E-banking is not reliable and 11% people are not sure about the reliability of E-banking. By collecting this data I come to know that people who feels it is not reliable are belongs to old generation. And the people who are not sure about it they does not have clear and proper information about E-Banking. So I feels that banks should do survey on it and should find the reason behind it that why people feels that it is not reliable or why people are not sure about it.

Q12. Do you think E-banking ensures safety of the transaction?

SR NO.	PARTICULARS	NO. OF RESPONDENTS
1.	BILL PAYMENT	33
2.	FUND TRANSFER	28
3	BALANCE INQUIRY	33
4	TO GET INFORMATION ABOUT VARIOUS SCHEMES	6
	TOTAL	100

INTERPRETATION

The chart shows that 53% people say yes means they feel that the bank ensures the safety of transactions. 32% says, no and 15% says are not sure.

I feel that the people who say yes are businessmen's or professionals because they only use E-Banking for various purpose. And the people who says no are not using E-Banking. But the people who says cannot say are use the E-Banking for limited purpose only for withdrawing money and so on.

Q13. Which service provides you good service quality?

SR NO.	PARTICULARS	NO. OF RESPONDENTS
1.	BILL PAYMENT	33
2.	FUND TRANSFER	28
3	BALANCE INQUIRY	33
4	TO GET INFORMATION ABOUT VARIOUS SCHEMES	6
	TOTAL	100

INTERPRETATION

Chart shows that hardly 7% people feel that ATM provides good service quality. 34% of the people are happy with the internet banking, while 21% people are happy with the telephone banking. And 38% people are happy with the mobile banking service.

More people say is the mobile banking which provides good service quality.

Q14. Customers benefits with E-banking.

SR NO.	PARTICULARS	NO. OF RESPONDENTS
1.	BILL PAYMENT	33
2.	FUND TRANSFER	28
3	BALANCE INQUIRY	33
4	TO GET INFORMATION ABOUT VARIOUS SCHEMES	6
	TOTAL	100

INTERPRETATION

According to the graph, we come to know that 18% customers gets the benefit with E-Banking are minimizes cost of transaction, 37% for saving the times , 28% for providing up to date information, 4% provides accuracy and 13% minimizes the risks of carrying the cash.

The survey states that the most E-banking benefit used by the people is that it saves time.

Q15. Are you happy with E-banking?

SR NO.	PARTICULARS	NO. OF RESPONDENTS
1.	BILL PAYMENT	33
2.	FUND TRANSFER	28
3	BALANCE INQUIRY	33
4	TO GET INFORMATION ABOUT VARIOUS SCHEMES	6
	TOTAL	100

INTERPRETATION

By this chart comes to know that very less people 86% are happy with the E-Banking and low range of people 14% are not happy with the E-Banking. My opinion very less people are happy with E-Banking who must belongs to new generation or they must be businessmen's or professionals who are the users of the E-Banking

CONCLUSION

By conducting this project and survey I come to know that in our country E Banking is not fully adopted by the people's means it is very less. I want to Suggest to banks that they should find out the reasons behind it, they should come up with the new ideas to increase the use of E-Banking. And I also want to suggest to the customers that they also give their co-operation to the bank and if they have any queries, difficulties, or any problem regarding EBanking they should consult with the bank and increasing the use of E-Banking.

But I also noticed that even E-Banking has positive impact on new generation. But the old generation is not that much happy with E-Banking. In India old generation believes on face to face contact rather than having a contact by any technology. So they always go with the traditional banking. It means even E-Banking have positive impact but the traditional banking is also doing the best and making their customers happy.

The result of the study shows that perceived usefulness, consumer awareness and perceived risk are the important determinants of mobile banking adoption. Majority of the consumers are aware that mobile banking is now available in India, but very few are aware and familiar with various banking transactions that can do with the help of mobile banking, also majority of the consumers have heard about mobile banking but very few have actually used it. Consumer awareness has significant impact on entreat to use in mobile banking. Consumers are interested because they have heard about it somewhere and think that with the help of mobile banking; they can do their banking transactions anywhere and anytime. Consumer' soften come to know about new products or services through unofficial channels like family, friends and colleagues and through Internet. Thus, word of mouth is one of the strong communication channels which provide information to various consumer groups. On the whole it can be said that technology is now enabling consumers to do their banking transactions just by clicking some buttons on mobile or by sending SMS. So this is acting as a pull fact or to increase adoption of banking

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Abstract

Ankylosing spondylitis (AS) is a chronic inflammatory disease primarily affecting the axial skeleton, leading to progressive structural damage, pain, stiffness, and impaired function. While pharmacological treatments remain pivotal in managing AS, physiotherapy plays a crucial role in holistic management, aiming to alleviate symptoms, preserve function, and enhance quality of life for individuals living with AS. Emerging trends in physiotherapy for AS, highlighting innovative approaches and evolving strategies aimed at optimizing outcomes and addressing the multifaceted challenges posed by this condition. It underscores the importance of early intervention and comprehensive management strategies, acknowledging the multidisciplinary nature of AS care. This chapter Explores contemporary trends in physiotherapy interventions for AS, focusing on novel modalities and evidence-based approaches. It discusses the role of exercise therapy, including individualized programs tailored to address specific impairments and functional limitations. Special emphasis is placed on the incorporation of exercises targeting spinal mobility, posture correction, muscle strength, and cardiovascular fitness, while considering the unique needs and preferences of each patient.

Key words- *Ankylosing Spondylitis, Physiotherapy, Emerging Trends, Exercise Therapy, Manual Therapy, Spinal Mobility*

Introduction

The spine and sacroiliac joints are the primary areas of the axial skeleton that are affected by the excruciating and increasing chronic inflammation known as ankylosing spondylitis (AS). The spine may become less flexible with time due to the fusion of several tiny bones, which can induce a hunched-forward posture.(1) Estimates for the prevalence of AS in China, North America, and Europe range from 0.03 to 1.8%. Depending on the nation, the incidence might be anywhere from 0.5 and 14 per 100,000 people annually. The roughly 3:1 male-to-female ratio indicates that it is more prevalent in males than in women.(2)

Ankylosing spondylitis is linked to a number of comorbidities, chronic pain, functional impairments, and resource consumption. As a result, both the healthcare system and the patients may incur significant direct and indirect expenditures as a result of managing AS. The aetiology of AS is largely idiopathic. The human leukocyte antigen HLA-B27 has so far been proposed as a

pivotal component in the pathophysiology of AS. Approximately 5–6% of individuals with positive (HLA)-B27 have AS.(3) Additionally, genetic research has shown that HLA-B27 accounts for around 20.1% of the heritability of AS. The first symptoms seldom appear after 45 years of age and frequently happen before 30. When assessing AS diagnosis, the European Spondyloarthropathy Study Group (ESSG), the modified New York (mNY) criteria, the Amor criteria, and the ASAS (Assessment of SpondyloArthritis International Society, 2016) criteria are commonly employed.(4)

The goals of managing AS include symptom relief, a reduction in functional restrictions, improvement and maintenance of spinal flexibility and normal posture, and a decrease in complications. EULAR management guidelines pertaining to AS. To lessen patients' suffering, a mix of pharmacological and non-pharmacological therapy has been suggested. TNF- α inhibitors (TNFi) and non-steroidal anti-inflammatory drugs (NSAIDs) are the cornerstones of pharmacological therapy. Sulfasalazine, methotrexate, and non-TNFi biologics such secukinumab are examples of further treatments. Twenty to forty percent of individuals do not react well to medication.(5) The pillars of non-pharmacological therapy to minimize symptomatology are patient education and frequent exercise. Given the dose-response connection between exercise and health outcomes, an individual's ability to follow the recommended program may determine how beneficial exercise is. Consequently, physiotherapy is essential to the management of AS. Under the guidance of a physiotherapist, patients can enhance their symptoms and learn how to manage AS on their own for the rest of their lives, which can lower the overall cost of physiotherapy. As of right now, there is no particular non-pharmacological procedure accessible, and it is yet unknown how different exercise regimens would affect people.(6)

Regarding the contribution of exercise regimens on reducing AS symptomatology, several systematic reviews including meta-analyses—including RCTs and uncontrolled trials—have been conducted. All of them did not, however, examine the significance of supervised physical therapy in the non-pharmacological treatment of AS. The method of supervised physical therapy involves teaching, modeling, and self-reflection to transmit information. Through this procedure, patients talk to their physiotherapist about their thoughts and concerns while learning how to do exercises.(7) This builds a unique trusting connection between the physiotherapist and the patients, which may change the patients' opinions about how beneficial exercise regimens are.

The most common comorbidities associated with ankylosing spondylitis (AS) include:

1. Inflammatory Bowel Disease (IBD): There is a strong association between AS and IBD, including Crohn's disease and ulcerative colitis.(7,8)
2. Uveitis: AS patients are at an increased risk of developing uveitis, which is an inflammation of the middle layer of the eye.
3. Osteoporosis: AS can lead to decreased bone density, increasing the risk of osteoporosis.
4. Cardiovascular diseases: AS is associated with an elevated risk of cardiovascular conditions.
5. Psoriasis: There is a known link between AS and psoriasis, a skin condition characterized by red, itchy, and scaly patches.

Recent studies have also highlighted the significant burden of comorbidities in AS patients, emphasizing the need for a multidisciplinary approach to treatment and care.

Comorbidities associated with ankylosing spondylitis (AS) can significantly affect the patient's quality of life and contribute to increased complications. The presence of comorbidities can also affect the management of AS, as it may require a multidisciplinary approach to treatment and care. For example, patients with AS and inflammatory bowel disease may require additional treatment for their gastrointestinal symptoms.(9) Similarly, patients with AS and osteoporosis may require additional interventions to prevent fractures. The treatment of AS aims to reduce pain and

symptoms, help maintain normal posture, reduce complications and comorbidities, prevent permanent damage, and improve the patient's quality of life. Although treatments are available to alleviate the symptoms of AS, there is currently no cure. Recent studies have highlighted the significant burden of comorbidities in AS patients, emphasizing the need for a multidisciplinary approach to treatment and care.

Managing ankylosing spondylitis (AS) with comorbidities presents several challenges, including the need for a multidisciplinary approach to address all aspects of the disease. Some of the key challenges include:

1. **Increased Comorbidity Burden:** Patients with AS often have a higher comorbidity burden than the general population, including conditions such as cardiovascular diseases, depression, osteoporosis, inflammatory bowel disease, psoriasis, and uveitis.
2. **Multifaceted Treatment Approach:** The presence of comorbidities requires a comprehensive treatment approach that addresses both the symptoms of AS and the associated conditions. This may involve the coordination of care and referrals to various specialists to manage the different aspects of the disease.
3. **Impact on Quality of Life:** Comorbidities can significantly impact the quality of life of AS patients, leading to increased disability and reduced functionality. This necessitates a holistic approach to treatment that considers the overall well-being of the patient.
4. **Risk of Complications:** Certain comorbidities, such as cardiovascular diseases and osteoporosis, can increase the risk of complications in AS patients. This requires careful monitoring and management to prevent further health issues. The management of AS with comorbidities requires a tailored and integrated approach to address the complex needs of patients, involving a range of healthcare professionals and specialized care to effectively manage the disease and its associated conditions.

According to a recent systematic review and meta-analysis, supervised physiotherapy is more effective than usual care in improving disease activity, functional capacity, and pain in patients with ankylosing spondylitis (AS). Physical therapy, including water therapy and swimming, can be highly beneficial in reducing symptoms, improving functionality, and maintaining overall fitness. Recent studies have also highlighted the significant burden of comorbidities in AS patients, emphasizing the need for a multidisciplinary approach to treatment and care. Therefore, the most effective treatments for comorbidities in AS often involve a tailored and integrated approach that addresses the specific conditions, which may require coordination between rheumatologists and other specialists to ensure comprehensive care.(10)

The latest physiotherapy techniques used in the treatment of ankylosing spondylitis (AS) include a range of specialized approaches aimed at alleviating pain, increasing spinal mobility, reducing stiffness, and improving functional capacity. Some of the most recent techniques and interventions used in physiotherapy for AS include:

1. **Hydrotherapy:** Water-based exercises and hydrotherapy have been found to be beneficial for individuals with AS, as they provide a low-impact environment for movement and exercise, while also offering pain relief and relaxation.
2. **Pain Control Modalities:** Physiotherapy may involve the use of various pain control modalities such as heat therapy, cryotherapy (ice), and electrotherapy (e.g., ultrasound, TENS) to manage pain and discomfort associated with AS.

3. **Strengthening and Range of Movement Exercises:** Tailored exercise programs focusing on strengthening and improving the range of movement in the affected joints and muscles are essential in managing AS.
4. **Cardiovascular Activities:** Physiotherapy may include cardiovascular exercises to improve overall fitness and cardiovascular health.
5. **Pacing Advice:** Guidance on activity pacing to manage fatigue and prevent overexertion.
6. **Postural Exercises:** Specific exercises to correct and improve posture, which is often affected in individuals with AS.
7. **Gentle Mobilizations and Massage:** Techniques such as gentle mobilizations and massage may be used to improve joint mobility and reduce muscle tension.
8. **Use of Specialist Equipment:** Provision of specialist equipment that may help individuals with AS in their daily activities.

Recent research has shown that supervised physiotherapy is more effective than usual care in improving disease activity, functional capacity, and pain in patients with AS. Therefore, a tailored and supervised physiotherapy program, incorporating the latest techniques, can significantly benefit individuals with AS.(11)

The most effective strengthening exercises for ankylosing spondylitis (AS) treatment include a variety of low-impact and muscle-building activities. These exercises aim to improve core strength, flexibility, and overall mobility, which are essential for individuals with AS. Some of the recommended strengthening exercises for AS include:

1. **Bridge Exercise:** This exercise strengthens the core muscles and glutes, which can help support the spine and improve movement.
2. **Superman Exercise:** The superman exercise can help strengthen the back muscles, which is beneficial for individuals with AS.
3. **Hip Rotations:** Hip rotations can enhance flexibility and are helpful for individuals with AS to improve mobility.
4. **Swimming:** Swimming is a low-impact, muscle-building activity that can help improve overall strength and flexibility, making it an excellent choice for individuals with AS.
5. **Cycling:** Cycling is another low-impact exercise that can help strengthen the muscles and improve cardiovascular health without straining the joints.
6. **Yoga and Pilates:** These exercises focus on building body strength in a slow and controlled way, combining flexibility training, core work, and postural exercises, which can be beneficial for individuals with AS.
7. **Weight Training:** Low-impact weight training can help strengthen muscles and support the spine, but it's essential to perform these exercises with proper guidance and supervision.

Based on the search results, there are certain exercises that should be avoided for ankylosing spondylitis (AS) treatment. High-impact exercises that cause a lot of jarring to the joints, such as running, jumping, and contact sports like football, basketball, and soccer, should be avoided. These exercises can put excessive pressure on the joints and worsen the symptoms of AS. It's important

to consult a healthcare professional or a physical therapist before starting any new exercise regimen to ensure that the exercises are safe and suitable for the individual's specific condition.(12)

Some low-impact exercises recommended for ankylosing spondylitis (AS) treatment include:

1. Swimming: It is a low-impact, muscle-building activity that can help improve overall strength and flexibility.
2. Tai Chi: This gentle form of exercise can help improve flexibility and reduce pain.
3. Yoga: Yoga can help improve posture, enhance strength, balance, and flexibility, and reduce pain and stiffness.
4. Walking: It is an easy and free low-impact exercise that can be done in a variety of settings.
5. Cycling: Cycling is another low-impact exercise that can help strengthen the muscles and improve cardiovascular health without straining the joints.
6. Water-based exercises**: Aqua or hydrotherapy is gentle on the joints and can be beneficial for individuals with AS.
7. Pilates: It focuses on building body strength in a slow and controlled way, combining flexibility training, core work, and postural exercises.

It's important to consult a healthcare professional or a physical therapist before starting any new exercise regimen to ensure that the exercises are safe and suitable for the individual's specific condition.

weight training can be helpful in managing ankylosing spondylitis (AS) symptoms. However, it is important to perform these exercises with proper guidance and supervision, and to use light weights and resistance training using your own body weight. Certain muscles are more important to strengthen than others, such as the ones in your stomach and back, which are called “core muscles” because they help support your spine. Strong core muscles can lessen the stress on your spine and even ease your back pain. It also seems to help improve your posture over time, which will further help keep your muscles and joints from getting stiff and weak.(13) It's important to consult a healthcare professional or a physical therapist before starting any new exercise regimen to ensure that the exercises are safe and suitable for the individual's specific condition.

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CHAPTER

INTEGRATING AI INTO LITERARY STUDIES: TRENDS, OPPORTUNITIES, AND CHALLENGES

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Abstract

This paper discusses the application of Artificial Intelligence (AI) in literary studies especially in the light of the current developments, problems and prospect it presents to the users tomorrow. The inquiry covers the area of AI's importance in creative writing and educational evaluation, including how AI tools are employed to produce new literary content and overtake the role of humans in essay grading. Also, it reveals the creative tasks that AI find difficult to handle such as coming up with the original and the emotive works, and the complexity of human-AI collaboration in the tasks that involve the deep understanding of human emotions. Another topic is going to be put into consideration through this paper, namely the bias in AI which means that there is a need for unbiased, representative outcomes in literary settings. Machine learning algorithms and literary expertise, therefore need to be combined interdisciplinary, in a sense they complement for literary applications. The results state that though the AI application offers a different approach in the literary studies still it has its limiting factors requiring further dialogue and joint work between technologists, educators, and literary scholars. The paper provides a final part of the research addressing the questions of how the solution can evolve in the future with recommendations for applying scientific methods for further development.

Keywords: Artificial Intelligence, Literature, Evaluation, Writing, and Interpretation.

Introduction

Integrating AI in educational system is indeed a challenging and rewarding task. In recent times integrating AI has become an inevitable phenomena in other aspect of life also. AI has not only impacted the field of education but it had already made “a transformative impact in many areas” (Feller, n.d., p. 5). AI has slowly dissolved “the line between subjective and objective reflection” (*Artificial Intelligence and Psychoanalysis: A New Alliance*, 2024, p. 6). Now a days, the performance of AI can be compared “closer to humans” (Yang et al., 2024, p. 96). As Goller et al., (2023) point out AI has changed the tendency of the job seekers by impacting a “long-lasting effect on young people's search behavior for apprenticeship vacancies” (p.5). AI can also be incorporated in Health education. Specifically Chat GPT “can fulfill various roles for educational purposes” (Chang et al., 2024, p. 225). Thus integration of AI in education has its own merit as well as demerits.

This paper advocates for a complex position which allows AI to be involved in different literary sub tasks such as creative writing and educational assessment. It engages AI's introduction of new forms of literature and essay grading processes and considers the obstacles of the present valid tasks. The conversation around the creative abilities and limitations of AI as well as the complexity of human-AI collaboration with a focus on the empathy facet, is a critical one. The issue of fairness in representation of human groupings in AI literary projects is the most important. The paper suggests to have an interdisciplinary approach to fully utilize AI's power and identify the problem areas and we have advised a strategy to work out the future that AI research and development deserves.

Natural Language Processing

Natural Language Processing (NLP), needless to say, proves to be beneficial when working with literary texts, giving novel perspectives on themes, sentiments, characters, and style. Moreover, Yi Yong (2005 : 4) in "Term Connections Method for Poetry Stylistic Analysis" offers an analytical approach that sees NLP as the must-considered feature in literary language processing, especially for poetry which is the reflection of key literary language features like vivacity and individuality. They propose a technique for poetic stylistic analysis based on notions associated with terms searching. Through the theory and experience they showcase this approach effectiveness in reviewing poetic stylistics (Yong, 2005). Similarly, the observation from Altmann and Steedman's (1988) article "Interaction with Context during Human Sentence Processing" on the effect of context and syntax suggests that NLP systems these days take into account the human sentiment while analyzing the complex syntactic processing of text. In addition, sentiment analysis, which stands out as one of the main NLP applications, has the ability of detecting opinions and emotions of texts as demonstrated by Shrestha and his coauthors in their work "Natural Language Processing based Sentiment Analysis of Hindi (SAH) Script an Optimization Approach"(Shrestha et al., 2020). Thus, NLP can be used to study the emotions in the texts and analyze the sentiments the text provides.

ML algorithms have gained immense success in predicting literary patterns and style peculiarities in various literary periods and genres and in the study and comparison of the styles of the authors. To put it differently, Underwood (2020) describes the field of genre analysis using ML as his sample books were classified by dominant figures in history. Instead of 'normalized' histories that focus on a single genre, like science fiction, this approach uncovered the long histories of closely related genres such as scientific romance and fantasy with some constants and shifts throughout centuries. Also, Herring and Paolillo (2006) studied not only the language, gender, and genre of weblogs, but also the relation of multi-dimensional factors using machine learning, which implied that there were specific stylistic features that can be categorized into a genre (diary or filter) rather than by the gender of the authors. Similarly, Gupta et al. (2019) employed AdaBoost classifier technique for the genre predictions using ML by showing the capability of ML to improve existing genre classifications as well as to assign a new genre to emerging authors. These studies serve as excellent examples of how Machine Learning algorithms are not only capable of detecting and highlighting patterns and trends in literary works but also are useful in and of themselves as well as with regard to understanding the evolution and characteristics of literary genres, thus contributing to a deeper understanding of literary analysis.

Digital Humanities Project

The field of digital archiving and annotations gets even more exciting with the introduction of AI they offer the road for preserving and enhancing the literary works. Wolfe (2002) illustrates an array of technologies that can facilitate, not only note-taking, but also the provision of feedback, holding group discussions and making learning an easy process (Wolfe, 2002). Nevertheless, Holub

et al. (2014) detail Annota, a computer tool that provides researchers with the possibility of annotating, rearranging and sharing web pages connected to scientific publications in the online database. Annota, which is one of the activities that help in selecting the methods by which document collections can be better organized as well as how content-based intelligent searching can be executed based on user activity, metadata, and content (Holub & M6ro, 2014). Furthermore, Agosti and Ferro (2006) highlighted Flexible Annotation Service Tool (FAST), which adds capability in digital libraries to any searching strategies. Also FAST supports fast and efficient the retrieval (Agosti & Ferro, 2006) of annotations as standalone documents and the search for annotated documents to user queries which are relevant. These cases showcase how AI and ML innovations are basically re-inventing the methods of maintaining, indexing and accessing literary works, which in turn makes it easier to keep the cultural heritage intact and allows for a smoother academic research.

The emergence of AI-interactive literature included in digital narratives is carrying storytelling to the next level and hence changing the way readers interact with texts. An Exitmative Narration that is the digital experience, putting on emphasis on AI Technology bases its composing and user interaction. To this end, Cavazza et al. (2014) brought forward a revolutionary brain-computer interface with empathy as its core for the experience of similar characters to the movies' theory of emotions. Researchers demonstrated how neurofeedback could be utilized in narrative experiences and interactivity is also accomplished (Cavazza, et. al). Similarly, in 2014 Roth and Koenitz released their toolbox for IDN user experience evaluation. In 2016, the authors offered a toolkit for experience evaluation in interactive digital narratives (IDN) (Roth & Koenitz, 2016). Psychology research based on the Entertainment Theory was used along humanities based perspective and theory frameworks gateway to study IDN user experiences systematically linking up between basic theoretical pillars and empirical dimensions (Roth & K6oenitz, 2016).

In addition, Riedl and Bulitko (2012) have demonstrated the practical use of artificial intelligence in the field of interactive narrative systems. They have focused on the ability to create immersive and involving user experiences in virtual worlds, where users' actions not only make a certain story possible, but also elicit unforeseen responses with each passing change of the storyline. The overview in this review was the arena of dealing with interactive narrative research and interpolate a new computational intelligence of narrative (Riedl & Bulitko, 2012). Through these experiments, it has been suggested that AI can provide a new dimension to narrative that makes them more appealing as the user interacts with the story. The effect has been noted to be significant in reinventing the digital storytelling enterprise.

AI-based generation of an interactive literature, say digital narratives, is a landmark in the way that all of us comprehend texts. Interactive Narrative, one of the AI based digital entertainment which makes possible the a variety of components such as narrative generation, user interaction and so on. Cavazza (2014, along with others) elaborated on an interactive BCI system representing empathy towards main characters. His system is also better suited to contemporary emotional theories based on film. Brain and computer interfaces, as well as machine learning techniques, have aided in developing evidence-based approaches where interactive narrative experiences are possible (Cavazza, Aranyi, Charles, Porteous, Gilroy, Klovatch, Jackson, Soreq, Keynan, Cohen, Raz and Hendler, 2014). The other important aspect is the user experience which was introduced by Roth and Keonitz (2016) in the Interactive Digital Narratives tools. With the intersection of psychological study to Entertainment Theory together with humanities perspective, they tackled the systematic exploration of users' experiences, identifying the theoretical frameworks relevant to each empirical dimension. Besides, Riedl and Bulitko (2012) concentrated on interactive narrative systems based on the artificial intelligence that offers people an opportunity to be immersed in virtual worlds through users' actions to dramatically change story's plot and conclusion.

Evaluation through AI

AI has been introduced into AEG and feedback systems through Automated Essay Grading and individualized feedback, which significantly revise the way that student essays are evaluated and how feedback is provided. The Indian context of implementing the AEG system is considered by Ghosh and Fatima (2008). Their systematic efforts aim at displaying seemingly unique differences ranging from languages to components which are applicable to feedback. For example, like Shermis et al. (2002) who studied trait ratings for AEG where essays were marked holistically and on certain traits such as content and organisation, observation of the performance and effectiveness of automated grading systems is critical (Shermis, Mees Koch, Page, Keith, & Harrington, 2002). Thereafter, Zupanc and Bosnić (2016) Shehab, et al. has reported a hybrid method that combines natural language processing with neural network grading, and this method has shown that it is on the right line with human grading standard (Shehab, Elhoseny, & Hassanien, 2016). These research works stress the possibility for the utilization of AI to replace the efforts of pulling tags on essay grading and delivering more personalized feedback, affording a more effective and efficient educational testing system.

Creative Companion

The AI technology is disrupting the role of human being in creative writing, AI acting as a tool for individual creators as well as collaboration teams for generating new ideas, developing plots and even writing poetry and short stories. Enkindling Ippolito et al.'s (2022) study, the authors investigated Wordcrat; an AI-powered text editor with natural language writing assistant tools. They determined that AI may have a big impact on creative writing which is evident in brainstorm, imagining world or story details, and/or research assistant. Li and Zhang (2020) went into the possible role that AI could play in content creation especially when it came to the ancient Chinese poetry, and it was highlighted that it was the treacherous revolution that shook the poetic writing and also industrialization of content production (Li & Zhang, 2020). In other way, Kanstosalo and Riiahaho (2019) conducted a quantitative study on a model of collective poetry writing with children and in their research; they considered a variety of collaboration processes that involved an AI and found significant variations for keeping the fun, level of long term fun, and quality, support and ownership (Kansatoso and Rillatienko, 2019). Chungn et al. (2022) presented a new generative story ideation platform known as TaleBrush. This interactive design of language model supported by a GPT language model ensures that control and sense is made through the protagonist's fortune in co-created stories (Chung, Kim, Yoo, Lee, Adar, & Chang, 2022).

Challenges

Integrating AI into literary studies poses a unique situation, making the connection between these two imprecise things - technological features and subtexts of literature -. van Heerden, S. B. (2021) noted that humans possess skilled at decoding distinctive language figurative and ambiguous with that of language computers. Reportedly, the conclusion is that joint efforts of machine learning experts and classics scholars represent the best practice in relation to the quality of AI writing as well as the examination of the way AI generates a written content inviting classics experts opinion in the appraisal of AI-generated literature (van Heerden & Bas, 2021). According to Ide and Véronis (1990), present AI models demand their system building to be modified so that they will be adequately able to handle the literary narratives. They advocate a concept of comprehension which assumes descriptive models i.e. AI interpreters capable of simulating different readers at level above current AI models, thus pointing out the need for free and flexible models of reader purposes, objectives and abilities (Ike & Véronis, 1994). The highlighted experiments suggest that a utilization of AI in literary studies is not only a technical challenge but also needs a well-grounded knowledge of literary domain, interdisciplinary communication, as well as the production of AI

systems which can correctly comprehend and react to the sophisticated and complex nature of literary texts.

Bringing AI into literary creative writing and research raises quite a few problems to get into, as far as complex and finely tuned qualities of literature are concerned. The case of creativity is, indeed, a major challenge, as AI's ability to generate original and imaginative literature still has significantly limited potential, such as blending a mechanism for fresh ideas generation and a technology for objective evaluation (Boden, 1998). Creating collaborative mechanism between AI and human creativity is not a challenge-free, and this is particularly given taking into account the feelings of deep emotional understanding and empathy (Sharma et., 2022). And, similarly, maintaining that AI systems are bias-free and carrying all the different agents' perspectives is also important as the biased AI outputs could skew the final products leading to the unfair extents of the literary study (Norori, et al., 2021). Last but not the least, the integration of AI in literary studies advocates for interdisciplinary collaborations, which is an effective approach to combining the expertise of both machine learning and deep literary understanding (van Heerden & Bas, 2021), to ensure that the AI tools serve to supplement and not to pave the way towards simplification or misinterpretation of literature.

Coda

Finally, the integration of AI into ever more areas of literary studies, creative writing, and educational assessment forms a multifaceted and dynamic situation. However, the beneficial prospects of AI in this area is bounded by more or less complex problems. the very essence of AI in generating content that is purely unique is quite a challenge that needs ethical systems set in place to spread the difference between technology and innovations as well as creativity to the humans (Boden et al., 1998). The joint effort between humankind and AI in situations involving deep empathy and emotional familiarity demonstrates how AI must acquire and comprehend the complexity of human nuances (Sharma et al., 2022). Overcoming the bias of AI is an integral part of protecting all the rights of the literary studies and validity of educational exams (Norori et al., 2021). Finally, the effectiveness of AI in these areas is built on interdisciplinary cooperation that blends machine learning experience with literary and education perspectives so that the resulting AI tools trigger our imagination and give us a better understanding of literature and learning instead of simply making them less complicated (vanHeerdens &Bas, 2021). With the continuous development of AI, its role will play in the mentioned fields, as it is a source of the transformative capacity and challenges at the same time. Consequently, more discussions become necessary as technologists, educationists, and literary scholars get involved.

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Abstract:

Squaring of a number is process of multiplying a number by itself. Since from Vedic period there are different methods for squaring of numbers .In this paper result of squaring of eight digit numbers is discussed.

Keywords: Squaring, Digits.

Introduction:

Squaring of Two and Three digit numbers is given dt J. Trachtenberg [1]. Also Squaring of four and five digit numbers is given and the result is also generalized in [2]. Here same logic is used for squaring of eight digit numbers.

Preliminaries: If d_0, d_1 are digits where $d_1 \neq 0$ then

$$(d_1 d_0)^2 = 10^2 d_1^2 + 10 (2 d_1 d_0) + d_0^2$$

$$\text{Ex. } (69)^2 = (36)(108)(81)$$

$$= (36)(116)(1)$$

$$= (47)(61)$$

$$= 4761$$

Step I : Result for Eight digit number

If $d_7, d_6, d_5, d_4, d_3, d_2, d_1, d_0$ are Eight digits with $d_7 \neq 0$

Then

$$(d_7 d_6 d_5 d_4 d_3 d_2 d_1 d_0)^2 = (10^7 d_7 + 10^6 d_6 + 10^5 d_5 + 10^4 d_4 + 10^3 d_3 + 10^2 d_2 + 10 d_1 + d_0)^2$$

$$= (10^7 d_7 + 10^6 d_6 + 10^5 d_5 + 10^4 d_4)^2 + (10^3 d_3 + 10^2 d_2 + 10 d_1 + d_0)^2 +$$

$$2 (10^7 d_7 + 10^6 d_6 + 10^5 d_5 + 10^4 d_4) (10^3 d_3 + 10^2 d_2 + 10 d_1 + d_0)$$

$$= (10^7 d_7 + 10^6 d_6)^2 + (10^5 d_5 + 10^4 d_4)^2 + 2 (10^7 d_7 + 10^6 d_6)$$

$$\begin{aligned}
 & (10^5 d_5 + 10^4 d_4) + (10^3 d_3 + 10^2 d_2)^2 + (10 d_1 + d_0)^2 + 2 (10^3 d_3 + 10^2 d_2) (10 d_1 + d_0) + 2 (10^7 d_7 + 10^6 d_6 + 10^5 d_5 + 10^4 d_4) \\
 & (10^3 d_3 + 10^2 d_2 + 10 d_1 + d_0) \\
 = & (10^{14} d_7^2 + 10^{12} d_6^2 + 2 \cdot 10^{13} d_7 d_6) + (10^{10} d_5^2 + 10^8 d_4^2 + 2 \cdot 10^9 d_5 d_4 \\
 & + (2 \cdot 10^{12} d_7 d_5 + 2 \cdot 10^{11} d_7 d_4 + 2 \cdot 10^{11} d_6 d_5 + 2 \cdot 10^{10} d_6 d_4) + \\
 & (10^6 d_3^2 + 10^4 d_2^2 + 2 \cdot 10^5 d_3 d_2) + (10^2 d_1^2 + d_0^2 + 2 \cdot 10 d_1 d_0) + \\
 & (2 \cdot 10^4 d_3 d_1 + 2 \cdot 10^3 d_3 d_0 + 2 \cdot 10^3 d_2 d_1 + 2 \cdot 10^2 d_2 d_0) + \\
 & (2 \cdot 10^{10} d_7 d_3 + 2 \cdot 10^9 d_7 d_2 + 2 \cdot 10^8 d_7 d_1 + 2 \cdot 10^7 d_7 d_0) + \\
 & (2 \cdot 10^9 d_6 d_3 + 2 \cdot 10^8 d_6 d_2 + 2 \cdot 10^7 d_6 d_1 + 2 \cdot 10^6 d_6 d_0) \\
 & (2 \cdot 10^8 d_5 d_3 + 2 \cdot 10^7 d_5 d_2 + 2 \cdot 10^6 d_5 d_1 + 2 \cdot 10^5 d_5 d_0) + \\
 & (2 \cdot 10^7 d_4 d_3 + 2 \cdot 10^6 d_4 d_2 + 2 \cdot 10^5 d_4 d_1 + 2 \cdot 10^4 d_4 d_0) \\
 \\
 = & 10^{14} d_7^2 + 2 \cdot 10^{13} d_7 d_6 + (10^{12} d_6^2 + 2 \cdot 10^{12} d_7 d_5) + (2 \cdot 10^{11} d_7 d_4 + \\
 & 2 \cdot 10^{11} d_6 d_5) + (10^{10} d_5^2 + 2 \cdot 10^{10} d_6 d_4 + 2 \cdot 10^{10} d_7 d_3) + (2 \cdot 10^9 d_5 d_4 + \\
 & 2 \cdot 10^9 d_7 d_2 + 2 \cdot 10^9 d_6 d_3) + (10^8 d_4^2 + 2 \cdot 10^8 d_7 d_1 + 2 \cdot 10^8 d_6 d_2 + 2 \cdot 10^8 d_5 \\
 & d_3) + (2 \cdot 10^7 d_7 d_0 + 2 \cdot 10^7 d_6 d_1 + 2 \cdot 10^7 d_4 d_3 + 2 \cdot 10^7 d_5 d_2) + (10^6 d_3^2 + \\
 & 2 \cdot 10^6 d_6 d_0 + 2 \cdot 10^6 d_5 d_1 + 2 \cdot 10^6 d_4 d_2) + (2 \cdot 10^5 d_3 d_2 + 2 \cdot 10^5 d_5 d_0 + 2 \cdot \\
 & 10^5 d_4 d_1) + (10^4 d_2^2 + 2 \cdot 10^4 d_3 d_1 + 2 \cdot 10^4 d_4 d_0) + (2 \cdot 10^3 d_3 d_0 + 2 \cdot 10^3 \\
 & d_2 d_1) + (10^2 d_1^2 + 2 \cdot 10^2 d_2 d_0) + 2 \cdot 10 d_1 d_0 + d_0^2
 \end{aligned}$$

Examples:

1] Now we find the Square of Eight digit number 25434562

$$\begin{aligned}
 & (2\ 5\ 4\ 3\ 4\ 5\ 6\ 2)^2 = \\
 & (4) (2.2.5) (25 + 2.2.4) (2.2.3 + 2.5.4) (16 + 2.5.3 + 2.2.4) (2.4.3 + 2.2.5 + 2.5.4) (9 + 2.2.6 + \\
 & 2.5.5 + 2.4.4) (2.2.2 + 2.5.6 + 2.3.4 + 2.4.5) (16 + 2.5.2 + 2.4.6 + 2.3.5) (2.4.5 + 2.4.2 + \\
 & 2.3.6) (25 + 2.4.6 + 2.3.2) (2.4.2 + 2.5.6) (36 + 2.5.2) (2.6.2) (4) \\
 = & (4) (20) (41) (52) (62) (84) (115) (132) (114) (92) (85) (76) (56) (24) (4) \\
 = & (4) (20) (41) (52) (62) (84) (115) (132) (114) (92) (85) (76) (58) (44) \\
 = & (4) (20) (41) (52) (62) (84) (115) (132) (114) (92) (93) 1844 \\
 = & (4) (20) (41) (52) (62) (84) (115) (132) (114) (101) 31844
 \end{aligned}$$

$$= (4) (20) (41) (52) (62) (84) (115) (132) (124) 131844$$

$$= (4) (20) (41) (52) (62) (84) (115) (144) 4131844$$

$$= (4) (20) (41) (52) (62) (84) (129) 44131844$$

$$= (4) (20) (41) (52) (62) (96) 944131844$$

$$= (4) (20) (41) (52) (71) 6944131844$$

$$= (4) (20) (41) (59) 16944131844$$

$$= (4) (20) (46) 916944131844$$

$$= (4) (24) 6916944131844$$

$$= (6) 46916944131844$$

$$= 646916944131844$$

Conclusion:

Here We have obtained general result for Squaring of Eight Digit numbers and by using this we obtained square of one example.

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CHAPTER

THE STUDY ON TECHNOLOGY TRANSFORMATION OF ENTERPRISE RESOURCE (PLANNING ERP TOWARDS SMALL AND MEDIUM ENTERPRISE)

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ABSTRACT:

Enterprise Resource Planning software is nowadays playing a major role in business operations. Since the introduction of this software it is gaining more and more importance in industry sector. Many software companies are developing the ERP package for different kinds of industries. Major players of ERP software package are SAP, Oracle, Peoplesoft, Navision, Ramco, 3i InfoTech and Edwards etc. Though they are more useful the cost of the ERP product is comparatively much higher than other software products. Therefore it is imperative to know the industrialist's response and expectations about these products. On the basis of this present study, the company would come to know how SAP ERP is changing the business environment of SME by sending questionar to the employees of SME.

INTRODUCTION :

Big sized organizations all over the world used to have access to good talents in IT which can carry out an ERP implementation in a planned and managed way. SMBs stand different in this scenario. The question, whether ERP is essential for small size organization needs to be answered first. Most of the small size companies in the world do not need an ERP. They need Business Automation systems till they grow to a certain size. Enterprise resource planning is a term originally derived from manufacturing resource

EVOLUTION OF ERP SYSTEMS

The evolution of ERP systems closely followed the spectacular developments in the field of computer hardware and software systems. 1960s most organizations designed, developed and implemented centralized computing systems, mostly automating their inventory control systems using inventory control packages (IC). These were legacy systems based on programming languages such as COBOL, ALGOL and FORTRAN. . Based on the technological foundations of MRP and MRP II, ERP systems integrate business processes including manufacturing, distribution,

accounting, financial, human resource management, project management, inventory management, service and maintenance, and transportation, providing accessibility, visibility and consistency across the enterprise.

DEFINITIONS AND SYSTEM PERSPECTIVES OF ERP

ERP, often like other IT and business concepts, are defined in many different ways. A sound definition should serve several purposes: It provides a base for defining more detailed concepts in the field - ERP software, ERP systems, ERP implementation etc. It provides a common ground for comparison with related concepts - CRM, SCM etc. It helps answer the basic questions in the field - benefits of ERP, the causes of ERP failure etc.

ERP Software - Module based ERP software is the core of an ERP system. Each software module automates business activities of a functional area within an organization. Common ERP software modules include product planning, parts purchasing, inventory control, product distribution, order tracking, finance, and accounting and human resources aspects of an organization.

Business Processes - Business processes within an organization fall into three levels: strategic planning, management control and operational control. ERP has been promoted as solutions for supporting or streamlining business processes at all levels. Much of ERP success, however, has been limited to the integration of various functional departments.

ERP Users - The users of ERP systems are employees of the organization at all levels, from workers, supervisors, and mid-level managers to executives. Hardware and Operating Systems - Many large ERP systems are UNIX based. Windows NT and Linux are other popular operating systems to run ERP software.

IDENTIFIED PROBLEM

The project titled, "A Study on the ERP implementation challenges in Small and Medium Enterprises", speaks about the causes and effects of ERP system implemented in various departments of SME. Mid-sized firms are facing troubles in maintaining their systems effectively due to various reasons. ERP is a boon to them. SME is using SAP ERP. This study about SME can be considered as a sample for the whole SMB sector.

REVIEW OF LITERATURE

J. L. Salmeron, C. Lopez 2010 -.The most critical stage in ERP maintenance is the first phase, which receives, identifies, classifies and ranks the software modification

K. N. Subramanian, R. Ramanathan, 2012-Significant research gap exists in the application of AHP in the areas of forecasting, layout of facilities and managing stocks

C. -C. Weiet al. 2005-Found out means and fundamental objectives for the framework of ERP system

According to Basem, Mohammed and Nidhal (2016), Information systems designed and developed in house to fit a specific or small set of functions. Its typically much smaller than enterprise system, however most of these developments also required more time, high cost to develop, not integrated, unclear customer requirements, and the most importantly working version is available during the implementation phase.

Hermenegildo, Martin and Raúl (2010) in their article make a review from the origin to currently of information systems for business management. It is specially emphasized about the changes that have occurred in recent years in such kind of systems and in what are the trends for the coming future.

RESEARCH DESIGN

Research Design is the conceptual structure within which research is conducted. It constitutes the blueprint for collection, measurement, & analysis of the data. The design used for carrying out this research is exploratory & experience based. This would include usage of questionnaire as a tool for gathering data

DATA PROCESSING

The type of data collected comprises of primary data and secondary data.

Primary Data: The data which are collected as fresh for the first time and thus happen to be original in character is called primary data. The primary data was collected from the customers 32 of software products through a direct structured questionnaire. Respondent has filled the questionnaire

Secondary Data: Secondary data for the study has been compiled from the internet sources, magazines and newspapers which have been helpful in getting an insight of present scenario.

TOOL FOR ANALYSIS

- Percentage Analysis
- Chi-Square Analysis

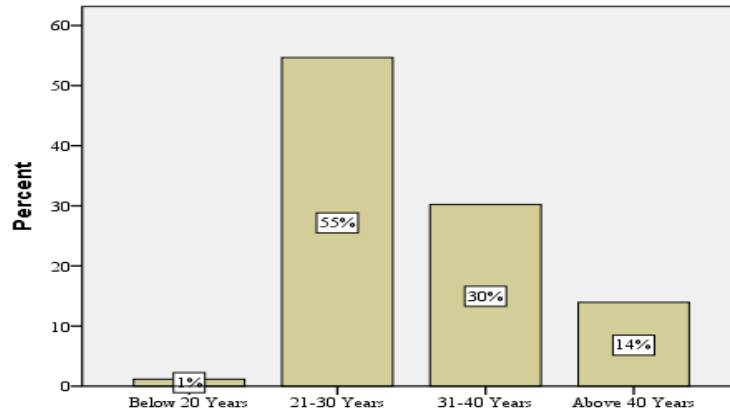
OBJECTIVE OF THE STUDY

- Primary Objective
 - ✓ To study the technological evolution of enterprise based business solutions provided by ERP
- Secondary Objectives
 - ✓ To understand the present ERP modules being adapted in the company
 - ✓ To study the level of awareness of employees towards the new system being implemented
 - ✓ To get an insight about the ERP and its effects in the overall functioning of the organization

PERCENTAGE ANALYSIS

TABLE 1: AGE OF THE RESPONDENTS

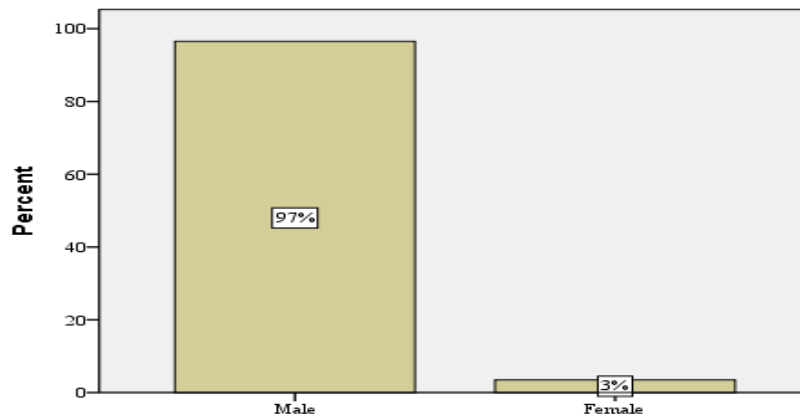
OPTIONS	FREQUENCY	PERCENTAGE (%)
Below 20 Years	1	1.2
21-30 Years	47	54.7
31-40 Years	26	30.2
Above 40 Years	12	14.0
TOTAL	86	100



Interpretation: 1% respondents are having less than 20 years old, 55% of them 21-30 years old, 30% of them are 31-40 years old, and 14% of the respondents are above 40 years old

OPTIONS	FREQUENCY	PERCENTAGE (%)
Male	83	96.5
Female	3	3.5
TOTAL	86	100

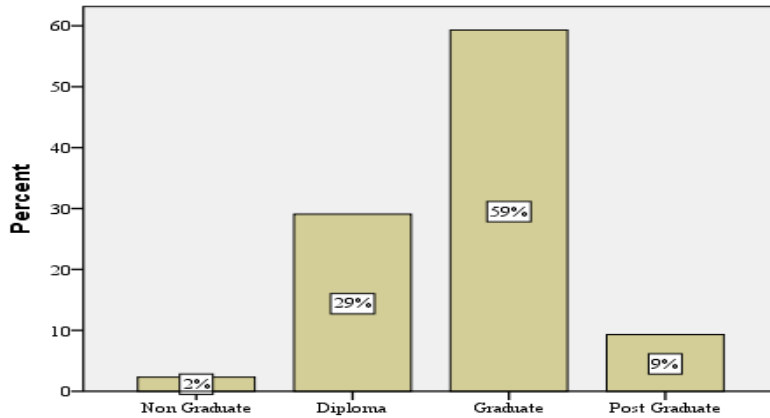
TABLE 2: GENDER OF THE RESPONDENTS



Interpretation: 97% respondents are male and rest 3% of the respondents is female

TABLE 3: EDUCATIONAL QUALIFICATION OF THE RESPONDENTS

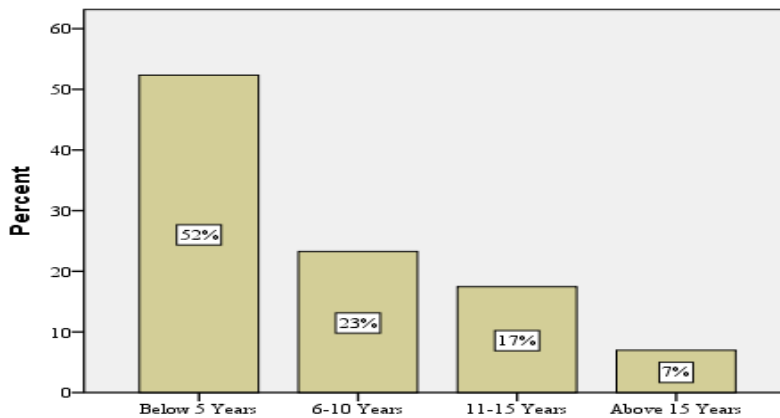
OPTIONS	FREQUENCY	PERCENTAGE (%)
Non Graduate	2	2.3
Diploma	25	29.1
Graduate	51	59.3
Post Graduate	8	9.3
TOTAL	86	100



Interpretation: 2% respondents are non-graduates, 29% of them are diploma holders, 59% of them are graduates, and 9% of the respondents are post graduates

TABLE 4: WORK EXPERIENCE OF THE RESPONDENTS

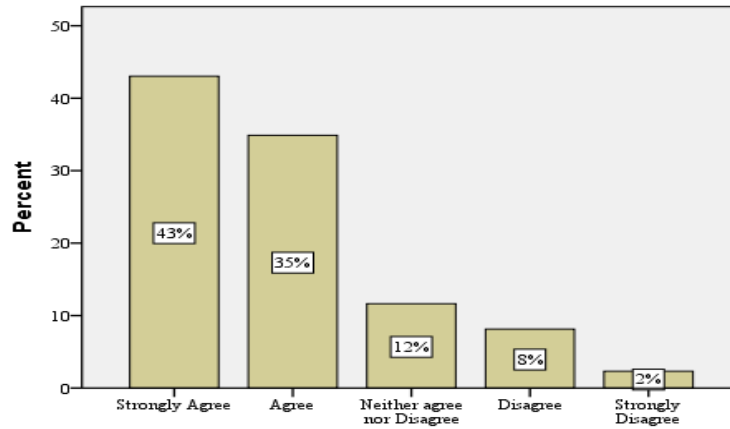
OPTIONS	FREQUENCY	PERCENTAGE (%)
Below 5 Years	45	52.3
6-10 Years	20	23.3
11-15 Years	15	17.4
Above 15 Years	6	7.0
TOTAL	86	100



Interpretation: 52% respondents have less than 5 years of work experience, 23% of them have 6-10 years of experience, 17% of them have 11-15 years of experience, 7% respondents have more than 15 years of experience

TABLE 5: EXCESS STOCKS

OPTIONS	FREQUENCY	PERCENTAGE (%)
Strongly Agree	37	43.0
Agree	30	34.9
Neither agree nor disagree	10	11.6
Disagree	7	8.1
Strongly Disagree	2	2.3
TOTAL	86	100



Interpretation: 43% respondents strongly agree that holding excess stock is the challenge in ERP, 35% of them agree with this, 12% of the respondents are neutral towards this, 8% respondents disagree and rest 2% of them strongly disagree with this

CHI-SQUARE TEST

Chi-Square between age of the respondents and their opinion no or poorly done needs analysis as a barrier in effective evolution of ERP

Null Hypothesis:

Ho = There is no dependency between age of the respondents and their opinion no or poorly done needs analysis as a barrier in effective evolution of ERP

Alternate Hypothesis:

H₁ = There is a dependency between age of the respondents and their opinion no or poorly done needs analysis as a barrier in effective evolution of ERP

Age * Poorly Crosstabulation									
			Poorly					Total	
			Strongly Agree	Agree	Neither agree nor Disagree	Disagree	Strongly Disagree		
Age	Below 20 Years	Count	0	1	0	0	0	1	
		Expected Count	.4	.4	.1	.1	.0	1.0	
	21-30 Years	Count	18	17	6	5	1	47	
		Expected Count	20.2	17.5	5.5	2.7	1.1	47.0	
	31-40 Years	Count	16	7	3	0	0	26	
		Expected Count	11.2	9.7	3.0	1.5	.6	26.0	
	Above 40 Years	Count	3	7	1	0	1	12	
		Expected Count	5.2	4.5	1.4	.7	.3	12.0	
	Total		Count	37	32	10	5	2	86
			Expected Count	37.0	32.0	10.0	5.0	2.0	86.0

Chi-Square Tests			
	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	13.832 ^a	12	.312
Likelihood Ratio	15.611	12	.210
Linear-by-Linear Association	.484	1	.487
N of Valid Cases	86		

a. 14 cells (70.0%) have expected count less than 5. The minimum expected count is .02.

Interpretation: Chi square value of χ (12) 13.832. Significance 0.312 at 5% level of significance, table value 13.832 is > 0.312 and the accepted Null Hypothesis. Hence there is no significant relationship between age of the respondents and their opinion no or poorly done needs analysis as a barrier in effective evolution of ERP

ONE WAY ANOVA TEST

Null Hypothesis:

Ho = There is no statistically significant relationship between education of the respondents and the utilization of resources as a challenge in present ERP process

Alternate Hypothesis:

H₁ = There is a statistically significant relationship between education of the respondents and the utilization of resources as a challenge in present ERP process

Descriptives								
Utilization								
	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
Non Graduate	2	1.50	.707	.500	-4.85	7.85	1	2
Diploma	25	2.04	1.172	.234	1.56	2.52	1	5
Graduate	51	2.12	1.089	.152	1.81	2.42	1	5
Post Graduate	8	1.25	.463	.164	.86	1.64	1	2
Total	86	2.00	1.085	.117	1.77	2.23	1	5

ANOVA					
Utilization					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	5.746	3	1.915	1.666	.181
Within Groups	94.254	82	1.149		
Total	100.000	85			

Interpretation: This is the table that shows the output of the ANOVA analysis and we have no statistically significant difference between our group means. We can see that the significance level is 0.181 ($p = .181$), which is more than 0.05, therefore, there is no statistically significant relationship between education of the respondents and the utilization of resources as a challenge in present ERP process

CONCLUSION

ERP systems provide better visibility to the working of the organization and disciplined way of working. SME are the backbone of the Indian economy and are today faced with global competition. Therefore it becomes imperative for them to look for means of responding to the dynamic markets. ERP systems have become the most common IT strategy for most large companies. SME too are moving towards ERP systems. They need to adopt a proactive approach towards ERP and consider it as a business solution rather than a mere IT solution.

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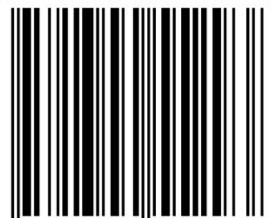
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