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Chief Editorial Note



I am delighted in putting forth the 2nd Issue - 2nd edition of *Applied Management Perspectives*. This journal continues to serve as a valuable platform for scholars, researchers, and practitioners in the field of management to share insights, research findings, and perspectives.

The journey from the first edition to the second edition has been one of growth, evolution, and refinement. With each edition, we have strived to elevate the quality and impact of the journal. In the current edition, we aim to maintain this by further enhancing the content, the review process, and the overall experience for both contributors and readers.

I would like to extend my heartfelt gratitude to the editorial team, reviewers, and contributors for their dedication, diligence, and expertise. As we look ahead, I encourage you all to continue your valuable contributions to this journal and share your expertise and insights with the academic community.

Regards

Dr Krishna Kumar
Associate Dean-SOM
Presidency University

Editorial Note



Welcome to the 4th issue of *Applied Management Perspectives* published by School of Management of Presidency University. We continue our journey through the ever-evolving landscape of management practices and perspectives. As we delve into the pages of this biannual journal, we find ourselves amidst a dynamic tapestry of sustainable ideas, strategies, and insights that shed light on the challenges and opportunities that define the world of applied management.

This issue of *Applied Management Perspectives* reflects the resilience of the management community. Our contributors have astutely examined the strategies and lessons learned from navigating the pandemic's turbulent waters. They offer valuable insights into the ways in which businesses have pivoted, adjusted, and embraced innovation to not only survive but thrive in this challenging environment. It is our hope that their experiences and research will serve as a beacon of guidance for leaders and managers navigating future uncertainties.

In this edition, we also explore broader themes that transcend the immediate crisis. We delve into topics such as sustainable management, globalization effects, Stock Market trends, Analytics, Gender equality and the role of digital world in shaping consumer behaviour. These articles remind us that while addressing immediate challenges is crucial, we must also keep our gaze fixed on the horizon, envisioning the long-term impact of our decisions and actions.

We are thankful to all the authors for their scholarly contributions and also wish to get the same patronage from all the authors and researchers, for the subsequent issues of the Journal.

Our humble gratitude to the Website Team, Editorial Committee Dr. Saravana Kumar Selvaraj-Asst. Prof.-SOM and Dr. Vijaya Vardhan Manchala-Asst.Prof-SOM. In closing, I encourage you to approach this issue with an open mind, eager to explore new perspectives and approaches to management. Let us continue to adapt, innovate, and learn from each other as we navigate the ever-changing landscape of applied management.

Sincerely,
Dr Virupaksha Goud G

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MAP MANAGEMENT WITH ARTIFICIAL INTELLIGENCE TO ENHANCE SOCIAL GOOD SUSTAINABILITY PRACTICES

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ABSTRACT

Purpose: Artificial intelligence (AI) has the potential to help tackle some of the world's most challenging social problems. Artificial Intelligence used in the right way can support tackling cases across all 17 of the sustainable development goals. Real-life examples of AI are already being applied in about one-third of these use cases, albeit in relatively small tests. They range from diagnosing cancer to helping blind people navigate their surroundings, identifying victims of online sexual exploitation, and aiding disaster-relief efforts. The study by Dan (2022) states that future works must unify the different dimensions of management that can sustain with Artificial Intelligence which supports the sustainability of social good.

Design/Methodology/Approach: This research has quantitative research with a survey performed targeting employees and collected 125 responses from Employees of the IT Industry by selecting them in a snowball sampling methodology.

Findings: From the interpretation, it was found a management-enhanced model under artificial intelligence is required to manage the sustainability of social good.

Originality: This paper presents original ideas on how enhanced management concepts can be connected with artificial intelligence to create a sustainable social good practice.

Social implications: Organizations as well as employees can be benefited from the improvisation of better management-infused social good practices and elevate the standards of social good and sustainability.

Keywords: Artificial Intelligence, Management Practice, Social Good, Sustainability, Sustainable Social Good Practice.

1. INTRODUCTION

As the world faces complex challenges related to social and environmental sustainability, the role of management practices becomes increasingly crucial. To effectively address these challenges and enhance social good sustainability practices, organizations are turning to a key tool: artificial intelligence (AI). By mapping management principles together with AI technology, businesses can harness its capabilities to drive sustainable outcomes, foster ethical decision-making, and create positive societal impact. This introduction explores how the integration of management practices and AI can be a transformative approach for enhancing social good sustainability practices. By leveraging AI's computational power, data analytics, and predictive capabilities, organizations can make more informed decisions, optimize resource allocation, and promote sustainable practices at a broader scale. Traditional management practices have relied on human judgment and experience, which can be limited in analyzing large volumes of data and identifying complex patterns. AI, on the other hand, can process vast amounts of data, detect correlations, and provide actionable insights in real-time.

This convergence of management principles with AI allows organizations to leverage data-driven approaches for sustainable decision-making, thereby enhancing social and environmental outcomes. AI can be employed across various domains to drive social good sustainability practices. For instance, in supply chain management, AI algorithms can optimize logistics, reduce waste, and minimize carbon emissions by dynamically adjusting transportation routes and inventory levels. In energy management, AI can help optimize energy consumption, forecast demand, and facilitate the integration of renewable energy sources into the grid. In addition, AI-powered analytics can enable organizations to identify and address social inequalities, enhance diversity and inclusion efforts, and promote ethical business

practices. By integrating management principles with AI, organizations can also enhance their ability to predict and mitigate risks associated with sustainability. AI algorithms can analyze historical data, identify patterns, and forecast potential environmental, social, and governance (ESG) risks. This proactive approach allows organizations to develop preventive measures, implement sustainable practices, and avoid negative impacts on communities and the environment.

Furthermore, the combination of AI and management principles fosters transparency and accountability. AI-powered tools enable organizations to track and measure their sustainability performance, set targets, and monitor progress in real-time. This transparency helps build trust among stakeholders and facilitates better communication, collaboration, and partnerships for collective action toward sustainable development goals. However, it is essential to recognize the ethical implications and potential biases associated with AI. The integration of management principles with AI should be guided by principles of fairness, transparency, and responsible use of technology. Organizations must ensure that AI systems are designed with ethical considerations in mind, avoiding discriminatory practices, protecting privacy, and promoting equitable outcomes.

In conclusion, mapping management principles together with AI represents a key way to enhance social good sustainability practices. By leveraging AI's computational capabilities, organizations can make data-driven decisions, optimize resource allocation, and promote sustainable practices at a larger scale. The integration of AI with management practices allows businesses to address complex challenges, predict risks, and foster transparency and accountability. To achieve sustainable development goals and create a positive societal impact, organizations must embrace the potential of AI as a transformative tool in driving social good sustainability practices.

2. REVIEW OF LITERATURE

Choudhary, V., & Bali, R. K. (2020). Artificial Intelligence in Sustainable Supply Chain Management: A Literature Review and Future Research Directions. *Journal of Cleaner Production*, 269, 122318. This literature review explores the integration of artificial intelligence (AI) in sustainable supply chain management. The study highlights the potential of AI technologies, such as machine learning and optimization algorithms, in optimizing logistics, reducing waste, and improving sustainability performance. It emphasizes the need for further research on the ethical considerations and implementation challenges of AI in sustainable supply chain practices.

Stamelos, I., Zafeiropoulos, A., & Chatzimisios, P. (2020). Artificial Intelligence for Environmental Sustainability: A Systematic Literature Review. *Sustainability*, 12(11), 4580. This review examines the role of artificial intelligence in enhancing environmental sustainability. It discusses various applications of AI, including energy management, pollution monitoring, and natural resource conservation. The study identifies the potential benefits of AI in promoting sustainability practices and emphasizes the importance of ethical considerations and human-AI collaboration in achieving sustainable outcomes.

Frank, B., & Krishnan, R. (2020). Artificial Intelligence for Social Good: A Survey. *ACM Computing Surveys*, 53(6), 1-39. This comprehensive survey provides an overview of how artificial intelligence can contribute to social good initiatives. It explores various domains, such as healthcare, education, poverty alleviation, and sustainability, where AI technologies have the potential to address social challenges. The study emphasizes the need for responsible AI development and ethical considerations to ensure the positive impact of AI on social well-being.

Ding, L., Lu, C., Li, L., & He, Q. (2021). Artificial Intelligence Applications in

Sustainable Development: A Review. *Journal of Cleaner Production*, 289, 125673. This review examines the application of artificial intelligence in promoting sustainable development. It discusses how AI technologies, such as data analytics, machine learning, and predictive modeling, can assist in decision-making, resource optimization, and environmental management. The study highlights the importance of AI ethics, explainability, and transparency to ensure the responsible and sustainable use of AI technologies.

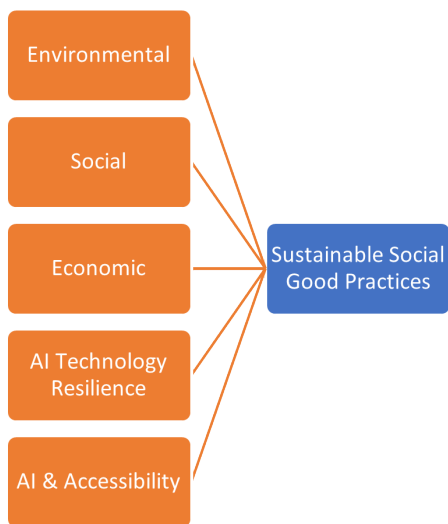
Su, X., & Zhang, W. (2020). Artificial Intelligence for Social Good: A Systematic Literature Review. *IEEE Access*, 8, 92469-92482. This systematic literature review focuses on the use of artificial intelligence for social good. It explores various applications of AI, including sustainability, poverty alleviation, healthcare, and education. The study discusses the potential benefits and challenges of AI in achieving social good outcomes and emphasizes the need for interdisciplinary collaboration and ethical considerations to maximize the positive impact of AI technologies.

In summary, the reviewed literature highlights the potential of integrating management principles with artificial intelligence (AI) to enhance social good sustainability practices. The studies discuss the application of AI in domains such as supply chain management, environmental sustainability, and social welfare. They emphasize the importance of ethical considerations, responsible AI development, and human-AI collaboration to ensure the positive impact of AI on social and environmental outcomes. Overall, the literature underscores the transformative role of AI in mapping management practices for sustainable development and emphasizes the need for further research and practical implementation in this area.

3. RESEARCH OBJECTIVE

- To identify the Social Good Sustainability Practices determinants.
- To analyze the relationship between independent variables
- To analyze the relationship between Environmental, Social, Economic, AI Technology Resilience, AI & Accessibility (Independent Variables) and Sustainable Social Good Practices (dependent variable)
- To offer an Artificial Intelligence-based model suggesting sustainable practices for social goods.

4. RESEARCH MODEL



5. RESEARCH METHODOLOGY

The persistence of this research is to study the rapport between Artificial Intelligence and its impact on Sustainable Social Good Practices of IT industry employees, in Kancheepuram District, Tamilnadu. The significant aim of this study is to contribute and analyze valuable insights into the field of IT and inform practical interventions in Kancheepuram District. It is Descriptive research with the use of Snowball Sampling, 125 samples. The primary data was gathered through a structured survey questionnaire and personal interviews. Based on

the study problem, gap, and theoretical model, appropriate statistical tools and methodologies were applied. The research aims and hypotheses guided the findings, recommendations, and conclusion.

6. ANALYSIS & INTERPRETATION

Reliability:

The Cronbach's alpha value has improved after the pilot study, as seen in the table below. After making the required modifications in the items, the values of Cronbach's alpha with respect to each construct for the 50 respondents are more than 0.70, indicating that the contents that are used to assess the variables are dependable. This indicates that there is no need for further changes and therefore there is no initial response prejudice.

Table 1 - Cronbach's Alpha test for Reliability

| Reliability | | |
|-------------|-----------------------------------|-------------|
| S. No | Variables | Reliability |
| 1 | Environmental | 0.829 |
| 2 | Social | 0.913 |
| 3 | Economic | 0.814 |
| 4 | AI Technology Resilience | 0.732 |
| 5 | AI & Accessibility | 0.715 |
| 6 | Sustainable Social Good Practices | 0.749 |

The reliability of each construct from the above table is Environmental (0.829), Social (0.913), Economic (0.814), AI Technology Resilience (0.732), AI & Accessibility (0.715), and Sustainable Social Good Practices (0.749).

Correlation:

Table 2 - Correlation:

| | | Environmenta l | Social | Economic | AI Technology Resilience | AI & Accessibility |
|--|----------------------------|-------------------|--------|----------|-----------------------------|-----------------------|
| Environ mental | Pearson Correlation | 1 | | | | |
| | Sig. (2-tailed) | | | | | |
| | N | 125 | | | | |
| Social | Pearson Correlation | .701** | 1 | | | |
| | Sig. (2-tailed) | 0 | | | | |
| | N | 125 | 125 | | | |
| Economi c | Pearson Correlation | .653** | .730** | 1 | | |
| | Sig. (2-tailed) | 0 | 0 | | | |
| | N | 125 | 125 | 125 | | |
| AI Technol ogy Resilian ce | Pearson Correlation | .628** | .685** | .814** | 1 | |
| | Sig. (2-tailed) | 0 | 0 | 0 | | |
| | N | 125 | 125 | 125 | 125 | |
| AI & Accessib ility | Pearson Correlation | .728** | .711** | .716** | .772** | 1 |
| | Sig. (2-tailed) | 0 | 0 | 0 | 0 | |
| | N | 125 | 125 | 125 | 125 | 125 |

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

From the above table 2, it is clear that the correlation is high between AI Technology Resilience and Economic which is 0.814.

Table 4 – ANOVA

| ANOVA ^a | | | | | | |
|--------------------|-------------------|----------------|-----|-------------|--------|-------------------|
| Model | | Sum of Squares | Df | Mean Square | F | Sig. |
| 1 | Regression | 1551.588 | 6 | 258.598 | 57.674 | .000 ^b |
| | Residual | 2748.558 | 119 | 4.484 | | |
| | Total | 4300.147 | 125 | | | |

a. Dependent Variable: Sustainable Social Good Practices
b. Predictors: (Constant), Environmental, Social, Economic, AI Technology Resilience, AI & Accessibility

Table 5 – Coefficients

| Coefficients ^a | | | | | | |
|---------------------------|-----------------------------|-----------------------------|------------|--------------------------------------|--------|-------|
| Model | | Unstandardized Coefficients | | Standardiz ed Coefficien ts | t | Sig. |
| | | B | Std. Error | Beta | | |
| 1 | (Constant) | -0.62 | 0.329 | | -1.884 | 0.06 |
| | Environmental | 0.041 | 0.017 | 0.131 | 2.402 | 0.017 |
| | Social | 0.034 | 0.023 | 0.093 | 1.994 | 0.036 |
| | Economic | 0.012 | 0.034 | 0.023 | 0.35 | 0.027 |
| | AI Technology Resilience | 0.052 | 0.033 | 0.101 | 1.963 | 0.049 |
| | AI & Accessibility | 0.05 | 0.024 | 0.118 | 2.072 | 0.039 |

a. Dependent Variable: Sustainable Social Good Practices

From the table 5, the coefficient table provide the necessary data to predict and also the significance is high to interpret the data to be statistically significant.

7. FINDINGS

The present study was carried out in seven stages. At the first stage, the personal profile of the employees (N = 125), their units were discussed. Based on the test of Reliability, the data came back significant and recommended for further analysis. The respondents were (N = 125) classified on the basis of their age, gender, education, functional area or department, designation, shift, working hours, total experience, respondent's experience in the current organization, and number of years working under the current profession.

- I. The correlation of independent variables turned to be significant and it was high between AI Technology Resilience and Economic which is 0.814
- II. The regression result turned to be significant

8. SUGGESTIONS

One key way to map management together with artificial intelligence (AI) to enhance social good sustainability practices is through the implementation of AI-powered data analytics and decision-making systems. Here's how organizations can utilize this approach:

- I. **Data-driven Sustainability Assessment:** Implement AI algorithms to analyze large volumes of data related to social and environmental impacts.
- II. **By utilizing machine learning and data mining techniques,** organization can identify trends, patterns, and correlations within the data to gain insights into their sustainability performance. This assessment can help identify areas of improvement, set targets, and monitor progress towards sustainability goals.
- III. **Predictive Modelling for Risk Assessment:** Use AI predictive modelling techniques to assess potential risks and impacts on social and environmental sustainability. By analysing historical data and

external factors, AI algorithms can provide organizations with insights into future risks, allowing for proactive planning and mitigation strategies. This approach helps organizations identify emerging sustainability risks and take preventive measures to avoid negative consequences

- IV. **Optimal Resource Allocation:** Utilize AI-based optimization algorithms to allocate resources efficiently and sustainably. By considering various factors such as energy consumption, waste generation, and social impacts, AI can optimize decision-making processes related to resource allocation. This approach ensures that resources are used effectively, minimizing waste and maximizing social and environmental benefits.
- V. **Ethical Decision-Making Frameworks:** Develop AI-powered decision-making frameworks that integrate ethical considerations. By embedding ethical principles into AI algorithms, organizations can ensure that decisions align with social good sustainability practices. This includes considerations such as fairness, transparency, and equity, which help prevent biased outcomes and promote responsible decision-making.
- VI. **Stakeholder Engagement and Collaboration:** Utilize AI-based tools for stakeholder engagement and collaboration. AI-powered platforms can facilitate transparent and inclusive decision-making processes by collecting and analysing feedback from diverse stakeholders. This approach helps organizations consider multiple perspectives, address concerns, and build consensus around sustainability initiatives.
- VII. **Monitoring and Reporting Systems:** Implement AI-enabled monitoring and reporting systems to track sustainability performance and communicate progress to stakeholders.

These systems can automate data collection, analyse performance metrics, and generate real-time reports, enabling organizations to demonstrate their commitment to social good sustainability practices. This transparency fosters accountability and builds trust with stakeholders.

VIII. Continuous Learning and Improvement: Leverage AI for continuous learning and improvement in sustainability practices. By analysing data and performance metrics, AI algorithms can provide feedback and insights for organizations to refine their strategies and optimize outcomes. This iterative approach ensures ongoing enhancement of social and environmental sustainability efforts.

It is important to note that while AI can provide valuable insights and decision-making support, human judgment and ethical considerations should always be involved in the decision-making process. Organizations should ensure that AI technologies are developed and used responsibly, addressing issues such as bias, privacy, and fairness. By mapping management principles together with AI in these ways, organizations can enhance their social good sustainability practices by leveraging the power of data analytics, predictive modeling, and optimized decision-making. This integration enables organizations to make informed, ethical, and impactful decisions that contribute to sustainable development and create positive social and environmental outcomes.

predictive modeling, and decision-making systems, organizations can make informed and impactful decisions that contribute to sustainable development and positive social and environmental outcomes. Through data-driven sustainability assessments, organizations can gain valuable insights into their sustainability performance, identify areas for improvement, and set targets for progress. The use of predictive modeling helps organizations proactively identify and address potential risks, allowing for effective risk mitigation strategies and the

avoidance of negative social and environmental impacts. Optimal resource allocation facilitated by AI optimization algorithms enables organizations to use resources efficiently and sustainably, minimizing waste and maximizing social and environmental benefits. Embedding ethical considerations into AI-powered decision-making frameworks ensures that decisions align with social good sustainability practices, promoting fairness, transparency, and equity. Stakeholder engagement and collaboration are enhanced through AI-based tools, enabling organizations to collect and analyze feedback from diverse stakeholders.

9. CONCLUSION

In conclusion, the integration of management principles with artificial intelligence (AI) offers a key way to enhance social good sustainability practices within organizations. By leveraging AI-powered data analytics, This inclusive approach ensures that sustainability initiatives consider multiple perspectives and address concerns, fostering consensus and collective action. AI-enabled monitoring and reporting systems provide real-time tracking of sustainability performance and enable organizations to communicate progress transparently to stakeholders. This transparency fosters accountability and builds trust. Importantly, organizations should approach the integration of management principles with AI with responsible and ethical practices. Human judgment and ethical considerations should always be involved in decision-making processes, addressing issues such as bias, privacy, and fairness. By mapping management principles together with AI, organizations can unlock the potential of data-driven insights, optimized decision-making, and stakeholder engagement, resulting in enhanced social good sustainability practices. This integration empowers organizations to make evidence-based, ethical decisions, driving progress towards sustainable development goals and creating positive impacts on society and the environment.

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PREDICTIVE DECISION TREE MODEL TO FORECAST CUSTOMERS COMPULSIVE BUYING BEHAVIOR FOR SUSTAINABLE FUTURE IN RETAIL MARKET

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ABSTRACT

Consumer behaviour has changed significantly during the past ten years. Each Consumer is undoubtedly unique as a person. Therefore, a successful company needs to have a thorough understanding of how customers choose products. It is essential to know impulsive buying in order to recognise the nature of "Purchasing power" and its impact on a purchasing decision. In order to investigate compulsive purchase behaviour among Indian urban customers, this study focuses on urban retail market settings near important cities like Bangalore. Due to the growth of the Indian IT industry, Bangalore's consumer lifestyle and spending power have undergone considerable changes. According to their predisposition for obsessive shopping, in this study are classified into a variety of groups. In this work, we adopted Predictive Decision Tree to forecast analysis approach is used for better quality shoppers therefore, an effective differentiation strategy of a firm is to provide a better version of an existing product in terms of quality of service we refer to this quality upgrade as a next-generation decision tree model which help retailers to predict mind set of young IT shoppers.

Keywords: Decision analysis, factors influencing shopping, Shopping behaviour.

1. INTRODUCTION

Customers may now buy a variety of customised goods online, including computers and fitness equipment. Instead of reading their daily newspapers, more individuals now read the internet editions, and news is increasingly being found on social media. To succeed in today's dynamic and rapidly evolving economy, marketers need to have a thorough understanding of consumers. This entails comprehending their requirements, viewpoints, operating methods, and spending habits. They must ascertain the contributing elements that influence client preferences. Researchers are interested in exploring different consumer consumption and possession attributes. These traits include excessive purchasing and consumerism. What we refer to as purchasing power is the distinction between "Feelings and exhilaration" that a buyer experiences from an unexpected purchase vs a planned purchase (Faber and O'Guinn, 1989). Power to buy has always had a positive impact on purchasing choices. Scholars of consumer behaviour and economists have only recently examined compulsive purchasing. This is very different from impulsive buying, which happens when a buyer makes an unplanned purchase. However, someone who purchases excessively develops a shopping addiction, which can have major negative consequences including placing them in debt. On occasion, it can cause conflict in personal relationships and instability in consumers' daily lives.

2. SIGNIFICANCE OF STUDY

The primary objective of this study is to validate the Consumer Compulsive Buying Behavior Scale in an Indian context. Retailer would also benefit from having a thorough understanding of the various subgroups of compulsive consumers, their demographic makeup, and the multiple factors they weigh while buying goods and services. This would help retailers create marketing strategies for India's compulsive consumers.

3. RESEARCH METHODOLOGY

This study focuses on Bangalore's urban marketplaces because the growth of the Indian IT sector in this city has caused substantial changes in consumer spending power and lifestyle. According to their predisposition for compulsive shopping, children are segmented into numerous groups in this study. This study makes use of predictive analytics, decision trees, and time series modeler forecasting analysis. This would help marketers create marketing strategies for India's neurotic consumers

4. OBJECTIVES OF THE STUDY

In an Indian context, to validate the scale for compulsive purchasing behavior.

1. To ascertain the factors influencing consumers' purchasing behavior.
2. To classify Bangalore's young consumers into different groups based on their obsessive buying tendencies.
3. To ascertain whether there is a connection between their demographics and compulsive shopping habits.

5. RESEARCH DESIGN

Exploratory research is used in the investigation's opening phase. This study aims to identify and explore the various invisible factors that affect young customers' purchase decisions. It is beneficial to look into the pleasure of shopping, spending tendencies, customer mindsets, usage, impulsive purchases, invisible drives, thoughts, attitudes, and hidden factors that affect these customers' purchasing decisions.

Descriptive research is used for the investigation's second section. In particular, this methodology helps to describe the traits of distinct consumer segments in Bangalore. It also helps to identify the characteristics of compulsive shopping. Using this description as a model, marketers may create numerous strategies to target distinct subgroups of neurotic consumers.

6. DATA SOURCES

The data that are gathered directly from consumers are referred to as primary data. These information is gathered straight from the youthful consumers who live in Bangalore. The Compulsive Purchasing Behavior Scale, created by Elizabeth A. Edwards in 1993 for the study "Development of a Novel Scale for Assessing Compulsive Buying Behavior," is included in secondary data. The questionnaire used in this study was created using Likert scale. By using a structured, open-ended questionnaire in a survey, primary data are directly obtained from consumers. The reliability, discriminant validity, and convergent validity of the survey are all evaluated.

7. SAMPLING DESIGN

In this study, convenience sampling was used. The sampling components for this study were chosen based on two criteria. The two requirements are:

The responders must fall between the ages of 21 and 35, the responders must have lived in Bangalore for two years, and the study used samples around 200 in bangaloreans.

8. LITERATURE REVIEW

An irresistible and repetitive urge to buy is characterized by compulsive buying disorder, also known as oniomania. While the literature contains different descriptions, the vast majority of people with this disorder are experiencing excessive worry and poor impulse control related to spending, chronic purchasing, and repetitive, compulsive purchasing of unnecessary.

Compulsive buying is chronic, repetitive buying, according to O' Guinn and Faber (1989), which becomes a primary response to negative events or feelings. Compulsive buyers tend to buy too many items they don't need and can't afford at times (Hoyer and MacInnis, 2001

Compulsive purchasing is different from impulse purchasing: impulse purchasing centers on a particular product at a particular time and is temporary, while compulsive purchasing is an enduring behavior that focuses on the purchasing process, not the purchasing itself (Solomon, 2004)

Compulsive purchasing is one form of compulsive consumption which is considered the dark side of consumption in the realm of abnormal consumer behaviour (Shiffman and Kanuk, 2000)

According to Faber et al. (1987), compulsive consuming is improper, frequently excessive, and obviously harmful to the lives of those who exhibit it. The other types of compulsive consuming include excessive eating, gambling addiction, drug addiction, and alcoholism (Shiffman and Kanuk, 2000). Similar to the behaviours listed above, compulsive purchasing has serious negative effects on one's financial, emotional, and interpersonal well-being as well as the well-being of their families and even the society to which they belong. Research was conducted to quantify and detect compulsive purchasing as the phenomenon gained increasing attention. Faber and O'Guinn (1992) used a scale to quantify obsessive shopping.

The scale developed by Valence et al. measures respondents' propensities for compulsive buying, according to Cole and Sherrell (1995)²⁵. The scale developed by Faber and O'Guinn detects more extreme compulsive buyers. Rindfleisch et al. (1997)²⁶ found that materialism and family structure have an impact on adolescents' compulsive purchasing.. D'Atous et al. (1990) discovered that environmental factors including peers, family communication, and parental compulsiveness have an impact on adolescent compulsive shopping trends. O'Guinn and Faber (1989) discovered hat compulsive buyers are likely to exhibit compulsiveness

as a personality trait and have lower self-esteem, and that the consequences of compulsive buying include extreme levels of debt, anxiety, and frustration, subjective suffering, and a lack of self-control.

According to (Edwards, 1993) obsessive shopping is an abnormal kind of shopping. In a sense, spending becomes an addiction for people, which might lead to debt for them. Additionally, it is characterised by customers' insatiable drive to spend money on shopping and other purchases. This was widely acknowledged by financial counsellors and therapists who believed that compulsive shopping conduct is the cause of financial difficulties. The validity and reliability of the scale are assessed. The outcome shows that obsessive spending may be broken down into five different dimensions or components. These included the need or compulsion to spend money, feelings related to shopping and spending, a propensity to spend money, dysfunctional spending, and guilt following a purchase.

According to Gwin, C. F (2005), Compulsive buyers form a significant percentage of the entire population. The authors feel that compulsive spending behaviour is a burden to the society. It is important to study the compulsive spending behaviour as it causes harm not only to the individuals but also to the society in the form of debt, bankruptcies and dysfunctional families. The consequences of compulsive buying seem positive in the short-term as the buyer receives the immediate gratification of the purchase; however, the long-term consequences are negative as compulsive buyers deal with economic and psychological consequences including high levels of credit card debt, low savings, depression, anxiety, frustration, low self-esteem, and interpersonal conflict (Roberts 1998).

The behaviours of compulsive consumption, according to Faber and O' Guinn (1989), can include pathological

gambling, kleptomania, obsessive sexuality, and eating disorders. According to authors, compulsive buying is described as "chronic, repetitive purchasing that occurs as a reaction to negative events or feelings." According to (McElroy, 1994), there is a connection between college students' obsessive shopping habits and their credit card debt. In particular, a number of variables, including gender, credit card use, rate of time preference, and income, were linked to the compulsive purchasing behaviour of college students. Regression analysis served to demonstrate this. Using the data from this survey, university policies are made or amended to include financial education and counselling.

9. RESEARCH GAP IDENTIFICATION

The term "compulsive buying" is used in the current study to refer to all forms of unusual buying behaviours, even though terminology like "impulsive buying" and "compulsive buying" are also sometimes used to refer to unplanned purchase (Solomon, 2002). Many studies on compulsive behaviour have been conducted, including studies on the gender and economic influences of compulsive behaviour (Block & Morwitz, 1999; Muller et al., 2007), however none of these studies specifically addressed obsessive purchasing behaviour in the Indian urban market. Given that China and India together account for a third of global population, a study of compulsive buying in such a market environment is of importance. This study focuses on consumer purchasing patterns in Bangalore in an effort to pinpoint the city's compulsive shoppers.

10. DATA ANALYSIS AND DISCUSSION

Predictive analytics is a branch of advanced analytics that makes predictions about future outcomes using historical data combined with statistical modelling, data mining techniques and machine learning. Companies employ predictive analytics to find patterns in this data to

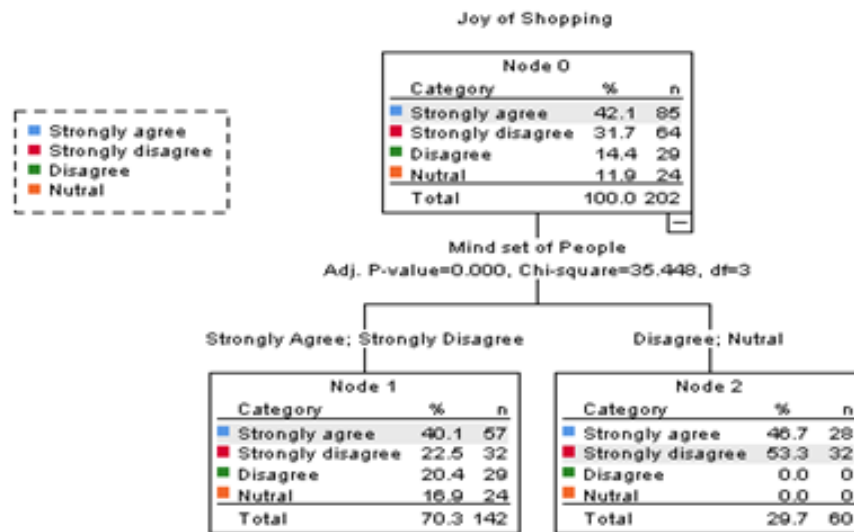
identify risks and opportunities.

A decision tree is a non-parametric supervised learning algorithm, which is utilized for both classification and regression tasks. It has a hierarchical, tree structure, which consists of a root node, branches, internal nodes and leaf nodes.

PREDICTIVE ANALYTICS WITH CLASSIFICATION AND DECISION TREE

| | | |
|----------------|--------------------------------|--------------------------------------|
| Specifications | Growing Method | CHAID |
| | Dependent Variable | Joy of Shopping |
| | Independent Variables | Usage of Product, Mind set of People |
| | Validation | None |
| | Maximum Tree Depth | 3 |
| | Minimum Cases in Parent Node | 100 |
| | Minimum Cases in Child Node | 50 |
| Results | Independent Variables Included | Mind set of People |
| | Number of Nodes | 3 |
| | Number of Terminal Nodes | 2 |
| | Depth | 1 |

Figure1. Decision Tree



Looking at the Table1: It is discerned that the variable joy of Shopping being Parent Node has got strongly agree with other two Child nodes by 40.1% & 46.7 % this shows that the joy of shopping has got correlation with the mind set of People by 40% which is 60% to the Total observed value hence this Variable is a determining Factor for deciding compulsive buying behaviour.

Table2. Tree Table

| Node | Strongly agree | | Strongly disagree | | Disagree | | Neutral | | Total | | Predicted Category | Parent Node | Primary Independent Variable | | | |
|------|----------------|---------|-------------------|---------|----------|---------|---------|---------|-------|---------|--------------------|-------------|------------------------------|-------------------|------------|----|
| | N | Percent | N | Percent | N | Percent | N | Percent | N | Percent | | | Variable | Sig. ^a | Chi-Square | df |
| 0 | 85 | 42.10% | 64 | 31.70% | 29 | 14.40% | 24 | 11.90% | 202 | 100.00% | Strongly agree | | | | | |
| 1 | 57 | 40.10% | 32 | 22.50% | 29 | 20.40% | 24 | 16.90% | 142 | 70.30% | Strongly agree | 0 | Mind set of People | 0 | 35.448 | 3 |
| 2 | 28 | 46.70% | 32 | 53.30% | 0 | 0.00% | 0 | 0.00% | 60 | 29.70% | Strongly disagree | 0 | Mind set of People | 0 | 35.448 | 3 |

Table 3. Classification

| Observed | Predicted | | | | | Percent Correct |
|--------------------|----------------|-------------------|----------|---------|--------|-----------------|
| | Strongly agree | Strongly disagree | Disagree | Neutral | | |
| Strongly agree | 57 | 28 | 0 | 0 | 67.10% | |
| Strongly disagree | 32 | 32 | 0 | 0 | 50.00% | |
| Disagree | 29 | 0 | 0 | 0 | 0.00% | |
| Neutral | 24 | 0 | 0 | 0 | 0.00% | |
| Overall Percentage | 70.30% | 29.70% | 0.00% | 0.00% | 44.10% | |

Looking at the Table 2 & 3 : It is discerned that the Tree diagram with four counts has 70.3% under acceptance and 29.7 % disagree with neutral being zero percent. This vouches that the joy of shopping when taken as dependent variable has P Value of 0.000 with

chi square being 35.448 in both the cases. However, when chi square value being 35.448 in the two nodes, the difference between the strongly agree and strongly disagree has not been significant as values show .000. Hence, the child nodes approves the parent joy of

Under the predicted classification by referring to Growing Method, the disagree and Neutral have both become zero to mean that the joy of shopping has got only two extremes with the ends being strongly agree and strongly disagree. Hence, there is no other variable in this continuum throughout and it is decided that the joy of shopping is the predicting variable.

Table 4. Time Series Modeler -Forecasting Analysis

| Model Description | | | |
|-------------------|-------------------|---------|---------------|
| | | | Model Type |
| Model ID | Joy of Shopping | Model_1 | ARIMA(1,0,11) |
| | Tendency to Spend | Model_2 | ARIMA(2,0,5) |

Table 5. Model Fit

| Fit Statistic | Mean | SE | Minimum | Maximum | Percentile | | | | | | |
|----------------------|---------|--------|---------|---------|------------|--------|--------|---------|--------|--------|--------|
| | | | | | 5 | 10 | 25 | 50 | 75 | 90 | 95 |
| Stationary R-squared | 0.495 | 0.034 | 0.471 | 0.519 | 0.471 | 0.471 | 0.471 | 0.495 | 0.519 | 0.519 | 0.519 |
| R-squared | 0.456 | 0.077 | 0.401 | 0.51 | 0.401 | 0.401 | 0.401 | 0.456 | 0.51 | 0.51 | 0.51 |
| RMSE | 0.604 | 0.174 | 0.481 | 0.728 | 0.481 | 0.481 | 0.481 | 0.604 | 0.728 | 0.728 | 0.728 |
| MAPE | 25.765 | 8.291 | 19.902 | 31.628 | 19.902 | 19.902 | 19.902 | 25.765 | 31.628 | 31.628 | 31.628 |
| MaxAPE | 108.359 | 34.975 | 83.628 | 133.09 | 83.628 | 83.628 | 83.628 | 108.359 | 133.09 | 133.09 | 133.09 |
| MAE | 0.418 | 0.178 | 0.292 | 0.544 | 0.292 | 0.292 | 0.292 | 0.418 | 0.544 | 0.544 | 0.544 |
| MaxAE | 2.649 | 0.063 | 2.605 | 2.694 | 2.605 | 2.605 | 2.605 | 2.649 | 2.694 | 2.694 | 2.694 |
| Normalized BIC | -0.848 | 0.568 | -1.249 | -0.446 | -1.249 | -1.249 | -1.249 | -0.848 | -0.446 | -0.446 | -0.446 |

Looking at the Time Series Modeller Forecasting analysis with which R squared values are measured fall below 0.5 meaning they are having variability when used as independent variable. If joy of shopping is correlated with tendency of spending, it goes without saying that the Normalised BIC turns negative that the two variables are positively correlated and an increase in one variable makes the other variable also increase.

Table 6. Model Statistics

| Model | Number of Predictors | Model Fit statistics | Ljung-Box Q(18) | | | Number of Outliers |
|----------------------------|----------------------|----------------------|-----------------|----|------|--------------------|
| | | Stationary R-squared | Statistics | DF | Sig. | |
| Joy of Shopping-Model_1 | 2 | 0.519 | 53.327 | 14 | 0 | 0 |
| Tendency to Spend -Model_2 | 1 | 0.471 | 41.401 | 14 | 0 | 0 |

Looking at the Graph Ljung Box Q18 chart with df as 14 when plotted for the two variables equivocally vouches for the size of the population in these two variables scattered between 1 to 101 and from 101 to 200. Hence, this charts proves there is negative correlation between the joy of shopping and tendency to spend under this Q18 chart. However, taking the df as 14 and significance at 0.000, it is presumed that the R Squared divides the data into two equal halves. Hence, the joy of shopping is a predictor variable.

11. CONCLUSION

The basic idea of this paper speaks on unplanned buying and given the compulsive buying behaviour of the young IT officials as respondents in this study, it is brought that there are few factors that are to be elucidated as 'predictors'. The survey of the respondents mostly restricted to Bengaluru city have expressed their propensity to suddenness in buying. Statistically, Decision tree model was found to be adaptive for this study as it has got nodes in Young star mind-set with two factors namely Joy of Shopping and the Tendency to spend emerging as predictor variables, Decision tree model has found positive correlation between the two. As the df in both the cases are 14 and with significance ruling at 0.000, it is concluded that these two variables are predictors for this study and the youngster respondents throw more light on the compulsive buying behaviour which help sustainable future for retailer understand these variables for designing new strategies to attract the younger generation tendency for a product with better quality is more attractive to consumers, who are willing to pay more for a better quality. Therefore, an effective differentiation strategy of a firm is to provide a better version of an existing product in terms of quality we refer to this quality upgrade as a next-generation decision tree model which help retailers to predict mind set of young IT shoppers.

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A STUDY ON THE STOCK PERFORMANCE OF PRIVATE AND PUBLIC SECTOR BANKING COMPANIES LISTED UNDER S&P BSE CARBONEX

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ABSTRACT

In recent days, social and environmental concern is gaining importance among the progressive investors all over the world. Investors look forward to put their funds in organizations which utilize environment friendly technologies and business practices to reduce their carbon impact. To provide these investors with a standard base to examine the performance of green companies' stocks in comparison with the rest of the market, certain green stock indices have been introduced all over the world which consist of stocks of companies assisted by green business philosophy. Bombay Stock Exchange of India has introduced two green indices in the year 2010 - BSE Carbonex and BSE Greenex. These indices help in the measurement of changing climate risk, performance of carbon emissions and advancement of energy efficient practices. This study intends to understand the volatility of share price movements of private and public sector banking companies listed in BSE Carbonex. This study is an analytical research work based on secondary data. The study attempted to analyze the market volatility by using mean, variance and correlation using the monthly adjusted closing prices of green banking stocks listed in BSE Carbonex. This study also attempts to compare the performance of green public sector bank stocks with green private sector bank stocks.

Keywords: Private Banks, Public Sector Banks, S&P Bse Carbonex, Stock prices, Volatility.

1. INTRODUCTION

BSE CARBONEX was launched in the year 2012. It is a carbon-based thematic index that values an organization's commitment to climate change. It aims at providing a benchmark as well as awareness to the dangers imposed by climate change. The assessment of these companies is made on the basis of carbon emission and carbon efficiency.

The drastic increase in greenhouse gas emissions in the recent years has given rise to Climate change. There are many other reasons behind climate change but the more common reason is anthropogenic activities. There is release of huge amount of greenhouse gases because of human activities in the atmosphere especially due to deforestation, burning of fossil fuels, industrial activities, etc. The release of these gases has resulted in global warming. Therefore, there is a need to keep a check on the greenhouse gas emissions emanating from our daily activities. Governments from all over the world are trying to come together to find a solution for this problem. The Indian Government has launched the National Action Plan of Climate Change in the year 2008 for tackling with the climate change issues.

It is the duty of the businessmen to act before it's late by considering the possible risks that might arise as a result of climate change. Many companies in India and the government have started working with various organizations like Carbon Disclosure Project – a non-profit organization from United Kingdom to work together for climate change adaptation and Mitigation. Bombay Stock Exchange has started indexing companies' and banks performance in terms of carbon emissions and climate change related risks and opportunities.

The first carbon index project in India, BSE Carbonex was launched by Bombay Stock Exchange in the year November 30, 2012. It takes into account the broader view of companies' commitment to mitigate climate

change. The Carbon Indexing Project uses data from Carbon Disclosure Project. CDP requires the leading companies from across the world to disclose information on emission of greenhouse gases, use of energy and the associated risks and opportunities from climate change. Carbon Disclosure Project has requested India's 200 largest companies to disclose climate change related information by their market capitalization as listed on the Bombay Stock Exchange.

The Companies which are efficient in managing the climate risk tend to be more attractive for long term investments. Investors look forward to put their funds in organizations which utilize environment friendly technologies and business practices to reduce their carbon impact. This study has been undertaken to analyze and examine the performance of green banking stocks listed under BSE Carbonex. There are 10 banking company stocks listed under BSE Carbonex, three public sector banks and seven private sector banks. The public sector banks listed under BSE Carbonex are State Bank of India, Bandhan Bank Ltd and Bank of Baroda. The private sector banks listed under BSE Carbonex are AU Small Finance Bank Ltd, Axis Bank Ltd, Federal Bank Ltd, ICICI Bank Ltd, HDFC Bank Ltd, IndusInd Bank Ltd and Kotak Mahindra Bank Ltd.

2. REVIEW OF LITERATURE

Neenu. C & T. Mohamed Nishad [July 2021] "Carbon Reduction and Sustainable Investment: A Way to Sustainable Development" the study was an attempt to examine the effect of different variables like population level, economic level, urbanization level, fossil fuel

energy consumption, industry proportion and emission of methane on carbon intensity in India using GARCH and EGARCH Model. The study was further extended to evaluate the volatility of green indices in the Indian stock market. The study found that all the identified variables except economic level had a significant positive impact on carbon intensity.

Swalih. M and Sulphey. M [2021] “Effectiveness of Investment in Sustainability Indices in the Bombay Stock Exchange” The study focused on determining the effectiveness of investing in environmentally responsible stock by analyzing the performance of three BSE indices; the S&P BSE Greenex, S&P BSE ESG-100, and S&P BSE Carbonex indices. The findings of the study indicate that the companies listed in sustainable indices performed as well or better than the market performance.

Preeti Sharma & Deepmala Jasuja [Jan 2020] in their research paper “Socially Responsible Investing and Stock Performance - A Study on Comparison of Sustainability Indices in India (ARCH & GARCH Approach)” have tried to compare the performance and volatility of BSE Carbonex and BSE Greenex via BSE Sensex. It was found that, during the study period, Sensex generated higher returns in comparison to that of the other two sustainability indices, Greenex and Carbonex.

Sanjay Kumar Patel and Poonam Kumari [2020] “Indian Stock Market Movements and Responsiveness of Sustainability Indices: A Risk Adjusted Analysis” The study was undertaken to analyze and examine the performance of BSE Carbonex and BSE Greenex with respect to market indices. The findings of the study show that the BSE Carbonex performance is similar to the BSE Sensex and BSE 500. Greenex performance is little lower than both BSE Sensex and BSE 500.

Shanavas S M & Dr. A V Hemalatha [2018] “Comparative Study on the volatility of share price of private and public sector Banking Companies” The study was taken up to examine and compare the volatility of share prices of three private banking companies with three public sector banking companies. This was an analytical research based on secondary data

Abhay Raja [July 2018] “Sustainable Business Practices and Stock Performance: A Study of BSE Greenex and its Constituents” The study made an attempt to examine and compare the performance of BSE Greenex with the performances of BSE Sensex and BSE – 100 indices. The study found that performance of BSE Sensex and BSE – 100 indices was better than the performance of BSE Greenex.

P. Vijaya & Dr. P. Sreenivas Reddy [April 2017] “A Study on Stock Exchanges & Sustainable Development” The study attempts to examine the evolution of stock exchanges in the movement towards sustainable development and the development of sustainable indices and practices.

Rajib Bhattacharya [2013] “Effect of Going Green on Stock Prices: A Study on BSE GREENEX” This paper tried to analyze and compare the performance of BSE-Greenex with other indices like the BSE-Sensex and the BSE-500 to find out whether it is financially rewarding for the investors to invest in green companies’ stocks. The study found that the performance of BSE-Greenex was superior over BSE-Sensex & BSE-500.

3. STATEMENT OF THE PROBLEM

Carbon efficient business can provide sustainable benefits for a business organization. The Companies which are effective and efficient in managing the climate risk tend to be more attractive for long term investment propositions. The Investors come forward to invest in organizations which will make use of environment friendly technologies and business practices to reduce their carbon intensity. This study has been undertaken to provide these progressive investors with the required information to assess the performance of green banking stocks listed under BSE Carbonex. BSE Carbonex

provides useful information and data to the investors which helps them in analyzing the risks and opportunities associated with change in climate. This enables the investors to monitor carbon emissions of companies in which they would like to invest.

4. OBJECTIVES OF THE STUDY

1. To analyze the stock performance of banking companies listed under S&P BSE CARBONEX.
2. To compare the stock performance of private banks with public sector banks listed under S&P BSE CARBONEX.
3. To examine the relationship between the performance of individual banks shares with S&P BSE CARBONEX and BSE SENSEX.

5. RESEARCH METHODOLOGY

For the study the banking stocks listed under BSE Carbonex have been selected. There are three public sector banks and seven private sector banks. The public sector banks listed under BSE Carbonex are State Bank of India, Bandhan Bank Ltd and Bank of Baroda. The private sector banks listed under BSE Carbonex are AU Small Finance Bank Ltd, Axis Bank Ltd, Federal Bank Ltd, ICICI Bank Ltd, HDFC Bank Ltd, IndusInd Bank Ltd and Kotak Mahindra Bank Ltd. This study is based on secondary data wherein daily adjusted closing prices of the S&P BSE Carbonex, BSE Sensex and daily closing prices of the banking stocks listed under BSE Carbonex are taken into consideration. The daily closing prices of the selected banking company stocks have been collected from the official website of Bombay stock Exchange (BSE) for a period of two years from 01-07-2021 to 30-06-2023. For data analysis, descriptive statistics, mean and variance analysis, trend analysis and correlation analysis have been used.

Period of Study

This study is based on the stock market information collected from private and public sector banking companies listed under BSE Carbonex for a period of two years from 1st July 2021 to 30th June 2023.

6. LIMITATIONS OF THE STUDY

1. This study is mainly carried out based on the performance of private sector and public sector banks stocks listed under S&P BSE Carbonex which might not be sufficient to generalize whole banking sector.
2. The study is purely based on technical analysis.
3. The period of study is restricted from 1st July 2021 to 30th June 2023 which might not be sufficient to predict the future market trend.

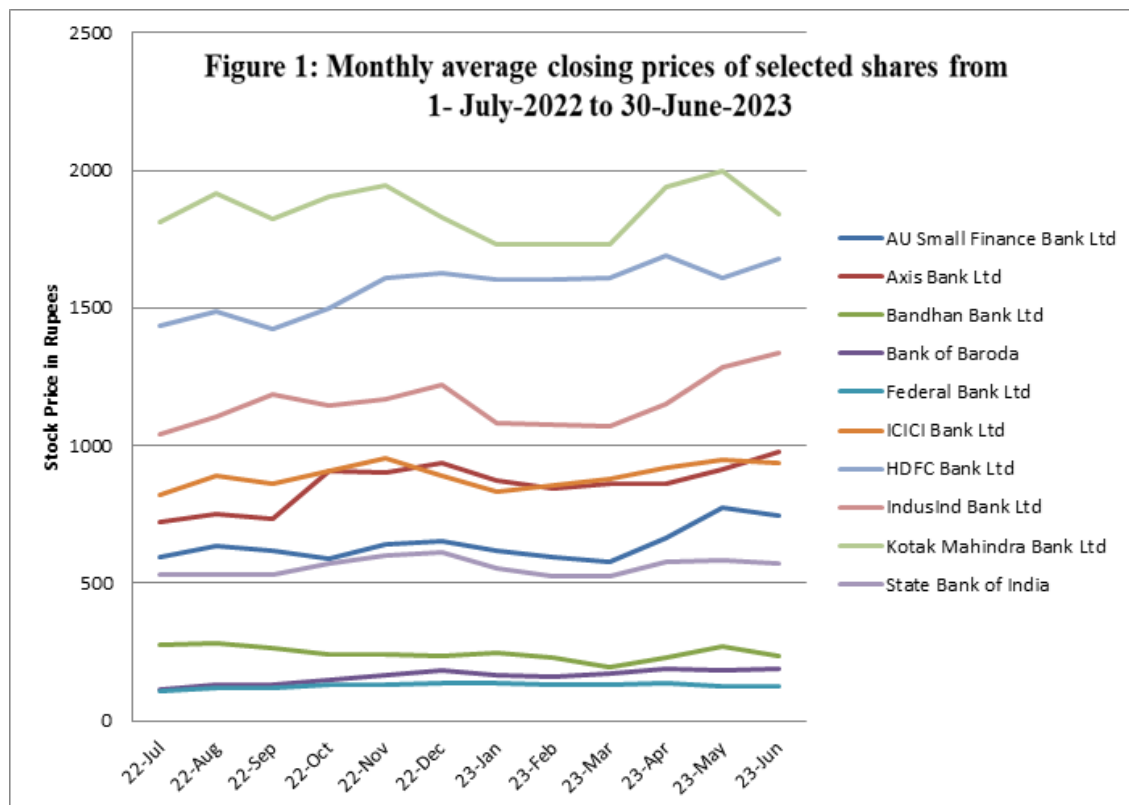
7. DATA ANALYSIS AND INTERPRETATION

Monthly average prices of selected stocks from 1st July 2021 to 30th June 2023

Table shows the monthly average of the adjusted closing prices of selected shares from 1- July-2021 to 30-June- 2023. The trend of share price movement of the selected stocks has been studied for a period of two years. State Bank of India, Bank of Baroda and Bandhan Bank Ltd., are the Public sector banks, while AU Small Finance Bank, Axis Bank Ltd, Federal Bank Ltd, ICICI Bank Ltd, HDFC Bank Ltd, IndusInd Bank Ltd and Kotak Mahindra Bank Ltd are private sector banks.

Table 1 : Monthly average prices of selected shares from 1- July- 2021 to 10- June-2023

| Month | AU Small Finance Bank Ltd | Axis Bank Ltd | Bandhan Bank Ltd | Bank of Baroda | Federal Bank Ltd | ICICI Bank Ltd | HDFC Bank Ltd | IndusInd Bank Ltd | Kotak Mahindra Bank Ltd | SBI |
|--------|---------------------------|---------------|------------------|----------------|------------------|----------------|---------------|-------------------|-------------------------|--------|
| 23-Jun | 754.1 | 987.8 | 242.05 | 190.35 | 126.1 | 934.35 | 1,701.75 | 1,375.05 | 1,847.20 | 572.8 |
| 23-May | 776.05 | 914.7 | 268.4 | 185 | 125.2 | 948.45 | 1,611.35 | 1,286.65 | 1,994.60 | 580.55 |
| 23-Apr | 663.75 | 860 | 229.2 | 187.8 | 134.95 | 917.7 | 1,688.05 | 1,152.05 | 1,937.70 | 578.05 |
| 23-Mar | 578.85 | 858.45 | 195.7 | 168.8 | 132.25 | 877.2 | 1,609.75 | 1,068.15 | 1,733.50 | 523.7 |
| 23-Feb | 593.2 | 843.8 | 230.9 | 159.25 | 129.1 | 854.65 | 1,601.25 | 1,077.85 | 1,729.00 | 522.75 |
| 23-Jan | 619 | 871.65 | 244.25 | 167.9 | 134.5 | 831.65 | 1,603.45 | 1,083.60 | 1,730.25 | 553.7 |
| 22-Dec | 652.95 | 933.85 | 234.2 | 185.65 | 138.95 | 890.95 | 1,627.30 | 1,221.50 | 1,826.45 | 613.2 |
| 22-Nov | 638.55 | 901.5 | 238.3 | 166.2 | 131.4 | 953.4 | 1,608.75 | 1,167.35 | 1,945.60 | 602.5 |
| 22-Oct | 589.3 | 905.85 | 238.65 | 147.75 | 131.45 | 908.55 | 1,496.40 | 1,142.70 | 1,901.80 | 573.8 |
| 22-Sep | 619.25 | 733.5 | 266.65 | 132.4 | 118.6 | 862.8 | 1,422.40 | 1,186.30 | 1,821.25 | 531.05 |
| 22-Aug | 633.75 | 751.15 | 278.7 | 130.85 | 117 | 887.6 | 1,486.20 | 1,106.95 | 1,915.25 | 531.15 |
| 22-Jul | 591.8 | 724.8 | 276.35 | 116.25 | 106.65 | 818.5 | 1,434.45 | 1,043.20 | 1,810.80 | 528.2 |
| 22-Jun | 591.3 | 636.7 | 263.5 | 97.35 | 90.25 | 706.85 | 1,347.50 | 794.55 | 1,660.80 | 465.8 |
| 22-May | 1,250.35 | 685.4 | 326.1 | 100.15 | 88.85 | 751.5 | 1,387.45 | 930.75 | 1,854.20 | 467.8 |
| 22-Apr | 1,391.80 | 728.7 | 334.3 | 112.9 | 95.95 | 743.55 | 1,384.75 | 978.2 | 1,788.95 | 496.5 |
| 22-Mar | 1,245.85 | 760.65 | 307.4 | 111.6 | 97.35 | 730.25 | 1,469.95 | 935.1 | 1,754.70 | 493.4 |
| 22-Feb | 1,204.35 | 742.6 | 306.35 | 106.55 | 96.95 | 742.45 | 1,426.70 | 921 | 1,842.65 | 483.3 |
| 22-Jan | 1,310.10 | 773.1 | 315.7 | 107.55 | 100.6 | 789.25 | 1,485.55 | 871.85 | 1,857.50 | 538.35 |
| 21-Dec | 1,036.30 | 678.55 | 252.65 | 81.95 | 83 | 740.25 | 1,479.80 | 887.65 | 1,796.30 | 460.45 |
| 21-Nov | 1,092.75 | 657.05 | 272.35 | 85.75 | 86.95 | 714.3 | 1,493.60 | 883.6 | 1,962.15 | 460.6 |
| 21-Oct | 1,209.85 | 742.05 | 291.5 | 97.5 | 97.4 | 802.3 | 1,582.35 | 1,140.05 | 2,032.25 | 502.4 |
| 21-Sep | 1,164.60 | 766.8 | 282.75 | 81.75 | 84.25 | 700.8 | 1,595.50 | 1,112.15 | 2,004.10 | 453.05 |
| 21-Aug | 1,130.75 | 786.4 | 284.85 | 77.35 | 81.25 | 718.85 | 1,581.50 | 993.5 | 1,754.45 | 426 |
| 21-Jul | 1,219.90 | 709 | 291.3 | 80.3 | 87.4 | 682.7 | 1,425.80 | 981 | 1,654.95 | 431.7 |



Discussion Table 1

Figure 1 shows the trend lines of all selected 10 banking company shares listed in BSE Carbonex Index for a period of one year from July 2022 to June 2023. It is clear from the chart that private sector banks stocks listed in BSE Carbonex are trading at a high price than the stocks of public sector banks and have shown an upward trend from the past one year. Public sector banks are at static mode. Among private sector banks Kotak Mahindra Bank, HDFC Bank and ICICI Bank have shown higher rates of growth and Axis Bank is also keeping an increasing momentum. In the public sector, SBI is trading at the top in comparison to Bank of Baroda and Bandhan Bank.

Descriptive Statistics

| | AU Small Finance Bank Ltd | Axis Bank Ltd | Federal Bank Ltd | ICICI Bank Ltd | HDFC Bank Ltd | IndusInd Bank Ltd | Kotak Mahindra Bank Ltd | S&P BSE CARBONEX |
|--------------------|---------------------------|---------------|------------------|----------------|---------------|-------------------|-------------------------|------------------|
| Mean | 0.027569 | 1.461468 | 1.856275 | 1.854518 | 0.628889 | 1.755279 | 0.519742 | 0.913293 |
| Standard Error | 3.014826 | 1.654195 | 1.674655 | 1.347097 | 0.922569 | 2.073244 | 1.290009 | 0.7557 |
| Median | -1.1017 | -0.14983 | 0.565717 | 2.702047 | 0.291774 | 1.844058 | 0.832443 | 0.354516 |
| Standard Deviation | 14.76957 | 8.103865 | 8.204099 | 6.599401 | 4.519648 | 10.15678 | 6.319728 | 3.702159 |
| Sample Variance | 218.1402 | 65.67263 | 67.30723 | 43.5521 | 20.42722 | 103.1601 | 39.93897 | 13.70598 |
| Minimum | -52.7092 | -11.4548 | -10.729 | -10.9685 | -5.79612 | -22.4946 | -10.4304 | -4.97863 |
| Maximum | 26.42092 | 23.49693 | 21.20482 | 15.79543 | 10.92019 | 31.29444 | 14.22953 | 9.062032 |

Discussion Table 2

Descriptive statistics here will give a summary of returns and nature of returns from the selected Private Banking Stocks. The above table depicts that most of the Private Banks stocks have mean returns higher than that of market return, S&P BSE Carbonex. The Stocks of Axis Bank Ltd, Federal Bank Ltd, ICICI Bank Ltd and IndusInd Bank Ltd have given the returns higher than the standard index returns. AU Small Finance Bank Ltd, HDFC Bank Ltd and Kotak Mahindra Bank Ltd have given mean returns less than that of market return, S&P BSE Carbonex. All the selected private banks have higher standard error in comparison to that of S&P BSE Carbonex. The standard deviation is used to measure total risk involved in investing in securities. There is more risk associated with all private banking stocks listed in BSE Carbonex in comparison to that of S&P BSE Carbonex. The risk of investing in ICICI Bank, HDFC Bank & Kotak Mahindra Bank is comparatively lesser than that of other private banking stocks. All the funds have varying minimum and maximum returns and it is not in-line with market (Sensex) minimum returns and maximum returns.

Descriptive Statistics of Private Sector Banks

| | Bandhan Bank Ltd | Bank of Baroda | SBI | S&P BSE CARBONEX |
|--------------------|------------------|----------------|----------|------------------|
| Mean | -0.79428 | 3.884641 | 1.536253 | 0.913293 |
| Standard Error | 2.101526 | 2.192457 | 1.423865 | 0.7557 |
| Median | -1.96737 | 2.038227 | 0.495495 | 0.354516 |
| Standard Deviation | 10.29534 | 10.7408 | 6.975484 | 3.702159 |
| Sample Variance | 105.9939 | 115.3648 | 48.65737 | 13.70598 |
| Minimum | -19.1966 | -12.0513 | -10.2257 | -4.97863 |
| Maximum | 24.95547 | 31.23856 | 16.91823 | 9.062032 |

Table 3: Mean return, Standard deviation and Variance from selected Banking stocks

| Table 2 (a): Summary of basic descriptive statistics of Private Banks and its comparison with S&P BSE Carbonex | | | | | | | | |
|--|---------------------------|---------------|------------------|----------------|---------------|-------------------|-------------------------|------------------|
| | AU Small Finance Bank Ltd | Axis Bank Ltd | Federal Bank Ltd | ICICI Bank Ltd | HDFC Bank Ltd | IndusInd Bank Ltd | Kotak Mahindra Bank Ltd | S&P BSE CARBONEX |
| Mean | 0.027569 | 1.461468 | 1.856275 | 1.854518 | 0.628889 | 1.755279 | 0.519742 | 0.913293 |
| Standard Error | 3.014826 | 1.654195 | 1.674655 | 1.347097 | 0.922569 | 2.073244 | 1.290009 | 0.7557 |
| Median | -1.1017 | -0.14983 | 0.565717 | 2.702047 | 0.291774 | 1.844058 | 0.832443 | 0.354516 |
| Standard Deviation | 14.76957 | 8.103865 | 8.204099 | 6.599401 | 4.519648 | 10.15678 | 6.319728 | 3.702159 |
| Sample Variance | 218.1402 | 65.67263 | 67.30723 | 43.5521 | 20.42722 | 103.1601 | 39.93897 | 13.70598 |
| Minimum | -52.7092 | -11.4548 | -10.729 | -10.9685 | -5.79612 | -22.4946 | -10.4304 | -4.97863 |
| Maximum | 26.42092 | 23.49693 | 21.20482 | 15.79543 | 10.92019 | 31.29444 | 14.22953 | 9.062032 |

Discussion Table 2 (b)

Descriptive statistics here will give a summary of returns and nature of returns from the selected public sector Banking Stocks. The above table depicts that State Bank of India and Bank of Baroda stocks have mean returns higher than that of market return, S&P BSE Carbonex while the Stocks of Bandhan Bank Ltd have given mean returns less than S&P BSE Carbonex. All the selected public banks have higher standard error in comparison to that of S&P BSE Carbonex. The standard deviation is used to measure total risk involved in investing in securities. There is more risk associated with all public banking stocks listed in BSE Carbonex in comparison to that of S&P BSE Carbonex. The risk of investing in SBI is comparatively lesser than that of other public banking stocks. All the funds have varying minimum and maximum returns and it is not in-line with market (Sensex) minimum returns and maximum returns.

Risk & Return

The average return and standard deviation of the returns helps to understand the mean returns and variability of returns from its mean. Daily adjusted closing prices of selected banks shares have been taken and their respective returns are worked out from 1 July 2021 to 30 June 2023. These returns are used to find the average, standard deviation and variance

| Table 3: Mean return, Standard deviation and Variance from selected Banking stocks | | | |
|--|----------------|--------------------|----------|
| Name of the Bank | Average Return | Standard Deviation | Variance |
| AU Small Finance Bank Ltd | 0.03 | 14.77 | 218.14 |
| Axis Bank Ltd | 1.46 | 8.1 | 65.67 |
| Federal Bank Ltd | 1.86 | 8.2 | 67.31 |
| ICICI Bank Ltd | 1.85 | 6.6 | 43.55 |
| HDFC Bank Ltd | 0.63 | 4.52 | 20.43 |
| IndusInd Bank Ltd | 1.76 | 10.16 | 103.16 |
| Kotak Mahindra Bank Ltd | 0.52 | 6.32 | 39.94 |
| Bandhan Bank Ltd | -0.79 | 10.3 | 105.99 |
| Bank of Baroda | 3.88 | 10.74 | 115.36 |
| SBI | 1.54 | 6.98 | 48.66 |

Discussion Table 3

The above table shows the return and risk associated with all the selected banking company stocks for the period of two years from July 2021 to June 2023. As per the figures listed above, the Bank of Baroda has given the highest return followed by Federal Bank, ICICI Bank, IndusInd Bank, SBI & Axis Bank in the recent two years to its investors. Bandhan Bank Ltd has given the least negative returns as compared to all the other banking stocks. AU Small Finance Bank Ltd, IndusInd Bank Ltd, Bandhan Bank Ltd and Bank of Baroda have the highest degree of volatility in returns and hence the risk of investing in these Banking stocks is high. HDFC Bank, ICICI Bank, Kotak Mahindra Bank and SBI have less risk

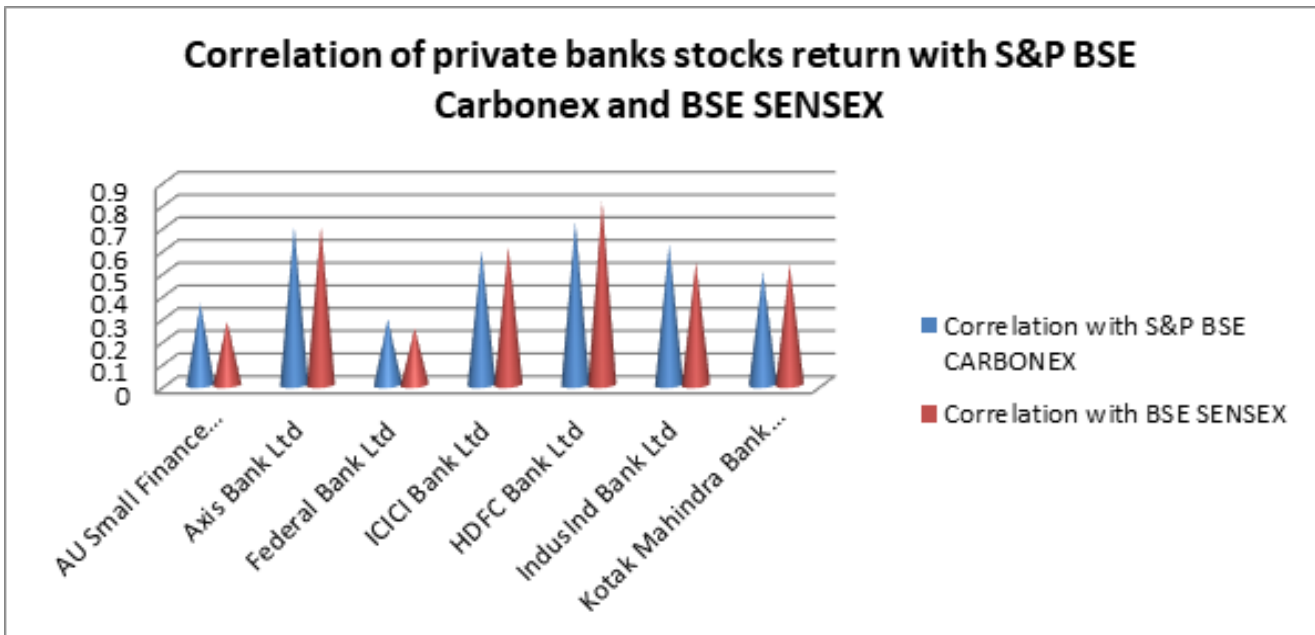
8. CORRELATION ANALYSIS

Correlation analysis is a bivariate analysis technique, primarily concerned with finding out whether a relationship exists between variables and then determining the magnitude and action of that relationship. Correlation between two variables can be either a positive correlation, a negative correlation, or no correlation. A positive correlation between two variables means both the variables move in the same direction. An increase in one variable leads to an increase in the other variable and vice versa. For example, spending more time on a treadmill burns more calories. A negative correlation between two variables means that the variables move in opposite directions. An increase in one variable leads to a decrease in the other variable and vice versa. For example, increasing the speed of a vehicle decreases the time you take to reach your destination. No correlation exists when one variable does not affect the other. For example, there is no correlation between the number of years of school a person has attended and the letters in his/her name.

a. Correlation of private sector banks with S&P BSE Carbonex and BSE SENSEX

Correlation between stock returns of all the selected shares of private sector banks with the two indices - S&P BSE Carbonex and BSE SENSEX is shown in table

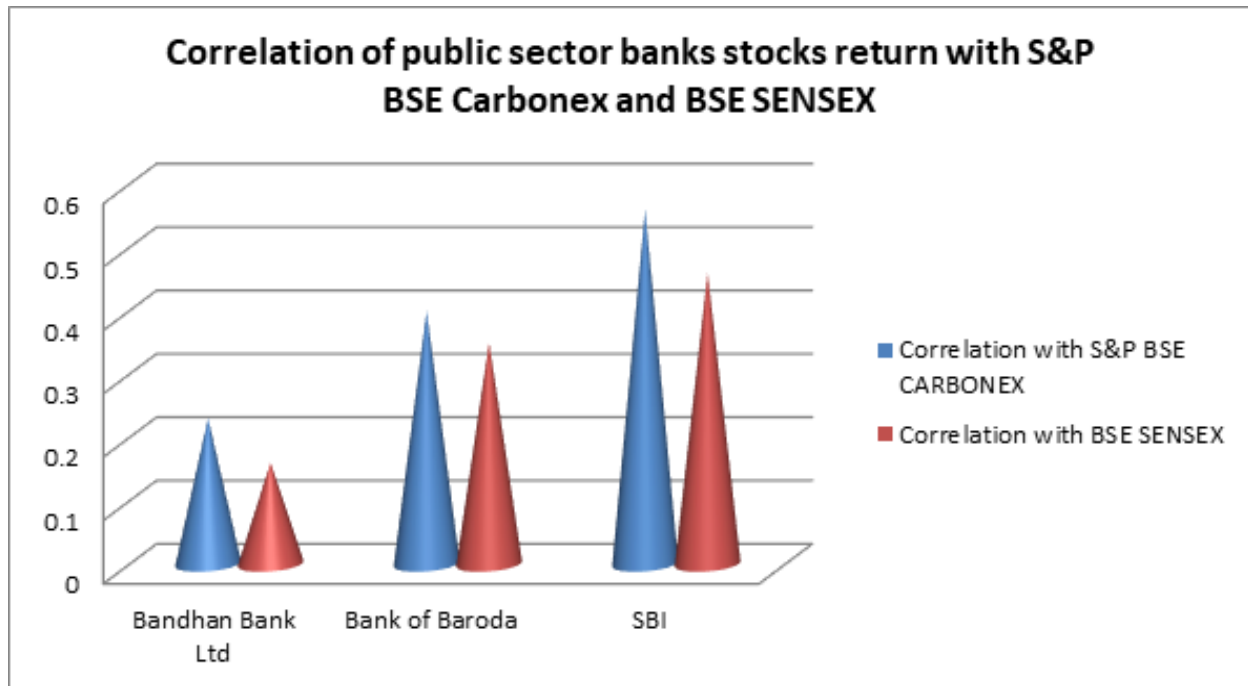
| Name of the Bank | Correlation with S&P BSE CARBONEX | Correlation with BSE SENSEX |
|---------------------------|-----------------------------------|-----------------------------|
| AU Small Finance Bank Ltd | 0.36 | 0.28 |
| Axis Bank Ltd | 0.7 | 0.7 |
| Federal Bank Ltd | 0.29 | 0.25 |
| ICICI Bank Ltd | 0.59 | 0.61 |
| HDFC Bank Ltd | 0.72 | 0.81 |
| IndusInd Bank Ltd | 0.62 | 0.54 |
| Kotak Mahindra Bank Ltd | 0.5 | 0.53 |



Discussion Table 4

The above table and graph shows correlation statistics of the monthly returns of the individual stocks of private banks with S&P BSE Carbonex and BSE Sensex Index. All the private sector banks stock returns listed under BSE Carbonex index are positively correlated with S&P BSE Carbonex and BSE Sensex. Axis Bank and HDFC Bank Ltd stock returns have very high positive correlation with S&P BSE Carbonex and BSE Sensex. ICICI Bank Ltd, IndusInd Bank Ltd and Kotak Mahindra Bank Ltd stock returns have moderate positive correlation with S&P BSE Carbonex and BSE Sensex. AU Small Finance Bank Ltd and Federal Bank Ltd stock returns have very low positive correlation with S&P BSE Carbonex and BSE Sensex. Correlation of public sector banks with S&P BSE Carbonex and BSE SENSEX Correlation between stock returns of all the selected shares of public sector banks with the two indices - S&P BSE Carbonex and BSE SENSEX is shown in table

| Name of the Bank | Correlation with S&P BSE CARBONEX | Correlation with BSE SENSEX |
|------------------|-----------------------------------|-----------------------------|
| Bandhan Bank Ltd | 0.23 | 0.16 |
| Bank of Baroda | 0.4 | 0.35 |
| SBI | 0.56 | 0.46 |



Discussion Table 5

The above table and graph show correlation statistics of the monthly returns of the individual stocks of public sector banks with S&P BSE Carbonex and BSE Sensex Index. All the public sector banks stock returns listed under BSE Carbonex index are positively correlated with S&P BSE Carbonex and BSE Sensex. Bandhan Bank Ltd stock returns has very low rate of positive correlation with S&P BSE Carbonex and BSE Sensex. Bank of Baroda stock returns have low positive correlation with S&P BSE Carbonex and BSE Sensex and State Bank of India stock returns has moderate level of positive correlation with S&P BSE Carbonex and BSE Sensex.

9. FINDINGS

This study attempts to measure the volatility of banking companies' stocks listed under S&P BSE Carbonex. It also intends to compare the volatility and trends of public sector banks with private sector banks.

- I. Private sector banks stocks listed in BSE Carbonex are trading at a higher price than the stocks of public sector banks and have shown an upward trend in the past two years.
- II. Among private sector banks Kotak Mahindra Bank, HDFC Bank and ICICI Bank have shown higher rates of growth and Axis Bank is also keeping an increasing momentum. In the public sector, SBI is trading at the top in comparison to Bank of Baroda and Bandhan Bank.
- III. Most of the Private Banks stocks have mean returns higher than that of market return, S&P BSE Carbonex. The Stocks of Axis Bank Ltd, Federal Bank Ltd, ICICI Bank Ltd and IndusInd Bank Ltd have given the returns higher than the standard index returns.

- IV. The risk of investing in ICICI Bank, HDFC Bank & Kotak Mahindra Bank is comparatively lesser than that of other private banking stocks.
- V. In the public sector, State Bank of India and Bank of Baroda stocks have mean returns higher than that of market return, S&P BSE Carbonex while the Stocks of Bandhan Bank Ltd have given mean return less than S&P BSE Carbonex.
- VI. The risk of investing in SBI is comparatively lesser than that of other public banking stocks
- VII. The Bank of Baroda has given the highest return followed by Federal Bank, ICICI Bank, IndusInd Bank, SBI & Axis Bank in the recent two years to its investors. Bandhan Bank Ltd has given the least and negative returns as compared to all the other banking stocks.
- VIII. AU Small Finance Bank Ltd, IndusInd Bank Ltd, Bandhan Bank Ltd and Bank of Baroda have the highest degree of volatility in returns and hence the risk of investing in these Banking stocks is high. HDFC Bank, ICICI Bank, Kotak Mahindra Bank and SBI have less risk.
- IX. All the private sector banks stock returns listed under BSE Carbonex index are positively correlated with S&P BSE Carbonex and BSE Sensex. Axis Bank and HDFC Bank Ltd stock returns have very high positive correlation with S&P BSE Carbonex and BSE Sensex. ICICI Bank Ltd, IndusInd Bank Ltd and Kotak Mahindra Bank Ltd stock returns have moderate positive correlation with S&P BSE Carbonex and BSE Sensex. AU Small Finance Bank Ltd and Federal Bank Ltd stock returns have very low positive correlation with S&P BSE Carbonex and BSE Sensex.
- X. All the public sector banks stock returns listed under BSE Carbonex index are positively correlated with S&P BSE Carbonex and BSE Sensex. State Bank of India stock returns has moderate level of positive correlation with S&P BSE Carbonex and BSE Sensex. Bandhan Bank Ltd stock returns has very low rate of positive correlation with S&P BSE Carbonex and BSE Sensex. Bank of Baroda stock returns have low positive correlation with S&P BSE Carbonex and

10. CONCLUSION

Social and environmentally responsible investing is a recent and growing trend in India, in which investors look for twin objectives, financial returns, and reduced socio-environmental impact. Yet, selecting an Indian stock having both these properties is not easy. To help investors track companies that follow energy-efficient and eco-friendly practices, the Bombay Stock Exchange (BSE) has developed indices with environmentally responsible stocks in collaboration with some other organizations. This study focuses on analyzing the performance of banking companies environmentally responsible stocks listed under BSE Carbonex index. The findings indicate that stock prices of public sector banks are more volatile than private sector banks. The study is very significant, as it provides new insights on the role of sustainable indices in the promotion of sustainable development in India and helps the investors who look to consider better performing green banking stocks in their portfolio. The findings of the study are important to investors, portfolio managers, financial advisers, and other stakeholders of the financial market interested in promoting sustainable investment.

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GLOBALIZATION AND LONGEVITY: INTERPLAY, IMPACT, AND IMPLICATIONS

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ABSTRACT

The phenomenon of globalization has led to numerous advancements in various sectors, such as trade, communication, and technology, resulting in improved living standards and access to healthcare across the globe. As economies become increasingly interconnected, the distribution and exchange of medical knowledge, resources, and technology have facilitated significant advancements in healthcare systems. Globalization, as a multidimensional process of interconnectedness and integration among nations, has had profound effects on various aspects of human life. One of the key areas significantly influenced by globalization is longevity - the average lifespan of individuals within a population. Globalization has also influenced lifestyle choices, leading to changes in dietary habits, physical activity, and disease patterns. While it has introduced better healthcare options, it has also brought forth new health challenges, such as the rise of non-communicable diseases and mental health issues, affecting the overall well-being of populations.

Globalization and longevity share a complex relationship, with globalization influencing health outcomes and life expectancy through economic, social, and technological channels. This paper underlines the need for a holistic approach to address the health challenges and opportunities brought about by globalization, with a focus on equitable healthcare access, disease surveillance, and sustainable development. This paper also explores the interplay between globalization and longevity, analyzing the impact of economic, social, and technological aspects of globalization on health outcomes and life expectancy worldwide. Through a comprehensive literature review, this study highlights the complex relationship between these two phenomena, shedding light on the potential implications for global health and policy.

Keywords: Private Banks, Public Sector Banks, S&P Bse Carbonex, Stock prices, Volatility.

1. INTRODUCTION TO GLOBALIZATION

Globalization refers to the process of international integration and interdependence among countries, businesses, and individuals. It involves the spread of economic, political, social, and cultural practices across borders and the increased interconnectedness of people and nations. Globalization has been driven by advancements in technology, transportation, and communication, allowing for the movement of goods, services, capital, and people across borders. It has led to the creation of global markets, increased competition, and the expansion of international trade and investment. While globalization has brought many benefits, such as increased economic growth and job creation, it has also led to challenges such as inequality, cultural homogenization, and environmental degradation. According to Giddens (2013), globalization refers to "the intensification of worldwide social relations which link distant localities in such a way that local happenings are shaped by events occurring many miles away and vice versa" (p. 1).

According to Held and McGrew (2020), globalization is "a process of the progressive interconnectedness of the world, promoting cross-border flows of goods, capital, people, technology, and ideas" (p. 3). Ohmae (1990) defines globalization as "the paradigm of the borderless world" (p. 2) in which economic, political, and cultural activities transcend national boundaries. Appadurai (1996) describes globalization as "a series of overlapping, disjunctive, and mutually constitutive economic, technological, cultural, and political projects that are unevenly and selectively pursued around the world" (p. 33).

Globalization is a multifaceted process that has transformed the world into an interconnected and interdependent global community. It encompasses the integration of economies, cultures, and societies across borders, facilitated by advancements in technology, trade, and communication. The concept of globalization has gained prominence since the late 20th century, reshaping various aspects of human life.

At the core of globalization is the free flow of goods, services, and capital across international borders. The expansion of global trade has enabled countries to specialize in the production of goods and services they excel in, leading to increased efficiency and economic growth. This interconnectedness has given rise to global supply chains, facilitating the distribution of products worldwide.

Moreover, technological advancements, particularly in information and communication technologies, have been instrumental in driving globalization forward. The internet, social media, and telecommunications have connected individuals and businesses across the globe, fostering a global network of communication and collaboration. Cultural globalization is another facet of this phenomenon. The exchange of ideas, values, and traditions between different societies has led to a blending of cultures, often referred to as "cultural homogenization" or "hybridization." As people from diverse backgrounds interact and share experiences, a global culture with both universal and localized elements emerges.

However, globalization is not without its challenges. Critics argue that it has exacerbated income inequality and contributed to job displacement in certain regions. The competitive nature of the global market can lead to exploitation of labor and resources in pursuit of profit. Furthermore, the rapid spread of information and ideas can also lead to cultural clashes and a loss of traditional practices and languages.

Globalization has also had a significant impact on the environment. The increased movement of goods and people has led to higher carbon emissions and environmental degradation. Addressing environmental concerns has become a global imperative, and international cooperation is vital to tackle issues like climate change and biodiversity loss.

2. POPULATION AGEING

Longevity refers to the length of an individual's life, typically measured in years. It is often used in the context of describing the lifespan of a particular species or demographic group.

Ageing refers to the biological, psychological, and social changes that occur as an individual grows older. These changes can include declines in physical and cognitive function, changes in social roles and relationships, and shifts in attitudes and values. Ageing is a natural and universal process, but its experience and impact can vary widely depending on factors such as gender, culture, socioeconomic status, and health status (Scharf et al, 2018).

Active ageing refers to the process of optimizing opportunities for health, participation, and security in order to enhance the quality of life as people age (World Health Organization, 2015). It involves taking an active approach to ageing that enables older adults to remain engaged in their communities, maintain their independence, and continue to contribute to society. Active ageing can involve a range of activities, including lifelong learning, volunteering, civic engagement, physical activity, and social participation.

Globalization has reshaped the world by fostering economic integration, cultural exchange, and technological advancements. It has brought both opportunities and challenges, requiring thoughtful management and international collaboration. Understanding the complexities of globalization is crucial in addressing its impact on economies, societies, and the environment, with the ultimate goal of creating a more inclusive, sustainable, and interconnected global community.

The concept of active ageing has its roots in the 1960s and 1970s, when the United Nations and other international organizations began to recognize the growing population of older adults around the world and the need for policies and programs to address their needs. In 1982, the World Assembly on Ageing adopted the Vienna

International Plan of Action on Ageing, which called for a shift from a welfare-based approach to ageing to one that emphasized the promotion of health, independence, and participation of older adults.

The term "active ageing" was first used in the 1990s, when the World Health Organization (WHO) began to promote a holistic approach to ageing that emphasized the importance of health, participation, and security. In 2002, the WHO launched the Active Ageing Framework, which defined active ageing as "the process of optimizing opportunities for health, participation and security in order to enhance quality of life as people age."

Since then, the concept of active ageing has gained increasing recognition and attention, with many governments, organizations, and individuals working to promote policies and programs that support the health, well-being, and engagement of older adults.

3. GLOBALISATION AND LONGEVITY

Globalisation, defined as the process of international integration and increased interconnectedness between economies, has been a topic of debate and discussion for several decades. One aspect of globalisation that has received considerable attention from researchers is its impact on public health and, in particular, longevity. The following review of literature provides an overview of the research conducted in this area.

Several studies have found a positive correlation between globalisation and increased life expectancy. In their study, Dreger and Reimers (2017) found that economic globalisation, as measured by trade openness and foreign direct investment, had a significant positive impact on life expectancy in both developed and developing countries. Similarly, Nandakumar and Nair (2015) found that globalisation was positively associated with life expectancy in India,

while Liang et al. (2019) found that globalisation had a positive effect on life expectancy in China.

In addition to economic globalisation, other dimensions of globalisation, such as the transfer of technology and knowledge, have also been found to contribute to improvements in life expectancy. For example, Mahapatra and Gupta (2017) found that the transfer of medical technology and knowledge from developed countries had a significant impact on life expectancy in developing countries. Similarly, Bago d'Uva et al. (2012) found that improvements in medical technology had a positive impact on life expectancy in European countries.

However, the relationship between globalisation and longevity is not always straightforward, and there are several factors that can complicate the relationship. One such factor is the role of economic inequality. While globalisation has been found to contribute to improvements in life expectancy overall, it has also been found to exacerbate economic inequalities, which can have a negative impact on health outcomes (Labonté et al., 2019).

Another factor that can complicate the relationship between globalisation and longevity is the impact of cultural and social factors. For example, some researchers have argued that globalisation can lead to changes in cultural norms and practices, which can have a negative impact on health outcomes (Hofmann, 2017). Similarly, migration and urbanisation, which are often associated with globalisation, can lead to changes in social and environmental factors that can have an impact on health outcomes (Collins and MacPherson, 2008).

There is a complex relationship between globalisation and longevity. While globalisation has been found to contribute to improvements in life expectancy overall, there are several factors that can complicate the relationship, including economic inequality and cultural and social factors. Further research is needed to fully

understand the mechanisms through which globalisation affects longevity and to develop strategies to ensure that the benefits of globalisation are distributed equitably.

Globalization and longevity are two important concepts that have received significant attention in the literature. While globalization has been associated with a range of economic and social changes, longevity refers to the length of life, which is influenced by a range of factors including healthcare, lifestyle, and environmental factors. In recent years, researchers have explored the relationship between globalization and longevity, with a particular focus on how globalization may impact health outcomes in different populations.

This review of literature aims to provide an overview of the existing research on the topic of globalization and longevity. A study by Chakraborty and colleagues (2018) explored the relationship between globalization and life expectancy in India. The authors found that globalization was positively associated with life expectancy, particularly in urban areas.

The study highlighted the importance of globalization in improving access to healthcare services, promoting healthy lifestyle choices, and reducing poverty, all of which have a significant impact on life expectancy. Another study by Hikima and colleagues (2019) examined the relationship between globalization and life expectancy in Sub-Saharan Africa.

The authors found that globalization was positively associated with life expectancy, particularly in countries with higher levels of economic development. The study highlighted the role of globalization in improving healthcare access, reducing poverty, and promoting technological advancements that contribute to improved health outcomes.

A study by Wang and colleagues (2018) explored the impact of globalization on life expectancy in China. The authors found that globalization was positively associated with life expectancy, particularly in urban areas. The study highlighted the role of globalization in improving healthcare access, promoting healthy lifestyles, and reducing environmental pollution, all of which have a significant impact on life expectancy.

A study by Blouin and colleagues (2019) explored the relationship between globalization and non-communicable diseases (NCDs) in low- and middle-income countries. The authors found that globalization was associated with an increase in

NCDs, particularly in countries with higher levels of economic development. The study highlighted the importance of addressing the negative impacts of globalization on health outcomes, while also recognizing the positive impacts of globalization in promoting economic development and improving healthcare access.

A study by Reher and colleagues (2019) explored the relationship between globalization and life expectancy in European countries. The authors found that globalization was positively associated with life expectancy, particularly in countries with higher levels of economic development. The study highlighted the role of globalization in promoting economic development, improving healthcare access, and reducing poverty, all of which contribute to improved health outcomes.

Overall, the literature suggests that there is a positive relationship between globalization and longevity, particularly in countries with higher levels of economic development. The positive impacts of globalization on healthcare access, poverty reduction, and technological advancements contribute to improved health outcomes and longer life expectancy. However, the negative impacts of globalization on health

outcomes, such as the increase in NCDs, cannot be ignored, and must be addressed in order to ensure that the benefits of globalization are distributed equitably.

4. SWEEPING CHANGES IN INDIAN ECONOMY POST 1991

India's economic liberalization began in 1991 with the implementation of reforms under the supervision of then-Finance Minister Dr. Manmohan Singh. These reforms included the dismantling of the License Raj, which had been in place since the 1950s, and the opening up of the Indian economy to foreign investment and trade. The Indian government also introduced a number of fiscal and monetary policy reforms to stabilize the economy.

Since then, India has experienced a significant transformation in its economy, with a shift towards a market-based system and increased integration with the global economy. This has led to sustained economic growth and the emergence of India as a major player in the global economy. The growth rate of India's GDP has consistently been higher than that of most other developing countries, and the country has emerged as the world's fastest-growing major economy.

India's economic liberalization has also brought about significant changes in its social and political landscape. The country has witnessed the rise of a middle class that has benefited from the economic growth, as well as increased political and social empowerment of marginalized communities.

However, the country still faces challenges in terms of poverty, inequality, and job creation, and the government has implemented a number of policies to address these issues.

Healthcare access to older people in developing economies is determined by government policy which in turn is influenced by global forces at play. Low income countries get support from International Monetary Fund so that health care in such nations becomes affordable. The flipside of globalisation needs consideration. For example, people may have access to branded products and ready-to-eat products which may not be necessarily healthy. Thus, even though people may live longer, they may not be healthy.

Life expectancy in a country like India has improved due to increased access to health care technology, advanced medical equipment and technologies and improvement in living standards. Advances in communication technologies make it easy for older people to interact with their children residing in different geographies.

Due to globalisation, the exodus of Indians to foreign nations has increased and this has improved the living standards of their families back home. This has also resulted in older people saving for their future.

On the other side, the disintegration of joint families and emergence of nuclear families has made it difficult for older people to cope up with the demands of a modern lifestyle. Not having their children during a crisis can be more debilitating than the crisis itself. This is particularly true in urban areas than rural areas.

Older people often experience isolation, insecurity, fear, alienation and depression and they have to rely on service providers to deal with the situation.

The growth of e-commerce has been a boon to the elderly in countries like India where stepping out for essential necessities can be risky for those who are indisposed or have health issues.

| Year | Population Growth | Growth Rate |
|------|-------------------|-------------|
| 2023 | 1,428,627,663 | 0.81% |
| 2022 | 1,417,173,173 | 0.68% |
| 2021 | 1,407,563,842 | 0.80% |
| 2020 | 1,396,387,127 | 0.96% |
| 2019 | 1,383,112,050 | 1.03% |
| 2018 | 1,369,003,306 | 1.09% |
| 2017 | 1,354,195,680 | 1.16% |
| 2016 | 1,338,636,340 | 1.19% |
| 2015 | 1,322,866,505 | 1.19% |
| 2014 | 1,307,246,509 | 1.25% |
| 2013 | 1,291,132,063 | 1.31% |
| 2012 | 1,274,487,215 | 1.34% |
| 2011 | 1,257,621,191 | 1.37% |
| 2009 | 1,223,640,160 | 1.40% |
| 2008 | 1,206,734,806 | 1.43% |
| 2007 | 1,189,691,809 | 1.48% |
| 2006 | 1,172,373,788 | 1.54% |
| 2005 | 1,154,638,713 | 1.62% |
| 2004 | 1,136,264,583 | 1.69% |
| 2003 | 1,117,415,123 | 1.74% |
| 2002 | 1,098,313,039 | 1.79% |
| 2001 | 1,078,970,907 | 1.82% |
| 2000 | 1,059,633,675 | 1.84% |
| 1999 | 1,040,500,054 | 1.87% |
| 1998 | 1,021,434,576 | 1.91% |
| 1997 | 1,002,335,230 | 1.94% |
| 1996 | 983,281,218 | 1.97% |
| 1995 | 964,279,129 | 2.01% |
| 1994 | 945,261,958 | 2.04% |
| 1993 | 926,351,297 | 2.07% |
| 1992 | 907,574,049 | 2.10% |

Source:
<https://www.macrotrends.net/countries/IND/india/population-growth-rate>

5. IMPROVEMENT IN LONGEVITY IN INDIA DUE TO GLOBALISATION

India, like many other countries, has experienced significant changes in its social, economic, and cultural landscape in recent years due to globalization. While there has been much debate about the impact of globalization on various aspects of Indian society, one area that has seen significant improvement is life expectancy.

India has traditionally had relatively low life expectancy compared to many other countries, largely due to poor healthcare infrastructure, poverty, and a range of other factors. However, in recent years, there has been a significant increase in life expectancy in India, which can be attributed in part to globalization.

One of the key ways in which globalization has contributed to increased longevity in India is through the transfer of medical knowledge and technology from developed countries. Advances in medical science and technology have made it possible to diagnose and treat a wide range of diseases and conditions that were previously considered untreatable, and many of these advances have been made available in India through partnerships with multinational corporations and international organizations.

For example, the introduction of new vaccines and treatments for diseases such as polio and tuberculosis has played a major role in reducing mortality rates in India, particularly among children. The use of mobile technology to provide healthcare services in rural areas, and the widespread availability of generic drugs and medical equipment, have also contributed to the overall improvement in healthcare outcomes in India.

Another important factor in the improvement of life expectancy in India is the growth of the economy and the resulting increase in access to healthcare services. The liberalization of the Indian economy in the 1990s led to an increase in foreign investment, which in turn led to increased job opportunities and higher incomes for many Indians. This has allowed more people to afford healthcare services, which were previously out of

reach for many.

Additionally, the rise of medical tourism in India has contributed to the growth of the healthcare sector and the availability of high-quality medical services in the country. Many people from around the world come to India for medical treatment, which has led to the growth of specialized medical facilities and the development of highly skilled medical professionals in the country.

Globalization has also contributed to the improvement of living standards in India, which has had a positive impact on life expectancy. As more people have gained access to education and job opportunities, they have been able to lead healthier lifestyles and have access to better nutrition and housing. This has led to a decline in the prevalence of diseases associated with poverty, such as malnutrition and respiratory infections.

However, it is important to note that the benefits of globalization have not been distributed equally across India, and there are still significant disparities in healthcare outcomes between different regions and socioeconomic groups. While the growth of the economy has led to increased access to healthcare services in urban areas, rural areas still face significant challenges in terms of access to basic healthcare services.

Furthermore, the privatization of healthcare services has led to concerns about the affordability and accessibility of healthcare for the poorest segments of society. The government has implemented a number of policies to address these issues, such as the National Health Mission and the Ayushman Bharat scheme, but there is still much work to be done to ensure that healthcare services are accessible to all.

While the impact of globalization on India's society and economy is complex and multifaceted, there is clear evidence that it has contributed to the improvement of life expectancy in the country

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The transfer of medical knowledge and technology, the growth of the economy and the resulting increase in access to healthcare services, and the improvement of living standards have all played a role in this improvement. However, it is important to ensure that the benefits of globalization are distributed equitably and that access to healthcare services is universal, regardless of socioeconomic status or geographic location.

6. REASONS FOR POPULATION AGEING IN INDIA

The population of India is rapidly aging due to several factors, including improvements in healthcare and medical technology, declining fertility rates, and changing social and economic patterns.

India has seen significant improvements in healthcare and medical technology over the past few decades, which has contributed to a decline in mortality rates and an increase in life expectancy. As people live longer, the population naturally ages, and the proportion of elderly people in the population increases.

The development of healthcare infrastructure, advancements in medical technology, and improved access to healthcare services have all contributed to the aging of the Indian population.

Fertility rates in India have declined significantly over the past few decades. The average number of children born to a woman has declined from 5.9 in the 1950s to 2.2 in 2017. This decline in fertility rates is due to a range of factors, including increased access to education and healthcare, improved economic opportunities for women, and changing attitudes towards family size. With fewer children being born, the proportion of elderly people in the population has increased, leading to population aging.

India is experiencing significant social and economic changes that have contributed to population aging. The country is undergoing a transition from a primarily rural, agricultural-based economy to an urban, service-based economy. As people move from rural areas to cities, they tend to have fewer children and live longer. In addition, as people become more educated and economically independent, they are less likely to have large families. This contributes to a decline in fertility rates and an increase in the proportion of elderly people in the population.

Social and cultural factors also contribute to population aging in India. Traditionally, families in India were large and multi-generational, with elderly family members living with younger family members. However, as families become more nuclear and mobile, elderly people are more likely to live alone or in assisted living facilities, leading to an increase in the proportion of elderly people in the population.

Population aging in India is a complex phenomenon that is influenced by a range of factors, including improvements in healthcare and medical technology, declining fertility rates, changing social and economic patterns, migration, and social and cultural factors. It is important for policymakers and healthcare professionals to understand these factors and develop strategies to address the challenges and opportunities associated with population aging in India.

7. DIMENSIONS OF THE RELATIONSHIP BETWEEN GLOBALISATION AND LONGEVITY

There is a growing body of research exploring the relationship between longevity and globalization over the past few decades.

Some studies suggest that globalization has had a positive impact on life expectancy, while others suggest that it has had a negative impact.

From a demographic perspective, globalization and longevity are closely intertwined. Globalization has enabled advances in healthcare, technology, and education, which have contributed to increased longevity. At the same time, globalization has also brought about changes in lifestyles and work patterns, which have led to new health challenges and increased inequality.

In the past few decades, the relationship between globalization and longevity has undergone significant changes. Globalization has facilitated the spread of new medical technologies, improved access to healthcare, and increased awareness of healthy living practices. These factors, along with improvements in public health and education, have contributed to increased life expectancy in many parts of the world.

However, globalization has also brought about new health challenges, such as the spread of infectious diseases and the rise of chronic conditions such as obesity and diabetes. In addition, the increased mobility and migration that come with globalization have led to disparities in health outcomes between different populations.

One of the most significant benefits of globalization has been the spread of knowledge, technology, and resources that have helped to improve healthcare and reduce mortality rates in many parts of the world. For example, advances in medical technology have made it possible to diagnose and treat diseases more effectively, while improvements in transportation and communication have made it easier to deliver healthcare services to remote areas. These factors have contributed to an overall increase in life expectancy in many countries. Globalization has

also led to significant changes in people's lifestyles, which can have both positive and negative effects on longevity. For example, the increased availability of processed foods and sedentary jobs may contribute to obesity and other health problems that can reduce life expectancy. However, globalization has also led to greater awareness of the importance of exercise and healthy eating, which can promote longevity.

One of the negative consequences of globalization has been the environmental degradation that often accompanies economic growth. Pollution, deforestation, and climate change can all have a negative impact on human health and longevity. For example, air pollution is a major contributor to respiratory illness and can lead to premature death, particularly in low-income countries where access to healthcare may be limited.

While globalization has brought many benefits to people around the world, it has also exacerbated existing disparities in healthcare access and outcomes. For example, in many low-income countries, access to healthcare is limited due to a lack of resources or infrastructure, and this can have a significant impact on life expectancy. In addition, the high cost of healthcare in many developed countries can also limit access to healthcare services and negatively impact longevity.

8. IMPACT OF GLOBAL POLICIES ON LONGEVITY

Several global policies have been implemented to support the increase in longevity. These policies focus on improving healthcare, education, and public health, as well as reducing poverty and promoting economic development. Some examples of global policies that support longevity include:

Sustainable Development Goals (SDGs): The SDGs were adopted by the United Nations in 2015 and aim to achieve a range of social, economic, and environmental objectives, including improving health and well-being for all. The SDGs include targets related to reducing maternal and child mortality, combating communicable diseases, and reducing the burden of non-communicable diseases.

Global Action Plan for the Prevention and Control of Noncommunicable Diseases: This plan was adopted by the World Health Organization in 2013 and aims to reduce the burden of non-communicable diseases, such as heart disease, diabetes, and cancer, by promoting healthy lifestyles and improving access to healthcare.

Universal Health Coverage: Universal health coverage is a global policy goal that seeks to ensure that all people have access to quality health services without financial hardship. It is included as part of the SDGs and is seen as a key driver of improved health outcomes and increased longevity.

On the local scale, these global policies are often implemented through national and local policies and programs. For example, countries may develop their own health policies and programs to address specific health challenges, such as reducing the prevalence of infectious diseases or improving access to healthcare services. These policies and programs may be tailored to the specific needs of the local population and may involve partnerships between governments, healthcare providers, and community organizations.

In addition to policies and programs aimed at improving health outcomes, there may also be policies and programs aimed at reducing poverty and promoting economic development. These may include programs to provide education and

job training, promote entrepreneurship, and support small businesses. These types of policies can have a positive impact on health outcomes by providing people with the resources they need to live healthy, productive lives.

Overall, the success of global policies in supporting longevity depends on their effective implementation at the local level. This requires collaboration and partnership between governments, healthcare providers, and community organizations, as well as a commitment to addressing the unique challenges and needs of local populations

9. CONCLUSION

Globalization is a transformative process that has interconnected and interdependent the world into a global community. It involves the integration of economies, cultures, and societies through technological advancements, trade, and communication. This phenomenon has gained prominence since the late 20th century, significantly influencing various aspects of human life.

At its core, globalization fosters the free flow of goods, services, and capital across international borders. Global trade allows countries to specialize in their areas of expertise, enhancing efficiency and economic growth. It has also given rise to intricate global supply chains, facilitating the distribution of products worldwide.

Technological advancements, particularly in information and communication technologies, have been instrumental in propelling globalization. The internet, social media, and telecommunications have connected individuals and businesses globally, fostering a network of communication and collaboration.

Cultural globalization is another crucial dimension. The exchange of ideas, values, and traditions between societies has led to the emergence of a global culture with universal and localized elements.

However, globalization has faced challenges. Critics argue that it exacerbates income inequality and job displacement in some regions. The competitive nature of the global market may lead to labor exploitation and resource depletion. Additionally, the rapid spread of information can cause cultural clashes and the erosion of traditional practices.

The environment has also been affected by globalization. Increased movement of goods and people has led to higher carbon emissions and environmental degradation. Addressing these concerns requires global cooperation to tackle issues like climate change and biodiversity loss. In view of the ageing world population, political actors should take a number of actions to address the challenges and opportunities associated with population ageing.

As people age, they tend to require more healthcare services and support. This means that healthcare systems need to be prepared to meet the increasing demand for services, including preventive care, primary care, and specialized care for chronic conditions. To help people live longer, healthier lives, political actors should promote healthy ageing through policies and programs that encourage physical activity, healthy eating, and access to preventive care.

Many older people experience social isolation and loneliness, which can have negative impacts on physical and mental health. Political actors should work to address these issues through policies and programs that promote social engagement, community involvement, and intergenerational connections. As people live longer, many are choosing to work longer as well. Political actors should support older workers by promoting age-friendly workplaces, encouraging lifelong learning, and addressing age discrimination in the workplace.

With longer lifespans come increased financial needs. Political actors should work to ensure that older people have access to adequate financial resources, including retirement benefits, pensions, and other forms of social protection.

In terms of the impact of ageing on globalisation, there are a number of potential effects. For example, as population ages, there may be changes in consumer behaviour and demand for goods and services. This could lead to shifts in global trade patterns and supply chains. Additionally, as more people live longer, there may be greater demand for cross-border healthcare and long-term care services, which could drive innovation and growth in these sectors. Finally, population ageing may have broader impacts on the global economy, such as changes in labour supply and demand, shifts in capital flows, and changes in the distribution of wealth and income

Looking ahead, the relationship between globalization and longevity is likely to continue to evolve. Advances in medical technology and healthcare delivery systems will likely continue to improve life expectancy, while changes in work patterns and lifestyles will present new health challenges. The COVID-19 pandemic has highlighted the interconnectedness of the world and the importance of global cooperation in responding to public health emergencies. The challenge for policymakers will be to balance the benefits of globalization with the need to address the health challenges that come with it, while ensuring that the benefits of increased longevity are shared fairly across all populations.

In conclusion, globalization has transformed the world by integrating economies, fostering cultural exchange, and enabling technological progress. While it offers numerous opportunities, it also presents challenges that necessitate careful management and international collaboration. Understanding the complexities of

globalization is essential to harness its potential for creating a more inclusive, sustainable, and interconnected global community.

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**REVIEW ON ASSESSING THE
LONG-TERM SOCIO-ECONOMIC
IMPACT OF NON- GOVERNMENT
ORGANIZATION’S FINANCIAL
SCHEMES ON WOMEN'S
ECONOMIC DEVELOPMENT IN
RURAL MANDYA DISTRICT**

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ABSTRACT

This study aims to assess the long-term socio-economic impact of non-government organizations' (NGOs) financial schemes on women's economic development in rural Mandya District. The economic empowerment of women in rural areas is crucial for fostering inclusive and sustainable development. NGOs play a vital role in implementing financial schemes that provide women entrepreneurs with access to capital, training, and support. However, there is a need to evaluate the effectiveness and sustainability of these schemes in generating long-term socio-economic benefits.

Through a mixed-methods approach, this study analyzes the outcomes of NGO financial schemes in terms of women's economic development indicators such as income levels, employment generation, skill acquisition, and social mobility. This study contributes to the existing knowledge base on women's economic development in rural areas, specifically focusing on the impact of NGO financial schemes. It seeks to bridge the research gap by providing empirical evidence and a comprehensive analysis of the socio-economic outcomes of these schemes in Mandya District

Keywords: Private Banks, Public Sector Banks, S&P Bse Carbonex, Stock prices, Volatility.

1.INTRODUCTION TO GLOBALIZATION

The economic development and empowerment of women are fundamental for achieving sustainable and inclusive growth in rural areas. In Mandya district, located in (mention the relevant region or country), women in rural communities face numerous socio- economic challenges, including limited access to financial resources, lack of skills and training, and traditional gender roles that restrict their participation in economic activities [1]. Non-government organizations (NGOs) have recognized the need to address these barriers and have implemented various financial schemes to support the economic development of women in rural Mandya[2].

The significance of focusing on women's economic development in rural areas cannot be overstated. Women constitute a significant portion of the rural population and play vital roles in agricultural activities, household management, and community development. However, they often face limited access to financial institutions and formal credit, making it challenging to start or expand their businesses [3]. This lack of financial resources acts as a major barrier to their economic progress. These schemes provide women with access to microcredit, savings groups, and entrepreneurship training, among other forms of support. By offering financial assistance and capacity-building opportunities, NGOs aim to enhance women's economic independence, boost household incomes, and contribute to overall poverty reduction in rural Mandya[4].

The financial schemes go beyond monetary assistance. They also focus on skill development, capacity-building, and promoting entrepreneurial spirit among women. By providing training programs in areas such as financial management, marketing, and business planning, NGOs equip women with the necessary tools and knowledge to establish and sustain their enterprises [5]. This comprehensive approach helps address the multifaceted challenges faced by women in rural areas and empowers them to take charge of their

economic destinies [6].

The impact of NGO financial schemes on women's economic development in rural Mandya extends beyond individual empowerment. It has broader implications for the community and the overall socio-economic landscape [7]. When women are economically empowered, they contribute to poverty alleviation, improved education, better healthcare, and enhanced social mobility for themselves and their families. This, in turn, leads to community development, as increased household incomes are reinvested in local businesses and services [8].

While NGO financial schemes hold great potential, it is crucial to evaluate their impact and identify areas for improvement. This study aims to assess the long-term effects of these schemes on women's economic development indicators, such as income levels, employment generation, skill acquisition, and social mobility. By understanding the successes, challenges, and best practices associated with these financial schemes, we can inform policy recommendations and improve their effectiveness [9].

Followings are primary objectives of work:

- 1.To evaluate the effectiveness of non-government organizations' (NGOs) financial schemes in promoting women's economic development in rural Mandya District.
- 2.To assess the long-term socio-economic impact of NGO financial schemes on women's income levels, employment generation, skill acquisition, and social mobility.
- 3.To identify the factors that contribute to the success or challenges faced by NGO financial schemes in empowering women and fostering sustainable economic development.
4. To provide policy recommendations and best practices based on the findings, aiming to enhance the design and implementation of future financial schemes for women's economic empowerment in rural Mandya District.

2. LITERATURE REVIEW

The economic empowerment of women in rural areas has gained significant attention as a key driver of sustainable development and poverty reduction. Non-government organizations (NGOs) have played a crucial role in implementing financial schemes aimed at promoting women's economic development in various contexts. This literature review examines the existing research and scholarly work related to assessing the long-term socio-economic impact of NGO financial schemes on women's economic development in rural Mandya District [10].

A considerable body of literature highlights the importance of women's economic empowerment for overall societal progress. Studies have emphasized the positive correlation between women's economic participation and poverty alleviation, education, health outcomes, and community development. Additionally, the literature emphasizes the need for targeted interventions and financial support to address the unique challenges faced by women in rural areas, including limited access to resources and gender-based discrimination [11].

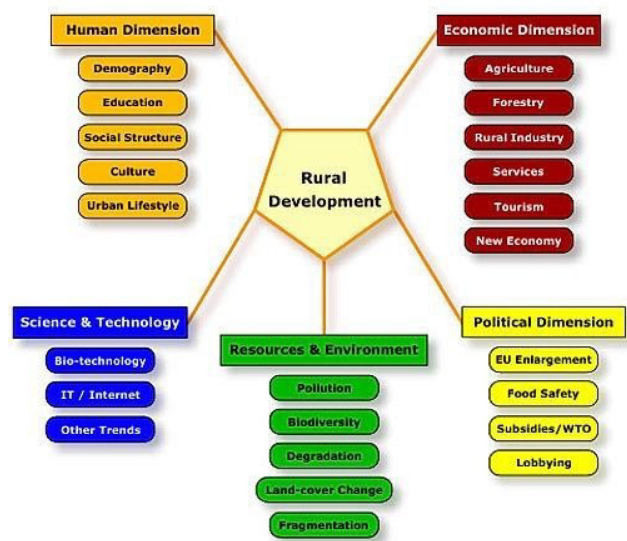
NGO financial schemes have emerged as important tools for enhancing women's economic development in rural contexts. Microcredit programs, savings groups, and entrepreneurship training are common components of these schemes. Several studies have demonstrated the effectiveness of microcredit in improving women's access to capital, promoting entrepreneurship, and increasing household incomes. Such schemes have been found to empower women, leading to enhanced decision-making power, improved self-esteem, and reduced vulnerability to economic shocks [12].

The impact of NGO financial schemes on women's economic development goes beyond financial outcomes. Skill development and capacity-building initiatives are integral

components of these schemes. Numerous studies highlight the positive effects of skills training programs on women's business performance, income levels, and employment generation. These programs equip women with essential entrepreneurial skills, including financial management, marketing, and record-keeping, thereby enhancing their business efficiency and sustainability.

Sustainability and long-term impact are critical areas of concern. Several studies have identified the need for ongoing support and mentoring to ensure the success and continued growth of women's businesses. Additionally, the limited scalability of these schemes and the dependence on external funding pose challenges to their long-term viability

Fig.2.1: Role of NGO impact on rural development (courtesy: resdongo.wixsite.com)



The cultural and social context of rural Mandya District plays a significant role in shaping the impact of NGO financial schemes. Traditional gender norms, limited mobility, and unequal access to resources can hinder women's economic empowerment. It is crucial for interventions to be contextually sensitive and address these socio-cultural dynamics to achieve meaningful and sustainable change [13].

3. RESEARCH METHODOLOGY

The study's data came from four taluks in Karnataka's Mandya district, namely Pandavapura, Krishnarajpet, Nagamangala, and Srirangapattana. Based on purposive sampling, 40 respondents from each taluk were chosen, making the total sample size 160. The study's main data is gathered using a scheduled interview process. The secondary information was gathered from MGNREGA's official web pages and other published sources. For data analysis, IBM SPSS software version 21 was employed. Statistical tools including pie charts, descriptive statistics, correlation analysis, and simple frequency and percentage analysis are used to analyse the data [14].

The research methodology for conducting a literature review on assessing the long-term socio-economic impact of non-government organizations (NGO) financial schemes on women's economic development in rural Mandya District typically involves the following steps:

3.1 Identification of Relevant Literature: Begin by conducting a comprehensive search of academic databases, research journals, conference proceedings, and other relevant sources. Identify key keywords and search terms related to NGO financial schemes, women's economic development, rural Mandya District, and long-term impact.

3.2. Inclusion and Exclusion Criteria: Establish specific inclusion and exclusion criteria to select relevant literature for the review. This may include publication date range, language, geographical focus, and relevance to the research topic. Ensure the inclusion of scholarly articles, research studies, reports, and case studies that address the research objectives.

3.3 Data Extraction: Extract key information from selected literature, such as the author(s), publication year, research objectives, methodology, findings, and conclusions. Organize this information in a systematic

manner, such as through a spreadsheet or reference management software, to facilitate analysis and synthesis

3.4. Data Analysis and Synthesis: Analyze the extracted data to identify common themes, patterns, and trends across the literature. Compare and contrast findings, methodologies, and theoretical frameworks employed in different studies. Synthesize the key findings and concepts to establish a coherent narrative that addresses the research objectives.

3.5. Critical Evaluation: Critically evaluate the quality, validity, and reliability of the included literature. Assess the strengths and limitations of the studies, including the methodology employed, sample size, data collection methods, and potential bias. Consider the generalizability of findings to the context of rural Mandya District.

3.6. Interpretation and Discussion: Interpret and discuss the findings from the literature, highlighting the key themes, trends, and gaps identified. Explore the implications of the findings for understanding the long-term socio-economic impact of NGO financial schemes on women's economic development in rural Mandya District.

4. DISCUSSION

4.1 Analysis and interpretation

The findings and implications derived from the research work it aims to synthesize the key themes, trends, and gaps identified in the literature and provide a comprehensive understanding of the topic.

4.1.1. Socio-economic profile of the beneficiaries

Table1: Socio-economic profile of the beneficiaries

| Sl. No. | Variables | Frequency (n = 160) | Percentage (%) |
|---------|--|---------------------|----------------|
| 1 | Age (in years) a) 18 – 30 b) 31 – 40 | 24 | 15 |
| | c) 41 – 50 | 47 | 29.4 |
| | d) Above 50 | 51 | 31.9 |
| | | 38 | 23.8 |
| 2 | Category | | |
| | Scheduled Caste (SC) Scheduled Tribe (ST) General Merit (GM) | 90 | 56.3 |
| | Other Backward Class (OBC) | 19 | 11.9 |
| | | 1 | 0.6 |
| 3 | Education | | |
| | Never been to school Up to 5th Standard Up to SSLC | 106 | 66.3 |
| | PUC | 44 | 27.5 |
| | Degree | 10 | 6.3 |
| 4 | Marital Status Single Married | | |
| | Widowed | | |
| | Divorced | 2 | 1.3 |
| | | 117 | 73.1 |
| 5 | Number of members in the family | | |
| | Less than 3 members | 14 | 8.8 |
| | 3 – 5 members | 72 | 45 |
| | More than 5 members | 74 | 46.3 |
| 6 | Beneficiaries having BPL/Anthyodaya card? Yes | | |
| | No | 160 | 100 |
| 7 | Are you a Landless Agricultural Labourer? | | |
| | Yes | | |
| | No | 148 | 92.5 |
| 8 | Monthly Income from Other Sources | | |
| | a) Nil | | |
| | b) Less than Rs. 10,000 | 7 | 4.4 |
| | c) Rs. 10,001 to Rs. 30,000 | 150 | 93.8 |
| | d) Rs. 30,001 to Rs. 50,000 | 3 | 1.9 |
| | e) Above Rs. 50,000 | 0 | 0 |
| 9 | Income from MGNREGA for 100 days | | |
| | a) Nil | 42 | 26.3 |
| | b) Less than Rs. 5,000 | 99 | 61.9 |
| | c) Rs. 5,001 to Rs. 15,000 | 12 | 7.5 |
| | d) Rs. 15,001 to Rs. 25,000 | 7 | 4.3 |
| 10 | Source of Knowledge of MGNREGA | | |
| | Relative/Friends Panchayats SHCs | | |
| | | 29 | 18.1 |
| | | 131 | 81.9 |
| | 0 | 0 | |

The outcomes reveal that NGO financial schemes have a significant positive impact on women's economic development in rural Mandya District. The provision of microcredit, savings groups, and entrepreneurship training enables women to access financial resources and develop essential business skills. As a result, women experience increased income levels, improved employment opportunities, and enhanced decision-making power within their households. These economic improvements contribute to poverty reduction,

better education and healthcare outcomes, and overall community development.

One of the main findings is the importance of skill development and capacity-building initiatives within NGO financial schemes. Skills training programs equip women with the necessary knowledge and expertise to effectively manage their businesses, leading to increased profitability and sustainability. Furthermore, these programs enhance women's confidence and self-esteem, empowering them to become successful entrepreneurs and contribute to their families' economic well-being.

The literature also highlights the challenges and limitations associated with NGO financial schemes. Sustainability is a major concern, as the long-term impact of these schemes is contingent upon continued support and mentoring. The scalability of the schemes is another challenge, as the limited availability of resources and funding can hinder their expansion and reach. Additionally, the cultural and social context of rural Mandya District plays a crucial role in shaping the impact of these schemes. Traditional gender norms, limited mobility, and unequal access to resources may require context-specific interventions to address the unique challenges faced by women.

Research identifies several research gaps that require further investigation. For instance, there is a need for longitudinal studies that track the long-term impact of NGO financial schemes on women's economic development in rural Mandya District. Additionally, research focusing on the specific challenges faced by marginalized groups within rural communities, such as Dalit women or women from lower-income backgrounds, would provide valuable insights for developing targeted interventions. It emphasizes the importance of skill development, sustainability, and context-specific approaches in maximizing the long-term socio-economic benefits.

The findings from the literature review contribute to a comprehensive understanding of the topic and provide valuable insights for future research, policy formulation, and program implementation aimed at empowering women and fostering sustainable economic development in rural areas.

4.2. OUTCOMES OF PAPER:

The research demonstrates that NGO financial schemes have a positive impact on women's economic development in rural Mandya District. These schemes provide women with access to financial resources, such as microcredit and savings groups, and offer entrepreneurship training and capacity-building programs. As a result, women experience increased income levels, improved employment opportunities, and enhanced decision-making power within their households. The following area are also benefited with research work

- Positive Impact on Women's Economic Development
- Skill Development and Capacity-Building
- Poverty Reduction and Community Development
- Challenges and Limitations
- Policy Implications and
- Future Research Directions

4.3. IMPACT ON SOCIETY:

The work on assessing the long-term socio-economic impact of NGO financial schemes on women's economic development in rural Mandya District has a profound impact on society. It contributes to women's empowerment, poverty reduction, community development, gender equality, and social change. By recognizing the importance of women's

economic participation and addressing the barriers they face, these initiatives lay the foundation for a more inclusive and prosperous society in rural areas.

5. CONCLUSION

Through an extensive literature review, the paper examines the long-term impact of these schemes, highlighting their positive influence on women's empowerment, poverty reduction, community development, gender equality, and social change. The study underscore the significance of NGO financial schemes in empowering women in rural Mandya District. By providing access to financial resources, such as microcredit and savings groups, and offering skills training and capacity-building programs, these schemes enable women to break free from the cycle of poverty and become agents of change within their communities. The increased income levels and improved employment opportunities lead to economic independence, enhanced decision-making power, and higher self-esteem for women, resulting in their overall empowerment.

The research emphasizes the broader societal impact of these financial schemes. The poverty reduction effect is not confined to individual households but extends to the community level. Women's economic empowerment leads to community development through investments in local businesses, contributions to social welfare programs, and a positive ripple effect on the economic growth and well-being of rural areas in Mandya District. Furthermore, the promotion of gender equality and the challenge to traditional gender norms are significant outcomes of these schemes, fostering a more inclusive and equitable society.

The research focused on the transformative potential of NGO financial schemes in rural Mandya District. By empowering women, reducing poverty,

promoting community development, driving gender equality, and challenging social norms, these schemes play a vital role in creating positive socio-economic change. The study highlights the importance of recognizing women's economic participation and addressing the barriers they face in order to build a more inclusive and prosperous society. Further research and collaboration between NGOs, policymakers, and communities are necessary to ensure the sustainability and effectiveness of these financial schemes, ultimately leading to long-term socio-economic transformation in rural Mandya District.

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**EXPLORING DIWALI EFFECT IN
INDIAN STOCK MARKET:
EVIDENCE FROM BSE SENSEX
STOCK RETURNS**

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ABSTRACT

This research is to investigate the Diwali impact, an emerging seasonal abnormality in the Indian stock market. For the aim of this analysis, the BSE Sensex stock returns from 2002 to 2022 are analyzed. Necessary statistical tools are applied for analysis and interpretation. The empirical findings reveal no significant variations between the average stock return during Diwali and other months. The outcomes and trading activity of the financial market are essentially unaffected by the months preceding Diwali, as the results and trading activity are comparable to other months. The Diwali effect or cultural variables have no substantial impact on the performance of the Indian stock market.

Keywords: Anomaly, Diwali effect, Indian stock market

1. INTRODUCTION TO GLOBALIZATION

The concept of stock market efficiency is vital because it enables us to understand how the markets function. The concept of market efficiency describes how information and share prices interact on the stock market. Because there would not be any overpriced or undervalued stocks in an efficient market, market efficiency affects an investor's investment strategy. It suggests that the stocks will not produce higher returns than what is reasonable to expect. According to the Efficient Market Hypothesis (EMH), all securities are price relative to reflect their intrinsic worth ultimately. Any market that eliminates all excess returns through arbitrage is considered efficient. However, various seasonal impacts that provide higher or lower returns depending on the time of year are evident from the perspective of financial markets, particularly in the case of equities returns. The 'anomalies' since typical asset pricing methods cannot account for them. Investors want to create trading strategies that will allow them to capitalize on these anomalies and make extraordinary profits. Even though several pricing models have attempted to describe the behavior of the shares, the stock markets frequently exhibit seasonal anomalies, which allow investors the opportunity to generate anomalous profits. The current article uses indices from Indian stock markets to demonstrate the festival effect, one of these market anomalies. Diwali festival happens between October and November, according to the Hindu calendar. Diwali presents a distinct occasion to look into and spot any predictable market volatility and return patterns that are not readily apparent in other months of the year. In the existing literature review, the holiday effect is an anomaly that delivers a substantial favorable return before or after a holiday. This study aims to investigate whether holidays, namely the Diwali effect, impact the performance of the Indian stock market. This study assists in comprehending the impact of Diwali on Sensex 30 companies on the Indian stock exchange.

2. LITERATURE REVIEW

In order to analyze and evaluate the stock market's performance during the holiday, asset pricing is a crucial topic of research.

M.J. Fields (1934) was the first to analyze daily stock returns to examine anomalies. The observer evaluated the daily stock data to determine the effect of the pre-holiday. Ariel (1980) also examined trading days in the United States prior to holidays. According to the data, the market portfolio earned more than a third of its total return in the eight trading days prior to the holiday. Lakonishok and Smidt (1988) analyzed the Dow Jones Industrial Average over the decades that followed. Especially they discovered that Christmas and New Year's had a positive effect on returns. Wong et al., in 1990, examined the returns of six Kuala Lumpur Stock Exchange sector-based indices, which included banking, hotels, real estate, tin, and plantations. Many indications pointed to the existence

of the Chinese New Year Effect, whose effects could be noticed well before the beginning of the Chinese Lunar Calendar. The results emerge by employing the EGARCH model and measuring the volatility of stock returns. The research conducted by Aman, Natchimuthu, and Mary (2019) studied the impact of the monsoon on stock returns on Indian stock exchanges. The data supported the monsoon effect in Indian stock markets. Dash et al. (2011) studied the monthly returns on Indian stock exchanges during the market crisis for specific periods. They found no statistically significant differences in the average monthly returns from one month to another, indicating the absence of a significant impact. Chen and Huirong (2009) studied the European stock market in 1992.

The results have no noticeable difference between daily seasonal returns and stock returns over the sample period considered for the study. Cadsby and Ratner were unable to find any evidence of the abnormality.

Chan, Khanthavit, and Thomas (1996) examined the Malaysian and Singaporean stock exchanges. Before a cultural holiday, a more robust holiday anomaly has been discovered. According to Prabakaran and Rufael (2017), the Pre-Holiday period had excellent gains on the Sensex and Nifty during the research period. According to Wachtel's concept, social and religious holidays are more significant to the investing public, and trading tactics can generate extraordinary profits around holidays. Consequently, trading might be profitable around holidays and develop a greater effect than during less significant holidays.

3. METHODOLOGY

To examine the Diwali effect and its influence on the stock returns of the BSE-30 Index stocks was conducted. The daily closing prices retrieved from the capitaline database from January 2002 to December 2022, comprising a sample period of 20 years from the Bombay Stock Exchange, were utilized to study the Diwali effect. The given formula approximates the stock return of BSE-30 Index constituents:

$$R_t = (\ln P_t - \ln P_{t-1}) * 100$$

The R_t represents the return in period t , while P_t and P_{t-1} represent the closing prices of each BSE-30 stock at time intervals t and $t-1$, respectively. Descriptive statistics were employed to measure the mean, standard deviation, and variation coefficient for the Diwali effect. October and November are designated Diwali months; the others are termed non-Diwali. The t -test and regression analysis were utilized. To evaluate the proposed hypothesis, we examined the link between independent and dependent variables using a benchmark as an intercept for evaluating market anomalies.

4. HYPOTHESIS

To investigate the Diwali effect anomaly in the

BSE-30 equities of the Indian stock market. The following hypothesis are framed.

Testable Hypotheses

H1: BSE-Sensex companies' daily closing price stock returns are statistically different in the months of October-November (Diwali month) and the rest of the year (non-Diwali month).

H0: The daily closing price of BSE-Sensex companies' stock returns is not statistically different between Diwali and other months.

Model framework for Diwali effect

To explore the presence of seasonal anomaly, that is Diwali effect in BSE Sensex 30 stocks, and the following methodology is adopted from the studies of; Harshita et al., 2018. Whereas Y_t is the underlying return series, dummy variables for October and November were modeled against the returns without using the intercept term. The dummy variable was set to zero for all other months except October and November. In contrast, dummy variable one is set for only October and November for the sample. To avoid getting caught in the "dummy variable trap," the regression analysis is done without an intercept term. The regression equation is as given below:

$$Y_t = \beta_1 \text{January} + \beta_2 \text{February} + \beta_3 \text{March} + \beta_4 \text{April} + \beta_5 \text{May} + \beta_6 \text{June} + \beta_7 \text{July} \\ + \beta_8 \text{August} + \beta_9 \text{September} + \beta_{10} \text{October} + \beta_{11} \text{November} + \beta_{12} \text{December} \\ + \epsilon_t$$

In a regression model, this study uses the ordinary least square approach to investigate the seasonal market anomaly, namely the Diwali effect. Because stock returns have nonsystematic qualities due to time-varying variation in the return series, ARCH, The GARCH (1, 1) model is employed for understanding the variability in the returns during these months.

Table 1: Descriptive results for the results of Diwali Effect

| Name of Company | Non-Diwali Effect | | | | | | Diwali effect | | | | | |
|---------------------|-------------------|------|-------|------|-------|---------|---------------|------|-------|------|--------|--------|
| | Mean | Max. | Min. | S.D | Skew. | Kurt. | Mean | Max. | Min. | S.D | Skew. | Kurt. |
| Titan | 0.0006 | 0.12 | -0.1 | 0.02 | 0.35 | 6.84 | 0.0001 | 0.09 | -0.08 | 0.02 | 0.18 | 5.7 |
| Asian Paints | 0.0016 | 1.61 | -0.18 | 0.04 | 21.34 | 882.6 | 0.0007 | 0.18 | -0.15 | 0.03 | 0.09 | 9.4 |
| Axis Bank | 0.0008 | 2.39 | -1.27 | 0.06 | 19.3 | 1110.26 | -0.0007 | 1.32 | -2.57 | 0.13 | -10.75 | 280.32 |
| Bajaj Auto | 0.0018 | 0.18 | -0.16 | 0.03 | 0.76 | 10.71 | 0.0005 | 0.18 | -0.22 | 0.03 | -0.08 | 14.08 |
| Bajaj Finance | 0.0011 | 0.18 | -0.11 | 0.02 | 0.75 | 12.08 | -0.0018 | 0.09 | -0.22 | 0.02 | -2.66 | 24.24 |
| Bajaj Finserv | 0.0009 | 0.16 | -0.11 | 0.02 | 0.6 | 6.53 | 0.0007 | 0.1 | -0.14 | 0.03 | -0.31 | 5.73 |
| Bharti Airtel | 0.001 | 0.22 | -0.23 | 0.02 | 0.15 | 19.68 | 0.0009 | 0.12 | -0.1 | 0.02 | 0.49 | 8.24 |
| HCL Technologies | 0.001 | 0.22 | -0.23 | 0.02 | 0.15 | 19.67 | 0.0009 | 0.12 | -0.1 | 0.02 | 0.49 | 8.23 |
| HDFC Bank | 0.0006 | 0.16 | -0.16 | 0.02 | 0.2 | 9.24 | 0.0004 | 0.07 | -0.08 | 0.02 | 0.06 | 5.96 |
| Hindustan Unilever | 0.0008 | 0.19 | -0.12 | 0.02 | 0.46 | 8.54 | 0.0006 | 0.16 | -0.11 | 0.02 | 0.25 | 8.65 |
| ICICI Bank | 0.0006 | 0.21 | -0.24 | 0.03 | -0.24 | 9.83 | 0.0018 | 0.15 | -0.22 | 0.03 | -0.59 | 12.93 |
| HDFC | 0.0013 | 0.16 | -0.2 | 0.03 | -0.01 | 8.53 | 0.0004 | 0.15 | -0.13 | 0.03 | 0.32 | 6.97 |
| Indsind Bank Ltd | 0.0008 | 0.14 | -0.31 | 0.02 | -2.08 | 35.93 | 0.0012 | 0.13 | -0.23 | 0.03 | -0.78 | 13.44 |
| Infosys Ltd | 0.0013 | 0.21 | -0.21 | 0.03 | 0.29 | 10.34 | 0.0009 | 0.08 | -0.18 | 0.02 | -0.87 | 13.83 |
| KotakMah. Bank | 0.0009 | 0.24 | -0.6 | 0.02 | -3.78 | 113.92 | 0.0007 | 0.67 | -0.7 | 0.04 | -0.89 | 173.01 |
| Larsen Toubro | 0.001 | 0.17 | -0.11 | 0.02 | 0.18 | 6.85 | 0.0008 | 0.21 | -0.17 | 0.03 | 0.09 | 14.66 |
| Maruti Suzuki | 0.0007 | 0.11 | -0.11 | 0.02 | 0.26 | 7.41 | 0.0008 | 0.13 | -0.06 | 0.02 | 0.81 | 9.6 |
| M&M | 0.0009 | 0.12 | -0.13 | 0.02 | 0.12 | 6.61 | 0.001 | 0.09 | -0.1 | 0.02 | -0.25 | 6 |
| Nestle India | 0.0002 | 0.13 | -0.15 | 0.02 | -0.09 | 10.36 | 0.0002 | 0.08 | -0.1 | 0.02 | 0.1 | 8.56 |
| NTPC | 0.0005 | 0.15 | -0.15 | 0.02 | -0.04 | 7.68 | -0.0005 | 0.09 | -0.17 | 0.02 | -1.15 | 14.29 |
| ONGC | 0.0002 | 0.18 | -0.18 | 0.01 | -0.27 | 25.86 | 0 | 0.1 | -0.14 | 0.02 | 0.01 | 14.57 |
| PowerGrid | 0.0012 | 0.48 | -0.34 | 0.02 | 2.01 | 79.4 | -0.0005 | 0.13 | -0.18 | 0.02 | -0.87 | 12.03 |
| Reliance Industries | 0.0005 | 0.18 | -0.16 | 0.02 | 0.03 | 7.14 | 0.0014 | 0.08 | -0.08 | 0.02 | -0.05 | 5.73 |
| Ultratech Cement | 0.0006 | 0.21 | -0.24 | 0.03 | -0.24 | 9.83 | 0.0018 | 0.23 | -0.15 | 0.03 | 1.33 | 13.3 |
| Tech Mahindra | 0.0013 | 0.18 | -0.14 | 0.03 | 0.25 | 7.64 | -0.0017 | 0.11 | -0.15 | 0.02 | -0.85 | 11 |
| TCS | 0.0006 | 0.23 | -0.16 | 0.02 | 0.67 | 16.77 | -0.0001 | 0.12 | -0.11 | 0.02 | -0.21 | 10.37 |
| Tata Steel | 0.001 | 0.21 | -0.11 | 0.02 | 1.02 | 17.95 | -0.0004 | 0.12 | -0.16 | 0.03 | -1.23 | 12.06 |
| Sun Pharma | 0.0002 | 0.15 | -0.14 | 0.02 | 0.1 | 8.06 | 0.0005 | 0.1 | -0.09 | 0.02 | 0.02 | 5.62 |
| SBI | 0.0009 | 0.09 | -0.16 | 0.02 | -0.35 | 7.47 | 0.0012 | 0.24 | -0.14 | 0.03 | 1.07 | 15.54 |

Source: Eviews output

The above table 01 offers results for the 30 stocks of the BSE Sensex Index. ICICI Bank, IndusInd Bank Ltd, Maruti Suzuki, Mahindra & Mahindra, Reliance Industries, Ultra Tech Cement, Sun Pharma, and SBI found the highest mean returns during the Diwali months (October, November), while other companies were getting negative returns volatility also varied from Diwali months to remaining months in a year. It was the highest in Diwali time compared to the remaining part of the year. Maximum returns found for Kotak Mahindra Bank for Diwali month compared to non-Diwali months. Axis Bank observes higher volatility for Diwali months (0.13%) and non –Diwali months (2.39%). These findings show the potential for this Index to generate significant returns during the months surrounding Diwali. Anomalies might be seen in both the kurtosis and the skewness. It provides some unique insights into the Sensex30 companies listed on the Bombay Stock Exchange in India.

Table 2: Results of Diwali effect using ordinary least square analysis

| SL no | Company | Diwali Effect | | | Non-Diwali Effect | | |
|-------|------------------------------------|---------------|--------|--------|-------------------|--------|--------|
| | | Co eff. | S.E | Prob. | Co eff. | S.E | Prob. |
| 1 | Asian Paints Ltd | -0.1059 | 0.066 | 0.1088 | 0.1215 | 0.0265 | 0 |
| 2 | Axis Bank Ltd | -0.0024 | 0.141 | 0.9863 | -0.1297 | 0.0565 | 0.0217 |
| 3 | Bajaj Auto Ltd | -0.1689 | 0.5201 | 0.7454 | 0.1014 | 0.21 | 0.6295 |
| 4 | Bajaj Finance Ltd | 0.0806 | 0.1071 | 0.4513 | -0.164 | 0.0429 | 0.0001 |
| 5 | Bajaj Finserv Ltd | -0.3335 | 0.1929 | 0.0829 | 0.2153 | 0.1879 | 0.2518 |
| 6 | Bharathi Airtel Ltd | -0.3398 | 0.1394 | 0.0148 | 0.2749 | 0.144 | 0.563 |
| 7 | HCL Tech Ltd | 0.0489 | 0.1171 | 0.6761 | -0.1369 | 0.1137 | 0.2285 |
| 8 | HDFC Bank Ltd | -0.0167 | 0.0742 | 0.822 | -0.8813 | 0.0297 | 0.003 |
| 9 | HUL | 0.039 | 0.0677 | 0.5645 | -0.0578 | 0.0271 | 0.0331 |
| 10 | HDFC Ltd | -0.0003 | 0.0009 | 0.7679 | -0.0007 | 0.0003 | 0.0335 |
| 11 | ICICI Bank Ltd | -0.1098 | 0.1078 | 0.3082 | -0.0616 | 0.0431 | 0.1537 |
| 12 | InduInd Bank Ltd | -0.0694 | 0.119 | 0.5595 | -0.0753 | 0.0477 | 0.1142 |
| 13 | Infosys Ltd | -0.0009 | 0.0013 | 0.4806 | 0.0018 | 0.0013 | 0.1648 |
| 14 | ITC Ltd | 0.0462 | 0.07 | 0.5091 | -0.0684 | 0.0281 | 0.0148 |
| 15 | Kotak Mahindra Bank Ltd | -0.0008 | 0.001 | 0.4418 | -0.001 | 0.004 | 0.012 |
| 16 | L&T Ltd | 0.0363 | 0.11 | 0.7412 | 0.0732 | 0.0443 | 0.0981 |
| 17 | Mahindra & Mahindra Ltd | -0.0668 | 0.0893 | 0.9395 | -0.0852 | 0.0358 | 0.0172 |
| 18 | Maruti Suzuki India Ltd | -0.002 | 0.0852 | 0.981 | -0.0824 | 0.0346 | 0.0172 |
| 19 | Nestle India ltd | 0.0077 | 0.0623 | 0.9019 | -0.0757 | 0.025 | 0.0024 |
| 20 | NTPC Ltd | 0.0113 | 0.0767 | 0.8832 | -0.0218 | 0.0309 | 0.481 |
| 21 | ONGC Ltd | 0.0606 | 0.0868 | 0.485 | -0.0425 | 0.0348 | 0.2223 |
| 22 | Power rid Corporation of India Ltd | -0.0044 | 0.0827 | 0.9572 | -0.0307 | 0.0338 | 0.3648 |
| 23 | Reliance Industries Ltd | -0.0016 | 0.001 | 0.0985 | 0.0012 | 0.0004 | 0.0021 |
| 24 | State Bank of India | 0.2058 | 0.1453 | 0.1568 | -0.2595 | 0.1402 | 0.0659 |
| 25 | Sun Pharmaceuticals Ltd | -0.0734 | 0.0791 | 0.3531 | 0.0996 | 0.0317 | 0.0017 |
| 26 | Tata Steel Ltd | 0.0204 | 0.1222 | 0.8677 | -0.0352 | 0.0493 | 0.475 |
| 27 | TCS | -0.1068 | 0.0878 | 0.2236 | 0.1121 | 0.0358 | 0.0017 |
| 28 | Tech Mahindra Ltd | 0.2132 | 0.1054 | 0.0431 | -0.0742 | 0.0425 | 0.0803 |
| 29 | Titan Company Ltd | -0.0005 | 0.001 | 0.6555 | -0.0013 | 0.0004 | 0.0019 |
| 30 | Ultratech Cement Ltd | 0.1483 | 0.0827 | 0.0821 | -0.0983 | 0.0337 | 0.0036 |

Source: Eviews output

From Table 2, the results support the theory that the impact of the Diwali months on the performance of Indian equity funds study using a dummy variable for the Diwali months. For this study, we have considered October and November as periods of consideration for the Diwali effect. Therefore, it is reasonable to believe that Diwali has no impact on the performance of the returns of the SENSEX30 firms except for the Bharathi Airtel Ltd having probability (0.0148).

Table 3: Results of Diwali effect using GARCH (1, 1) model

| SN | Company | Diwali Effect | | | Non-Diwali Effect | | |
|----|-------------------------------------|---------------|--------|--------|-------------------|--------|--------|
| | | Co eff. | S.E | Prob. | Co eff. | S.E | Prob. |
| 1 | Asian Paints Ltd | 0.7267 | 0.0147 | 0.0001 | 0.4113 | 0.0317 | 0.0001 |
| 2 | Axis Bank Ltd | 0.4691 | 0.0421 | 0.0001 | 5.0508 | 0.3683 | 0.0001 |
| 3 | Bajaj Auto Ltd | 0.1303 | 0.3327 | 0.6953 | 0.2361 | 0.157 | 0.0089 |
| 4 | Bajaj Finance Ltd | 0.794 | 0.0088 | 0 | 0.4346 | 0.0313 | 0 |
| 5 | Bajaj Finserv Ltd | 0.7158 | 0.0169 | 0 | 0.5609 | 0.0487 | 0 |
| 6 | Bharathi Airtel Ltd | 0.9218 | 0.0047 | 0 | 0.1023 | 0.0095 | 0 |
| 7 | HCL Tech Ltd | 0.9036 | 0.0056 | 0 | 0.0352 | 0.0041 | 0 |
| 8 | HDFC Bank Ltd | 0.9038 | 0.0056 | 0 | 0.3517 | 0.0041 | 0 |
| 9 | HUL | 0.6742 | 0.0108 | 0 | 0.3521 | 0.0189 | 0 |
| 10 | HDFC Ltd | 0.887 | 0.0067 | 0 | 0 | 0 | 0 |
| 11 | ICICI Bank Ltd | 0.8894 | 0.0093 | 0 | 0.2149 | 0.0265 | 0 |
| 12 | InduInd Bank Ltd | 0.8974 | 0.0053 | 0 | 0.0614 | 0.0098 | 0 |
| 13 | Infosys Ltd | 0.7083 | 0.007 | 0 | 0 | 0 | 0 |
| 14 | ITC Ltd | 0.7303 | 0.0166 | 0 | 0.3606 | 0.0297 | 0 |
| 15 | Kotak Mahindra Bank Ltd | 0.8825 | 0.0056 | 0 | 0 | 0 | 0 |
| 16 | L&T Ltd | 0.887 | 0.0265 | 0 | 0.0189 | 0.3521 | 0 |
| 17 | Mahindra & Mahindra Ltd | 0.9097 | 0.0064 | 0 | 0.0833 | 0.0109 | 0 |
| 18 | Maruti Suzuki India Ltd | 0.8717 | 0.0095 | 0 | 0.1755 | 0.0163 | 0 |
| 19 | Nestle India ltd | 0.873 | 0.008 | 0 | 0.0996 | 0.01 | 0 |
| 20 | NTPC Ltd | 0.8579 | 0.0091 | 0 | 0.0137 | 0.0138 | 0 |
| 21 | ONGC Ltd | 0.8542 | 0.0078 | 0 | 0.1412 | 0.0164 | 0 |
| 22 | Power grid corporation Of India Ltd | 0.8433 | 0.9303 | 0 | 0.0103 | 0.0118 | 0 |
| 23 | Reliance Industries Ltd | 0.6681 | 0.0193 | 0 | 0.0001 | 0 | 0 |
| 24 | State Bank of India | 0.8516 | 0.0122 | 0 | 0.2783 | 0.0343 | 0 |
| 25 | Sun Pharmaceuticals Ltd | 0.7843 | 0.0147 | 0 | 0.4165 | 0.0376 | 0 |
| 26 | Tata Steel Ltd | 0.9153 | 0.0077 | 0 | 0.1367 | 0.0233 | 0 |
| 27 | TCS | 0.8369 | 0.1583 | 0 | 0.2425 | 0.0293 | 0 |
| 28 | Tech Mahindra Ltd | 0.8785 | 0.0083 | 0 | 0.1994 | 0.0207 | 0 |
| 29 | Titan Company Ltd | 0.7535 | 0.0121 | 0 | 0.0001 | 0 | 0 |
| 30 | Ultra Tech Cement Ltd | 0.8256 | 0.0128 | 0 | 0.0238 | 0.0263 | 0 |

Source: Eviews output

The results of equations (1) and (2) for the Diwali effect on the stock yields of SENSEX30 Companies are shown in the above table. For SENSEX 30 firms, returns during the Diwali months were positive and statistically significant at the 5% level of Significance. However, all other months' returns are also noteworthy and favorable. The results show that the Diwali effect exists for all the stocks of BSE Sensex 30 except Bajaj Auto Ltd. The results are similar to that of non-Diwali effect months. This data indicates no particular Diwali effect as the results have no difference between the Diwali and non-Diwali month effect.

5. CONCLUSION

This study investigates the impact of religious experience on Indian financial markets and explores the applicability of well-established asset pricing models for estimating these effects. The empirical results of this study reveal significant findings that contradict prior research; for instance, there are no noticeable differences between the average stock return during Diwali and other months of the year. The results from descriptive statistics shows that during the Diwali months, only ICICI Bank, IndusInd Bank Ltd, Maruti Suzuki, Mahindra & Mahindra, Reliance Industries, Ultra Tech Cement, Sun Pharma, and SBI had the highest mean returns, while other companies had negative returns. In addition, volatility varied between the Diwali months and the year's remaining months.

It was the greatest during Diwali compared to the rest of the year. The months surrounding Diwali have little impact on the trading activity of the financial market because the results are comparable to other months. The Diwali effect or cultural factors have no significant impact on the returns of the Indian stock market.

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A REVIEW ON SOCIAL MEDIA INFLUENCERS AS ENDORSERS AND IMPACT ON CONSUMER'S PURCHASE INTENT

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ABSTRACT

Social media is used as a medium to make people aware of the brands. Taking this as an opportunity, companies are continuously sticking to new marketing strategies through social media influencers. This article aims at three domains, “social media influencers as an endorser, impact of social media influencers, and to identify different types of influencers based on their activities. The main purpose of this article is to offer insight into marketing literature and assist marketers in choosing the appropriate influencers to promote the brands while focusing on consumers. The present research is done by collecting information from various journal articles published and that were available in google scholar. After reviewing the existing literature on SMIs marketing, the result shows that marketing and advertising through SMIs were successful. However, when choosing an influencer, companies must target the right influencers to advertise the product that has the highest engagement level with customers.

Keywords: social media, influencers, endorsement, purchase intention

1. INTRODUCTION TO GLOBALIZATION

With a swap from the traditional to the automated era, human behaviour has drastically changed resulting a change in marketing operations as well. The emergence of different social media platforms has created room for Social Media Influencers. Thus, allowing them to showcase their daily activities. As per the report in (Statista) 2023, presently there are 5.18 billion internet users worldwide amounting to 64.6 percent of the total worldwide population. Out of this 59.9 percent are social media users. Therefore, the increasing number of social media users has instigated companies to shift their marketing and advertising approach from traditional to digital. People want everything at their doorstep right away due to the change in lifestyle. From placing online grocery orders to using smartphones to access information and updates from every nook and corner of the world. Consumers now expect everything to be available at the click of a button. Online marketing thus plays a significant role in conveniently satisfying and meeting customers' demands. Today's consumer has a presence in both the online and offline worlds. Thus, as a result of the extensive dissemination of social media, the strategy of influencer marketing through Social Media Influencers has evolved gradually.

Influencer Marketing (IM) has become one of the most well-known areas of digital marketing, and incorporating it into marketing promotion and advertisement appears to be a successful strategy for attracting customers. The popularity of SMIs is growing in advertising and marketing research as a result of two theoretically related concepts—opinion leadership and electronic word-of-mouth (e-WOM). This kind of marketing strategy relies on influencers to help consumers become aware of brands and make decisions about what to buy that is posted by them (Lou & Yuan, 2019).

The rapid growth of vloggers on YouTube and fashion influencer on Instagram have uncovered

the concept of SMIs. Consumers now follow influencers, brand-new sources who connect with millions of people on social media sites like Instagram and YouTube (Chae, 2021). According to (Singh & Diamond, 2012), Influencers collaborate with the brand to generate content through different social media sites to attract vast audiences to achieve the marketing goal of the company or brand. A high-impact influencer encourages audiences to visit the brand's website while also raising awareness of the product and enabling devoted followers to use and even recommend it to their networks (J. A. Lee & Eastin, 2020).

This article aims at providing narrative literature review of the existing literature on Social Media Influencers research.

2. RESEARCH OBJECTIVES

- To study the types of Social Media Influencers and their characteristics.
- To study the impact of Social Media Influencers.
- To identify the theories related to Influencer Marketing research.

3. RESEARCH METHODOLOGY

This article is a literature review that aims to provide a base for understanding social media influencers, their characteristics, and their impact. The descriptive research method is used in this study. The present research is done by collecting information from various journal articles published and that were available in google scholar. The study's main goal is to shed light on social media

4. DEFINITIONS OF SOCIAL MEDIA INFLUENCERS (SMIS)

Freberg et al., (2011) defined SMIs as “independent third-party endorsers who influence social media users using blogs, tweets, and other social media.”

Ouvrein et al., (2021) defined SMIs as “average people who, consciously or unconsciously, inspire and influence others through online works that are regarded as authentic by a small audience.”

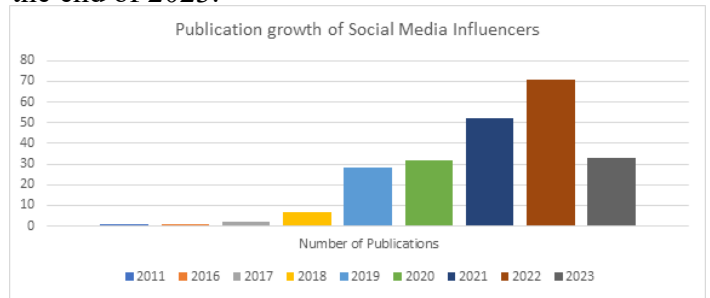
Campbell & Farrell, (2020) defined SMIs as “someone who posts to social media in exchange for compensation.”

5. LITERATURE REVIEW

5.1 Social Media and the rise of SMIs.

Social media is playing a crucial role in providing online information to the user. Before purchasing anything, people now look forward to others’ reviews and recommendations about the product or services. Social media has become an important medium for advertisers and marketers to reach their audience. Businesses are using social media for marketing purposes such as boosting brand awareness, attracting customers, changing consumer attitudes, and boosting Purchase Intention (Ananda et al., 2016). Highlighting the generation of advertising, a traditional form of advertising was done through public figures during the pre-digital era. Later, the emergence of the Web. 2.0 and the formation of different social media platforms, have enabled internet users to share maximum content on their social media and fundamentally changed marketing practices (Vidani & Das, 2021). Thus, giving rise to social media influencers. IM has been around for a while, and until recently it involved hiring people who had a big social impact to promote products in a genuine way. Modern IM relies on SMIs, a social media phenomenon that reflects endorsement practices by individuals with a significant social media audience, with the goal of increasing online

engagement for the endorsed product or service. SMIs are frequently recognized as having some expertise in particular fields, such as healthy living, travel, food, lifestyle, beauty, or fashion (Lou & Yuan, 2019a). The Fig.1 below highlights the evolution of Social Media Influencers research from 2011 till date. However, it is expected that research on this topic is increasing and will cross the highest level by the end of 2023.



5.2 CHARACTERISTICS OF SOCIAL MEDIA INFLUENCERS.

We observed that it is not SMIs fame alone that can influence consumers, but influencers’ overall characteristics also matter when a consumer encounters them. Therefore, in this section, we discussed different characteristics of SMIs-influencer credibility, psychological influencing factor, and content credibility and its impact according to the existing literature.

5.2.1 Source Credibility.

The first and most prevalent research topic in the existing literature is concerned with the characteristics of SMIs and how they influence behavioural outcomes. Many academics believe that the high perceived credibility of influencers in social media settings has contributed to its success (Al-Emadi & Ben Yahia, 2020; Sokolova & Kefi, 2020). Researchers (Djafarova & Trofimenko, 2019; Schouten et al., 2020) used the (Ohanian, 1990) model of source credibility that consists of trustworthiness, attractiveness, and expertise. However, (Xiao et al., 2018) took their investigation a step further by focusing on SMI-specific aspects of source credibility.

They discovered that the most important elements in determining credibility are trustworthiness, argument quality, social influence, and relevance. A study by Torres et al., (2019) claims that consumers' responses, including their attitude toward the endorsement and brand, as well as their intention to make a purchase, are significantly influenced by the influencer's attractiveness, which is not just related to her/his physical attributes but also encompasses familiarity and likeability. Few other authors also supported their portrayal of SMIs as someone who is very visible, attention seeker, and has a high social position (Cho et al., 2012; Kapitan & Silvera, 2016). As per an empirical study on the Indian consumer perspective, the trustworthiness of influencers has a strong impact on followers' behavioural intentions (Suresh et al., 2021). Related studies on SMIs endorsing brands impact consumer purchase intent mainly for influencer's trustworthiness because SMIs personally try the product (Uzunoglu & Misci Kip, 2014).

5.2.2 Psychological Influential Factor.

Ki et al., (2020) showed that the persuasive power of SMIs derives from the emotional attachment they establish with their followers. Prior research indicates that the emotional attachment of a beauty vlogger through three dimensions of homophily (attitude, values, and appearance) seems to influence the perceived popularity of the vlogger, which has a significant impact on the purchase of the recommended product (Ladhari et al., 2020). Although Sokolova & Kefi, (2020) suggested a negative relationship, it is noteworthy to note that several researchers have revealed that the social interaction of an influencer is also based on physical attractiveness (J. E. Lee & Watkins, 2016). The previous study highlights various psychological factor that impacts consumer purchase intent- para-social interaction (Jin et al., 2019), inspiration (Ki et al., 2020), enjoyability (Magno & Cassia, 2018), sense of friendship (Kim & Kim, 2021), homophily and similarity (Ki et al., 2020), wishful identification (Hu et al., 2019).

5.2.3 Content Credibility.

According to (Ki & Kim, 2019) consumers have positive attitudes toward SMIs when they post visually appealing, prestigious, expertly crafted content that is regarded as informative and interactive. As a result of their desire to replicate the influencer, they also exhibit positive behavioural outcomes. According to Casaló et al., (2020), consumers are more likely to interact with influencers, follow their recommendations, and encourage others to do the same when they perceive the content to be original and unique. When the recommended product is expected goods and brand awareness is high the attitude toward the sponsored recommendation post tends to be positive, increasing consumers' willingness to purchase the product (Lu et al., 2014). The previous study highlights that informative content impacts consumer purchase intent (Ki et al., 2020). The table no.1 below shows the various studies by researcher on the characteristics of SMIs.

Table No 1. Table showing previous studies on

| Author | Characteristics of SMIs |
|----------------------------|---|
| (Magno & Cassia, 2018) | Information Quality, Bloggers Trustworthiness. |
| (NUGRAHA & SETYANTO, 2018) | Celebrity Credibility, Celebrity Attractiveness, Celebrity Expertise. |
| (Lou & Yuan, 2019) | Informative value, Entertainment value, Expertise, Trustworthiness, Attractiveness, and Similarity. |
| (Breves et al., 2019) | Expertise, Trustworthiness, Physical attraction. |
| (Gayathri & Anwar, 2019) | Expertise, Trustworthiness, and Attractiveness. |
| (Saima & Khan, 2020) | Expertise, Trustworthiness, Likability, Information Quality, and Entertainment value. |
| (Suresh et al., 2021) | Trustworthiness, attractiveness, expertise, informativeness and Entertainment value. |
| (Es-Safi & Sağlam, 2021) | Communication skill, Influence, Authenticity, Expertise. |
| (Özbölük & Akdogan, 2022) | Attractive, Trustworthiness, competence, online self-presentation, and Influencer identification. |
| (Al-Sous et al., 2023) | Information Quality and trustworthiness. |

5.3 ARE ALL INFLUENCERS THE SAME?

An influencer is someone who posts on social media in exchange for remuneration (Campbell & Grimm, 2019). Influencers are different with respect to the platform they are present in, the category they belong to, and the aspects they are experts in. We see different researchers using different terms to present influencers that perfectly fit into. However, influencers can also be classified based on the followers counts. They are- (a) Nano influencers (1k-10k followers), (b) Micro-influencers (10k- 100k followers), (c) Macro influencers (100k- 1M followers), (d) Mega and celebrity influencers (1M+ followers) which deal with the promotion and advertisement of the products in the social media platforms (Campbell & Farrell, 2020). Classification of influencers is important because it helps brands or companies in identification of the right influencers. Classification of influencers may vary from country to country and platform to platform (Ouvrein et al., 2021). Besides classification of influencers based on their followers count, influencers can also be classified based on the activities they are into.

a. GREENFLUENCER

With the rapid increase in global warming and climate change, people are more concerned about climate sustainability and responsibility to save the earth. The number of green influencers, also known as "greenfluencers" has been steadily increasing in response to growing concerns about sustainability in general and the climate crisis (Knupfer et al., 2023). Influencers can act as an endorser on behalf of the policymakers in creating awareness concerning sustainable policies and sustainable consumption pattern (Yıldırım, 2021). The promotion of sustainable consumption patterns, which will likely

b.FASHION INFLUENCERS

With the change in lifestyle and living standard of people, the demand for fashionable and attractive products and services is also increasing. Customers have become more fashion-conscious as a result of the growing

fashion industry demand, and fashion influencers have a significant impact on their purchasing decisions. Fashion influencers are individuals who have a sizable following on social media, produce fashion content, and can sway followers' opinions and purchasing decisions (Chetioui et al., 2020). The fashion Industry is highly engaged in influencer marketing.

c. POLITICAL INFLUENCERS

Social media has not only made it possible for politicians to engage with potential voters by taking advantage of the opportunities for reciprocal exchange, but it has also given ordinary people and celebrities the chance to express their political opinions and grievances. Political influencers are regular people who have grown their followings on social media and occasionally talk about politics with their audiences (Harff & Schmuck, 2023).

d. BEAUTY INFLUENCER

In the era of selfies and social media, content creation by influencers on makeup tutorials have become well desired by the active followers or audience. Mostly influencers endorsing certain beauty brands can be seen in Instagram and YouTube. As per Statista Report 2023, influencers on Instagram are seen creating content on makeup and beauty products, national and international brands. More specifically, the term "beauty influencer" refers to an aesthetic specialist who imparts knowledge on topics related to enhancement of life, health, style, and beautification practises (Tran et al., 2020). A beauty influencer frequently enters into business agreements with beauty brands that pay them to promote their product(s). By the term beauty, we are not to limit our understanding on beauty influencer. A beauty influencer is not only a female and male influencer, but third gender person can also be seen endorsing and creating content on personal care and beauty (Chen & Kanai, 2022).

e. HEALTH INFLUENCERS

Social media influencers who specialise in topics related to health are known as “health influencers” (Zou et al., 2021). They provide health related information to general public online and offline. Health influencers have a special role in health education and communication because they spread health messages, evoke strong emotions, and help people change their behaviour (Albalawi & Sixsmith, 2017). Additionally, this time period is the era of health consumerism, where consumers are primarily responsible for achieving and maintaining personal health. To improve their health, people are investing in related goods and services that ensure them a good health. Combining with health influencers, fitness influencers are also being admired by health-conscious people. Fitness influencers are those who showcase their bodies, feature online exercise, workouts, and healthy tips to their followers (Sokolova & Perez, 2021).

5.4 THEORIES ASSOCIATED FOR INFLUENCER MARKETING.

The theoretical background of IM campaign run by companies through SMIs and their impact on Purchase Intention can be linked to different psychological and marketing theories. Influencer marketing is the practice of using influencers to spread information about a company's products among its audience (Brown & Hayes, 2008). The theories are explain below-

a. Social Exchange Theory:

According to Social exchange theory, human behaviour is the "exchange of activity, tangible or intangible, more or less costly, between at least two people" (Homans, 1958). Therefore, when an influencer uploads useful, entertaining, and appealing content online as part of IM campaigns and as a reward the followers express their gratitude and satisfaction by engaging in actions through liking, sharing, commenting, and subscribing. Thus, when an influencer shares information dominantly, the other partner becomes dependable on the interaction.

b. Source Credibility Theory: The source credibility theory, explains that the acceptance of information by the audience is based on the qualities of a source or communicator such as expertise and trustworthiness (Hovland & Weiss, 1951). Thus, communicator's positive credibility can affect the message's acceptance by others (Ohanian, 1990). The source-credibility model examines factors that influence the communicator's perceived credibility. According to Ohanian, (1990), the main factors influencing people's perceptions of source credibility are expertise, trustworthiness, and physical attractiveness. The level of expertise denotes the extent to which the endorser is perceived to be a reliable source of information, whereas trustworthiness denotes the endorser's perceived honesty, credibility, and integrity.

c. Source Attractiveness Theory: Source attractiveness theory, explains that communicator can be judged by audience based on their physical attractiveness they posit during the communication (Mc GUIRE, 1968).

d. Social Learning Theory: The social learning theory conceptualized by (Bandura & Walters, 1977) has been widely applied in communication and advertisement research. This theory serves as a theoretical framework regarding socialization factors that forecast consumption behaviours. According to this theory, individuals receive motivation from a social agent through direct or indirect social communication, which leads to exceptional positive attitudes. This theory is applicable in marketing studies to understand consumers' consumption patterns when they interact with a variety of social agents, such as friends, family members, and celebrities. Since SMIs are the social agents who can influence follower's attitudes and decision-making through social media platforms, the social learning theory provides a basis for understanding the effects of influencers on consumer PI (Zafar et al., 2021).

e. Cognitive Dissonance Theory: Cognitive dissonance theory, explains that people experience mental discomfort if they have two inconsistent beliefs or act in a way that is inconsistent with their beliefs (Festinger, 1962). This unsettling sensation makes people feel under pressure to get out of it, whether by altering one of their dissonant cognitions (beliefs or attitudes) or their behaviours. Thus, when exposed to SMIs, customers experience two cognitions, whether to accept or reject the information. All these theories provide a basis to understand SMIs.

f. Signalling Theory: According to signalling theory, customers can decide whether and how to interpret a signal it receives from another party to learn more about the sender's characteristics that cannot be directly evaluated. Signals are especially important in consumer contexts where consumers are unable to evaluate the quality of a product prior to purchase. In these circumstances, a retailer or brands may give indications to customers to help them feel less uncertain about the quality of the products they are purchasing. The signalling theory is particularly useful for explaining consumer behaviour in online settings.

g. Social Adaptation Theory: According to social adaptation theory, brand endorsers will be seen as reliable sources of new information if their personalities seem to fit the promoted brand image. For example, consumers should be able to find reliable information about products from attractive celebrities because they may think that using the product will make them appear more attractive. The social adaptation theory applies cognitive development concepts like attitude change and the effectiveness of advertising.

h. Attributional Theory: According to attributional theory, when an endorser promotes a suitable brand, consumers may think that the endorser is internally rather than externally motivated. Customers ought to believe that brand-congruent endorsers are promoting the product because they enjoy using it or because they believe in it, not because they are under

contract to do so or because they are paid for doing so.

5.5 IS MARKETING THROUGH SMIs EFFECTIVE?

The rapid growth of technological advancement has resulted in the rise of consumers, who wants higher convenience, value, and options to satisfy their needs. Since the previous five years, the number of social media platforms and users has doubled, and this expansion is posing a new marketing challenge. To meet this new marketing challenge, brands are trying to upgrade their advertisement strategies to reach vast audiences at a low cost. Marketers are focusing on collaborating with SMIs to endorse their products on different social media platforms (like YouTube, Facebook, Instagram, WhatsApp, and Twitter). This in return helps a marketer to increase their Return on Investment. This new strategy is helping both brands as well as SMIs. This marketing strategy has proven successful in other regions (Audrezet & Charry, 2019). IM has also improved companies' financial performance (Vrontis et al., 2021). Companies are making \$5.2 ROI for every \$1 spent on IM. Marketers have raised their proportion of the total marketing budget by allocating more funds to social media and digital marketing while decreasing expenditures on traditional forms of advertising such as television and print media.

Influencer marketing is a type of marketing where influential people are used to influence consumers' awareness of a brand and/or their decision to buy. Influencer marketing primarily impresses potential customers. According to the findings of Djafarova & Trofimenko, (2019), original SMIs have a more favourable impact on consumers' purchase intentions than non-original SMIs. Lim et al., (2017) found that consumers' perceptions of brands are negatively affected by influencers who lack expertise to support a given product, which results in less favourable purchase intentions. Influencers in the fields of beauty and fashion are frequently well-known and have a significant impact on consumer attitudes and behaviour (Phua et al., 2017).

Study by (Xu (Rinka) & Pratt, 2018) reveals that SMI who promoted destination positively influenced visit intention of the travellers. (Osei-Frimpong et al., 2019) found that a celebrity endorser who has attributes like attractiveness, trustworthiness and familiarity has positive influence on consumer perception of quality, purchase intention and loyalty towards the endorsed brands. A study by AlFarraj et al., (2021) on dimensions of SMI namely-attractive and expertise positively impact PI of consumer for aesthetic dermatology in Jordan. Wachyuni et al., (2021) found that food blogger acting as influencer influences brand image and purchase decision of a customer. Lokithasan et al., (2019) in their study found that gender of the influencer endorsing the brand also impact purchase behaviour of youths. Thus, empirical studies from various parts of the world reveals the result of influencer marketing effectiveness.

Table No 2. Review of Literature

| Author | Country | Objectives | SMIs characteristics | Major Findings |
|----------------------------|------------------|---|---|---|
| (Magno & Cassia, 2018) | Italy | To examine impact of SMIs as blogger on behavioural intention of tourism. | Information Quality, Bloggers Trustworthiness. | Finding reveals that follower's intention to travel suggestions depends on bloggers trustworthiness and information. |
| (NUGRAHA & SETYANTO, 2018) | Indonesia | To examine the effect of vlogger credibility YouTube on brand awareness to purchase intention. | Celebrity Credibility, Celebrity Attractiveness, Celebrity Expertise. | Celebrity credibility, attractiveness, expertise positively impacts purchase intention through Brand Awareness. |
| (Lou & Yuan, 2019) | United States | To understand the mechanism by which influencer marketing affects consumer purchase intention. | Informative value, Entertainment value, Expertise, Trustworthiness, Attractiveness, and Similarity. | Finding reveals that Informative value, trustworthiness, attractiveness, and similarity positively effect brand awareness and Purchase intention. |
| (Gayathri & Anwar, 2019) | India | To examine consumers' perception of the credibility of SMIs influencers and their impact on PI. | Expertise, Trustworthiness, and Attractiveness. | The credibility factors (expertise, trustworthiness, and attractiveness) of the influencer positively impact consumer PI. |
| (Saima & Khan, 2020) | India | To identify the effect of various attributes of SMIs on purchase intention. | Expertise, Trustworthiness, Likability, Information Quality, and Entertainment value. | Trustworthiness, information quality, and entertainment value have significant direct effects on the credibility of influencers as well as significant indirect effects on the PI. |
| (Suresh et al., 2021) | India | To examine the impact of credibility social media influencers on the behavioural response of the followers. | Trustworthiness, attractiveness, expertise, informativeness, and Entertainment value. | The results identify trustworthiness to be the most important credibility factor for the influencer that influence their behavioural intention. |
| (Kim & Kim, 2021) | United States | To examine source credibility and attractiveness on PI through trust | Expertise, authenticity, physical attraction and homophily | There is no significant relation between source attractiveness and PI mediating through consumer trust. |
| (Es-Safi & Sağlam, 2021) | Morocco & Turkey | To determine the predictive effects between influencer characteristics, brand equity, and purchase intention. A | Communication skills, Influence, Authenticity, Expertise. | Only authenticity and communication skill positively effect Brand Equity and PI. |
| (Özbölük & Akdogan, 2022) | Turkey | To investigate the effect of online source credibility and influencer identification on the consumer purchase decision. | Attractive, Trustworthiness, competence, online self-presentation, and Influencer identification. | The trustworthiness of the influencer affected consumer purchase decisions. However, The attractiveness, competence, and self-presentation of consumers did not affect the purchase decision. |
| (Al-Sous et al., 2023) | Jordan | To examine the impact of SMIs on consumers' purchasing decisions | Information Quality and trustworthiness. | There is a significant impact of information quality and trustworthiness towards brand attitude and consequently on the Purchase decisions. |

6. MANAGERIAL IMPLICATIONS

The findings of this study will help brands and organisation identify the right influencers that fits their need. This study provides a variety of practical advice and implications for marketing practitioners. All these proposals have one thing in common: these practitioners need to rethink how they engage in brand interactions with their customers. First, social media has established an environment that allows for more engaging and direct engagement with customers, resulting in a more creative, informal interaction. Thus, it is marketing through SMIs who has direct engagement with niche audience will help brands or organisation to reach its target audience.

Second, brands and organisation should keep in mind while collaborating with influencers who is not a natural fit for the company, and this may result in untrustworthy messages since followers may think the collaboration is solely for business purpose. Influencer should represent his or her credibility to its audience and disclose sponsored partnership.

Third, influencer with different capability and work activities may differ from every influencer. Therefore, the companies must be quite clear about the main goal of their endorsement. For instance, it would be unethical and wrong to ask health influencers to promote fashion products because their actions will not fit.

Fourth, there are numbers of marketing theories to understand consumer behaviour and influencers characteristics. These theories provide the basis for influencer marketing in digital era.

Fifth, influencer marketing campaign through social media influencers has proven successful in other developed nations. Thus, brands and companies in developing countries must adopt the strategy that has already been successful in other nations.

7. CONCLUSION

The use of Social Media Influencers in Influencer Marketing campaign has become crucial in digital era where consumers spend more time in screening. India is witnessing a rise in the popularity of SMI marketing. SMIs have the potential to be used as a marketing strategy in today's era. Thus, brands and companies must adopt or collaborate with influencers that perfectly fit in endorsement activities. The study on this area can be seen increasing because of researcher and academicians started focusing on this topic as well with its demand in market. However, because it is a new concept, the information available is limited. As a result, there is more room for research in this area, such as investigating consumer perceptions of influencer marketing and determining whether right influencer can help or harm consumers' perceptions of a brand in a positive or negative way can also be further examined.

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HR ANALYTICS STUDY ON EMPLOYEE ATTRITION AT IBM

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ABSTRACT

This article presents an analysis of employee attrition at IBM, using HR analytics via Tableau to gain insights into the underlying causes and potential solutions. The study focuses on understanding attrition patterns, identifying contributing factors, and implementing effective strategies to mitigate attrition. By leveraging a data-driven approach, IBM's HR analytics team collected and analysed various data sources, including demographics, performance metrics, job satisfaction surveys, and employee feedback. Through this analysis, several key factors contributing to attrition at IBM emerged, including a lack of career growth opportunities, poor work-life balance, job dissatisfaction, and strained relationships between managers and employees. Armed with these insights, IBM has taken proactive measures to address attrition, such as fostering a culture of continuous learning and development, improving work-life balance, enhancing leadership training programs, and implementing flexible work arrangements. Ongoing monitoring and feedback mechanisms allow IBM to measure the impact of these initiatives and make necessary adjustments. This study showcases the importance of HR analytics in understanding and addressing attrition challenges, and highlights IBM's commitment to creating a positive work environment that fosters employee retention and satisfaction.

Keywords: *Employee Attrition, employee morale, HR Analytics, Work-Life Balance, Reason for Attrition, Data driven approach.*

1. INTRODUCTION

Employee attrition, or the rate at which employees leave a company, is a critical metric for any organization. High attrition rates can have a detrimental impact on a company's productivity, morale, and ultimately, its bottom line. In an increasingly competitive job market, understanding the factors that contribute to attrition is crucial for companies to develop effective retention strategies. In this article, we will delve into the analysis of employee attrition at IBM, using HR analytics to gain insights into the underlying causes and potential solutions.

2. OBJECTIVES OF THE STUDY:

1. Investigate the Influential Factors on Employee Attrition at IBM:

This study aims to identify and analyse the factors that significantly contribute to employee attrition within IBM. It will examine individual, organizational, and external factors that may influence employees' decisions to leave the company.

2. Assess the Impact of Employee Attrition on Organizational Performance:

The study seeks to evaluate the consequences of employee attrition on various aspects of organizational performance, including productivity, profitability, customer satisfaction, and employee morale. By understanding these impacts, the study aims to emphasize the importance of addressing attrition rates effectively.

3. Explore the Relationship between Employee Demographics and Attrition:

This study aims to examine whether specific demographic characteristics, such as age, gender, educational background, or tenure, are correlated with higher attrition rates. Such analysis can provide insights into particular employee groups that may be more susceptible to attrition, enabling the development of tailored retention strategies.

4. Identify Patterns and Trends Associated with Employee Attrition:

By analysing historical data, this study aims to identify common patterns or trends regarding when and why employees tend to leave IBM. This analysis can help identify critical points or triggers contributing to attrition, facilitating the creation of targeted retention strategies.

5. Provide Actionable Insights and Recommendations for Reducing Attrition Rates:

The objective is to offer practical insights and recommendations based on the study's findings to effectively address and mitigate employee attrition at IBM. These recommendations may include modifications to HR policies, talent management practices, employee engagement initiatives, career development opportunities, or other interventions aimed at improving employee retention.

3. RESEARCH METHODOLOGY:

Here are the key points regarding the research methodology and approach used in the research on employee attrition at IBM:

1. Sampling design: The research employed a non-probability sampling method.
2. Sampling techniques: Convenient sampling and simple random sampling were utilized.
3. Sampling unit: The unit of sampling was the number of employees.
4. Sampling tool: Structured questions were used as the primary tool for sampling.
5. Area of study: The research focused specifically on the IBM company.
6. Data analysis method: Tableau was employed as the method for analysing the collected data.

Tableau: Tableau is a business intelligence (BI) software that empowers users to visualize and analyse data effectively. It enables users to share their discoveries, create interactive dashboards and reports, and connect to various data sources.

Here are some key features of Tableau: **Data Connectivity:** Tableau offers connectivity to diverse data sources, including databases, spreadsheets, cloud services, and big data platforms. **Data Visualization:** With Tableau, users can leverage a wide range of charts, graphs, and maps to build interactive dashboards and reports. The visualizations are highly customizable, allowing users to modify colours, fonts, and design elements to suit their needs. **Data Analysis:** Tableau provides robust data analysis tools, such as data blending, forecasting, and trend analysis. Users can create calculated fields, utilize statistical functions, and perform complex calculations to derive valuable insights from their data. **Collaboration:** Tableau facilitates collaboration by enabling users to share their

4. LIMITATIONS OF THE STUDY:

The study "Analysing the Impact on Employee Attrition at IBM: An HR Analytics Study" has certain limitations. It is important to critically evaluate the limitations of any study to understand the scope and applicability of its finding.

Some Potential Limitations Include:

1) **Sample bias:** The study may have been conducted on a specific subset of employees within IBM, such as a particular department or location. This can limit the generalizability of the findings to the entire organization or other industries.

2) **Data limitations:** The study's findings may be limited by the quality and availability of data. For example, if the study relied on self-reported or incomplete data, there could be inaccuracies or missing information that could affect the results.

3) **Causality and correlation:** While the study may have identified factors associated with employee attrition at IBM, it may not establish a causal relationship between those factors and attrition. Correlation does not necessarily imply causation, and there could be other underlying factors that were not considered or controlled for in the analysis.

4) **Time frame:** The study's findings may be specific to a particular time period, and the dynamics of employee attrition at IBM could have changed since then. Longitudinal studies that examine attrition trends over time would provide a more comprehensive understanding of the topic.

5) **Internal validity:** There may be potential confounding variables or unmeasured factors that could influence the results. It is important to consider other variables, such as external market conditions, changes in management policies, or economic factors that may impact employee attrition.

6) **External validity:** The study's findings may not be applicable to other organizations or industries due to differences in organizational culture, structure, and employee demographics.

7) **Interpretation and subjective bias:** The interpretation of the study's findings may be subject to the biases and perspectives of the researchers involved. Different researchers may have different interpretations of the same data.

8) **Ethical considerations:** The study should adhere to ethical guidelines regarding data privacy, informed consent, and potential biases. Any potential ethical issues should be addressed and discussed within the study.

5. IBM – ABOUT COMPANY

Headquartered in Armonk, New York, and operating in over 175 countries worldwide, International Business Machines Corporation (IBM), commonly known as IBM or Big Blue, is an American multinational technology company. IBM provides a wide range of services, including hosting and consulting, in various fields such as mainframe computers and nanotechnology. The company specializes in computer hardware, middleware, and software. Listed on the Dow Jones Industrial Average, which comprises 30 major publicly traded companies, IBM is recognized as one of the largest employers worldwide, with over 297,900 employees in 2022. Yet the IT giant is not spared by the industry attrition problem which sees around 26% of attrition compared average 17 – 18 % attrition in IT sector.

IBM – Employee Attrition, Analysis & Retention.

By leveraging HR analytics, IBM has embarked on a journey to identify the key drivers of attrition within its workforce and take proactive measures to mitigate its impact.

With Data-driven approach IBM's HR analytics team collected and analysed vast amounts of data to gain a comprehensive understanding of employee attrition. This report reports a data set of 1500 employee survey from IBM, indicating the level of attrition.

The data was investigated for various factors, including demographics, performance metrics, job satisfaction surveys, and employee feedback. By using sophisticated analytical tools, they were able to extract meaningful insights from this data, enabling them to make data-driven decisions and design targeted retention strategies.

Identifying Attrition Patterns

One of the first steps in the analysis was to identify attrition patterns within different

employee groups at IBM. This involved segmenting the data based on factors such as age, gender, job role, tenure, and performance ratings. By comparing attrition rates across these segments, the HR analytics team could pinpoint areas where attrition was more prevalent and explore the underlying reasons.

Factors Contributing to Attrition.

Through the analysis, several factors emerged as common contributors to attrition at IBM. One key factor was the lack of career growth opportunities. Employees who felt stagnant in their roles or saw limited possibilities for advancement were more likely to leave the company. Additionally, a poor work-life balance and a lack of job satisfaction were found to be significant drivers of attrition. Employees who experienced high levels of stress or dissatisfaction were more inclined to seek opportunities elsewhere.

Another crucial factor that emerged was the relationship between managers and employees. Employees who had strained relationships with their supervisors or experienced a lack of support and recognition were more likely to leave. This finding highlighted the importance of fostering strong managerial relationships and providing effective leadership training programs.

Dashboard



Figure 1 different types of visualizations about the attrition rate in IBM company

6. OBSERVATIONS FROM FIGURE 1:

1. The attrition rate is 16.12%, within the chosen sample space.
2. About two-thirds of those are male employees. However, this is proportional to the overall gender distribution of employees in the chosen sample, with attrition rate within males being 17% and within females being 14.8%.
3. Age wise, the highest attrition is in the 18-27 group (about 28.09%) and the lowest is in the 38-47 group (about 9.36%). At the 18-27 group the attrition rate in females is slightly higher at 29.11% (compared with 27.48% for males) and at the 38-47 group the attrition of males is significantly higher at 9.09% compared with 6.42% for females.
4. The attrition rate correlates with the travel of employees, with employees self-reporting as “travels frequently” having an attrition rate of 24.9%, and employees who report as “travels rarely” having an attrition rate of 14.9%.
5. The attrition rate initially correlates with the number of years the employee has spent with the company, with the attrition rate being 32.9% for those who have been with IBM for less than 5 years, dropping down to 5% to those who have been in IBM for 25 to 30 years, before rising again for employees having been in IBM for more than 30 years, reaching a maximum of 12.5% for 35-40 years.
6. Prior experience also correlates with attrition, with those who have worked with 5 or more companies before being about twice as likely to leave the company.
7. The attrition is predominantly in the sales and R&D departments, with a minute percentage from HR. This reflects the overall departmental breakdown of the sample space; if weighted by department population the attrition in R&D is only 13% whereas it's close to 20% in both sales and HR.

8. Satisfaction surveys correlate strongly with attrition, with job satisfaction, environment satisfaction and relationship satisfaction all showing a pattern of anyone self-reporting least satisfied (1) having twice the attrition rate of those reporting most satisfied (4). By contrast, there seems to be little difference among those reporting 2, 3 or 4 in satisfaction survey regarding attrition.

Addressing Attrition

Armed with these insights, IBM has taken proactive measures to address attrition. Firstly, they have focused on creating a culture of continuous learning and development, providing employees with ample opportunities to upskill and advance their careers within the organization. By investing in training programs and internal mobility initiatives, IBM aims to retain top talent and enhance employee engagement.

IBM has also made efforts to improve work-life balance and job satisfaction by implementing flexible work arrangements and well-being initiatives. Recognizing the importance of strong managerial relationships, the company has enhanced leadership training programs to equip managers with the skills needed to support and motivate their teams effectively.

Being proactive to address the general issues that is most common cause to attrition, IBM has created number of employee engagement and retention programs. For instance, the organization offers training, coaching, and career growth possibilities for employee development. In order to promote work-life balance and employee wellbeing, IBM also provides flexible work schedules, WFH, and other benefits.

Also, more importantly, Measuring the impact - An ongoing HR analytics study monitors the impact of these initiatives on attrition rates. By collecting data on attrition levels post-implementation, IBM can

assess the effectiveness of their strategies and make necessary adjustments. Regular employee surveys and feedback mechanisms also provide valuable insights into the employee experience and help identify areas for improvement.

7. SCOPE FOR FURTHER RESEARCH

This research is done on a limited sample size of 1500 employees. The larger the sample size the more accurate the analysis and conclusions one can draw from them. A future study can be done to survey a larger number of employees.

This analysis is done with Tableau, but there might be other products in the market which can look at a data set and present it in a way that we can draw conclusions from them. One of the fastest growing sectors of technologies is AI (Artificial Intelligence) and soon we might have products that will look at this data and present the conclusions directly. But we don't have such technology readily available at the time of this research.

8. CONCLUSION

While some level of attrition in a company is inevitable, minimizing it and being prepared for the cases that cannot be helped will significantly help improve the operations of organization. As a future development, with a sufficiently large data set, it would be meaningful to run a segmentation on employees, to develop certain "at risk" categories of employees. This could generate new insights for the business on what drives attrition, insights that cannot be generated by merely informational interviews with employees.

The key driver of success in reducing the attrition would be the human element reaching out the employee, understanding the current situation of the employee and acting to resolve the controllable factors that can prevent attrition of the employee.

Employee attrition is a challenge faced by companies worldwide, and IBM recognizes the significance of HR analytics in tackling this issue. Through a comprehensive analysis of various factors, IBM has gained valuable insights into the drivers of attrition within its organization.

By addressing these factors head-on and implementing targeted retention strategies, IBM aims to reduce attrition rates, enhance employee satisfaction, and foster a positive work environment.

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SUSTAINABLE APPROACHES TO COMPOST IN TERRACE GARDENS AND ITS EFFECTS ON THE PSYCHOLOGICAL WELL BEING

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ABSTRACT

Ecosystem is defined as a biological assemblage interacting with its associated physical environment located in a specific place by Tansley (1935). Our Ecosystem plays vital role for our existence as well as all for another organism in the world. Protecting it is very crucial not only for our survival but also for every single living organism in this world. Wherever we live we have that basic responsibility to protect the ecosystem by any means. Those who live in urban areas are deprived of the landscape which helps to connect us with nature but inside every one of us there is that instinct which triggers us to have minimum a small pot with a sapling. Terrace garden concepts become familiar during lockdown. Kitchen waste is used as manure for terrace garden plants by composting and there are also many online workshops conducted to teach about composting. This provided way for terrace garden's popularity and people are getting many benefits like organic fresh vegetables, aesthetic appearance for the terrace, cooling effect for the house above all it improved the psychological well being of the people positively. The main objective of the study is to find the sustainable approaches to compost and protect ecosystem in terrace gardens of urban areas and its effects on psychological well-being. Data is collected using Google forms from respondents by purposive sampling technique. ANOVA and Chi-Square is used to analyze the data using SPSS. The results show that there is positive relationship with terrace gardens and psychological well being.

Keywords: *ecosystem, terrace garden, composting, psychological well-being.*

1. INTRODUCTION

Terrace garden is a good way to improve our mental health for those who live in urban area. We can easily compost our kitchen waste and the same can be used as manure for our terrace garden. Terrace garden give us lot of benefits some are tangible and some are intangible. When it comes to mental health benefits it reduces stress, strength our connections with other people with similar interest, being in mindfulness, feeling sense of worth, reduces the risk of Alzheimer's, gives us good body structure and strengthens our immune system. Mycobacterium vaccae, a soil bacterium will help us to improve our immune system and also reduces depression as per research studies.

2. PROBLEM STATEMENT

To find the sustainable approaches to compost and protect ecosystem in terrace gardens of urban areas and its effects on psychological well being

3. OBJECTIVES OF THE STUDY

To find the sustainable approaches to compost in terrace gardens. To find the association between terrace gardens and psychological well being. To find the difference between educational qualification and psychological well-being.

4. REVIEW OF LITERATURE

Positive effect of nature connectedness:

Previous research studies says that people who are involved to protect the natural environment by gardening and developing natural environment are positively influenced and shows increased subjective well being. More research studies need to be done in

this area to prove this association. If people involved in protecting natural environment shows improvement in well being it will have a double benefit, first for preserving our natural environment and secondly for the development of human kind (Ginkel, 2020) Nature connectedness may increase the well being by

motivating people's need to be with nature and also to include many varieties in their gardens. Research study also shows there is positive effect on well being because of human beings need to connecting with nature (Samus, 2023).

Intention to recycle: Theory of planned behavior

Theory of planned behavior was framed by adding perceived behavioral control from the reasoned action theory. Theory of planned behavior is widely used to tell about different aspects of human behavior and is recognized as one of the most important theories for studying social and psychological behaviors. Theory of planned behavior says that human beings act logically by outwardly or inwardly by calculating the output of their behavior. This theory of planned behavior postulates three main factors. They are attitude, subjective norm and perceived behavioral control to predict behavioral intention. As per this theory if a person has a good attitude, subjective norm and perceived behavioral control then he will show a good behavioral intention. Researchers like Wang, Mak, and Abbasi employed this theory to study the behavioral intention of people in areas like the impact of environmental awareness norms, recycling, intention to recycle, awareness of consequences, economic incentives and to explore the intention to revisit a destination (Rahman 2022). All these research studies show that people when they are aware of the consequences of growing terrace garden and its effects on psychological well being they will positively exhibit the behavior which is helpful both for them as well as for the society.

Relationship of human well being with nature: Theory of Biophilia.

Edward O. Wilson (1984), a well-known biologist described Biophilia as an "innate tendency to focus connections on life and life-like processes".

He has written about this in his book in 1984 but originally German philosopher and psychologist Erich Fromm used it as “the passionate love of life and of all that is alive” in 1964 itself. In 1993, Stephen R. Kellert used the hypothesis as the relationship of human emotional reaction to nature in many dimensions. All these studies show that the theory of Biophilia is covering wider aspects and it interprets the relationship of human well being with nature (Ozturk Sari. S 2023)

Advantages of Compositing:

Composting is converting different decomposable wastes into outputs which can be used as organic fertilizers. The composting process paves way to ensure that underground water is safe from pollutants. Due to composting there is control of microbes and chemical pollutants which are dangerous to people. The advantageous microbes remove the chemicals during composting. (Ayilara 2020)

Ornamental Plants remove Stress:

During pandemic people were affected worldwide but those who were growing ornamental plants were positive emotionally because it is considered as one of the practices for reducing anxiety and stress in human beings. To support this research result it is necessary to grow ornamental plants with more research studies in places where people are stressed. Particularly it can be used to solve different problems by growing ornamental plants since it reduces the negative emotions (Turkoglu 2023)

Terrace gardens and Psychological Well Being:

Terrace gardens improve the creativity and psychological benefits for the urban people. Also terrace gardens changes the physical view of the houses, provides privacy from neighbors and hides unwanted pipeline and also unattractive appearance. In city shops the quality of the vegetables is questionable and also kitchen waste

can be recycled are the main reasons for these terrace gardens (Kalyan 2020).

Benefits of Terrace Gardens:

Terrace gardens improve the physical activity, social interaction and exposure to nature and Sunlight. Blood pressure is lowed with exposure to sunlight and increase Vitamin D level. Terrace gardens give us fruits and vegetables that have a good impact on the nutrition. Terrace gardens burns same number of calories as one might get working in gym. It also restores dexterity and strength. More calories are burnt by digging, raking and mowing in terrace gardens. Social isolation can be removed for those people with learning disabilities and poor mental health by the social interaction done in communal and therapeutic garden projects (Thompson 2018). Psychological well being, purpose of life, social interaction, interpersonal relations, personality development, new perception about the environment, social roles and quality of life are associated with terrace gardens (Triguero-Mas 2020)

Protecting Ecosystem with Terrace gardens:

Terrace gardening is the easy solution for fast growing urbanization and food adulteration to stay healthy with healthy food and also to protect our ecosystem by including nature into one’s environment. We should keep the ecosystem in good condition and it is our responsibility because only our children and grandchildren will be living on this Mother Earth (Thunam Srikanth 2022)

5. RESEARCH METHODOLOGY

Primary data is collected from 246 respondents using Google forms by purposive sampling technique. First the target population who are having terrace garden is identified and Google forms are circulated to them and also to the people who don’t have terrace garden. Data analysis is done using ANOVA and Chi-square in SPSS.

Questionnaire used to measure psychological well being- 18 item scale is developed by psychologist Carol D. Ryff (1995). Ryff scale consists of six factors: autonomy, environmental mastery, personal growth, positive relations with others, and purpose in life and self-acceptance. Total score if it is high it shows increased psychological well being.

In addition, questions for demographic factors, and open-ended questions are given to know about the respondent's interest in terrace garden, types of plants they grow in terrace and also their methods of composting in terrace garden. Respondents are also asked to give their suggestions to improve terrace garden in urban area.

6. DATA ANALYSIS AND INTERPRETATION

6.1 Terrace Garden and Psychological Well Being

H1: There is significant association between terrace garden and psychological wellbeing.

| Chi-Square Tests | | | |
|---|--------|----|-----------------------------------|
| | Value | Df | Asymptotic Significance (2-sided) |
| Pearson Chi-Square | 87.37 | 44 | 0 |
| Likelihood Ratio | 110.79 | 44 | 0 |
| Linear-by-Linear Association | 15.49 | 1 | 0 |
| N of Valid Cases | 276 | | |
| a. 61 cells (88.4%) have expected count less than 5. The minimum expected count is .01. | | | |

Interpretation:

The Pearson Chi-Square value is significant. So, the null hypothesis is rejected and the alternative hypothesis is accepted.

There is significant association between terrace garden and psychological well-being.

| Symmetric Measures | | | |
|--------------------|------------|-------|--------------------------|
| | | Value | Approximate Significance |
| Nominal by Nominal | Phi | 0.56 | 0 |
| | Cramer's V | 0.4 | 0 |
| N of Valid Cases | | 276 | |

Phi and Cramer's V values are .563 and .398 which shows terrace garden is positively associated with psychological well-being.

H2: There is significant difference between Educational Qualification and psychological well-being.

| Descriptives | | | | | | | | |
|--------------------------|-----|------|----------------|------------|----------------------------------|-------------|---------|---------|
| Psychological Well Being | | | | | | | | |
| | N | Mean | Std. Deviation | Std. Error | 95% Confidence Interval for Mean | | Minimum | Maximum |
| | | | | | Lower Bound | Upper Bound | | |
| 1 | 48 | 3.7 | 1.17 | 0.17 | 3.36 | 4.04 | 2 | 5.44 |
| 2 | 60 | 3.9 | 1.32 | 0.17 | 3.56 | 4.24 | 2 | 6.22 |
| 3 | 96 | 3.85 | 1.27 | 0.13 | 3.59 | 4.1 | 2 | 6.33 |
| 4 | 72 | 3.68 | 1.15 | 0.14 | 3.41 | 3.95 | 2 | 5.56 |
| Total | 276 | 3.79 | 1.23 | 0.07 | 3.64 | 3.94 | 2 | 6.33 |

Interpretation:

Out of 276 respondents 48 are having Higher secondary/School education,60 are graduates, 96 are post graduates and remaining 72 are with different qualification and coming under Others category.

| Test of Homogeneity of Variances | | | | | |
|----------------------------------|--------------------------------------|------------------|-----|--------|------|
| | | Levene Statistic | df1 | df2 | Sig. |
| Psychological Well Being | Based on Mean | 0.52 | 3 | 272 | 0.67 |
| | Based on Median | 0.64 | 3 | 272 | 0.59 |
| | Based on Median and with adjusted df | 0.64 | 3 | 271.04 | 0.59 |
| | Based on trimmed mean | 0.53 | 3 | 272 | 0.65 |

Interpretation:

The Levene Statistic values are insignificant. So, the data is homogeneous.

6. OBSERVATIONS FROM FIGURE 1:

1. The attrition rate is 16.12%, within the chosen sample space.
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Addressing Attrition

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Also, more importantly, Measuring the impact - An ongoing HR analytics study monitors the impact of these initiatives on attrition rates. By collecting data on attrition levels post-implementation, IBM can

| ANOVA | | | | | |
|--------------------------|----------------|-----|-------------|-------|------|
| Psychological Well Being | | | | | |
| | Sum of Squares | df | Mean Square | F | Sig. |
| Between Groups | 2.32 | 3 | 0.77 | 0.508 | 0.68 |
| Within Groups | 413.78 | 272 | 1.52 | | |
| Total | 416.1 | 275 | | | |

Interpretation:

The F value is insignificant so the null hypothesis is accepted. There is no difference between educational qualification and psychological well-being.

7. FINDINGS

From the above analysis and interpretation, the findings are:

There is association between terrace garden and psychological well-being. So having terrace garden is positively associated with increasing the psychological well-being.

There is no difference between educational qualification and psychological well-being. So psychological well-being is not showing any difference because of different levels of educational qualification.

Respondents are growing medicinal plants, flowing plants and vegetables and greens in their terrace gardens.

Some of common plants they grow are medicinal plants like Tulasi, Alove vera, Hibiscus, Mint, Thoothuvalai etc, flowing plants like Rose, Jasmine and vegetables like Brinjal, Ladies finger, Pumpkin, Sweet potato, Tomatoes, Chillies, Ginger.

8. SUGGESTIONS

Respondent's suggestions for composting in terrace garden:

Mix the kitchen waste with coco peat and sand in a closed container for some time and use it.

Use Compost bin and fill the kitchen waste and sand layer by layer.

By drying the kitchen waste in sun and storing them for future use.

By soaking the kitchen waste in water and using it for terrace garden.

Respondent's suggestions for improving terrace garden:

Choose plants based on the purpose like medicinal plants or flowing plants or vegetable plants

Daily maintenance is important

Check whether the roof is strong and take proper precautions before keeping plants in terrace.

Use stands to keep the pots properly.

Start from small plants and gradually increase the pots.

Use organic fertilizers instead of Chemical fertilizers.

Cleaning and watering the plants is very important on daily basis.

9. CONCLUSION

Gardening connects us with nature and improves our psychological well-being. At the same time, we can do composting in a small scale from our kitchen waste which is very important for sustainable development of our ecosystem. Everyday working in garden burns the extra calories which reduces the risk of obesity. As per pervious research studies watering the plants improve our Heart function also improves psychological well-being. We inhale good oxygen when we are working in our terrace garden. Also, we get Vitamin D naturally by exposing to sunlight in terrace garden.

Terrace garden gives us many benefits like organic vegetables and greens fresh from our terrace to kitchen. Terrace garden is like our window to outer natural environment and frees us from the stress. We can learn gardening in a natural way by starting slowly with small plants and within inside of everyone we have a gardener. We will also get the satisfaction of doing our part to protect the ecosystem for future generation by this terrace garden and composting our kitchen waste.

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**IMPACT OF STOCK INDEX
FUTURES TRADING ON SPOT
PRICE VOLATILITY: EVIDENCE
FROM MATURE AND EMERGING
MARKETS**

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ABSTRACT

This study compares the effects of spot price volatility on stock index futures trading in developed and developing markets. We examine the relationships between futures trading and spot market volatility using a comprehensive dataset derived from four nations, especially Japan and the US (mature markets) and Mexico and South Korea (developing markets). Volatility in financial time-series data is modelled using a number of econometric methodologies, including the use of a Generalized Autoregressive Conditional Heteroskedasticity (GARCH) model. To determine stationarity in the time series data, careful unit root analysis is also used in the research. Our findings help to clarify how derivative instruments work in the financial markets and offer insightful information to both investors and market authorities.

Keywords: GARCH model, futures trading, spot price volatility, mature markets, emerging markets, stock index futures, unit root analysis.

1. INTRODUCTION

This research paper focuses on the impact of futures trading on spot price volatility in mature and emerging markets. The debate on whether futures trading stabilizes or destabilizes spot prices has been ongoing for many years. Some studies suggest that futures trading can stabilize spot prices, while others argue that it exacerbates price volatility.

The paper reviews several studies that provide mixed findings on the relationship between futures trading and market volatility. For example, some studies show that futures trading increases volatility before or after certain events, while others indicate that it reduces volatility. The impact of futures trading on spot price volatility appears to vary depending on the specific market and conditions.

The purpose of this paper is to contribute to the ongoing debate by examining the impact of futures trading on spot price volatility in both mature and emerging markets. The researchers aim to determine whether futures trading has a stabilizing or destabilizing effect on spot prices and whether there are any differences between the two types of markets.

The study will use advanced econometric techniques to analyze the relationship between stock index futures trading and spot price volatility. The findings of this research will be valuable for policymakers, investors, and regulators, as it can provide insights into market stability, risk management, and financial regulation. Understanding the impact of futures trading on spot price volatility is crucial for making informed decisions in both mature and emerging markets.

2. REVIEW OF LITERATURE:

The literature reviewed suggests that there is a significant relationship between futures trading and spot market volatility. Many studies have been conducted on this topic, mainly focusing on stock index futures and commodity derivatives

markets in both developed and emerging economies. The majority of these studies have employed econometric models, such as GARCH, to examine the impact of futures trading on spot market volatility.

Macroeconomic announcements' effects on emerging market bond returns and volatility were examined by Andritz Ky et al. in 2003, and they discovered a strong correlation. The FTSE-100 stock index futures contract was the subject of Antoniou and Holmes' (2010) investigation into the effect of futures trading on spot price volatility. They found that futures trading enhances spot price volatility and offers fresh market data.

When Antoniou and Foster (2010) examined the influence of futures trading on Brent crude oil spot price volatility, they discovered a sizable favorable effect. The impact of stock index futures on stock market volatility was examined by Guo (2013), who found a correlation. Illueca and Lafuente (2013) looked at how spot and futures trading affected stock index market volatility and discovered a strong and positive correlation.

Using the GARCH model, Debasish (2015) examined the influence of futures trading on spot price volatility in the NSE Nifty and discovered a sizable favorable impact. In their 2015 study on derivative trading in developing markets, Singh and Singh discovered that futures markets are essential for price discovery and risk management.

Studying price discovery and investor structure in stock index futures, Bohl, Salm, and Schuppli (2016) brought attention to the crucial role that futures trading plays in price discovery. In-depth volatility spillovers were discovered by Yang et al. (2016) when they looked at intraday price discovery and volatility transmission between stock index and stock index futures markets.

In the 2016 study, Sehgal et al. found a short-term positive correlation between futures trading and spot market volatility in Indian commodities markets. In their 2016 study, Kuo et al. found a substantial correlation between individual and institutional trading and futures returns and volatility in emerging index futures markets. Price discovery and volatility spillovers in Mexico's index futures markets were examined by Zhong et al. (2016), who discovered a substantial correlation.

The influence of futures trading on spot price volatility in the spot electricity market in France and Germany was examined by Kalantzis and Milonas (2017), who discovered a decrease in spot price volatility. In their 2017 study, Gao and Sun saw a reduction in stock

3. DATA COLLECTION:

The section presents data and econometric that is employed to find out the results.

4. Data Description:

This study mainly considers indices for each country of Mexico & South Korea as Emerging Markets and Japan & US as Mature Market to show the market volatility in China when index futures were introduced.

The Taiwan Index Futures Market's market liquidity and volatility were researched by Chou et al. (2017), and they discovered a substantial influence. The influence of futures trading on spot market volatility in Indian commodities derivatives markets was explored by Kumar (2017), and it was shown to be beneficial.

In the study of the SET50 index future, Chetchatree (2019) found a favorable correlation between futures trading activity and index price volatility. In a developing market dominated by individual investors, Li and Wang (2019) examined the link between daily institutional

transactions and stock price volatility and discovered a large favorable influence.

These studies' inferences are varied, which might be attributed to differences in study methodology and market circumstances. However, the research repeatedly argues that there is a considerable correlation between futures trading and spot market volatility, with futures trade favorably affecting spot market volatility in a number of financial sectors. stock of each separately. The daily closing prices of cash market is taken from yahoo finance. To check the volatility in returns and market efficiency for each country the whole sample is divided into two main sections :(pre-year data and post year data). Table indicates the description of the data period respectively.

| Country (underlying index) | Pre-data period | Introduction date of index future | Post-data period | Whole period |
|--------------------------------------|-----------------|-----------------------------------|------------------|--------------|
| Japan (Nikkei 225)- mature market | 1984-1986 | Sep-86 | 1986-1990 | 1984-1990 |
| US (Nasdaq)- mature market | 1997-1999 | Jun-99 | 1999-2003 | 1997-2003 |
| Mexico (IPC Mexico)- emerging market | 2015-2017 | Jun-17 | 2017-2020 | 2015-2020 |
| South Korea (KS11) - emerging market | 2005-2007 | Apr-07 | 2007-2010 | 2005-2010 |

Data Preprocessing: The collected data will be cleaned and preprocessed to handle any missing values, outliers, and other data issues. It will be important to ensure that the data is reliable and consistent before proceeding with the GARCH analysis.

4. METHODOLOGY

This comparative research intends to evaluate the effects of spot price volatility on stock index futures trading in both developed and developing markets. Secondary sources will be used to gather information on trade volumes, open interest, daily closing prices of stock index futures, and financial databases such as Yahoo Finance. For each market, the data will be examined independently using descriptive statistics, unit root analysis, and GARCH models appropriate for financial time series data.

5. RESULTS AND DISCUSSION:

UNIT ROOT ANALYSIS:

Unit root analysis is a statistical technique used to determine whether a time series data set is stationary or non-stationary. The Augmented Dickey-Fuller (ADF) test is a widely used unit root technique to assess the stationarity of time series data. When determining whether a time series variable is stationary or exhibits a unit root (non-stationary), the ADF test is used.

H0: The stock index series has a unit root and is non-stationary

H1: The stock index series does not have a unit root or is stationary

ADF Test Equation: $\Delta y(t) = \alpha + \beta t + \gamma y(t-1) + \sum \delta_i \Delta y(t-i) + \varepsilon(t)$

Where: $\Delta y(t)$ represents the differenced time series data at time t . α is a constant term. β is the coefficient associated with a time trend, if present. γ is the coefficient of the lagged dependent variable, $y(t-1)$. $\sum \delta_i \Delta y(t-i)$ represents the sum of the coefficients of lagged differenced variables, where δ_i represents the coefficients and $\Delta y(t-i)$ represents the differenced values of the lagged variables

| UNIT ROOT ANALYSIS | | | | | | | | | |
|--------------------|--------------------|--------|--------------------|-------|-------|-------|------|------|------|
| SL.NO | Stocks | Period | ADF T-Statistic | tau | | | phi | | |
| | | | | 1% | 5% | 10% | 1% | 5% | 10% |
| 1 | Nikkei225 (Japan) | Pre | -8.2209 | -3.43 | -2.86 | -2.57 | 6.43 | 4.59 | 3.78 |
| | | Post | -11.3162 | -3.43 | -2.86 | -2.57 | 6.43 | 4.59 | 3.78 |
| 2 | Nasdaq(US) | Pre | -0.7948 | -3.44 | -2.87 | -2.57 | 6.47 | 4.61 | 3.79 |
| | | Post | -0.9558 | -3.43 | -2.86 | -2.57 | 6.43 | 4.59 | 3.78 |
| 3 | IPC Mexico | Pre | -1.8126 | -3.43 | -2.86 | -2.57 | 6.43 | 4.59 | 3.78 |
| | | Post | -1.2873 | -3.43 | -2.86 | -2.57 | 6.43 | 4.59 | 3.78 |
| 4 | KSII (South-Korea) | Pre | -7.9835 | -3.44 | -2.87 | -2.57 | 6.47 | 4.61 | 3.79 |
| | | Post | -6.6299 | -3.43 | -2.86 | -2.57 | 6.43 | 4.59 | 3.78 |

TABLE 2: Results of the ADF test for the daily returns of Emerging and Mature market

The table 2 shows that unit root analysis done on the stock market indexes of four different nations (Japan, US, Mexico, and South Korea) during two distinct time periods, denoted as "Pre" and "Post." The goal of the analysis is to assess whether or not the stock prices reflect a unit root process, a sign of a non-stationary time series.

The null hypothesis of a unit root is rejected for the Nikkei225 index of Japan because the ADF (Augmented Dickey-Fuller) test statistic is notably negative for both the "Pre" and "Post" eras. The Nikkei 225 index is therefore considered stationary during both timespans.

By contrast, the ADF test results that are not statistically negative suggest that the Nasdaq index of the US exhibits non-stationarity in both

the "Pre" and "Post" eras. The Nasdaq index is assumed to demonstrate a unit root process and is consequently non-stationary because the null hypothesis was rejected in this situation

The ADF test data for the IPC Mexico index are not statistically negative, indicating non-stationarity for both time periods. As a result, it is determined that the IPC Mexico index is a non-stationary time series.

Whereas the KSII (South Korea) index displays stationary behavior both during the "Pre" and "Post" periods because the unit root process null hypothesis is rejected by the ADF test statistics, which are significantly negative.

Investors and decision-makers should consider the implications of these findings carefully. It is difficult to forecast future stock price movements since the presence of unit roots and non-stationarity in stock market indices suggests that the prices may be affected by long-term trends and may not revert to their mean over time.

Descriptive Statistics: Descriptive statistics such as mean, median, standard deviation, Minimum, Maximum, Skewness and Kurtosis will be calculated to provide an overview of the data and to identify any initial patterns or trends in the data.

| TABLE 3: Descriptive Analysis of Mature and Emerging Markets Pre and Post data | | | | | | | | |
|--|--------|---------|---------|----------|----------|---------|----------|----------|
| Index | Period | Mean | Median | Min | Max | Std.Dev | Skewness | Kurtosis |
| Nikkie 225 | Pre | 12583 | 12642.9 | 9703.35 | 18936.24 | 3467.72 | -1.61 | 8.24 |
| | Post | 26319.3 | 27412.3 | 15819.55 | 38915.87 | 8498.89 | -1.48 | 5.71 |
| Nasdaq | Pre | 1883.42 | 1785.64 | 1419.12 | 2652.05 | 330.045 | 0.84 | 2.41 |
| | Post | 2407.78 | 2034.84 | 1114.11 | 5048.62 | 998.829 | 0.72 | 2.33 |
| IPC Mexico | Pre | 45328.4 | 45316 | 32964.22 | 51713.38 | 3567.97 | -0.76 | 3.85 |
| | Post | 45114.3 | 44956.7 | 32964.22 | 51713.38 | 4234.52 | -0.63 | 2.94 |
| KS11 | Pre | 1286.19 | 1333.18 | 970.88 | 1470.03 | 182.497 | -4.01 | 27.49 |
| | Post | 1565.44 | 1623.06 | 938.75 | 2064.85 | 297.579 | -1.83 | 9.81 |

The table 3 examines the performance of the Nikkei 225, Nasdaq, IPC Mexico, and KS11 stock market indexes in developed and developing markets before and after a certain time period. Their mean, median, lowest and maximum values as well as their standard deviation, skewness, and kurtosis are displayed. In comparison to the pre-period, the indexes exhibited greater mean values, wider ranges, and more volatility in the post-period. In the post-period, certain indices demonstrated a move towards less severe skewness and kurtosis.

In the post-period, the Nikkei 225 index had a higher mean and median in addition to a broader range and greater volatility. Its distribution was negatively skewed in both times, although the post-period's kurtosis was lower, suggesting fewer outliers.

The Nasdaq index had greater mean and median values, a substantially wider range, and more volatility in the post-period. Both of the eras' distributions were positively skewed, although the post-period's kurtosis was somewhat lower.

The Nikkei 225 index had a wider range, higher mean and median, and more volatility in the post-period. Although the post-period's kurtosis was lower and would have indicated fewer outliers, its distribution was negatively skewed in both periods. In the post-period, the Nasdaq index displayed higher mean and median values, a much broader range, and more volatility. Although the post-period's kurtosis was a little bit lower, the distributions of both periods were favorably skewed.

In both the pre- and post-periods, the IPC Mexico index had a comparable mean and median with a very small range. The distribution remained negatively skewed but with significantly reduced skewness in the post-period, and volatility rose. Indicating a distribution with fewer outliers, the kurtosis shrank.

In the post-period, the KS11 index had a higher mean and median combined with a wider range and greater volatility. It had an exceptionally heavy tail, significantly negatively skewed

distribution, and several outliers in both time periods. Even while the kurtosis was lower in the post-period, it was still rather high.

Changes in the indexes for mature and emerging markets. The mean and median values increased generally over the post-period, showing improved market performance. The ranges widened to reflect increased market turbulence. The Nasdaq index saw the largest growth in range and volatility as well as the greatest increase in mean and median values. Although there was a tendency towards less severe skewness, the distributions in the post-period remained skewed. Generally speaking, the kurtosis values dropped, showing distributions with comparatively fewer outliers. According to these results, the post-period saw an increase in market volatility, a more even distribution of stock market returns, and overall positive market growth.

GARCH Analysis: In order to assess the impact of futures introduction on volatility, it is common to compare the volatility levels before and after the introduction of stock index futures. Previous studies have often employed the Generalized Autoregressive Conditional Heteroskedasticity (GARCH) model, which is suitable for analyzing stock market data. The GARCH model allows for precise specification of volatility and provides controls for other factors that can influence volatility.

The main hypothesis in this study can be formulated as follows:

H0: There is a change in the volatility of the stock index after the introduction of index futures.

H1: There is no change in volatility after the introduction of index futures.

Garch Model: $\sigma_t = \alpha + \beta\sigma_{t-1} + \gamma\epsilon_{t-1}^2$

where:

σ_t is the volatility at time t

α is the constant term

β is the autoregressive coefficient

γ is the conditional variance coefficient

ϵ_{t-1} is the white noise error term at time t-1

By analyzing the data using the GARCH model, the study aims to determine whether the introduction of stock index futures has a significant impact on the volatility of the underlying stock index. The GARCH model can capture the dynamics of volatility over time, allowing for the examination of any shifts or changes in volatility patterns associated with the introduction of futures trading.

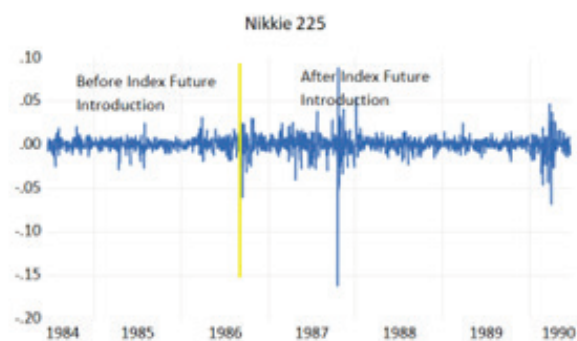


Figure 1

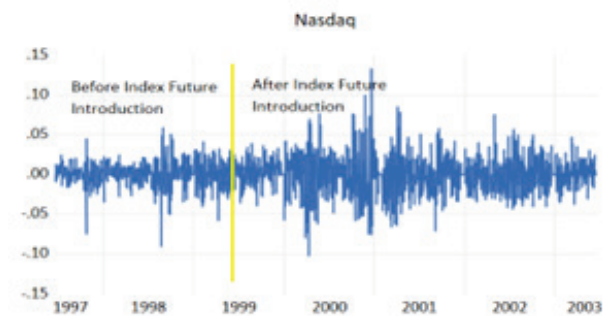


Figure 2

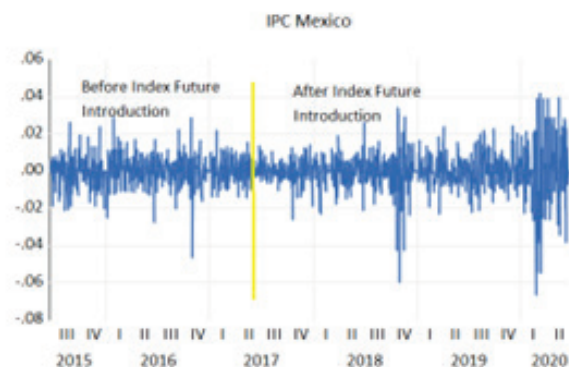


Figure 3

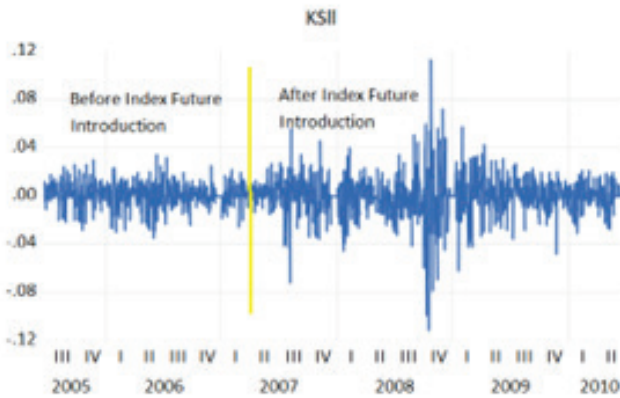


Figure 4

TABLE 4: Spot Volatility of Pre-Mature & Emerging Markets by using GARCH Model

| Index | Spot Volatility | Constant(c) | RESID(-1) ² | GARCH(-1) | Z-statistic | Probability |
|------------|-----------------|-------------|------------------------|-----------|-------------|-------------|
| Nikkei 225 | 0.884379 | 0.000821 | 0.183957 | 0.699601 | 3.141 | 0.0017 |
| Nasdaq | 0.968063 | 0.001752 | 0.303309 | 0.663002 | 3.062 | 0.0022 |
| IPC Mexico | 0.696361 | 0.000021 | 0.143724 | 0.552616 | 2.114 | 0.0345 |
| KSII | 0.937678 | 0.001281 | 0.101737 | 0.83466 | 2.736 | 0.0062 |

TABLE 5: Spot Volatility of Post Mature & Emerging Markets by using GARCH Model

| Index | Spot Volatility | Constant(c) | RESID(-1) ² | GARCH(-1) | Z-statistic | Probability |
|------------|-----------------|-------------|------------------------|-----------|-------------|-------------|
| Nikkei 225 | 0.953809 | 0.001245 | 0.434611 | 0.517953 | 5.032 | 0 |
| Nasdaq | 0.981469 | 0.000769 | 0.082504 | 0.898196 | 4.524 | 0 |
| IPC Mexico | 0.976311 | 0.000042 | 0.194471 | 0.781798 | 8.016 | 0 |
| KSII | 0.984755 | 0.000838 | 0.101099 | 0.882818 | 7.153 | 0 |

The spot volatility of the Nikkei 225, which represents Japan in the mature market segment, was 0.884379 prior to the introduction of index futures and 0.953809 following it. This suggests that the developed Japanese market is experiencing moderate to high levels of volatility. The rise in spot volatility following the launch of index futures shows that the market's volatility rose, possibly as a result of increased trading activity and modifications to the market's dynamics.

Before the introduction of index futures, the spot volatility on the Nasdaq, which represents the US market, was 0.968063; after the introduction, it was 0.981469. These numbers show that the mature US market has a comparatively high amount of volatility. The minor boost in spot volatility following the introduction is likely caused by a number of variables unique to the

developed US market.

The IPC Mexico showed spot volatility of 0.696361 prior to the introduction of index futures and 0.976311 following the introduction in the emerging market category. This suggests that volatility has significantly increased since index futures were introduced in the developing Mexican market. The influence of index futures on trade dynamics and market participation can be explained by the higher spot volatility, which indicates that the market became more erratic.

Finally, the spot volatility of the KS11, which represents the South Korean market, was 0.937678 before the introduction of index futures and 0.984755 after. These numbers point to a moderate

to high level of market volatility in South Korea's developing economy. The market may have become more volatile as a result of characteristics unique to the context of emerging markets, as evidenced by the rise in spot volatility following the introduction.

Variable levels of volatility are found in both mature and emerging markets, according to the spot volatility research. The Nasdaq and Nikkei 225, which are mature markets, have considerably higher spot volatilities than other markets because of their inherent volatility and trading dynamics. On the other hand, spot volatility is less extreme but nevertheless present in the emerging markets of South Korea (KS11) and Mexico (IPC Mexico). The introduction of index futures in these developing markets seems to have significantly boosted spot volatility and its levels.

6. CONCLUSION

The influence of spot price volatility on the trading of stock index futures in Japan, the US, Mexico, and South Korea was examined using a GARCH model in the study. The introduction of index futures has different effects on volatility in both developed and emerging markets, according to the results. The necessity for market participants and regulators to address increased volatility in their decision-making and risk management techniques is one of the practical ramifications. To fully comprehend the function of financial derivatives in markets, future research should examine long-term consequences, market dynamics, and the impact of stock index futures on other market components.

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