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THE INSTITUTE OF COST ACCOUNTANTS OF INDIA

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The Institute of Cost Accountants of India would be the preferred source of resources and professionals for the financial leadership of enterprises globally.

Mission Statement

The CMA professionals would ethically drive enterprises globally by creating value to stakeholders in the socio-economic context through competencies drawn from the integration of strategy, management and accounting.

Behind Every Successful Business Decision, there is always a ***CMA***

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President
The Institute of Cost Accountants of India
12 Sudder Street, Kolkata - 700016

FOREWORD

I am delighted to present Vol.49 No. IV issue of our Research Bulletin. This publication showcases the diversity and quality of research articles conducted on the various issues like Corporate Governance, CSR, Financial Literacy, Banking, Artificial Intelligence, etc. I extend my heartfelt gratitude to the authors for their dedication and contribution towards enriching our publication.

Identifying our academic responsibilities, this bulletin is intended as a step towards developing our community's awareness of the quality and quantity of excellent research. The primary goal of this bulletin speaks to fostering an environment that will inspire research excellence and train the budding research scholars.

Through a pragmatic and conscientious approach to research and by cultivating strategic partnerships, we aim to design an ecosystem that pursues, supports, and celebrates research that makes a difference.

I am very pleased to see the extent of impactful research profiled in the pages of this bulletin. Moreover, I would like to extend my sincere appreciation to the team whose support makes our publication possible. Collectively, we are committed to making an impact in the nation and beyond for the better.

CMA Ashwin G. Dalwadi
President
The Institute of Cost Accountants of India

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CHAIRMAN'S COMMUNIQUÉ

Improved digital transformation strategy could be an effective solution to address the long-standing problem. Research and innovation are vitally important to facilitate and accelerate digital transformation in various businesses in terms of improving traceability, sustainability, and quality of a product in many different areas. Digital Revolution can have a dramatic impact in different ways on society, economy and above all, humanity.

Industry and economic experts believe that the sustained economic expansion will enhance India's appeal to global corporations, firmly establishing its position as a prominent business hub.

The ever-changing business landscape offers infinite research possibilities, and the ways in which we can make an impact are limitless. I would like to express my thanks and admiration to the editor and the editorial team of the research bulletin and all of our contributors who continue to do excellent work. With your dedication and dissemination of knowledge, we wish to continue transforming our world for a sustainable future.

The readers are requested to put forward their valued suggestion towards enrichment of Research Bulletin.

CMA (Dr.) K Ch. A V S N Murthy
Chairman
Journal & Publications Committee
The Institute of Cost Accountants of India

EDITOR'S NOTE

Knowledge dissemination is one of the mere responsibilities of the researchers. "Research Bulletin", a peer-reviewed Journal's aim is to share innovative achievements and practical experiences from diverse domains of management, from researchers, practitioners, academicians and professionals. This bulletin is dedicated to publishing high quality research papers providing meaningful insights into the management content both in Indian as well as global context.

The research bulletin consists of the articles- Corporate Governance, CSR, Financial Literacy, Banking, Artificial Intelligence, PESTEL Analysis, Segment Reporting, etc. This research bulletin is a quarterly publication via both offline and online platform and will act as a wide and easy space for the readers to track and evaluate emerging research topics in the field of management.

We are extremely happy to convey that our next issue of *Research Bulletin, Vol.50 No. I* would be a non-theme one and the subtopics are - Securities and Commodities Markets, Sustainable Finance, AI in Banking Operations, Digital Finance and Fintech Innovations, GST, Cryptocurrency and Blockchain Developments, Green Entrepreneurship and Circular Economy, Startups and Sustainable Development Goals (SDGs), CSR, Corporate Governance, Insurtech and Regtech, Blockchain and Decentralized Finance (DeFi).

I would like to express special appreciation for the commitment of the editorial board and authors for their contribution in the Research Bulletin, a quarterly publication of The Institute of Cost Accountants of India. I am certain that the grow up potential of this space as well as the extreme capabilities of the academics, would make this a well successful in the future by bringing their insightful concepts to the forefront of the world.

Warm regards,

CMA (Dr.) Debaprosanna Nandy
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Contents

ANALYSIS OF INVESTMENT PERCEPTIONS OF GEN Z: WITH REFERENCE TO JAMNAGAR DISTRICT

Bhavik M Panchasara
Heena S Bharadia

Abstract

Generation Z investors are being considered as a critical player for financial markets throughout the world. Gen Z investors includes the generation born between 1999 to 2006 or near about (age group of 18 to 25 years). They are very important because this generation is grown with digitalization and their entrance in financial market play vital role for digital economy. Financial companies and influencers mainly focus on Gen Z investors strategically as they are techno savvy and highly influenced by social media and other online platforms. This paper analysis the perception of Gen Z investors who belongs to tier II city and surrounded rural area with reference to Jamnagar district. The result shows that the Gen Z respondents have a considerable influence of social media over their perceptions towards investment and behavioural practices related to investment. This may be alarming also because all social media tips or guiding videos may not be sound. The need of basic financial knowledge is must.

Keywords:

Generation Z, Investment Perceptions, Social Media, Financial Markets

Introduction

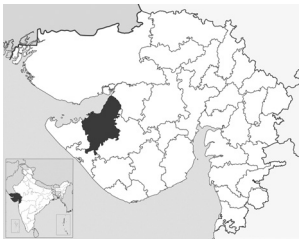
Keeping in view the contemporary trends and digitalization of financial products and services, it is especially important to understand the perceptions and behavioural aspects of different age group especially for modern generations. Current financial and investing environment is also make it crucial to thoroughly understand the attitudes and actions of different demographic segments. Within these categories, Generation Z (Gen Z) consists with unique characteristics and viewpoints about financial matters. Gen Z represents the age group between 18 to 25, those have born between 1999 to 2006 and nearabout. From their childhood, this generation is influenced by information technology, social media, and bunch of informative sources via internet. The influence possessed by Gen Z on investments and the perceptions they have developed are more relevant for researchers and practitioners to know about their financial behaviour practices in their adulthood.

The investing ideas and perceptions of Gen Z are also influenced by various other factors, such as their educational backgrounds, social status, cultural and familial influences, and educational background of their parents. On the bases of these factors, their personal beliefs, external influences, risk tolerance, investing knowledge, and long-term financial goals are built. Apart from this, Gen Z is also characterised by its technological proficiency, global outlook, and desire for financial autonomy, which adapts to the dynamic environment with distinct goals and worries. Thus, it becomes very essential to understand the perceptions of Gen Z about investment to understand their decision-making process. The purpose of this study is to examine and analyse the viewpoints of Gen Z about their perceptions on investments, with special reference to Jamnagar – a tier II city and the rural area belongs to this district. The outcome of the paper will help the policymakers, financial institutions, researchers, and other stakeholders to have insights into their views, preferences, and motivations in relation to investments.

About Jamnagar District:

The objective of this study is to conduct a comprehensive analysis of the investing perceptions of Gen Z in the Jamnagar District. Jamnagar – a tier II city, is situated at the western end of the Gujarat state of western India, presents a distinct socio-economic context to analyse the investment perceptions of Gen Z. Jamnagar provides a unique landscape to study the financial inclinations of the Gen Z in this area because of its blend of urban and rural population, diverse industrial and agricultural background and thriving economy.

Figure 1: Jamnagar district in Map of India and Gujarat



Source: https://commons.wikimedia.org/wiki/Category:Jamnagar_district

Jamnagar, a dynamic metropolitan centre with a centuries-old history, blends tradition and technology, consists of six talukas namely Jodiya, Dhrol, Kalavad, Lalpur, Jamjodhpur and Jamnagar. Districts headquarter is Jamnagar city. The city combines cultural legacy and economic prosperity the Reliance Industries refinery – world's largest manufacturing complex is the example of industrialisation. Jamnagar has been a trade, business, and investment hotspot in recent years, drawing local and foreign companies. The city's strategic position, well-connected infrastructure, and business-friendly atmosphere have spurred its expansion, giving many possibilities in manufacturing, logistics, tourism, and hospitality.

This research examines Gen Z investment perspectives in Jamnagar to understand the changing dynamics of finance in the area. Stakeholders may support financial literacy and inclusive development of the selected generation and that can be useful for further research as well.

Objectives of the study

Main objective of this study is to analyse the investment perceptions of Gen Z. For this research, Gen Z has identified as youngsters in the age group of 18 to 25 years. Based on this main objective, further objectives are as under:

- Perform a brief assessment of the current level of financial and investment awareness among Gen Z
- To analyse the socio-economic variables that may influence the investment perception of Gen Z
- To analyse the demographic variables that may influence the investment perception of Gen Z

Review of Literature

W.D.S Kasun Wijerathne, P.L.S Peter (W. & Peter, 2023) found that education, tech-savvy, and digital connectivity make Generation Z one of the most confused clientele. By 2020, 40% of consumer purchases will be digital. Cognitive talents and social media networking have made them market gurus with consumer awareness of industry dynamics. In a free trade economy with multiple possibilities, marketers must improve client knowledge to attract this market. Nature Lewis (NAture, 2023) presented in article that millennials and Gen Z share many ideas on economics, jobs, and technology. Millennials are America's biggest living generation, but Gen Z is still expanding and many are young. The entire range of digital generation differences may take decades to emerge. As social media shapes Gen Z's attitudes and perspectives, they may diverge more from earlier generations. Members of various generations act differently from others in terms of consumer references, ideas, habits, and how they approach societal issues when making judgments. The influencers do not impact sustainable investment, while impact on return, risk-averseness, and positive performance positively influence sustainable investments. (Lestari & Wiryono, 2023) Generations' education level also played a moderating role in

influencing stock investment intention. (Bagus & Raden, 2021). Education was a key factor in the investment decisions of Generation Z. To improve the investment potential of Generation Z, targeted efforts should be taken to encourage female participation in the stock market and to provide more resources for women to gain the knowledge and confidence to invest in the stock market. (Pravin & Parmar, 2024) The existing technological advances are can also moderate the effect of investment knowledge, and risk perception on investment interest. If the desired increase in investment interest is in the advancement of the Islamic capital market, especially among Z-generation, then what needs to be improved. (devy, sista, Syamsuddin, Rahmawati, & Zahra, 2023).

Gen Z is investing long term in assets like Equity Shares, Mutual funds, Fixed Deposit and Gold/Silver, and intraday in risky assets like Crypto. Factors like rate of return, long term gains and historical performance were found to influence their investment decisions as more than 50% of the Gen Z were found likely to invest in Growth and SIP's of mutual funds, Growth and Value equity stocks and in Banking and Information Technology sector. (Dugar & Madhavan, 2023) Among the Gen Z investors, the biases such as financial literacy, risk attitude and information search has a positive and significant impact on the decision making of investors while the trait herding has a very weak and negative relationship with investment decisions. (Sajeev, Mohd, Cristi, Birău, & Florescu, 2021) . Gen Z has grown up in a different environment where they are surrounded by big corporate houses and dynamic technologies. Technologies are so advanced that every facility is available at their fingertips. The basic purpose of this study is to first determine the factors influencing an individual's (Gen Z) attitude toward investment and investment intention, and then study the impact of these factors on an individual's attitude and investment intention. (Nag & Shah, 2022) Many Gen Zs do not yet invest, largely due to income constraints and the challenge of meeting expenses, as well as a lack of education and knowledge about financial topics and limited familial influence. They are attracted to investing by the wide dissemination of financial information on social media and other online platforms; the increasing ability to invest with small amounts, often on investing apps designed for their generation; the prevalence and popularity of cryptocurrency; the fear of missing out (FOMO) on a key opportunity to make money; and the substantial influence and assistance from their parents and other family members. (CFA Institute and FINRA Investor Education Foundation, 2023).

Methodology

The study has used primary data collected from the respondents of the age group between 18 to 25 years, belongs to Jamnagar district. Samples are collected from all the talukas of Jamnagar district, namely Jamnagar, Dhrol, Jodiya, Lalpur, Kalavad and Jamjodhpur. The data is collected through telephonic and personal interviews with structured questionnaire. Total sample size for this study is 68

respondents. Sampling method used was random referral sampling.

Analysis and Interpretation of Data:
The table 1 below offers a comprehensive breakdown of demographic characteristics that includes education of respondents, age distribution, household income, residential locations, and parental education levels among respondents.

Table 1: Demographics of Gen Z respondents

Demographics	Male		Female		Total	
Gender	43	63%	25	37%	68	100%
Education	Male		Female		Total	
High school or less	8	19%	3	12%	11	16%
Graduate / Pursuing graduation	22	51%	10	40%	32	47%
Postgraduate/ Pursuing post-graduation	13	30%	12	48%	25	37%
Age Group	Male		Female		Total	
18 - 19	10	23%	4	16%	14	21%
20 - 22	23	53%	12	48%	35	51%
23 – 25	10	23%	9	36%	19	28%
Household Income - Annual	Male		Female		Total	
< Rs. 5,00,000	9	21%	7	28%	16	24%
Rs. 5,00,000 to Rs. 10,00,000	15	35%	8	32%	23	34%
Rs. 10,00,000 +	19	44%	10	40%	29	43%
Resident	Male		Female		Total	
Jamnagar City/ Taluka	10	23%	6	24%	14	21%
Jodiya Taluka	7	16%	2	8%	9	13%
Dhrol Taluka	6	14%	3	12%	11	16%
Lalpur Taluka	11	26%	8	32%	19	28%
Kalavad Taluka	4	9%	3	12%	7	10%
Jamjodhpur Taluka	5	12%	3	12%	8	12%
Education of Parents	Male		Female		Total	
Up to school level	11	26%	6	24%	17	25%
Graduate	12	28%	8	32%	20	29%
Postgraduate and above	6	14%	4	16%	10	15%
Technical	4	9%	7	28%	11	16%

In terms of gender distribution, there were 43 male respondents, constituting 63% of the total, while 25 respondents were female, accounting for 37% of the total sample.

Regarding education levels, most respondents were pursuing or had attained a graduate degree, with 22 males (51%) and 10 females (40%) falling into this category. Additionally, 13 males (30%) and 12 females (48%) were pursuing or had attained post-graduate qualifications.

Age distribution showed that the largest proportion of respondents fell into the 20-22 age bracket, with 23 males (53%) and 12 females (48%). The 18-19 and 23-25 age groups comprised 21% and 28% of the total sample, respectively.

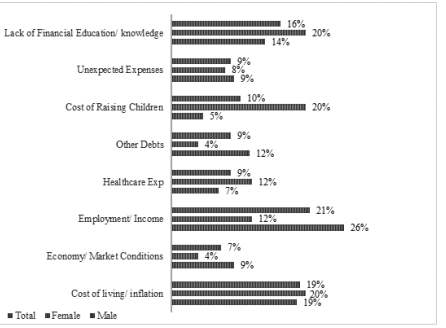
When considering household income, most respondents fell into the income bracket of Rs. 10,00,000 and above, with 19 males (44%) and 10 females (40%). The income bracket of Rs. 5,00,000 to Rs. 10,00,000 accounted for 35% of male respondents and 32% of female respondents.

Residential distribution revealed that the highest number of respondents resided in Lalpur Taluka, with 11 males (26%) and 8 females (32%). Other significant residential areas included Jamnagar City/Taluka and Dhrol Taluka.

Regarding parental education, the most common level of education among parents was at the graduate level, with 12 male respondents (28%) and 8 female respondents (32%). Up to the school level accounted for 25% of the total male respondents and 24% of the total female respondents.

Chart 1 offers insight into the various challenges respondents encounter when striving to meet their financial goals, segmented by gender. Among the challenges highlighted, the most prominent concern appears to be the cost of living and inflation, with a total of 13 respondents identifying this as a significant hurdle. While male respondents cited this challenge 8 times, representing 19% of their responses, female respondents reported it 5 times, constituting 20% of their responses. This suggests that both genders are equally affected by the increasing cost of living and inflationary pressures.

Chart 1: Major Challenges to meeting Financial Goals



Another notable challenge highlighted in the table is employment and income stability, which was mentioned by a total of 14 respondents. Male respondents accounted for 11 instances of this concern, comprising 26% of their responses, while female respondents cited it 3 times, representing 12% of their responses. This discrepancy suggests that male respondents may be more affected by employment and income-related challenges compared to their female counterparts.

Healthcare expenses also emerged as a significant concern, with 6 respondents mentioning it as a challenge. While both male and female respondents reported this issue equally, it's notable that healthcare expenses represent 7% of male responses and 12% of female responses. This suggests that healthcare affordability is a pressing issue for a significant portion of the surveyed population, irrespective of gender.

Moreover, the lack of financial education or knowledge was highlighted as a significant challenge by 11 respondents. Male respondents reported this challenge 6 times, making up 14% of their responses, while female respondents cited it 5 times, constituting 20% of their responses. This suggests a shared concern among respondents regarding the importance of financial literacy in navigating financial challenges effectively.

Chart 2: Major Sources of Information for Gen Z

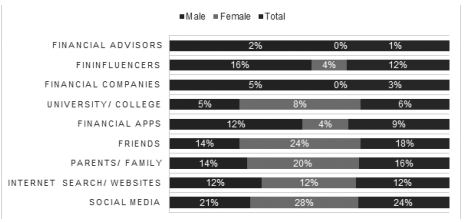


Chart 2 provides a detailed breakdown of the major sources from which Gen Z gather financial information. Social media emerges as the most prevalent source, with a total of 16 respondents relying on platforms such as Facebook, Instagram, Twitter, and YouTube for financial insights. Among males, 9 respondents, constituting 21% of male respondents, cited social media, while 7 female respondents, making up 28% of female respondents, indicated the same. This indicates a significant reliance on social media platforms for financial guidance among both genders, albeit slightly higher among females.

Internet searches and websites also serve as important sources of financial information, with 8 respondents utilizing them for guidance. Among males, 5 respondents (12%) reported using internet searches and websites, while the same percentage of female respondents also relied on this source. This suggests a balanced reliance on online resources for financial information across genders.

Moreover, parents and family members represent another significant source of financial knowledge, with a total of 11 respondents mentioning them. While 6 male respondents (14%) reported seeking financial advice from their parents or family, 5 female respondents (20%) also indicated the same, indicating a slightly higher reliance among females on familial guidance for financial matters.

Friends and financial influencers on social media platforms were also cited as important sources of financial information, with a total of 12 respondents relying on them. Both males and females reported seeking financial insights from friends, with 6 respondents from each gender indicating this source, highlighting the influence of peer networks on financial decision-making.

Financial apps and university/college resources were less frequently cited as sources of financial information, with 6

and 4 respondents, respectively, relying on them. Interestingly, while financial apps were more commonly utilized by males (12%) compared to females (4%), university/college resources were equally sought after by both genders.

Additionally, financial companies, financial advisors, and financial influencers played relatively minor roles as sources of financial information, with only a small number of respondents indicating them. Notably, financial influencers were slightly more influential among males (16%) compared to females (4%).

Chart 3: Top Sites used by Gen Z to Learn about Financial Topics

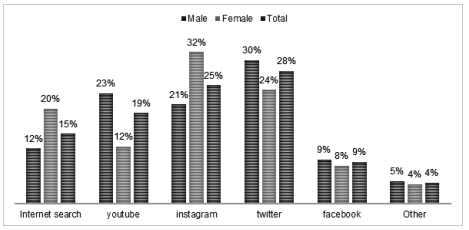


Chart 3 presents breakdown of the top sites utilized by Gen Z to acquire knowledge on financial topics, categorized by gender. Notably, YouTube emerges as the most prominent source, with 13 respondents across both genders relying on the platform, representing 19% of the total responses. Among males, YouTube is particularly popular, with 10 respondents (23%) citing it as their primary source, while among females, 3 respondents (12%) also indicated YouTube as their go-to platform for financial learning. This highlights the widespread use of video content for financial education among Gen Z, with males showing a slightly higher inclination towards this medium.

Social media platforms also play a significant role in financial education, with Instagram and Twitter being prominent sources. Instagram is particularly popular among females, with 8 respondents (32%) citing it, compared to 9 male respondents (21%). Similarly, Twitter is widely used by both genders, with 13 male respondents (30%) and 6 female respondents (24%) indicating it as a valuable source of financial information. This suggests that social media platforms are crucial channels for disseminating financial knowledge to Gen Z, with each platform potentially catering to different preferences or interests among males and females.

Internet search engines also remain a key source of financial information, with 10 respondents across both genders utilizing them. While the percentage of female respondents (20%) relying on internet searches is slightly higher than that of male respondents (12%), it is evident that search engines continue to be an essential tool for accessing financial resources and advice.

Chart 4: Sources of Financial Information Trusted Mostly by Gen Z

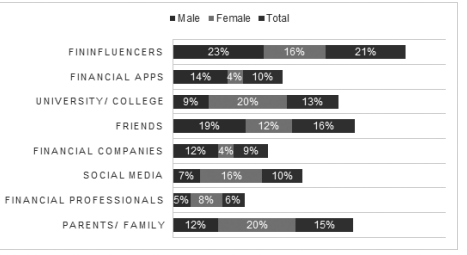


Chart 4 above provides a detailed breakdown of the sources of financial information that Gen Z individuals

primarily trust, categorized by gender. Notably, parents and family members emerge as the most trusted source, with 10 respondents across both genders relying on them, representing 15% of the total responses. Among females, parents and family members are particularly trusted, with 5 respondents (20%) indicating them as their primary source, compared to 5 male respondents (12%). This underscores the significant influence of familial guidance in shaping financial attitudes and decision-making among Gen Z.

Additionally, financial influencers, particularly those on social media platforms, are highly trusted sources of financial information, with 14 respondents citing them. Among males, 10 respondents (23%) trust financial influencers the most, while among females, 4 respondents (16%) also rely on them. This suggests a widespread recognition of the expertise and credibility of influencers in providing valuable financial insights, especially among male respondents.

Friends also play a significant role as trusted sources of financial information, with 11 respondents across both genders indicating them. While 8 male respondents (19%) primarily trust their friends for financial advice, 3 female respondents (12%) also rely on them. This underscores the importance of peer networks in shaping financial attitudes and behaviours among Gen Z.

Moreover, university/college resources and financial apps are also trusted sources, with 9 and 7 respondents, respectively, indicating them. Interestingly, while university/college resources are trusted by a slightly higher percentage of females (20%) compared to males (9%), financial apps are more popular among males, with 6 respondents (14%) primarily trusting them.

Chart 5: Major Qualities of Source that Trusted Mostly by Gen Z

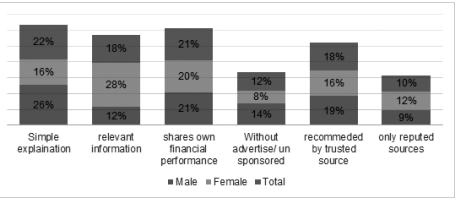


Chart 5 offers an insightful breakdown of the major qualities that Gen Z individuals primarily seek in the financial information sources they trust the most, categorized by gender. Notably, simplicity in explanation emerges as the most valued quality, with 15 respondents across both genders prioritizing it, representing 22% of the total responses. Among males, 11 respondents (26%) prefer sources that provide simple explanations, while among females, 4 respondents (16%) share the same preference. This underscores the importance of clear and straightforward communication in effectively conveying financial concepts and advice to Gen Z.

Additionally, relevance of information is highly valued by respondents, with 12 individuals indicating it as a key quality. While relevance is particularly important to females, with 7 respondents (28%) prioritizing it, it is also valued by 5 male respondents (12%). This suggests that Gen Z individuals seek information that is tailored to their specific needs and circumstances, enabling them to make informed financial decisions.

Furthermore, respondents express a

preference for sources that share their own financial performance, with 14 individuals indicating it. Among males, 9 respondents (21%) prioritize sources that share their financial performance, while among females, 5 respondents (20%) share the same preference. This indicates a desire among Gen Z individuals to learn from real-life examples and experiences when seeking financial guidance.

Moreover, the absence of advertisements or sponsorships is also valued by respondents, with 8 individuals prioritizing it. While 6 male respondents (14%) prefer sources without advertisements, 2 female respondents (8%) share the same preference. This suggests that Gen Z individuals prefer sources that are free from commercial influences, allowing them to trust the information provided without bias.

Additionally, recommendations from trusted sources are highly valued, with 12 individuals prioritizing them. While 8 male respondents (19%) seek recommendations from trusted sources, 4 female respondents (16%) also share the same preference. This underscores the importance of peer recommendations and endorsements in influencing the trustworthiness of financial information sources.

Furthermore, respondents express a preference for sources that are reputed, with 7 individuals indicating it. While 4 male respondents (9%) prioritize reputable sources, 3 female respondents (12%) share the same preference. This suggests that Gen Z individuals value the credibility and reliability of sources when seeking financial information.

Chart 6: Attended Formal Financial Education

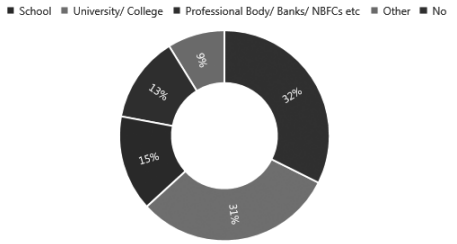


Chart 6 presents a comprehensive breakdown of formal financial education programs attended by Gen Z through different sources, categorized by gender. Notably, attending financial education programs during university or college emerges as the most common form of formal education, with 21 respondents across both genders indicating participation, representing 31% of the total responses. Among males, 12 respondents (28%) reported attending financial education programs during university or college, while among females, 9 respondents (36%) shared the same experience. This highlights the significance of higher education institutions in providing structured financial education to young adults, irrespective of gender.

Additionally, attending financial education programs in school is also prevalent among respondents, with 10 individuals indicating it. While 7 male respondents (16%) reported receiving financial education in school, 3 female respondents (12%) shared the same experience. This suggests that financial education initiatives implemented in schools play a role in equipping students with basic financial literacy skills, although

participation rates vary slightly between genders.

Furthermore, attending financial education programs facilitated by professional bodies, banks, or non-banking financial companies (NBFCs) is also reported by respondents, with 9 individuals indicating it. While 4 male respondents (9%) reported participation in such programs, 5 female respondents (20%) shared the same experience. This indicates the role of financial institutions and organizations in providing specialized financial education to Gen Z individuals, with a slightly higher participation rate among females in this category.

Moreover, a small proportion of respondents reported attending formal financial education programs through other means, with 6 individuals indicating it. While 5 male respondents (12%) reported attending such programs, only 1 female respondent (4%) shared the same experience. This suggests that there are alternative avenues for accessing formal financial education outside of traditional educational institutions and financial organizations, although participation rates vary between genders.

Additionally, a notable proportion of respondents reported not attending any formal financial education programs, with 22 individuals indicating so. While 15 male respondents (35%) reported no participation, 7 female respondents (28%) shared the same experience. This highlights a significant gap in formal financial education provision among Gen Z individuals, with a higher proportion of males reporting no participation compared to females.

Table 2 provides insights into the major factors influencing Gen Z's decisions to invest, with respondents able to select multiple options on a 5-point scale. Notably, financial influencers emerge as the most influential factor, with a significant 78% of total respondents citing them. This indicates the substantial impact of influencers on young investors, highlighting the power of social media personalities in shaping investment decisions and strategies among Gen Z.

Table 2: Major Factors that Influence Decision to Invest (Multiple options on 5-point scale)

Major Factors that Influence Decision to Invest	% of Total Gen Z Respondents
Fin influencers	78%
Small Amount Option	74%
Parent/ Family member	68%
Teacher/ Professors	62%
Ease of opening account	59%
Friends/ Colleagues	55%
Obtained money to invest	44%

Social media	43%
Advertisements	38%
Promotional incentive	28%
Curiosity	23%

Moreover, the availability of investment options requiring small amounts of capital is also a significant factor, with 74% of respondents considering it. This suggests that accessibility and affordability play crucial roles in encouraging investment behaviour among young adults, emphasizing the importance of platforms that facilitate low-cost investment opportunities.

Furthermore, parental, and familial influence is highlighted as a major factor, with 68% of respondents indicating it. This underscores the role of family members in imparting financial knowledge and values, indicating the importance of intergenerational guidance and support in shaping investment decisions among Gen Z.

Additionally, the influence of teachers and professors is noteworthy, with 62% of respondents considering them. This suggests the importance of formal education in fostering financial literacy and awareness, highlighting the potential impact of educators in shaping young investors' attitudes and behaviours.

Moreover, factors such as the ease of opening an investment account (59%) and recommendations from friends and colleagues (55%) also play significant roles. This underscores the importance of convenience and peer influence in driving investment decisions among young adults, highlighting the need for user-friendly investment platforms and social networks.

Furthermore, the availability of funds to invest (44%), social media (43%), and advertisements (38%) are also cited as influential factors. This indicates the multifaceted nature of influences on investment decisions, with various external stimuli and personal circumstances playing roles in shaping attitudes and behaviours towards investing.

Finally, promotional incentives (28%) and curiosity (23%) are identified as relatively less influential factors. While promotional offers and curiosity may not be primary drivers of investment decisions, they still contribute to the overall decision-making process, indicating the complex interplay of motivations and influences among young investors.

Conclusion

In conclusion, the analysis of investment perceptions among Generation Z (Gen Z) in Jamnagar District sheds light on several key insights regarding their attitudes, behaviours, and influencing factors in the realm of finance. The study underscores the significance of understanding the unique characteristics and viewpoints of Gen Z, particularly considering their upbringing influenced by technology,

social media, and digital information. The demographic breakdown of the respondents provides valuable insights into the educational backgrounds, household incomes, residential locations, and parental education levels, which collectively shape their investment perceptions and decision-making processes. Understanding these demographics allows for tailored strategies to address the diverse needs and preferences of Gen Z investors.

Secondly, the challenges identified by Gen Z respondents, such as the rising cost of living, employment instability, healthcare expenses, and lack of financial education, highlight the complex landscape within which they navigate their financial goals. Addressing these challenges requires holistic approaches encompassing education, employment opportunities, and financial literacy initiatives. The sources of financial information trusted by Gen Z, including social media, internet searches, family members, and friends, emphasize the importance of accessible and relatable content in guiding their investment decisions. Leveraging these trusted sources can enhance financial literacy efforts and foster informed decision-making among young investors.

Furthermore, the factors influencing Gen Z's decision to invest, such as financial influencers, accessibility of investment options, parental influence, and peer recommendations, underscore the diverse array of influences shaping their investment behaviours. Recognizing and addressing these factors can empower Gen Z to make sound investment choices aligned with their financial goals and aspirations.

Overall, the findings of this study provide valuable insights for policymakers, financial institutions, educators, and other stakeholders seeking to engage and support Gen Z investors in Jamnagar District and beyond. By understanding their perceptions, challenges, and influencing factors, stakeholders can develop targeted interventions and initiatives to promote financial literacy, inclusion, and empowerment among the next generation of investors.

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A DESCRIPTIVE STUDY OF ESG INVESTING: A WAY TOWARDS SUSTAINABILITY

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Abstract

Environmental, social, and governance (ESG) considerations have emerged as critical factors in the investment decision-making of companies and individuals. ESG factors assess the impact of environmental, social, and governance aspects of a company. This paper explores the importance of ESG factors for sustainability, the growing trend toward ESG investing, and the challenges and opportunities associated with ESG integration. The study uses a qualitative research design, using secondary sources such as academic articles, company reports, media reports, and statements of persons of importance. The findings reveal that ESG considerations are crucial for sustainable development, the companies that prioritize ESG factors tend to perform better in the long term, have a lesser cost of capital, better retention rate, and lower litigation risks.

Keywords:

ESG, Sustainability, Investment Decision-Making, Sustainable Investing, Sustainable and Responsible Investing

Introduction

ESG considerations are essential for achieving sustainability and it is by far the most used technique under the major theme of 'Sustainable and Responsible Investment'. The components of ESG involve the assessment of a company's impact on three aspects

1. Environmental factors which include the impact of the company's operations on the environment such as carbon emissions, resource use, waste generation and management, resource depletion, greenhouse emissions, etc.
2. Social factors which include the impact on stakeholders such as employees, customers, suppliers, and the community. The company is rated on concerns like labor practices, social engagement, and product safety. Hazardous products such as liquor, tobacco, arms, and ammunition are rated least because of their impact on society.
3. Governance factors which include the management structure, board diversity, executive compensation, risk management, and shareholder rights.

These three aspects cover all the significant concerns of a business from the viewpoint of an investor and allow them to shortlist the companies which have a better chance of outperforming the market in the long run.

Trend Of ESG Investing

The trend of ESG investing has been steadily increasing over the past few years. According to a report by Morningstar, global sustainable fund assets reached a high record of 1.7 trillion USD in Q2 2021, up from 1.2 trillion USD in Q4 2019. In addition, the report also found that sustainable funds have attracted record inflows, with 185.3 billion USD invested in sustainable funds in Q2 2021 alone.

Present State of ESG Investing

The assets under management (AUM) invested in sustainable and responsible investing (SRI) and environmental, social, and governance (ESG) themes have been increasing in recent years. According to a report by the Global Sustainable Investment Alliance (GSIA), the total AUM in sustainable investing globally reached $35.3 trillion in 2020, up from $30.7 trillion in 2018.

The breakdown of AUM by region is as follows:

- Europe: $18.8 trillion
- United States: $17.1 trillion
- Canada: $3.2 trillion
- Japan: $2.4 trillion
- Australia/New Zealand: $1.2 trillion
- Asia (excluding Japan): $0.6 trillion
- Africa and Middle East: $0.4 trillion
- Latin America: $0.1 trillion

The report also found that the most commonly used sustainable investing strategies are negative/exclusionary screening, ESG integration, and corporate engagement/shareholder action. In addition, the largest sector in terms of AUM is public equities, followed by fixed-income and alternative investments.

It's worth noting that the definition and

methodology of sustainable investing can vary among different investors and regions, so the figures reported may not be directly comparable. Nonetheless, the overall trend of increasing AUM in sustainable investing reflects a growing interest in addressing environmental, social, and governance issues through investment strategies. ESG investing has become a mainstream investment strategy, with a growing number of investors incorporating ESG criteria into their decision-making process. This has led to a wider range of ESG investment options, including mutual funds, exchange-traded funds (ETFs), and separately managed accounts.

Learnings From Literature Review

1. ESG and Financial Performance

- Research Findings: According to a metaanalysis by **Friede, Busch, and Bassen (2015)**, there is a positive correlation between ESG performance and financial performance over the long term. Companies with high ESG scores tend to have higher profitability and lower costs of capital.
- Implications: This suggests that integrating sustainable business practices can lead to financial benefits for companies. Sustainable practices are not just about moral obligation; they directly contribute to a company's bottom line by enhancing profitability and reducing financial risks.
- Rational Learning: Companies that adopt ESG practices can achieve greater financial stability and performance, making ESG a valuable strategy for long-term success.

2. ESG and Risk Mitigation

- Research Findings: **Eccles and Serafeim (2012)** found that companies with good ESG scores are less likely to encounter negative events such as litigation or regulatory fines.
- Implications: Strong ESG performance can serve as a risk mitigation strategy, shielding companies from potential legal and reputational risks.
- Rational Learning: ESG factors act as indicators of a company's resilience and ability to navigate challenges, safeguarding its long-term viability and reputation.

3. ESG and Brand Reputation

- Research Findings: **Maigan and Ferrell (2004)** discovered that companies with strong social and environmental performance have a more positive image in the eyes of consumers. This can lead to increased customer loyalty and a willingness to pay a premium for products or services.
- Implications: Investing in ESG initiatives enhances corporate reputation, fosters consumer trust, and loyalty, ultimately contributing to sustainable business growth.
- Rational Learning: A positive brand image built on strong ESG practices can drive customer loyalty and premium pricing, enhancing competitive advantage.

4. CSR, SRI, and Financial Returns

- Research Findings: A *Deutsche Bank*

Group report (2012) showed that socially responsible investing (SRI) relies heavily on negative screening, which adds little value for investors. Conversely, CSR and ESG factors are correlated with lower costs of capital and greater financial returns.

- Implications: Companies that prioritize CSR or ESG integration tend to exhibit lower risk profiles and outperform the market.
- Rational Learning: ESG integration can generate tangible financial benefits by reducing risk and enhancing returns for investors, beyond ethical considerations.

5. ESG and Employee Engagement

- Research Findings: **Krambia and Zopitias (2019)** found that companies with strong ESG practices have higher employee job satisfaction and commitment, leading to lower turnover rates and higher productivity.
- Implications: Investing in ESG initiatives benefits the environment and society and enhances employee satisfaction and organizational performance.
- Rational Learning: ESG practices can create a virtuous cycle of sustainability and success by fostering a positive organizational culture and work-force engagement.

6. ESG in Crisis Periods

- Research Findings: **Tripathi and Bhandari (2015, 2016)** found that investors benefit from socially responsible investing, especially during crisis periods like the 2008 financial crisis. They suggested that understanding how to integrate ESG criteria into investment processes is crucial for harvesting value enhancing ESG factors.
- Implications: ESG considerations can serve as valuable risk management tools, helping investors navigate uncertain market conditions and capitalize on emerging opportunities.
- Rational Learning: ESG criteria are crucial for risk management and opportunity capitalization during crises, improving investment outcomes.

7. Contrary Evidence on ESG During Covid19

- Research Findings: **Fabrizio Feriani and Filippo Natoli (2020)** found that low ESG risk funds performed significantly better than high-risk ones during the Covid19 crisis.
- Implications: This finding questions earlier research favoring ESG considerations, suggesting the need for a nuanced understanding of ESG impacts.
- Rational Learning: The mixed performance of ESG funds during crises highlights the complexity of ESG impacts and the need for continual reassessment of ESG strategies.

8. Shift in Consumer Perceptions Post Crisis

- Research Findings: **PalmaRuiz, CastilloApraiz, and GómezMartínez (2020)** conducted a survey involving 575 Spanish citizens, revealing a shift

in consumer perceptions toward CSR following recent crises. Companies exhibiting socially irresponsible behavior during crises risk changes in consumer preferences.
- Implications: Companies must prioritize social responsibility and ethical conduct to maintain consumer trust and loyalty, as consumer preferences increasingly favor socially responsible brands.
- Rational Learning: The growing importance of CSR in consumer preferences underscores the need for companies to act responsibly to sustain their reputation and market position.

9. Costs and Benefits of ESG Integrated Investing

- Research Findings: **Pederson, Fitzgibbons, and Pomorski (2020)** developed a theory highlighting the potential costs and benefits of ESGintegrated investing. Their findings indicate that better governance predicts positive returns, while the social measure predicts negative returns due to "sinstocks."
- Implications: The evidence for environmental and overall ESG measures is mixed and insignificant, suggesting that the impact of different ESG components varies.
- Rational Learning: Governance improvements can enhance profitability, but the mixed results for social and environmental measures indicate a need for targeted ESG strategies.

10. ESG and Investment Decision Making

- Research Findings: **Hoepner et al. (2016)** found that institutional investors increasingly consider ESG factors in investment decisions. Funds with higher ESG scores had lower portfolio risk and outperformed funds with lower ESG scores. Additionally, countries with higher ESG scores can reduce overall debt costs for companies.
- Implications: ESG integration can enhance investment decision making by reducing risk, improving portfolio performance, and potentially lowering debt costs.
- Rational Learning: Considering ESG factors in investment analysis and decision making processes can lead to better risk management, improved performance, and financial savings.

The literature review highlights the multifaceted benefits of ESG integration, from financial performance and risk mitigation to employee engagement and consumer trust. Despite some contradictory findings, particularly during crises, the overall evidence supports the value of ESG considerations in fostering sustainable and successful business practices.

Future Prospects of ESG investing

The future for ESG investing looks promising, with many industry analysts and experts predicting continued growth in the ESG investment market. This is being driven by a number of factors, including increased awareness of ESG issues among investors, governments, and businesses. Here are some potential future prospects and forecasts for ESG investing:

- **Continued growth:** Many industry experts predict that ESG investing

will continue to grow at a rapid pace, with increasing demand from institutional and individual investors who are increasingly concerned about sustainability, social responsibility, and good corporate governance.

- **Regulatory and policy changes:** There is growing recognition among policymakers and regulators of the importance of ESG factors in investment decision-making, and there are likely to be more regulatory and policy changes to promote and incentivize ESG investing. For example, the European Union has introduced regulations that require asset managers to disclose how they incorporate ESG factors into their investment decisions, and the U.S. Securities and Exchange Commission has indicated that it will be increasing its focus on ESG disclosures.
- **Integration of ESG factors into mainstream investing:** As ESG investing becomes more mainstream, it is likely that ESG factors will be integrated into mainstream investment strategies and tools, rather than being seen as a separate niche area of investing. This could lead to greater standardization and consistency in ESG reporting and analysis, making it easier for investors to compare and evaluate companies based on their ESG performance.
- **Technological advancements:** Advancements in technology, such as artificial intelligence and machine learning, are likely to play a significant role in ESG investing going forward. These tools can be used to analyze large amounts of data and identify patterns and trends in ESG performance, helping investors to make more informed decisions.

All these factors show that the future is bright for ESG investing and people will start to implement these metrics as the knowledge, awareness, and regulations will grow in the times to come.

Indian Government and ESG Practices

1. The Indian government issued National Voluntary Guidelines on Social, Environmental, and Economic Responsibilities of business in 2011. These guidelines provide a framework for businesses to integrate ESG principles into their operations.
2. In 2014, the Government of India passed the Companies Act, which includes a provision mandating that companies with a net worth of INR 500 crore or more, a turnover of INR 1,000 crore or more, or a net profit of INR 5 crore or more must spend at least 2% of their net profits on CSR activities. This has encouraged companies to invest in social and environmental initiatives.
3. In 2015, the government launched the country's first green bonds to raise funds for renewable energy projects. Since then, several Indian companies have issued green bonds to finance sustainable infrastructure projects.
4. The Indian government has developed a National Action Plan on Climate Change, which includes several initiatives aimed at promoting sustainability, including increasing the share of renewable energy in the

country's energy mix and improving energy efficiency.

5. India is committed to achieving the Sustainable Development Goals (SDGs) set by the United Nations. The government has launched several initiatives to promote sustainability and achieve SDGs, including Swachh Bharat Abhiyan and Smart City Mission.
6. The Indian government has been taking steps to encourage ESG investing and promote sustainable development. In 2019, the Securities and Exchange Board of India (SEBI) issued a circular requiring the top 1,000 companies in India to disclose ESG data in their annual reports, namely the 'Business Responsibility Report' Or BRR. The SEBI also established a working group to develop a framework for ESG disclosure and reporting for Indian companies.

While the Indian government has taken several steps to promote ESG principles and sustainability, there is still much work to be done. The Indian government can further encourage ESG investing by introducing tax incentives, subsidies, and grants for companies excelling in sustainable practices. Mandatory ESG disclosure requirements and standardized metrics would ensure transparency and comparability. Promoting green bonds and ESG-linked loans, along with fostering public-private partnerships and innovation hubs, can drive investment in sustainability projects. Recognition programs and public listings of top ESG performers can enhance corporate reputation. Clear regulatory guidelines, advisory services, stakeholder dialogues, and consumer education campaigns would support companies in their ESG efforts. Specific incentives for SMEs, carbon pricing mechanisms, and increased funding for R&D in sustainable technologies would further bolster ESG adoption, creating a conducive environment for sustainable business practices in India. In addition, the government could work to improve the quality of ESG reporting in the country, making it easier for investors to incorporate ESG criteria into their investment decision-making process.

Challenges and Hurdles for ESG investing

While ESG investing has been growing in popularity, there are several challenges that need to ensure its continued success.

Some of the key challenges for ESG investing include:

1) **Lack of Standardization:** One of the biggest challenges for ESG investing is the lack of standardization in ESG data and reporting. This makes it difficult for investors to compare ESG performance across different companies and industries.
2) **Data Quality:** Another challenge is the quality of available ESG data. Some companies may not report accurate or complete data, which can make it difficult for investors to make informed decisions.
3) **Limited Investment Options:** While there has been significant growth in ESG investment options in recent years, there are still limited investment options available compared to traditional

investment strategies. The number of ESG mutual funds in India is only eight to date.

4) **Regulatory Environment:** The regulatory environment for ESG is still evolving and there is a risk that changing regulations could impact the growth and viability of ESG investing.
5) **Lack of Understanding:** There is still a lack of understanding among some investors about ESG investing and its potential benefits. This can make it difficult to fully incorporate ESG criteria into the investment decision-making process.
6) **Green-washing By Companies:** Companies engaging in greenwashing practices convey false or misleading information about the environmental soundness of their products, leading to inaccurate perceptions among consumers and investors. Green-washing can be detrimental to the investment process as it makes it difficult for investors to distinguish truly sustainable businesses from those that are only making false claims. Therefore, it is important for investors to remain vigilant and conduct thorough research before making investment decisions to ensure that they are supporting genuinely environmentally responsible companies.

Conclusion, Findings, and Suggestions

Studies indicate a positive correlation between ESG performance and financial performance. Companies with high ESG scores not only demonstrate higher profitability but also lower costs of capital, underscoring the financial benefits of sustainable business practices. Strong ESG performance also mitigates risks, enhancing a company's reputation and consumer trust. Additionally, companies with robust ESG practices report higher employee job satisfaction and lower turnover rates, contributing to increased productivity. During crises, ESG considerations have proven valuable; for instance, low-ESG risk funds outperformed during the Covid-19 crisis, highlighting the role of ESG as a risk management tool.

Regionally, ESG investing is most prominent in Europe, the United States, and Canada, each showing varied AUM and investment strategies. In India, the government has introduced several measures to promote ESG practices, such as mandatory CSR spending, green bonds, and ESG disclosure requirements. However, further efforts are necessary to standardize ESG reporting and incentivize sustainable practices.

To ensure the continued success of ESG investing, it is crucial to standardize ESG data and reporting. Standardization would facilitate better comparison and evaluation of companies' ESG performance, enhancing transparency and decision-making for investors. Ensuring the accuracy and completeness of ESG data reported by companies is also essential, necessitating collaboration between regulators and industry bodies to improve data quality and reliability.

Expanding the number of ESG investment options, such as mutual funds and ETFs, would provide investors with more opportunities to engage in sustainable

investing. Governments should introduce regulatory frameworks and incentives, such as tax benefits and subsidies, to encourage companies to adopt and report on ESG practices. Addressing green-washing, where companies make misleading claims about their environmental practices, requires stringent regulations and penalties, as well as promoting transparency in ESG reporting.

Increasing awareness and understanding of ESG investing among investors is essential. Educational initiatives and resources can help investors make informed decisions and recognize the benefits of ESG integration. By promoting standardized reporting, improving data quality, expanding investment options, and providing regulatory support, the potential of ESG investing can be fully realized. These efforts will enhance financial returns and contribute to a more sustainable and responsible global economy.

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CORPORATE GOVERNANCE AND SUSTAINABILITY REPORTING: A STUDY OF LISTED PHARMACEUTICAL COMPANIES IN INDIA

Arti
L. N. Koli

Abstract

The main objective is to depict the magnitude of Sustainability Reporting in ten selected BSE-listed Pharmaceutical Companies in India. The data analysis period from 2018–19 to 2022–23. The information was gathered from selected companies' annual reports. Moreover, researchers used a multiple regression model to know the influences of the independent variables on the dependent variable. The hypothesis was found statistically significant for board size, board independence, promoter shareholdings, foreign shareholding, and institutional shareholdings. The remaining variables were insignificant. It indicates that good attributes of Corporate Governance minimize market information asymmetry and provide valuable information to the stakeholders. This research is important for policymakers and management to examine these companies' disclosure strategies and trends.

Keywords :

Sustainability Reporting (SR), Pharmaceutical Companies, Corporate Governance

Introduction

Sustainability is defined as providing our current requirements without jeopardizing our ability to meet future generations' needs. Reporting is described as the presentation of significant data and news. On the order of, Sustainability Reporting allows organizations to report on three parameters: environmental, economic, and social performance. It is an approach for the company to integrate and reinforce its devotion to sustainable development in a way that could be lucid for internal and external stakeholders. It goes beyond just presenting statistics in the form of a report. Sustainability reports assist businesses in increasing customer trust and improving company reputations. Elkington proposed this notion in 2004, and "it addresses three aspects: environmental performance, social responsibility, and economic contribution." Sustainability Reporting is described by the Global Reporting Initiative (GRI) as "An organization's practice of reporting publicly on its economic, environmental, and social impacts, and hence its contributions – positive or negative – towards the goal of sustainable development." The World Business Council for Sustainable Development described Sustainability Reporting as follows in a similar vein: "Public reports by companies to provide internal and external stakeholders with a picture of corporate position on activities on economic, environmental and social dimensions." The rising importance of corporate sustainability has prompted corporations to disclose their environmental and social information by using non-financial reporting. The growing interest among numerous stakeholder groups in how corporations manage sustainability challenges has put enormous constraints on organizations to embrace Sustainability Reporting Practices (*ElBassiouny, 2019; Khan et al., 2021*). As a result, corporations must disclose information regarding sustainability performance to fulfill the demands of related stakeholders. Corporate Sustainability Reporting is concerned with revealing corporate actions' environmental and social impacts to preserve economic viability. According to *Alshbili et al. (2019),* how the organization is controlled heavily influences the amount of sustainability performance disclosure. Even though extensive literature on Corporate Governance is available, recent efforts have been made to depict the repercussions of Corporate Governance on companies' sustainability Information. Corporate Governance can have a substantial impact on the adoption of reporting techniques for an organization's economic, environmental, and social performance (*Hahn and Kuhnen, 2013*; *Shamil et al., 2014*). *Dam and Scholtens (2013*) emphasized that Corporate Governance characteristics substantially impact the firm's socially responsible activity. Previous research has found that efficient Corporate Governance mechanisms improve openness and accountability, leading to improved practices.

At the heart of this evolution in corporate reporting lies the governing bodies responsible for shaping a company's strategic direction and policies. These

entities wield considerable influence over the decision-making processes and culture within organizations. The composition, diversity, expertise, and incentives of a company's board members and the nature of its Ownership Structure can all impact the prioritization of sustainability objectives and the extent to which they are integrated into the core business strategy.

Literature Review

Khaghaany, M. (2019) *"Value relevance of Sustainability Reporting under an accounting information system: Evidence from the tourism industry."* This investigation examines the importance of Sustainability Reporting of tourism companies that are listed on the Iraq Stock Exchange. It uses a quantitative approach and analyzes data from 52 year-companies' observations between 2013 and 2018. The research uses share price and traded shares as market indicators to examine the domination of Sustainability Reporting. The results indicate that Sustainability Reporting positively affects share prices but does not have a significant correlation with the size of traded shares.

Raquiba, H. & Ishak, Z., (2019) "*Sustainability Reporting Practices in the Energy Sector of Bangladesh"* This research investigates the Sustainability-Related Reporting Practices in the Bangladesh energy sector by analyzing annual reports of 19 companies from 2011 to 2017. It focuses on the importance of energy for economic growth and the sector's environmental and social concerns. The study uses a regression model and discusses legitimacy theory, finding that Sustainability Reporting in the industry is insufficient. Factors like Ownership Structure, media visibility, and director characteristics positively influence reporting. The article also discusses policy implications.

Kumar, K., (2020) "*Emerging phenomenon of Corporate Sustainability Reporting: Evidence from top 100 NSE listed companies in India."* This study investigates the Sustainability Reporting of the top NSE-100 Indian companies, focusing on Global Reporting Initiatives (G.R.I.), industry, and ownership. Data collected from various reports between 2017 and 2019 were analyzed, revealing inconsistencies in reporting. Companies had higher sustainability disclosure. Surprisingly, no significant difference was found between government-owned and private companies in Sustainability Reporting.

Coulmont, M., (2022) *"Sustainability performance indicator trends: a Canadian industry-based analysis."* This study analyzes Sustainability Report data from eight Canadian companies spanning 19 years, observing a consistent rise in the disclosure of sustainability performance indicators. These indicators cover environmental, social, and economic aspects. Notably, the study shows a shift from an initial emphasis on environmental performance to a more comprehensive inclusion of social performance measures, for instance, human rights and employment practices, in recent years.

Khan, I. et al. (2022) *"Evaluating Sustainability Reporting on G.R.I. Standards in Developing Countries: A Case of Pakistan"* This study examines Sustainability Reporting in Pakistan and focuses on the Pakistan Stock Exchange from 2016 to 2020. It uses G.R.I. standards and both qualitative and quantitative methods. The results show a growing trend in Sustainability Reporting over the years, although few organizations fully adhere to G.R.I. standards. Furthermore, a positive correlation exists between Sustainability Reporting performance indicators.

Kumar, K., (2022) "*Do Ownership Structures and Governance Attributes Matter for Corporate Sustainability Reporting? An examination in the Indian context:"* The investigation's primary objective is to examine the influence of Corporate Governance and Ownership Structures on Sustainability Reporting in India. It utilizes panel data regression analysis with the data from environmentally sensitive corporations listed on the NSE's NIFTY100 Index from 2015 to 2019. The findings show that Sustainability Reporting has consistently improved. While board size and big4 audits have no substantial impact on sustainability disclosure, government holdings and the frequency of board meetings do. Unexpectedly, sustainability information is not improved if companies increase the number of independent Directors.

Githaiga, P. N., & Kosgei, J. K. (2023) *"Board Characteristics and Sustainability Reporting. A case of listed firms in East Africa."* This investigation examines the influence of the board's characteristics on sustainability information in East African listed corporations. The research includes data from 2011 to 2020, focusing on 79 companies from East African securities exchanges. Sustainability Reporting is assessed by the Global Reporting Initiative guidelines, and various statistical models are applied. The results show the positive and significant influence of board independence, financial knowledge, and gender diversity on Sustainability Reporting. On the other hand, board size has a negative and considerable influence on reporting on sustainability.

Research Gap

There is a noticeable lack of industry-specific research in the pharmaceutical sector in India despite the presence of studies focusing on the overall relationship between Board Qualities, Ownership Structures, and Sustainability Reporting across all sectors. Filling this research vacuum is crucial, particularly when considering the specific sustainability challenges faced by Pharmaceutical Companies. The problems encompass the development of pharmaceuticals, healthcare accessibility, and environmental effects. Pharmaceutical Companies operate in a context where the items they create directly impact the environment, ecosystems, and public health, unlike many other industries. It is crucial to fully understand the intricacies of sustainability practices in this business to advance ethical and impactful company operations. The present study is going to fill this research gap regarding Sustainability Reporting.

Objectives Of Study

1. To study the association between Corporate Governance and Sustainability Reporting of selected Pharmaceutical Companies listed in B.S.E.
2. To empirically explore the influence of Corporate Governance on the Sustainability Reporting of selected Pharmaceutical Companies listed in B.S.E.

Hypothesis Of Study

H_1: Board Size has positive and significant influences on Sustainability Reporting.

H_2: Board Meetings have positive and significant influences on Sustainability Reporting.

H_3: Board Independence has positive and significant influences on Sustainability Reporting.

H_4: Gender Diversity has positive and significant influences on Sustainability Reporting.

H_5: Financial Expertise has positive and significant influences on Sustainability Reporting.

H_6: Promoter Shareholding has positive and significant influences on Sustainability Reporting.

H_7: Institutional Ownership has positive and significant influences on Sustainability Reporting.

H_8: Foreign Ownership has positive and significant influences on Sustainability Reporting.

Research Methodology

✓ **Collection of Data and Sample Selection**

In this research study, we focused on ten Pharmaceutical Companies publicly traded on the Bombay Stock Exchange, adhering to specific inclusion criteria. Firstly, the companies had to be listed on the Bombay Stock Exchange (BSE-500). Secondly, their annual reports and standalone sustainability reports had to be accessible on the Stock Exchange or the company's official website in both hard and soft copy formats. The data collection spanned five years, from the financial year 2018-2019 to 2022-2023. This choice was based on the historical significance of 2017, as it marked the inception of mandatory Sustainability Reporting standards for BSE-500 companies in India. The selection of these ten Pharmaceutical Companies was determined by their Market Capitalization as of 31 March 2023, resulting in a dataset comprising 50 observations (10 companies over 5 years).

TABLE : 1

Companies	Market Cap in Cr.
Sun Pharmaceutical Industries Ltd (Sun Pharma)	235873.09
Dr Reddy's Laboratories Ltd. (Dr. Reddy)	76957.11
Divis Laboratories Ltd. (DIVISLAB)	75014.78
Cipla Ltd. (CIPLA)	72696.02

Torrent Pharmaceuticals Ltd. (TORNTPHARM)	52028.57
Zydus Lifesciences Limited	49749.83
Abbott India Ltd.	46932.38
Alkem Laboratories Limited (ALKEM)	40626.39
Aurobindo Pharma Ltd. (AUROPHARMA)	30351.62
Lupin Ltd. (LUPIN)	29475.97

For the Financial years 2018-19 to 2022-23, all data related to Corporate Governance and Sustainability Reporting are gathered from the annual reports of selected Companies.

✓ **Measurement of variables**

In this study, a content analysis method is employed to evaluate the level of Sustainability Reporting of selected companies. Economic, environmental, and social sustainability factors were considered for evaluation. Data were collected from business responsibility reports, corporate social responsibility reports, official websites, and sustainability reports to create a binary disclosure index. This index was developed based on established Sustainability Reporting literature and the Global Reporting Initiative (G.R.I.) guidelines, which are particularly relevant in developing nations. A binary approach was used; value 1 was assigned if a specific indicator was reported at least once and 0 if not. Each company's sustainability disclosure score was calculated by dividing the total number of reported indicators considered in the study, expressed as a percentage ranging from 0 to 100. Additional variable measurements can be found in Table 2.

TABLE 2

Variables	Measurement
Independent Variables	
• Size of the Board	• Total number of members on the Board
• Board Meetings	• Total number of Board meetings held in the selected financial years
• Independence of the Board	• The total proportion of independent directors on the Board
• Gender Diversity	• The proportion of female directors on the Board
• Financial Expertise	• The proportion of directors with finance knowledge
• Promoter shareholding	• The total proportion of the promoter's total shares
• Institutional Ownership	• The total proportion of the Institutional shareholding in the total shares
• Foreign Ownership	• The total proportion of the foreign shareholding in the total shares

Dependent Variables • Sustainability Reporting Index	$SRI = \frac{(Total\ score\ of\ Company)}{(Total\ Score)} * 100$
Control Variables • Age of Company • Leverage • Size of Company • Financial Performance	• The logarithm of the number of years since the Company was incorporated • Debt to Equity Ratio • The logarithm of the total assets of Companies • Return of Assets

The Global Reporting Initiative is used to monitor Sustainability Reporting, and SPSS is employed to analyze the data using multiple regression. This paper statistically investigates the influence of Corporate Governance on the Sustainability Reporting of Indian companies listed on the Bombay Stock Exchange (BSE-500). Furthermore, Multiple regression models are employed in this study to estimate the beta coefficients, which are then utilized to evaluate the hypotheses. The following is the research model:

$$SRI_{it} = \beta_0 + \beta_1 * BS_{it} + \beta_2 * BM_{it} + \beta_3 * BI_{it} + \beta_4 * GD_{it} + \beta_5 * FE_{it} + \beta_6 * PS_{it} + \beta_7 * IS_{it} + \beta_8 * FS_{it} + \beta_9 * AGE_{it} + \beta_{10} * LEV_{it} + \beta_{11} * SIZE_{it} + \beta_{12} * FP_{it} + \varepsilon_{it}$$

"SRI_{it} is the Sustainability Reporting Index, BM_{it} is the Board Meeting, BS_{it} is the Board Size, BI_{it} is the Board Independence, FE_{it} is the Financial Expertise of the Board, GD_{it} is the Gender Diversity, PS_{it} is the Promoter Shareholding, IS_{it} is the Institutional Shareholding, FS_{it} is the Foreign Shareholding, AGE_{it} is the Age of Company, LEV_{it} is the Leverage, $SIZE_{it}$ is the Size of Company, FP_{it} is the Financial Performance of Company, ε =Error Term, β_0 is the intercept, β_1 to β_{13} are the beta-coefficients, "i" is the cross-section units and "t" is the period of study."

Data Analysis And Findings

- **Descriptive statistics**

TABLE: 3

	N	MINIMUM	MAXIMUM	MEAN	STD. DEVIATION
Dep: Sustainability Reporting Index	50	40.4	76.4	50.7	6.1
Ind: Board Size	50	7	12	9.8	1.6
Ind: Board Meetings	50	3	10	5.9	1.5
Ind: Independent Directors	50	33.3	83.3	52.8	12.2
Ind: Gender Diversity	50	11.1	40	22.4	7.1
Ind: Financial Expertise	50	0	100	60.6	33.1

Ind: Promoter Shareholding	50	26.7	75	15.6	54.6
Ind: Foreign Shareholding	50	0	46.1	9.7	13.7
Ind: Institutional Shareholding	50	5.2	45.8	12.0	21.8
Con: Company Size	50	5.1	8.8	6.8	0.9
Con: Age	50	1.9	2.8	2.3	0.2
Con: Leverage	50	0	33	1.9	6.7
Con: Financial Performance	50	-0.8	22.1	10.1	5.1
Valid N (listwise)	50				

According to this study, for understanding the basic nature of data of selected companies. Researchers used descriptive statistics, which is shown in Table 3. There are a total of 50 observations. S.R.I. has a mean value of 50.7 and a standard deviation of 6.1, which represents a moderate level of difference within selected companies. The minimum and Maximum values are 40.4 and 76.4.

TABLE:4 - MODAL SUMMARY

Modal	R	R^2	Adjusted R^2	Std. Error of the Estimate	Change Statistics			df2	Sig. F Change
					R^2 Change	F Change	df1		
1	.974[a]	0.948	0.932	.04231	0.948	56.742	12	37	0.000

Predictors: (Constant), Con: Financial Performance, Age, Leverage, Company Size, Ind: Independent Directors, Institutional Shareholding, Board Meetings, Financial Expertise, Gender Diversity, Board Size, Promoter Shareholding, Foreign Shareholding

According to the modal summary, which is given in Table 4, The multiple correlation coefficients, shown by R, imply a high degree of prediction (0.974). Furthermore, the coefficient of determination, R2, is quite high (94.8%), indicating how much variance in the dependent variable can be explained by the independent factors. The adjusted R2 is 0.932, and the standard error is .04231.

TABLE:5- ANOVA[a]

Model	Sum of Squares	d.f.	Mean Square	F	Sig.
Regression	1.219	12	0.102	56.742	0.00[b]
Residual	0.066	37	0.002		
Total	1.285	49			

[a]Dependent Variable: Sustainability Reporting Index

[b]Predictors: (Constant), Con: Financial Performance, Age, Leverage, Company Size, Ind: Independent Directors, Institutional Shareholding, Board Meetings, Financial Expertise, Gender Diversity, Board Size, Promoter Shareholding, Foreign Shareholding

The ANOVA results are shown in Table 5; the value of the F ratio is 56.742, and the significant value is 0.00. The P< 0.05. That suggests the regression modal fits the data well.

TABLE:6- COEFFICIENTS[a]

Modal	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B	
	B	Std. Error	Beta			Lower Bound	Upper Bound
(Constant)	0.107	.230		.463	.646	-.360	.573
Board Size	.090	.033	.199	2.715	.010	.023	.158
Board Meetings	.163	.104	.109	1.568	.125	-.048	.375
Independent Directors	-.116	.047	-.188	-2.463	.019	-.212	-.021
Gender Diversity	.012	.027	.023	.421	.676	-.044	.067
Financial Expertise	-.103	.052	-.142	-1.975	.056	-.209	.003
Promoter Shareholding	.313	.075	.486	4.188	.000	.162	.465
Foreign Shareholding	-.161	.041	-.170	-3.905	.000	-.245	-.078
Institutional Shareholding	.355	.096	.405	3.699	.001	.161	.550
Company Size	-.367	.053	-.921	-6.910	.000	-.475	-.260
Age	.053	.099	.125	.539	.593	-.147	.253
Leverage	.551	.539	.313	1.022	.313	-.541	1.643
Financial Performance	-.251	.329	-.110	-.763	.450	-.917	.416

[a]Dependent Variable: Sustainability Reporting Index

The coefficient outcome is displayed in Table 6. Among the control variables, only the company's size shows statistical significance. Age, leverage, and financial performance exhibit negligible results. Moreover, independent factors such as board size, board independence, promoter shareholdings, foreign shareholding, and institutional shareholdings have a statistically significant influence. Financial expertise yields slightly substantial outcomes. The study found that corporate governance features moderately impacted the Sustainability Reporting of selected Pharmaceutical Companies.

- **Robustness Checks**

Additional analyses were performed in the

current study to verify the strength and reliability of the results. The regression model was recalibrated by substituting the logarithm of total sales for total assets, a common metric used to gauge company size in previous research (*Kumar et al., 2022*).

TABLE:7 - MODAL SUMMARY

Modal	R	R^2	Adjusted R^2	Std. Error of the Estimate	Change Statistics			df2	Sig. F Change
					R^2 Change	F Change	df1		
1	.971[a]	0.943	0.903	.05488	0.943	23.462	12	37	0.000
Predictors: (Constant), Con: Financial Performance, Age, Leverage, Company Size, Ind: Independent Directors, Institutional Shareholding, Board Meetings, Financial Expertise, Gender Diversity, Board Size, Promoter Shareholding, Foreign Shareholding									

According to the modal summary of modify model, which is given in Table 7, The multiple correlation coefficients, shown by R, imply a high degree of prediction (0.971). Furthermore, the coefficient of determination, R2, is quite high (94.3%), indicating how much variance in the dependent variable can be explained by the independent factors. The adjusted R2 is 0.903, and the standard error is .05488. After substituting and recalibrating the regression model, researchers discovered that there was no significant disparity in the outcomes when compared to the original model. The association between the relevant variables remained mostly consistent regardless of the replacement.

Conclusion

The pharmaceutical sector significantly contributes to the development and welfare of populations, especially in emerging nations such as India. Businesses have a responsibility to examine the interaction between the economy, environment, and society as they operate. Despite its crucial importance, the degree of SR among Pharmaceutical Companies is surprisingly low. It is important to acknowledge that strong Corporate Governance may greatly impact these practices. This study's findings illuminate the present status of SR in Pharmaceutical companies. Only the company's size demonstrates statistical significance. Age, leverage, and financial performance show insignificant influence. Additionally, criteria including board size, board independence, promoter shareholdings, foreign ownership, and institutional shareholdings have a statistically significant impact. Financial expertise leads to somewhat significant results. Insufficient reporting aside, effective governance measures may enhance openness and accountability. Corporations are required to provide increasingly detailed information on sustainability problems due to growing demand from different stakeholders, such as foreign investors, promoters, and institutional owners.

• **Limitations of this Research**

Acknowledging the limitations of this study is crucial. The availability and accessibility of data on Sustainability Reporting procedures in Pharmaceutical Companies may limit the research scope. The research may not fully account for the intricacies of a company's operations or differences across various countries or market sectors. The study's conclusions may be influenced by biases inherent in the methods used.

• **Implications of Research**

Although limited, the results of this study provide useful insights for readers and Pharmaceutical Companies. Readers, especially stakeholders like investors, politicians, and advocacy organizations, should carefully examine business sustainability practices based on the results. Enhancing transparency and accountability empowers readers to compel Pharmaceutical Companies to prioritize sustainability efforts and tackle environmental and social issues.

For Pharmaceutical Companies themselves, the findings serve as a call to action to enhance their Sustainability Reporting Practices. By embracing principles of good governance and engaging in meaningful dialogue with stakeholders, companies can not only mitigate risks but also unlock opportunities for innovation and competitive advantage. Moreover, a robust commitment to sustainability can foster trust and goodwill among consumers and investors, ultimately contributing to long-term business success.

Ultimately, Pharmaceutical Companies encounter substantial sustainability obstacles, although there is a strong chance for companies to promote good change by improving their reporting and governance processes. By utilizing the knowledge obtained from this research, stakeholders may together strive for a more sustainable and fair future for everyone.

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CSR IN INDIA – A VISION FOR THE SUSTAINABLE FUTURE

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Abstract

CSR has emerged as a critical component of modern business practices, especially in the Indian context. The dynamic background of CSR in India reflects a transformation in the role of corporations from mere profit-making entities to responsible corporate citizens contributing to societal welfare. With a rich history deeply intertwined with philanthropy and social causes, India has witnessed a significant shift in the way businesses perceive and execute their social responsibilities. In this backdrop, the present paper puts an attempt to comprehensively analyze the role of CSR in contributing sustainable development and challenges within the Indian CSR ecosystem. Further, the article concludes with strategics to address these challenges, advocating for collaborative efforts and policy reforms to shape the future of CSR in India.

Keywords:

CSR, India, Sustainable Development, Challenges, Policy Reforms

Introduction

Corporate Social Responsibility refers to the ethical framework and strategic approach adopted by corporations to integrate social, environmental, and economic concerns into their operations. It goes beyond mere profit-making and aims to create a encouraging impact on society while ensuring sustainable business practices. However, the theoretical framework of CSR encompasses four important dimensions as identified and analyzed below (Figure – 1).

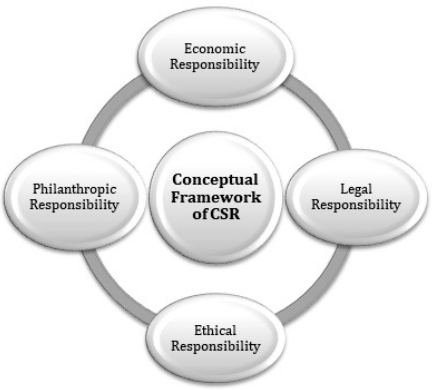


Figure - 1: Conceptual Framework of CSR

1) **Economic Responsibility**: This aspect revolves around a company's primary objective of generating profits for shareholders. However, it emphasizes ethical business practices, compliance with rules and guidelines, and fair competition within the market.
2) **Legal Responsibility**: Corporations have legal obligations that they must fulfill. This includes adhering to laws and regulations set by the government and various regulatory bodies.
3) **Ethical Responsibility**: Companies are expected to engage in ethical practices, ensuring fair action of all stakeholders, avoiding unethical activities, and conducting business in an honest and transparent manner.
4) **Philanthropic Responsibility**: This dimension involves voluntary actions and contributions by businesses to promote the welfare of society. It includes initiatives such as community progress, environmental sustainability, and philanthropic activities without any legal obligation.

A Few Developments in the Evolution of CSR in India

The growth and progress of Corporate Social Responsibility in India has been a journey spanning decades, characterized by a shift from traditional philanthropy to a more structured and strategic approach. The history of CSR in India showcases the changing background of corporate responsibility and societal impact.

1) **Pre-Independence Era**: During the pre-independence period, Indian business families and leaders were actively involved in philanthropic activities, contributing to social causes such as education, healthcare, and community welfare. These efforts were often driven by personal initiatives rather than formal corporate strategies.
2) **Post-Independence and Early Development**: After independence, the Indian government took significant steps to address social challenges. Businesses

continued their philanthropic activities, and corporate contributions focused on building educational institutions, hospitals, and other community-based infrastructure.

3) **The Rise of Business Houses and Philanthropy**: The country saw the emergence of influential business families and conglomerates investing in philanthropy and social causes. Names like the Tata Group, Birla Group, and others set up foundations and trusts to drive social initiatives in education, healthcare, and community development.
4) **Shift towards Strategic CSR**: The CSR landscape in India saw a transformation in the late 20th century and early 21st century. There was a gradual shift from ad-hoc philanthropy to a more strategic approach where companies started aligning their CSR initiatives with their business objectives. This phase emphasized sustainable practices, employee welfare, and community development alongside profit-making.
5) **Legal Mandates and Regulatory Framework**: A significant turning point came with the introduction of Section 135 of the Companies Act, 2013, which made it mandatory for certain companies to spend a percentage of their profits on CSR activities. This formalized CSR commitments, giving rise to a more structured and regulated approach to corporate social responsibility in India.
6) **Embracing Sustainability and Impact**: The recent evolution of CSR in India has seen an increasing focus on sustainability, environmental conservation, and measuring the impact of CSR initiatives. Companies are aligning their strategies with Sustainable Development Goals (SDGs) and embracing technology and innovation for more effective and measurable social impact.

Fulfilling Responsibilities - The Imperative of CSR in India

Corporate Social Responsibility (CSR) holds significant importance in the Indian context due to various reasons and they are presented below (Figure – 2) and followed by an analysis.

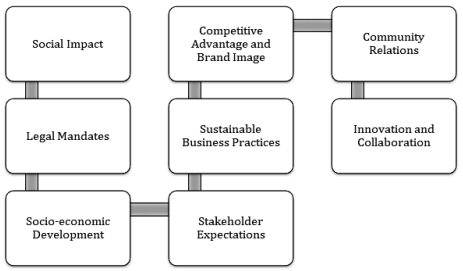


Figure - 2: Fulfilling Responsibilities and the Imperative of CSR in India

1) **Social Impact**: India faces numerous social challenges like poverty, education gaps, healthcare accessibility, and environmental concerns. CSR initiatives play a vital role in addressing these issues by directing resources, expertise, and efforts towards social development.
2) **Legal Mandates**: The introduction of the Companies Act, 2013, has made CSR spending mandatory for

companies meeting specific financial criteria. This legal framework has necessitated businesses to allocate resources for social causes, fostering a more socially responsible corporate culture.

3) **Socioeconomic Development**: CSR initiatives contribute to the socioeconomic development of the country. They help bridge gaps in development by supporting education, healthcare, infrastructure, and skill development programs, especially in underserved areas.
4) **Stakeholder Expectations**: With increased awareness and accountability, stakeholders such as consumers, employees, investors, and communities, now expect companies to engage in responsible and ethical business practices. Fulfilling CSR commitments helps in maintaining a positive reputation and trust among stakeholders.
5) **Sustainable Business Practices**: Embracing CSR encourages businesses to adopt sustainable and environmentally friendly practices. This includes reducing their carbon footprint, conserving resources, and promoting sustainable technologies, aligning with global sustainability goals.
6) **Competitive Advantage and Brand Image**: Companies engaging in impactful CSR initiatives often experience a boost in brand image, customer loyalty, and employee satisfaction. Such endeavors contribute to a positive corporate image and can give a competitive edge in the market.
7) **Community Relations**: CSR activities foster positive relationships between businesses and the community. By involving and understanding the needs of local communities, companies can create stronger, mutually beneficial partnerships.
8) **Innovation and Collaboration**: CSR initiatives often encourage innovation and collaboration. Businesses work alongside NGOs, government bodies, and local communities, leading to innovative solutions for social issues and broader community development.

CSR and Sustainability – A Synergistic Approach

The inclusion of CSR as a mandatory provision is poised to have a transformative impact on India's societal landscape. Through CSR projects, companies are now instrumental in addressing various social challenges, aligning their efforts with the broader goals of sustainable development. This initiative goes beyond corporate profitability and underscores a commitment to social and environmental well-being. In essence, the enactment of the Companies Act, 2013, with its mandatory CSR provisions, represents a pioneering step towards aligning corporate interests with the larger objectives of sustainable development and social welfare. This regulatory framework positions India at the forefront of global efforts to integrate corporate responsibility into the fabric of business operations, fostering a paradigm shift towards a more socially conscious and sustainable business environment**.**

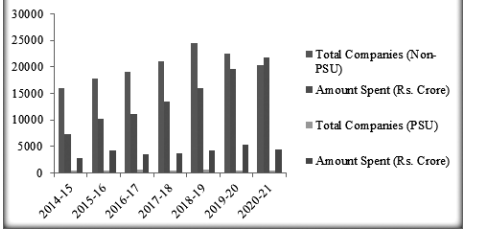
Over the past five years, the landscape

of Corporate Social Responsibility (CSR) activities in India has witnessed a noteworthy surge, reflecting a commendable growth in both the financial commitment and the participation of companies. According to available data, the expenditure on CSR activities in India demonstrated a substantial rise, escalating from Rs. 17,098.57 Crore in the fiscal year 2017-18 to Rs. 25,932.79 Crore in 2021-22. This translates to an impressive increase of Rs. 8,834.22 Crore over the specified period, representing a compound annual growth rate (CAGR) of 8.68%. Breaking down the numbers further, this augmentation corresponds to a factor of 0.52 times, underscoring the sustained and robust expansion in the investment devoted to CSR initiatives. Such positive trends are indicative of a corporate sector increasingly recognizing and embracing its social responsibility.

Moreover, the growth isn't confined to financial figures alone; the number of companies actively participating in CSR activities has exhibited a consistent upward trajectory from the fiscal year 2014-15 to 2020-21. This points towards a broadening engagement of businesses in contributing to societal well-being.

The graphical demonstration of these trends is encapsulated in Figure – 3, revealing a visual testimony to the escalating commitment of both public and private sector entities in India towards CSR initiatives. This visual aid serves as a powerful testament to the concerted efforts and positive strides taken by corporations in fulfilling their societal obligations.

Figure -1: Sector-wise Contribution of CSR Expenditure



It may be noted here that the data unequivocally illustrates a laudable advancement in CSR endeavors, both in terms of financial commitment and the expanding base of participating companies. This signals a promising trend in the Indian corporate landscape, where social responsibility is increasingly becoming integral to business operations.

Implementation of CSR in India – A Few Issues/Challenges

Though a few issues/challenges in the implementing of Corporate Social Responsibility (CSR) initiatives in India have been identified and an attempt is made here to analyze the important issues in the implementing of CSR. These issues pose a number of challenges to the seamless execution and effectiveness of these activities in the county.

1) **Regulatory Compliance and Reporting**: Adhering to the regulatory framework while ensuring accurate and transparent reporting of CSR activities poses a significant challenge for many companies. Compliance with the specific provisions of the Companies Act, 2013, and other related regulations demands meticulous record-keeping and reporting.

2) **Resource Allocation and Sustainability**: Effective allocation of resources and ensuring the sustainability of CSR programs remain challenging. Balancing long-term sustainability with immediate impact and managing the allocation of funds, manpower, and infrastructure poses a consistent challenge.
3) **Measuring Impact and Evaluation**: Assessing the real impact of CSR initiatives and establishing appropriate metrics for evaluation is a persistent challenge. Companies often struggle to develop standardized, measurable parameters to gauge the success and impact of their CSR projects.
4) **Stakeholder Engagement and Collaboration**: Engaging various stakeholders, including local communities, NGOs, government bodies, and employees, and fostering effective collaboration among these diverse groups can be complex. Building consensus and maintaining active involvement from all stakeholders can be challenging.
5) **Geographical Reach and Rural Penetration**: Extending CSR initiatives to remote, rural areas poses challenges due to inadequate infrastructure, limited accessibility, and dispersed populations. Ensuring the successful implementation of programs in these areas can be challenging.
6) **Skill Development and Capacity Building**: Enhancing the skill sets and capabilities of those involved in CSR activities, both within the company and the communities it serves, is a challenge. Developing the necessary skills and capacity for sustainable programs is crucial yet challenging.
7) **Maintaining Long-term Commitment and Impact**: Ensuring consistent, long-term commitment and sustained impact from CSR programs can be challenging. Organizations often face difficulties in maintaining the momentum and ensuring continued positive impact over an extended period.
8) **Cultural and Social Diversity**: India's vast cultural diversity and varying social norms across regions present challenges in designing and implementing uniform CSR programs that effectively cater to the unique needs of diverse communities.

Emerging Trends in CSR – A Brief Analysis

The Corporate Social Responsibility (CSR) landscape in India is witnessing transformative changes, marked by evolving trends that are shaping the future of responsible business practices.

1) **Digital Transformation and Technology Integration**: The integration of digital technologies, such as AI, big data, and blockchain, is revolutionizing CSR initiatives. These technologies are facilitating efficient impact assessment, enhancing transparency, and expanding the reach of CSR programs.
2) **Focus on ESG (Environmental, Social, and Governance) Factors**: Companies are increasingly integrating ESG factors into their CSR strategies. This includes a sharper focus on environmental sustainability, social impact, and ethical

governance, aligning with global sustainability benchmarks.

3) **Impact Investment and Social Entrepreneurship**: There's a surge in impact investing and social entrepreneurship, where businesses are leveraging capital to create scalable and sustainable social impact, aiming for both financial returns and social welfare.
4) **Community-Led Initiatives and Grassroots Participation**: The CSR landscape is witnessing a shift towards more community-centric initiatives, empowering local communities to actively participate in the design and implementation of programs tailored to their specific needs.
5) **Diversity, Equity, and Inclusion (DEI) Initiatives**: Companies are increasingly embracing DEI initiatives as part of their CSR agenda. This involves fostering diverse and inclusive workplaces, promoting gender equality, and addressing social inequalities.
6) **Circular Economy and Sustainable Practices**: Embracing circular economy principles and sustainable practices has become a focal point for CSR. Companies are reimagining resource use, waste reduction, and recycling, aligning with a more sustainable approach to business.
7) **Public-Private Partnerships for Social Impact**: Collaborative efforts between the public and private sectors are on the rise. This partnership aims to address larger societal issues such as healthcare, education, and infrastructure development, leveraging combined resources and expertise.
8) **Climate Resilience and Disaster Response**: CSR initiatives are increasingly focused on climate resilience and disaster response. Companies are actively participating in climate action, disaster relief, and preparedness to address environmental emergencies.
9) **Focus on Employee Well-being and Mental Health**: CSR initiatives are now directed towards ensuring employee well-being, mental health support, and work-life balance, acknowledging the importance of a healthy workforce.

Tomorrow's CSR - Strategies Shaping a Sustainable Future

To enhance the effectiveness and impact of Corporate Social Responsibility (CSR) initiatives in India, some strategies and suggestions can be implemented.

- Integrate CSR initiatives with the core business strategy, aligning social goals with long-term business objectives to ensure sustainability and relevance.
- Prioritize a few impactful and sustainable CSR programs instead of scattered efforts, enabling better monitoring, evaluation, and amplification of positive outcomes.
- Develop comprehensive impact assessment methodologies to measure the tangible effects of CSR initiatives, ensuring accountability and providing valuable insights for future planning.
- Involve local communities in identifying their actual needs and empowering them to actively participate in the design and implementation of CSR programs.
- Invest in skill development programs

for communities, ensuring they have the necessary skills and knowledge to sustain the benefits of CSR initiatives.

- Embrace technological innovations to maximize the reach and effectiveness of CSR programs. Leverage technology for education, healthcare, and sustainable solutions.
- Foster partnerships with NGOs, government bodies, and other corporations to leverage collective resources and expertise for larger-scale, impactful initiatives.
- Encourage employee involvement through volunteering programs, matching grants, and skill-based contributions, fostering a sense of social responsibility among the workforce.
- Maintain transparent reporting mechanisms to demonstrate the outcomes of CSR activities, ensuring stakeholders have visibility into the initiatives and their impact.
- Develop long-term commitments and clear sustainability goals for CSR programs, ensuring continuity and a lasting positive impact on communities.
- Align CSR activities with Sustainable Development Goals (SDGs) and global best practices, ensuring that initiatives are contributing to broader global sustainability objectives.
- Act as advocates for social causes, leveraging thought leadership to raise awareness, advocate for policy changes, and inspire other companies to engage in meaningful CSR activities.

Conclusion

To sum up, CSR in the Indian context is not just about philanthropy or meeting regulatory requirements; it is increasingly becoming an integral part of sustainable business strategies, contributing to holistic social and economic progress. However, the future of CSR in India holds promise for more strategic, impactful, and sustainable initiatives. As companies identify these uncharted territories, aligning their businesses with societal well-being, the key lies in robust partnerships, innovative solutions, and a steadfast commitment to the welfare of the communities they serve. The journey ahead requires a collaborative, transparent, and future-oriented approach, ensuring that CSR continues to be a force for positive change and sustainable development in India.

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EFFECTIVENESS OF CONSOLIDATION OF BANK OF BARODA: AN EMPIRICAL STUDY

Wilson Peter Minz
Goutam Bhowmik

Abstract

Consolidation through Merger & Acquisition is not a new phenomenon in the Indian banking space. After the adoption of the Basel-III norms by the RBI in 2013, the process of consolidation became more relevant and imperative in the Indian banking sector. Under such situations, study on effectiveness of the ongoing consolidation drive has become necessary. With this end in view, the paper attempt to highlight the effectiveness of Merger & Acquisition on the profitability of Bank of Baroda. The study is based on the secondary data collected from various sources for the period 2015-16 to 2022-23. ROE of Bank of Baroda is measured by using extended Dupont analysis. Furthermore, paired t test have been applied to determine whether there exists any significant difference among the drivers of ROE during the pre and post-merger period of Bank of Baroda. The Extended Dupont analysis revealed that though there was an increase in ROE during the post-merger period; Asset Turnover and Tax Burden were found to be lower than that of pre-merger period. Paired t-test pointed out that there was no significant difference in ROE during the pre-and post-merger periods. Additionally, among the five drivers of ROE, only operating margin was found to have a significant difference during the pre-and post-merger periods. The present study will help to provide an insight into the profitability of the merger of India's third largest public sector banks in India.

Keywords :

Bank of Baroda, Dupont Analysis, Merger & Acquisition, Pre and Post-merger Profitability, Return on Equity

Introduction

Since the early 1980s, due to technological advancements, deregulation, and globalisation, the financial services sector, specifically the banking industry, has undergone a considerable transition throughout the world. As a result, large number of banks have been merged, amalgamated or restructured. Globally, banking consolidation began in the 1980s and surged in the 1990s as macroeconomic pressures and banking crises forced the banking industry to modify its business strategies and regulators to deregulate the banking industry at the national level and open up financial markets to foreign competition (Bishnoi, 2015). According to ILO 2001, due to merger waves in the United States, the number of banks decreased from 12333 to 7122 during 1980 to 1997. Similarly, in Europe banking establishment declined, particularly in Denmark by 57 % and France by 43 % during 1980 and 1995.

India has not been an exception to that. M&A is common in the Indian banking industry prior to the country's independence as well. Post-independence, several committees such as, Saraiya committee (1972), Shah committee (1976), S. Raj committee (1978), Narasimham committee-I (1991) and Narasimham committee-II (1998) have advocated, in one way or other, for three to four big banks at the national level, and remaining in the regional level (Jayadev, 2007). Moreover, the adoption of Basel-III norms in 2013 has accelerated the process of consolidation in the Indian banking space as it reduced the scope of operations of smaller banks (Bhowmik, 2014). As, a result seven mega mergers of banks took place since 2014 (Table 1).

Table 1: List of Banks Consolidated after the Adaptation of Basel-III Norms

Sl. No.	Anchor Bank	Amalgamating Banks	Bank size after Amalgamation	Year of Merger
1.	State Bank of India (SBI)	State Bank of Travancore State Bank of Bikaner and Jaipur State bank of Hydrabad State Bank of Mysore State bank of Patiala Bharatiya Mahila Bank	First largest PSB in India	2017
2.	Punjab National Bank	Oriental Bank of Commerce and United Bank of India	Second largest PSB in India	2020
3.	Bank of Baroda	Vijaya Bank and Dena Bank	Third largest PSB Bank in India	2019
4.	Canara Bank	Syndicate Bank	Fourth largest PSB bank in India	2020

5.	Union Bank of India	Andhra Bank and Corporation Bank	Fifth largest PSB Bank in India	2020
6.	Indian Bank	Allahabad Bank	Seventh largest PSB Bank in India	2020
7.	Kotak Mahindra Bank	ING Vyasa Bank	Fourth largest Private Bank in India	2014

Source: Complied and constructed by the authors

There are several reasons behind the ongoing consolidation of Indian banks. First, there is no Indian bank among the top 70 large global banks in terms of asset size. Second, increase in demand of large-scale lending emanating from ever increasing global presence of Indian corporates. In order to accommodate the increased lending demand, bank must also expand in size. Thirdly, Basel-III norms strongly recommended for the creation of 3 to 4 systematically important Banks (SIBs) having Global footprint. Accordingly, India earmarked 3 Domestically Systematic Important Bank (D-SIBs) – SBI, HDFC and ICICI Bank. According to RBI, consolidation in the banking Industry results in more diverse loan portfolios for banks and the removal of superfluous institutions from the banking ecosystem, resulting in a more stable financial system (Gandhi.R. 2016).

In this backdrop, the present study attempt to bring into light the effectiveness of merger of BoB on its profitability. On 2nd January, 2019 the Union Cabinet of India approved the merger of Vijaya Bank and Dena Bank with BoB. After the merger, BoB became the third largest Public Sector Banks in India after Punjab National bank and SBI in terms of assets. Post-merger, bank achieved uniform presence in different parts of the country. Because the erstwhile BoB had stronger presence in western and northern India while Dena Bank had larger base in Gujarat and Maharashtra and Vijaya Bank had strong presence in south India. This would expect to improve the customer base of BoB covering areas in north, south, east and western part of India.

Banking sector is key area for the development of Indian economy and mergers acquisitions have a substantial impact on the overall financial performance of the Anchor bank. Thus, it is vital to understand the ramifications of merger of BoB in order to investigate how an economy's banking system might be improved and made more efficient through consolidation. Therefore, the present study aims to examine the pre and post-merger profitability (ROE) of BoB by using Extended Dupont ansalysis since the model divides ROE into five sub-parameters, which aids in determining the factors that contribute to changes in ROE.

Literature Review

A brief review of relevant literature is given below chronologically:

Bishnoi & Devi (2015) examined the pre and post-merger performance of the Indian banks. Their investigation revealed that, with a few notable exceptions, there is generally no discernible benefit after mergers are approved.

Patel & Shah (2016) compared the pre and post-merger financial performance of the selected banks (Oriential bank of Commerce, Fedral Bank, IDBI Bank. Indian Overseas Bank, HDFC Bank and ICICI Bank). They found out that, post-merger financial performance has improved in the majority scenarios.

Gupta Honey (2016) analysed pre- and post-merger financial performance of SBI by using a variety of financial metrics. The study reveals that, with the exception of a few financial parameters, there has been no meaningful improvement over the post-merger era.

Paul Jayeeta (2017) analysed the performance of the selected commercial banks in India before and after merger, during the period 2000-2012. The analyses reveals that the capital adequacy and asset quality of the acquiring banks have improved following the merger, but management efficiency and earnings quality have failed to reflect the bank's ability to effectively utilize its assets in generating increased income and thus profitability.

Singh & Das (2018) evaluated the effect of Indian banks' merger on share price. Banking merger announcements often result in negative (or slightly positive) cumulative abnormal returns on acquiring banks' stocks and significantly positive abnormal returns on target bank stocks.

Ujjwala (2019) ascertained the factors that led to the merger of Vijaya Bank and Dena Bank with BoB, as well as the benefits that are expected to accrue. The merger was expected to improve the efficiency, expansion and performance of BoB.

Naveen et al. (2020) used 'Dupont' metrics like profit margin, asset yield, financial leverage, return on assets, and return on equity. Even though a merger offers the institutions concerned many advantages, the merged banks shouldn't anticipate an immediate, dramatic improvement in its financial performance.

Krishnan & Sanjeevinathan (2021) attempted to calculate the ROE of three private (ICICI Bank, HDFC Bank, Axis Bank) and public sector banks (State Bank of India, Canara Bank, Bank of India) by using DuPont model ratios for the period 2013 to 2017. The study reveals that among the public sector banks, Canara Bank performed well in terms of Net Profit Margin, Net Interest Margin, and Leverage ratio. On the other hand, among the private sector banks, ICICI Bank's performance was better than others in terms of DuPont ratios.

Herwadkar et al. (2022) investigated the effect of bank mergers on the short-term and medium-term performance of the acquirer banks. Data envelopment analysis (DEA) indicates that a rise in scale or productive capacity led to an improvement in the efficiency of acquirers. Additionally, the merger agreement has increased the acquiree banks' shareholder wealth.

Rani & Sangeeta (2023) pre and post-merger financial performance of Bank of Baroda was analysed by using various financial

indicators for the period 2018-2021. The study reveals that Bob's performance showed improvement after the merger.

The above review showed that several studies have been conducted on the pre and post-merger financial performance. But there is no compressive study on the profitability in terms of ROE and the drivers associated to it with regard to BoB covering the period 2015-16 to 2022-23. The present study, therefore, helps to identify the drivers responsible for the increase or decrease of ROE of BoB in the post-merger period.

Objectives of The Study

The objectives of the study are as follows:

- To Highlight the regulatory framework of the bank mergers in India.
- To analyse pre-and post-merger profitability of Bank of Baroda.

Hypothesis

H_{01}: No significant difference in Asset Turnover Ratio during pre and post-merger of BoB.

H_{02}: No significant difference in Equity Multiplier ratio during pre and post-merger of BoB.

H_{03}: No significant difference in Tax Burden Ratio during pre and post-merger of BoB.

H_{04}: No significant difference in Interest Burden Ratio during pre and post-merger of BoB.

H_{05}: No significant difference in Operating Margin Ratio during pre and post-merger of BoB.

H_{06}: No significant difference in ROE during pre and post-merger of BoB.

Methodology of the Study

The present study is both descriptive and analytical in nature, assessing the pre and post- merger profitability of Bank of Baroda (BoB). The study is based on secondary data, which has been collected from the annual reports of the respective banks (BoB, Vijaya Bank and Dena Bank), the Reserve Bank of India and other related sources. The major reason for selecting Bank of Baroda is that Bank of Baroda was the first triparty merger that took place after the adaptation of BASEL III. Wherein, Dena bank was the sick bank and Vijaya bank was moderate performing bank. As a result, the aforementioned bank was chosen for the study in order to determine whether the burden borne by anchoring banks in terms of high NPA, lower profitability, and higher operational expenses has an impact on the anchor bank's profitability. The study has been conducted for the period 2014-15 to 2022-23. The upper boundary of the period corresponds to the most recent year (2022-23). The financial year 2018-19 is taken as base year which provides us four years of post-merger period (2019-20 to 2022-23). In order to keep parity with the post-merger period, the lower limit is fixed at 2015-16. During the pre-merger years, the relevant figures were arrived at by summing up the numbers reported by erstwhile BoB, Vijaya Bank and Dena Bank. ROE of Bank of Baroda is measured by using extended Dupont analysis having five drivers – Asset Turnover Ratio, Equity Multiplier Ratio, Tax Burden Ratio, Interest Burden Ratio and Operating Margin Ratio. Furthermore, paired t test have been applied to determine whether there exists any significant

difference among the 5 drivers of ROE during the pre and post-merger period of Bank of Baroda.

Model Specification

The extended Dupont analysis has been used to examine BoB's profitability both before and after the merger. The major reason of employing extended Dupont analysis is to identify the drivers responsible for the increase or decrease of ROE of BoB. Accordingly, five sub-parameters have been taken into account while calculating ROE, which is a profitability metric for banks. Variables are either summarized (during pre-merger periods) or collected from the balance sheets and income statements of the concerned bank for the relevant period. The reason for using a 5-step Dupont analysis rather than a 3-step Dupont analysis is that in 3- step rise in ROE is based on an increase in net profit margins, asset turnover, and equity multiplier. In contrast, a 5-step Dupont analysis demonstrates that a rise in equity multiplier does not always imply an improvement in ROE. It additionally provides a further breakdown of the profit margin ratio (net income/sales) into two parts: tax burden and interest burden, which are compounded by the operating profit margin. The application of extended Dupont analysis in the financial sector gives management and financial analysts with more precise information about a firm and its immediate competitors. The extend Dupont formula has been mathematically expressed as under:

$$\text{ROE} = \frac{Net\ Profit\ After\ Taxes}{Earnings\ Before\ Taxes} \times \frac{Earnings\ Before\ Taxes}{Earnings\ Before\ Interest\ and\ Taxes} \times \frac{Earning\ Before\ Interest\ and\ Taxes}{Total\ Revenue}$$

$$\times \frac{Total\ Revenue}{Total\ Assets} \times \frac{Total\ Assets}{Total\ Equity}$$

Or,

ROE = [Tax Burden Ratio× Interest Burden Ratio × EBIT Margin Ratio × Asset Turnover Ratio × Equity Multiplier Ratio]

Table 2: Extended Dupont ratios and its responses

Dupont Ratios	Performance	
	Increase	**Decrease**
Asset Turnover	A higher ATR score indicates that the bank is more efficient in terms of asset management.	A Lower ATR indicates that the bank is not efficiently utilizing its assets and most likely has management concerns.
Equity Multiplier	A high EM indicates that a bank is highly leveraged and thus at a higher risk of insolvency.	A low EM suggests that the bank is less indebted and hence has a lower risk of insolvency.

Tax Burden	A high TB indicates that the bank can retain a significant amount of its pretax income, implying a reduced tax rate.	A low TB suggests that the bank is unable to sustain its pretax income, implying a higher tax rate.
Interest Burden	A higher IB reflects the bank's ability to efficiently manage its interest expenses.	A lower IB indicates the bank is less adept at managing its interest expenses.
Operating Margin	Higher OM indicates that the bank is able to generate more revenue while incurring reduced operational expenses.	Lower OM indicates that the bank has lower revenue and higher operational expenses.

Source : Complied and constructed by the authors

After computation of the Dupont ratios, a paired sample t test has been conducted to statistically verify the difference in pre- and post- merger profitability of BoB. The student paired sample t test has been expressed in the following manner:

$$t = \frac{\bar{x}_1 - \bar{x}_2}{S}\sqrt{\frac{n_1 n_2}{n_1 + n_2}}$$

Where, $\bar{x}_1 = \sum \frac{x_1}{n_1}$ *and* $\bar{x}_2 = \sum \frac{x_2}{n_2}$

$\bar{x}_1$ = The mean of the combined pre-merger performance ratio of the BoB.
$\bar{x}_2$ = The combined post-merger performance ratios of the BoB.
n_1 and n_2 are the number of observations of the first and second series respectively (Here n_1 = n_2=4 = years under pre-merger and post-merger period).
And, *S* is the combined standard deviation of the pre and post-merger performance ratios of BoB.
The standard deviation has been calculated by using the following equation:

$$S = \sqrt{\frac{\sum(x, -A_1)^2 + \sum(\chi_2 - A_2)^2 - n_1(\overline{x_1} - A_1)^2 - n_2(\bar{x}_2 - A_2)^2}{n_1 + n_2 - 2}}$$

Where $n_1 + n_2 - 2$ = the degree of freedom and are the assumed means of the pre and post-merger series.

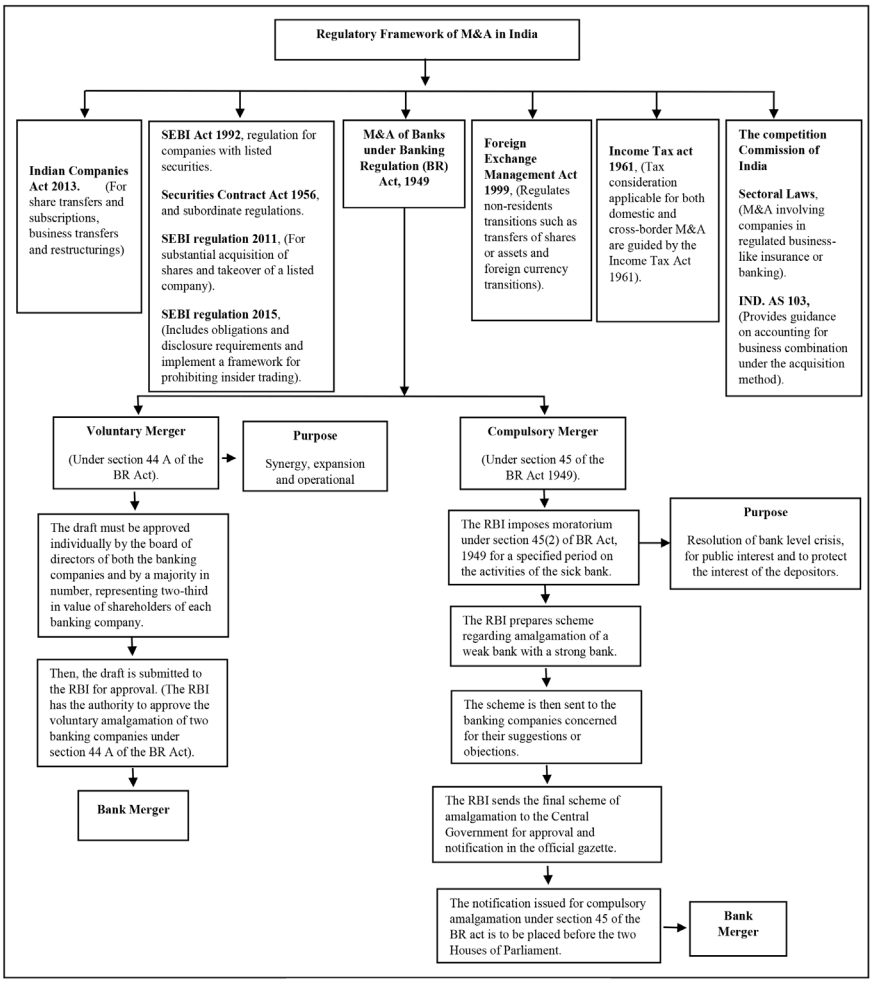
Regulatory Framework of Bank Merger in India

Banking sectors operating in India are governed by different statutory provision depending upon their status as a body corporate established by an Act of parliament or a banking institution so far as M&A is concerned. Chart 1 demonstrates

the existing legal framework of merger of banking institutions in India. The important regulations governing M&A of banks are listed below.

- The Companies Act of 2013 specifies the procedure for share transfers and subscriptions, business transfers and restructurings.

Chart 1: Flow Chart of Regulatory Framework of Bank Merger in India



Source: Complied and constructed by the authors

- SEBI also regulates companies with listed securities under the SEBI Act 1992, the Securities Contracts Act 1956, and subordinate rules. Substantial acquisition of shares and takeovers of a listed company are regulated under SEBI Act 2011. SEBI regulation 2015 includes listing obligations and disclosure standards, as well as a framework for combating insider trading.
- The Foreign Exchange Management Act of 1999 and related laws regulates transfers of shares or assets and foreign currency transactions.
- Indian competition law is governed by the Competition Commission of India, which also has regulations governing the notification and consent procedures for mergers and acquisitions.
- The Income Tax Act of 1961 governs tax issues related to M&A, with double taxation avoidance treaties which is applicable in case of cross-border M&A.
- Ind. AS 103, provides guidance on accounting for business combination under the acquisition method.
- Sectoral laws are applicable to M&A involving corporations in regulated industries such as insurance or banking.

The Companies Act, competition regulations, Indian income tax rules are applicable to all companies. SEBI laws apply solely to listed companies, FEMA laws apply only to M&A involving foreign exchange and non-residents, and sectoral restrictions apply only to enterprises in specific sectors.

The comprehensive regulatory framework of a merger between two banks, regardless of their business or capital adequacy, is the result of consecutive work groups appointed by RBI. The Banking Regulation (BR) Act, of 1949 outlines the regulatory framework for mergers and acquisitions. There are two types of M&A, namely, voluntary and compulsory. According to Section 44A of the BR Act, in the case of a voluntary amalgamation, the scheme to combine one banking company with another must be approved by the boards of directors of both banking companies and by the requisite majority, which must represent two-thirds of the value of each banking company's shareholders. After that, the scheme will be presented to the RBI for approval. Under Section 44 A of the BR Act, the Reserve Bank, however, has the discretionary authority to authorise the voluntary merger of two banking entities.

Most voluntary mergers in the banking industry are between healthy banks, as recommended by the first Narsimham Committee. The Committee believed that the restructuring of the banking industry should be market-driven, focused on profitability, which can only be accomplished through a process of M&A. A recent example of the voluntary of merger in the Indian banking space, is the combination of ING Vysya Bank and Kotak Mahindra bank in 2014.

Compulsory amalgamations are another type of bank merger that is induced by the Reserve Bank under Section 45 of the BR Act, in the public interest or in the interest of depositors of a distressed bank, or to secure proper management of a banking company, or in the interest of the banking

system. When a specific bank shows serious symptoms of sickness such as huge NPAs, erosion in net worth or substantial decline in capital adequacy ratio, the RBI under Section 45 (2) of the BR Act may apply to the Central Government for an order of moratorium in respect of a weak bank and prepare a scheme of merger of a weak bank with a healthy banking institution. The scheme is then sent to the concerned banking institutions for their suggestions or objections. After careful consideration, the Reserve Bank submits the final merger proposal to the Central Government for approval and publication in the official gazette. The notification issued for compulsory merger under Section 45 of the BR Act must be presented to both Houses of Parliament. The merging of banks takes effect on the date mentioned in the government notification. One such example of the compulsory merger in the Indian banking sector is the merging of Global Trust Bank with Oriental Bank of Commerce in 2004.

Data Analysis and Discussion

This section provides an empirical result and interpretation of analysis, wherein ROE has been broken down into 5 sub parameters so as to identify the drivers responsible for the increase or decrease of ROE of BoB both in the pre and post-merger periods.

Table 3: Financial Performance indicators of Bank of Baroda

Variables	Pre-Merger Period				Mean	Base Year	Post-Merger Period				Mean
	$-T_4$	$-T_3$	$-T_2$	$-T_1$		T_0	T_1	T_2	T_3	T_4	
	2014-15	2015-16	2016-17	2017-18		2018-19	2019-20	2020-21	2021-22	2022-23	
Asset Yield	0.075	0.079	0.092	0.075	**0.080**	**0.074**	0.076	0.074	0.066	0.073	**0.072**
Financial Leverage	18.171	17.252	14.817	15.936	**16.544**	**16.409**	15.767	14.598	14.588	14.388	**14.835**
Tax Burden	0.716	0.737	0.639	0.717	**0.702**	**0.722**	-0.752	0.243	0.784	0.725	**0.250**
Interest Burden	0.467	-0.625	0.164	-0.241	**-0.05**9	**0.098**	-0.060	0.281	0.415	0.681	**0.329**
Operating Margin	0.184	0.160	0.209	0.228	**0.195**	**0.255**	0.225	0.255	0.275	0.273	**0.257**
ROE (%)	8.335	-10.007	2.971	-4.700	**-0.850**	**0.022**	1.219	1.878	8.545	14.055	**6.424**

Source: Complied and constructed by the authors

Table 3, depicts pre and post-merger performance of BoB by using extended Dupont analysis. The average Asset Turnover Ratio in the post-merger period declined to 0.072 from 0.080 of the pre-merger period, indicating under-utilization of available resources and the presence of idle capacity during post-merger periods. The average Equity Multiplier Ratio deteriorated from 16.544 to 14.835 after the

merger. However, the decrease in the Equity Multiplier indicates an improvement in the bank's leverage structure, which directly leads to increase in performance of the bank. Prior to the merger, the average Tax Burden Ratio of BoB was 0.702, but after the merger, the ratio significantly reduced to 0.250, implying that BoB is unable to retain a larger portion of its pre-tax income. On the other hand, the average Interest Burden Ratio showed improvement, increasing from -0.059 to 0.329 after the merger, indicating better management of interest efficiency by the bank during the post-merger era. The average Operating Margin Ratio also increased from 0.195 to 0.257 after the merger, indicating that BoB has been able to generate more revenue while incurring reduced operational expenses. Additionally, the average Return on Equity experienced a moderate increase from -0.850% before the merger to 6.424% after the merger, where T_1 indicates 1.219% ROE, which increases to up to 1.878% during T_2 and T_3 with 8.545% respectively and peaks up at 14.055%. Therefore, an increasing trend in the profitability of BoB could be observed during the post-merger period.

Table 4: Descriptive Statistics on Pre and Post-Merger Profitability of BoB

Paired Samples Statistics					
Particulars		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Asset Turnover Ratio Pre-Merger	.08025	4	.008057	.004029
	Asset Turnover Ratio Post Merger	.07225	4	.004349	.002175
Pair 2	Equity Multiplier Pre-Merger	16.54400	4	1.472026	.736013
	Equity Multiplier Post Merger	14.83525	4	.628652	.314326
Pair 3	Tax Burden Pre Merger	.70225	4	.043262	.021631
	Tax Burden Post Merger	.25000	4	.710595	.355297
Pair 4	Interest Burden Pre Merger	-.05875	4	.476055	.238027
	Interest Burden Post Merger	.32925	4	.308180	.154090
Pair 5	Operating Margin Pre-Merger	.19525	4	.029613	.014806
	Operating Margin Post Merger	.25700	4	.023152	.011576
Pair 6	Return On Equity Pre-Merger	-.85025	4	8.116596	4.058298
	Return On Equity Post Merger	6.42425	4	6.068743	3.034372

Source: Complied and constructed by the authors

Table 5: Paired sample t test on pre and post-merger profitability of BoB

Paired Samples Test									
Particulars		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval				
					Lower	Upper			
Pair 1	Asset Turnover Ratio Pre-Merger – Asset Turnover Ratio Post Merger	.008000	.012247	.006124	-.011488	.027488	1.306	3	.283
Pair 2	Equity Multiplier Pre-Merger - Equity Multiplier Post Merger	1.708750	1.094284	.547142	-.032500	3.450000	3.123	3	.052
Pair 3	Tax Burden Pre Merger – Tax Burden Post Merger	.452250	.730760	.365380	-.710552	1.615052	1.238	3	.304
Pair 4	Interest Burden Pre Merger - Interest Burden Post Merger	-.388000	.685438	.342719	-1.478684	.702684	-1.132	3	.340
Pair 5	Operating Margin Pre-Merger - Operating Margin Post Merger	-.061750	.024730	.012365	-.101101	-.022399	-4.994	3	.015
Pair 6	Return On Equity Pre-Merger - Return On Equity Post Merger	-7.274500	11.000557	5.500279	-24.778841	10.229841	-1.323	3	.278

Source: Complied and constructed by the authors using SPSS

Table 5, depicts that there is a significant difference [t (3) = -4.994, p = <.015] in mean score of pre and post-merger Operating margin of BoB, wherein post-merger operating margin (M= .19525, SD = .029613) is higher than the pre-merger operating margin (M = 0.25700, SD = 0.023152). Therefore, it can be concluded that there is a significant difference between the pre and post-merger Operating margin of BoB. Whereas, there was no significant difference found in terms of Asset yield, Equity multiplier, Tax burden, Interest burden and Return on Equity.

Summary of Findings & Conclusions

The Major findings of the study are summarized below:

- The extended Dupont analysis reveals that Asset Turnover, Equity Multiplier and Tax Burden were comparatively higher prior to merger of BoB. Whereas, Interest Burden and Operating Margin was found to be higher during the post-merger period.
- Return on Equity was found to be higher during the post-merger period, owing to improvements in Interest Burden, Operating Margin, and Equity Multiplier. Lower ROE of BoB during pre-merger periods is due to deterioration in Interest Burden, Operational Margin, and increase in Equity Multiplier.

- Further, the Extended Dupont analysis revealed that though there was an increase in ROE during the post-merger period; Asset Turnover and Tax Burden were found to be lower than that of pre-merger period.
- Paired sample t test revealed that there was a significant difference in Operating Margin during post-merger period over pre-merger period. However, there was no significant difference found in terms of Asset Turnover, Equity Multiplier, Tax Burden, Interest burden and Return of Equity.

The above finding using paired t test demonstrates that there was no significant difference found during the pre and post-merger profitability in terms of ROE. Furthermore, the extended Dupont analysis reveals that the merger of BoB is found to have a moderate impact on the post-merger profitability mainly because of improvements in Interest Burden, Equity Multiplier and Operating Margin. However, there was a deterioration in the asset turnover ratio and tax burden during the post-merger period. Thus, it is recommended that the management must focus in improving their asset turnover ratio and tax burden ratio, as the dynamic relationship for each activity will affect the overall profitability of bank.

Limitation of the Study and Scope of Future Research

- The study is based on the secondary data. Therefore, it is limited to the belief that they expose the reality and an accurate picture of state of affairs of business.
- As the study is based upon one single case, which restricts to give a conclusive inference on the effectiveness of consolidation drive in the Indian banking sector. It can be elaborated in future by taking all seven mega mergers that has been taken place after the adoption of Basel-III norms.
- The present study has only analysed the profitability of BoB, leaving a room for further studies on several aspects of financial performance after the merger of BoB.

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FINANCIAL SELF-EFFICACY (FSE) AS A MEDIATOR BETWEEN FINANCIAL LITERACY (FL) AND FINANCIAL INCLUSION (FI): AN EMPIRICAL STUDY IN INDIAN CONTEXT

Garima Bansal

Abstract

The objective of the paper is to investigate the influence of financial literacy (FL) level on financial inclusion (FI) of individuals residing in the National Capital Region (NCR) of India, with the role of financial self-efficacy (FSE) as a mediator. The study considers 384 individuals selected through convenient sampling. CFA and Regression analysis were used to analyse data using SPSS and AMOS 20.

The results indicate that FSE partially mediates the association among FL and FI. The study recommends that "FL aids in increasing finance related knowledge and in enhancing individuals' skills so that they can make comparison and select better financial products which ultimately enhance FI".

A majority of previous researchers have studied FI and FL; however, the role of FSE as mediator within this realm has remained unexplored. This paper is possibly the first attempt to bridge this gap.

Keywords:

Financial Self-efficacy, Financial Literacy, Financial Inclusion

Background

With continuous innovations and expansions in the financial market, wide choices of financial products are available in every nook and corner of the finance marketplace. These financial products are complex in nature and individuals face difficulty in taking judicious economic decisions. According to the Standard & Poor survey (2014), three-fourth Indians are not financially literate and 76% selected adults are not comfortable with basic financial plans. Therefore, in order to understand and use such complex financial products, various renowned authors recommend developing individuals' FL.

Previous studies like Cole *et al.* (2009), Ramakrishnan (2012), Atkinson and Messy (2013), Damodaran (2013), Mahdzan and Tabiani (2013), Bahadur (2015) and Grohmann *et al.* (2018) describe how FL level influences FI. Despite various policies, strategies and programs in promoting FL and increasing the usage of financial products provided by banks, FI is still at infancy. According to Schlein (2017), approx. 300 crore people in developing countries are not able to avail these financial products.

The studies suggest that some other factors have been overlooked which contribute to FI. Most of the studies conducted on FI focus on the supply side variables and very few portray demand side variables like FL and FSE (Noor *et al.,* 2020). As far as author's study, psychological factors also help in improving FI which is still not explored. In this study, FSE variable is presented which means "one's belief about their capability of organising and executing a course of action to achieve one's ultimate financial goals" (Forbes and Kara, 2010). Mindra and Moya (2017) study in Uganda; Noor *et al.* (2020) study in Pakistan and Bojuwon *et al.* (2023) study in Nigeria examine role of FSE as mediating instrument between FL and FI. However, in India, this aspect has remained unexplored. On the basis of this research gap, the present study aims to test theoretical structural models with FSE as a mediator between FL level and FI among individuals (refer Figure 1).

2. Review of literature and hypotheses formulation

2.1. Relationship of FL (financial literacy) and FSE (financial self-efficacy)

Lapp (2010) views FSE and financial knowledge as the key determinant of financial capability; it is explained by five aspects i.e. ability to manage expenses with income, keeping an eye on expenses; future planning & saving, controlling financial products and lastly obtaining & employing financial knowledge. Thus, FSE is associated with financial knowledge (Heckman and Grable, 2011). Similarly, Postmus (2011) highlights that FL and FSE also play a noteworthy job in controlling individuals' financial actions. Correspondingly, Noor *et al.* (2020) study in Pakistan find a strong association between FL and FSE with $\beta = 0.38$ and that FL enhances individual's confidence and ability to recognise finance related matters which ultimately lead to good financial decisions (Herawati *et al.,* 2019; Liu and

Zhang, 2021). However, Demirhan *et al.* (2019) note a weak relationship between FL and FSE. In view of these studies, the first hypothesis will be:

H_{1A}: FL significantly influences FSE of an individual.

2.2. Financial self-efficacy (FSE) and financial inclusion (FI)

The relation between FSE and FI is imperative as FSE influences individuals' behaviour. Mindra *et al.* (2017) survey in Uganda assert how FSE i.e. individuals' self-confidence in financial matters affect FI. Findings reveal that consumers with a high level of FSE could manage their finance related activities efficiently, confidently employ sophisticated financial services and are able to handle obstacles towards FI. This confidence in financial matters results in more investment decisions (Montford and Goldsmith, 2015) and higher financial performance via financial tools (Shiau *et al.,* 2020). Ghosh and Vinod (2017) also highlight the significance of FSE required by individuals in taking financial decisions and handling difficult financial situations. Accordingly, the second hypothesis of the study will be:

H_{2A}: FSE significantly affects FI of an individual.

2.3 Financial literacy (FL) and financial inclusion (FI)

Angela *et al.* (2009) and Remund (2010) describe that one who possesses basic financial concepts can manage finance confidently and effectively. Lusardi (2002) also points to FL as a significant determinant of savings behaviour. The author stresses on providing financial education to children in schools to know about the benefits of savings so that they can teach their parents. Thus, policy planners should promote FL. Cole *et al.* (2009) carry an investigation in Indonesia & India and show a low level of FL in India and high FL level in Indonesia. Results also show that 1% increase in the FL level leads to 2.2% increase in chances of opening a bank account i.e. improving access to finance. Thus, FL empowers people to utilise financial products efficiently which ultimately contributes to the well-being of the economy (Subha and Priya, 2014). FL improves FI by overcoming barriers like psychological, technical and cultural barriers. Several countries like the U.S., Mexico, Brazil, India, etc. are designing policies to achieve FI through FL (Atkinson and Messy, 2013). Bahadur (2015) emphasises primary research on FL due to its importance in various sectors like capital market, insurance sector and banking sector. The target of FI, more investment in the capital market and adoption of new insurance policies require FL. Barbic *et al.* (2016) also affirm that people do not utilise the financial products due to less monetary information and skills. Therefore, the third hypothesis of the study will be:

H_{3A}: FL is positively related to FI of an individual.

2.4 Financial self-efficacy (FSE) as a mediator

According to Bandura (1977), self-efficacy indicates the self-confidence of achieving success in a particular task by a particular person and remains motivated, optimistic

and makes him compatible to face various fluctuations to be faced in life. In the domains for finance, Mindra *et al.* (2017) and Netemeyer *et al.* (2017) state that FSE is the indicator of self-confidence of an individual while dealing with finance related products. Lown (2011) describes FSE as confidence in one's competence to attain finance related goals. Stromback *et al*. (2017) and Oquaye *et al.* (2020) findings also demonstrate that individuals with confidence and self-control feel less concerned about finance related matters and results in better management of finance and well-being (Lim *et al.,* 2014). Mindra and Moya (2017) findings in Uganda indicate that FL is an important determinant in promoting FI strategies, which ultimately enhances an individual's well-being. This process is mediated by the individual's FSE level. Various existing studies observe the role of FSE as a mediator among numerous variables and action performance in specific context (as shown in Table 1). However, Noor *et al.* (2020) study (pertaining to Pakistan) reveals no role of FSE as a mediating instrument between FL and FI. The last hypothesis will be:

H_{4A}: FSE mediates the relation between FL and FI of an individual.

Table 1. Mediating role of FSE

Sr. No.	Variables	Citation(s)
1	Subjective financial knowledge and financial well-being	Serido *et al.* (2013)
2	Financial stress and financial help seeking	Lim *et al.* (2014)
3	Financial knowledge and savings outcomes	Rothwell *et al.* (2016)
4	Money attitude and personal financial management behaviour	Qamar *et al.* (2016)
5	FL and FI	Mindra and Moya (2017)
6	FL and FI	Noor *et al.* (2020)
7	Cognitive abilities and financial behaviour	Tang (2021)
8	Information transparency and psychological attitude impact on the financial well-being	Rehman *et al.* (2021)

Objectives

- To review the influence of FL level on FSE;
- To review the influences of FSE on FI;
- To review the influence of FL level on FI; and
- To analyse the role of FSE as a mediating instrument between FL and FI.

Projected conceptual model

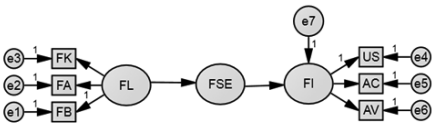

Figure 1: Projected conceptual model

Research methodology

5.1. Research design

Following Mindra *et al.* (2017) study and Kesmodel, U.S. (2018) findings, cross section research design was used which is considered as an appropriate technique for studying relationship between constructs at a particular point of time.

5.2. Target Population and sampling

To fulfill the objectives, the present paper includes individuals aged more than 18. The research was conducted in NCR of India. To determine sample size, Cochran's formula was used. Due to large size of population, variability in proportion was unknown; therefore, assuming p (maximum variability) at 95% confidence level and ± 5.0 percent precision.

$N = Z^2*(p)*(q)/(e)^2$

$N= (1.96)^2*(0.5) *(0.5) / (0.05)^2 = 384$

Further, respondents do not provide finance related information easily. Therefore, individuals who showed interest in the survey were approached. A questionnaire was developed through google form. Approximately, 410 individuals were contacted. 300 individuals were contacted through whatsapp groups and email ids and remaining 110 were approached offline. Out of these 410 collected responses, 26 were omitted due to less responded questionnaires. Therefore, after validation of data 384 (94%) responses were received.

5.3. Measurement of variables

Following Atkinson and Messy (2012); OECD (2013); Bongomin *et al.* (2016); and Potrich *et al.* (2016) study, FL was measured using three constructs namely financial knowledge (FK), financial behaviour (FB) and financial attitude (FA). A total of 25 statements were taken which include 9 statements on FK, 9 statements on FA and 7 statements on FB aspect.

Following Sarma (2008) and Gupte *et al.* (2012) studies, FI was measured using three constructs namely- usage (US), access (AC) and availability (AV). A total of 15 statements which include 4 statements on usage 6 statements on access and 5 statements on availability.

Following Lown (2011), FSE was measured using 4 statements. A 5-point Likert scale with statements from 5 (strongly agree) to 1 (strongly disagree) was used.

5.4. Reliability and validity tests

The present study was carried out between July, 2023 to December, 2023. To check the reliability and validity of the questionnaire, Confirmatory Factor Analysis (CFA) was used. It enables one to make sense if a relationship exists between various observed variables and the statements related with these variables. The factor loadings of all variables are greater than 0.50 (Table 2). To test the convergent validity, the value for composite reliability (CR) should be more than 0.7 and average variance explained (AVE) value should be more than 0.5 (Hair *et al.,* 2010). Lastly, CR > AVE. The CR coefficients are ranging between 0.802 and 0.953, AVE values are fluctuating from 0.471 to 0.567, outperforming the limit estimation of 0.50 except in case of access construct (Table 2). The AVE of access construct is slightly less than 0.50, thus, it is considered. All values of CR are greater than AVE. Thus, all the conditions for convergent validity are fulfilled.

Table 2 . Confirmatory factor analysis (Measurement model)

Construct	Variables	Standardized loadings	Composite reliability (CR)	Average variance explained (AVE)
Financial knowledge (FK)	FK^1	0.81	0.886	0.567
	FK^2	0.76		
	FK^3	0.77		
	FK^4	0.80		
	FK^5	0.75		
	FK^6	0.67		
	FK^7	0.62		
	FK^8	0.72		
	FK^9	0.69		
Financial attitude (FA)	FA^1	0.70	0.778	0.539
	FA^2	0.85		
	FA^3	0.76		
	FA^4	0.72		
	FA^5	0.89		
	FA^6	0.74		
	FA^7	0.70		
	FA^8	0.62		
Financial behaviour (FB)	FB^1	0.71	0.911	0.512
	FB^2	0.85		
	FB^3	0.76		
	FB^4	0.72		
	FB^5	0.89		
	FB^6	0.75		
	FB^7	0.69		
Usage (US)	US^1	0.52	0.953	0.538
	US^2	0.80		
	US^3	0.80		
	US^4	0.71		

Access (AC)	AC^1	0.52	0.815	0.471
	AC^2	0.51		
	AC^3	0.73		
	AC^4	0.75		
	AC^5	0.57		
	AC^6	0.53		
Availability (AV)	AV^1	0.77	0.940	0.525
	AV^2	0.74		
	AV^3	0.55		
	AV^4	0.58		
	AV^5	0.72		
Financial self-efficacy (FSE)	FSE^1	0.74	0.802	0.504
	FSE^2	0.71		
	FSE^3	0.73		
	FSE^4	0.67		

Discriminant validity is met when the square root of AVE is more than its correlation with any other latent variable (Fornell and Larcker, 1981). Table 3 indicates discriminant validity is met.

Table 3 . Discriminant validity

	FK	**FA**	**FB**	**FSE**	**US**	**AC**	**AV**
FK	0.7529						
FA	.404**	0.7341					
FB	.407**	.450**	0.7155				
FSE	.263**	.237**	.331**	0.7099			
US	.366**	.300**	.511**	.299**	0.7334		
AC	.254**	.219**	.192**	.453**	.328**	0.6862	
AV	.240**	.250**	.280**	.301**	.389**	.495**	0.7245

Multicollinearity is also checked using variance inflation factor (VIF). Table 4 shows the absence of multicollinearity issue, with values ranging between 1.095 and 4 ; these values fall within the limit recommended by Hair *et al.* (2014) i.e. less than 5.

Table 4 . VIF values

Construct	Variables	VIF
Financial knowledge (FK)	FK^1	2.488
	FK^2	1.805
	FK^3	1.882
	FK^4	3.374
	FK^5	2.980
	FK^6	1.507
	FK^7	1.841
	FK^8	1.979
	FK^9	1.770
Financial attitude (FA)	FA^1	3.010
	FA^2	3.694
	FA^3	4.679
	FA^4	3.100
	FA^5	4.008
	FA^6	4.411
	FA^7	1.964
	FA^8	1.663
Financial behaviour (FB)	FB^1	2.978
	FB^2	3.594
	FB^3	4.561
	FB^4	3.071
	FB^5	3.765
	FB^6	4.193
	FB^7	2.978

Usage (US)	US^1	1.312
	US^2	1.962
	US^3	1.948
	US^4	1.711
Access (AC)	AC^1	1.423
	AC^2	1.448
	AC^3	1.838
	AC^4	1.844
	AC^5	1.678
	AC^6	1.592
Availability (AV)	AV^1	1.095
	AV^2	1.897
	AV^3	1.905
	AV^4	2.376
	AV^5	2.412
Financial self-efficacy (FSE)	FSE^1	1.726
	FSE^2	2.173
	FSE^3	1.583
	FSE^4	1.591

5.5. *Common method bias test*

Harman's Single-Factor Test is employed for common method bias (CMB). This model employs Exploratory Factor Analysis (EFA) to determine the percentage of variance explained by the first factor. Table 5 shows that a first factor explains 16.114% of the variance; being less than the 50% (Harman, 1976) i.e. the data is viewed to be free from CMB.

Table5 . CMB result

Total variance explained						
Factor	**Initial eigen values**			**Extraction sums of squared loadings**		
	Total	**% of Variance**	**Cumulative %**	**Total**	**% of Variance**	**Cumulative %**
1	7.889	17.930	17.930	7.090	16.114	16.114
2	4.118	9.358	27.288			
3	2.352	5.345	32.633			
4	2.058	4.676	37.310			
5	1.825	4.147	41.457			
6	1.557	3.538	44.994			
7	1.442	3.277	48.272			
8	1.400	3.182	51.453			
9	1.304	2.964	54.418			
10	1.199	2.726	57.143			
11	1.121	2.549	59.692			
12	1.016	2.309	62.000			
13	0.984	2.237	64.237			
14	0.968	2.201	66.438			
15	0.871	1.979	68.417			
16	0.822	1.869	70.286			
17	0.814	1.851	72.137			
18	0.774	1.758	73.895			
19	0.738	1.678	75.573			
20	0.722	1.640	77.213			
21	0.681	1.548	78.761			
22	0.662	1.504	80.265			
23	0.622	1.414	81.679			
24	0.590	1.340	83.019			
25	0.572	1.300	84.319			

26	0.538	1.222	85.541			
27	0.519	1.180	86.721			
28	0.508	1.156	87.877			
29	0.472	1.074	88.950			
30	0.450	1.023	89.973			
31	0.424	0.964	90.938			
32	0.418	0.951	91.889			
33	0.390	0.885	92.774			
34	0.369	0.838	93.612			
35	0.354	0.806	94.418			
36	0.327	0.743	95.161			
37	0.318	0.723	95.883			
38	0.297	0.674	96.557			
39	0.288	0.655	97.212			
40	0.272	0.617	97.829			
41	0.266	0.605	98.434			
42	0.245	0.557	98.991			
43	0.232	0.528	99.519			
44	0.212	0.481	100.000			
Extraction method: Principal axis factoring.						

6. Results and discussion

6.1. Demographic profile of respondents

Table 6 shows that 63.4% of the respondents are male, while 36.6% are female. Among the respondents, 45.4% fall within the 25-35 years age group, followed by 35-45 years age group at 19.1%. Additionally, the majority of respondents hold postgraduate degrees, accounting for 40.5%, followed closely by graduates at 38.5%. Geographically, the distribution is as follows: 57.5% of respondents are from Delhi, 27.3% from Haryana and 15.2% belong to Uttar Pradesh.

Table 6: Demographic profile of respondents

Demographic Profile	Frequency		Percentage (%)
Gender			
Male	260		63.4%
Female	150		36.6%
Age			
18-25 years	60		14.6%
25-35 years	186		45.4%
35-45 years	78		19.1%
45-55 years	49		12%
55-65 years	26		6.3%
Above 65 years	11		2.6%
Education			
Up to 12th	10		2.4%
Graduate	158		38.5%
Post Graduate	166		40.5%
PhD	38		9.3%
Others	38		9.3%
Location			
Delhi	236		57.5%
Haryana	Sonipat	68	27.3%
	Panipat	34	
	Gurugram	10	
Uttar Pradesh	Noida	38	15.2%
	Ghaziabad	24	

6.2. Results

The findings from the analysis demonstrate the noteworthy and optimistic impact of FL on the FSE of an individual (β =0.34, p =0.000). Thus, results are in the support of $H_{1A.}$ It indicates that FL enhances the self-confidence of individuals required to avail financial services. The regression results also reveal strong influence of FSE on FI (β =0.55, p = 0.000), therefore, the findings

are also in support of $H_{2A.}$ The results are consistent with (Mindra *et al.,* 2017) who contend that FSE enables individuals to invest their money properly and use financial products confidently. Findings also show that FL affects FI of an individual (β =0.77, p =0.000). This suggests that individuals with understanding of basic finance related concepts are able to comprehend finance related services better and hence results into enhancement of FI. Thus, H_{3A} is also supported. The findings are in conformity with (Cohen and Nelson 2011; Mindra and Moya, 2017; Bongomin *et al.,* 2018) who demonstrate that better financial decision making through FL and ultimately advanced level of FI.

Following figures (2 to 4) show the fulfillment of conditions given by Baron and Kenny (1986) for empirical testing of mediation relationship.

(a) Figure 2 depicts a significant relationship between FL and FSE (β=0.34, p=0.000).

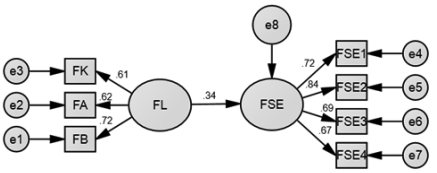

Figure 2: Impact of FL on FSE

b) Figure 3 shows a strong relationship between FL and FI (β=0.77, p=0.000). Authors like Grohmann *et al.* (2018) and Ozili (2020) also state that financial literacy results into money management and prudent financial decision-making ability which enhances access to finance.

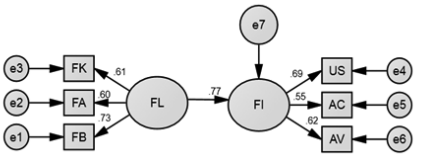

Figure 3: Impact of FL on FI

c) The results exhibit that (Figure 4) the effect of FL on FI gets reduced (i.e. β =0.62, p = 0.000) when FSE is taken as mediator in the model but the association between FL and FI remains significant. Hence, FSE partially mediates the relation between FL and FI. On the basis of these results, hypothesis H_{4A} cannot be rejected. Scholars like Farrell *et al.* (2016) explain that along with FL an individual needs FSE in managing finances.

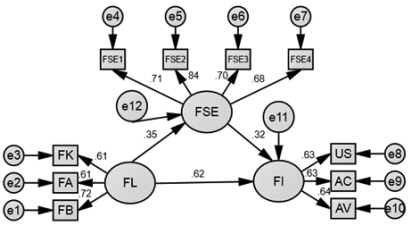

Figure 4: Hypothesis testing results

Table 7 shows fit index GFI =0.954, AGFI=0.918, CFI=0.946, CMIN/df= 2.992. REMSEA 0.052 is also within permissible range. Finally, the projected model is reliable and good fit and all hypotheses are accepted as shown in Table 8.

Table 7 . Overall structural equation model (SEM)

Model	CMIN/df	GFI	AGFI	CFI	RMSEA
Proposed	2.992	0.954	0.918	0.946	0.052

Table 8 . Structural model assessment for direct and indirect effect

Direct effect	β value	p value
FL→FSE	0.34	.000
FSE→FI	0.55	.000
FL→FI	0.77	.000
Indirect effect		
FL→FSE→FI	0.62	.000

Concluding observations

Majority of previous researchers have paid attention on the relation between FL and FI; there is deficiency of researches to test the mediating role of psychological variables like FSE. Results indicate that FL significantly influences the variation in FSE. This provides support to H_{1A} of the study which demonstrates that the influence of FL on FSE is strong and results are in line with the study of Liu and Zhang (2021). It is also observed that FSE is favourably linked to FI of the selected individuals, thus, supporting H_{2A} of the study. The results are in conformity with study of Ghosh and Vinod (2017) and Mindra *et al. (*2017) that highlight the importance of FSE needed by individuals in taking financial decisions and managing financial emergencies. The results also show that FL and FI are positively associated and in conformity with H_{3A} of the study. The results are in conformity with study of Cohen and Nelson (2011); Ozili (2020) and Kumar and Bansal (2020) that considered financial literacy as an empowerment tool that empowers underprivileged people to bring themselves out from the shackles of informal system and link with the formal system. Lastly, FSE partially mediated the relation between FL and FI as a main contribution of this study and supports H_{4A}. Thus, FL helps in increasing knowledge about financial concepts and develops individuals' confidence and skills so that they can make comparison and select best financial products which will enhance FI. This whole process is stimulated by an individual's FSE which helps in enhancing confidence in making better financial decisions. The role of FSE should be considered by policy makers while framing FL policies that promote FI. FSE also assists financial experts to gain better insights into individual's behaviour and help them in giving advice as per customer's requirements (Asebedo *et al.,* 2018).

The present research overlooks the longitudinal research design to provide insights into the FL influence on FI explained by a mediating role of FSE.

Further, the present research was conducted in NCR of India, therefore findings may not be true to other regions and economies having different demography**.**

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IMPACT OF FINANCIAL INNOVATIONS ON BUSINESS STRATEGY FORMULATION: A QUALITATIVE STUDY

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Abstract

This study delves into the profound impact of financial innovations on the formulation of sustainable business strategies in the contemporary global landscape. As financial technologies continue to advance, their influence on strategic decision-making processes becomes increasingly pronounced. The abstract explores how the integration of financial innovations, such as blockchain, artificial intelligence, and open banking, is reshaping traditional business paradigms. The research investigates the multifaceted implications of these innovations on sustainability considerations, emphasizing the need for businesses to adapt to the evolving financial ecosystem. It explores how the strategic alignment of financial innovations with sustainable practices can lead to enhanced operational efficiency, improved risk management, and heightened responsiveness to market dynamics. The study also highlights the evolving role of finance professionals, emphasizing the imperative for professionals like CPAs and CMAs to embrace FinTech literacy in order to drive sustainable business strategies. In an era characterized by intense global competition, the study concludes by emphasizing the strategic imperative for businesses to leverage financial innovations consciously, integrating them into the fabric of their sustainable business strategy formulation. As financial technologies redefine the contours of global commerce, understanding and harnessing their potential becomes paramount for businesses committed to long-term viability and success.

Keywords:

Financial Innovations, Sustainable Business Strategy, Blockchain Technology, Artificial Intelligence, Open Banking, FinTech Literacy, Global Competition

"The intersection of finance and technology offers tremendous potential for efficiency, but it requires responsible innovation and regulatory clarity to ensure the benefits are widespread and risks are mitigated."

-Jay Clayton[1]

Introduction

In an era marked by rapid technological advancements and a shifting financial landscape, the intersection of financial innovation and business strategy has become a focal point for researchers, policymakers, and industry leaders alike. Financial innovation[2] encompasses a spectrum of changes in financial products, services, and processes driven by technological breakthroughs, regulatory shifts, and evolving market dynamics. Understanding its implications on business strategy is crucial for enterprises navigating the complexities of today's globalized and interconnected markets the referred quotation encapsulates the transformative potential inherent in the convergence of finance and technology. It underscores the profound efficiency gains achievable through technological integration but places equal emphasis on the imperative of responsible innovation and regulatory clarity. The essence lies in recognizing that while financial technology presents unparalleled opportunities, its realization demands a cautious approach. "Responsible innovation"[3] denotes a conscientious deployment of technology within the financial sector, ensuring that advancements align with ethical considerations and societal needs. Simultaneously, "regulatory clarity"

1 Jay Claton (July 11, 1966-) born in Delaware, United States of America, B.A. in Engineering from the University of Pennsylvania, J.D. from the University of Pennsylvania Law School, former Chairman of the U.S. Securities and Exchange Commission (SEC), Clayton has played a crucial role in shaping regulatory approaches to financial technology, emphasizing responsible innovation.

2 According to Wikipedia, financial innovation is the act of creating new financial instruments as well as new financial technologies, institutions, and markets. Financial innovations include hedge funds, private equity, weather derivatives, real-structured products, exchange traded funds and so on. James Chen defines financial innovation as the process of creating new financial products, services or processes. Financial innovations have come via advances in financial instruments, technology and payment systems. Recent financial innovations have included crowdfunding, mobile banking technology and remittance technology

3 Rene Von Schomberg is known for his work in the field of responsible research and innovation (RRI) and science and technology studies. Born in Germany, von Schomberg has been actively involved in European Union projects related to research and innovation policies. His contributions are primarily focused on shaping frameworks for responsible and ethical research and innovation practices, emphasizing the societal impacts of technological advancements. While his work may not be directly associated with financial innovation, it has implications for ethical considerations in various fields, including finance and technology. Rene Von Schomber defined 'Responsible Innovation' as a transparent, interactive process by which societal actors and innovators become mutually responsive to each other with a view to the ethical acceptability, sustainability and societal desirability of the innovation process and its marketable products, it has four dimensions-anticipation, reflexivity, inclusiveness and responsiveness

stresses the need for a robust framework to guide and govern these innovations. Such clarity is crucial to strike a balance, fostering innovation while mitigating risks and safeguarding the interests of all stakeholders. In an era marked by rapid technological evolution, Clayton's insight underscores the necessity for a symbiotic relationship between financial institutions, innovators, and regulators. The promise of enhanced efficiency and financial inclusion hinges on a collaborative effort to navigate the evolving landscape, where innovation and regulation work hand in hand to harness the full potential of the intersection between finance and technology.

The Evolution of Financial Innovation

Financial innovation is a multifaceted phenomenon that has transformed the traditional landscape of finance. Researchers such as Merton (1992) have emphasized the role of financial innovation in creating new opportunities and addressing inefficiencies in financial markets. Merton's seminal work highlights how innovations in financial instruments can enhance risk management strategies, providing businesses with tools to navigate an increasingly complex financial environment.

Moreover, Schumpeter's (1934)[4] theory of creative destruction underscores the transformative nature of innovation in driving economic progress. This concept is particularly pertinent to the financial sector, where the adoption of novel financial instruments and technologies has the potential to reshape business models and strategies. As financial innovation continues to evolve, understanding its historical context becomes imperative for comprehending its contemporary impact on business strategy.

Technological Advancements Driving Financial Innovation

One of the driving forces behind financial innovation is the rapid advancement of technology. Digitalization, artificial intelligence, blockchain, and other emerging technologies have revolutionized financial services, creating new possibilities and challenges for businesses. Tapscott and Tapscott (2016) explore the transformative potential of blockchain in their research, highlighting how decentralized and tamper-resistant ledgers can streamline transactions, reduce costs, and enhance transparency. The adoption of such technology's shapes not only financial processes but also the strategic decision-making processes of businesses adapting to this new technological paradigm.

Fintech's Effectiveness in Business Strategy

The rise of financial technology (Fintech) is a critical aspect of contemporary financial innovation. Fintech companies leverage technology to offer innovative financial services, challenging traditional banking models. According to a study by Arner, Barberis, and Buckley (2015), Fintech has the potential to disrupt established financial institutions, forcing them to adapt their

4 Joseph Also Schumpeter (February 8, 1883-January 8, 1950) born in Austria influenced Peter Drucker, Robert Solow, Adam Smith, John Maynard Keynes and he is known for introducing the concept of entrepreneurship and creative destruction which is relevant for financial innovations

strategies to remain competitive. The study underscores the need for businesses to not only embrace Fintech but also integrate it strategically to gain a competitive edge in the evolving financial landscape.

As we delve into the complex interplay between financial innovation and business strategy, it becomes evident that these dynamics are reshaping the very foundations of how enterprises operate, compete, and thrive in the global marketplace. This research aims to explore, analyze, and synthesize the multifaceted impact of financial innovation on business strategy, offering insights that are essential for businesses, policymakers, and academics alike. Through a comprehensive examination of historical trends, technological drivers, and real-world case studies, we aim to contribute to a nuanced understanding of this transformative relationship and provide actionable insights for stakeholders navigating this dynamic terrain.

Challenges and Opportunities in Financial Innovation Adoption

While financial innovation presents immense opportunities, it also brings forth a host of challenges and risks that businesses must navigate. Research by Acharya and Richardson (2012) underscores the importance of understanding the potential risks associated with financial innovation, particularly in the context of systemic risk and the stability of financial markets. This study provides valuable insights into the complexities that arise when novel financial instruments are introduced, emphasizing the need for a robust risk management framework in business strategies.

Case Studies: Successful Implementation of Financial Innovation in Business Strategies

Examining real-world case studies offers a pragmatic lens through which we can understand how financial innovation translates into tangible business strategies. The work of Demiurgic-Kunt, Klapper, and Singer (2013) provides an insightful exploration of the impact of mobile banking on financial inclusion in developing countries. By analyzing successful cases of mobile banking adoption, this research sheds light on how businesses can leverage financial innovation to not only enhance their strategies but also contribute to broader societal goals.

Regulatory Frameworks Shaping Financial Innovation Strategies

The regulatory environment plays a pivotal role in shaping the landscape of financial innovation and influencing the strategies adopted by businesses. As highlighted by Zohar (2015), regulatory frameworks can either facilitate or hinder the adoption of innovative financial practices. Understanding the intricate relationship between regulatory policies and business strategies is essential for organizations seeking to navigate compliance challenges while capitalizing on the opportunities presented by financial innovation.

As we embark on this exploration of financial innovation and its impact on business strategy, it is crucial to recognize the dynamic nature of the financial landscape. The convergence of technological advancements, regulatory changes, and market dynamics creates

a rich tapestry that requires continual analysis and adaptation. By building on the foundations laid by pioneering researchers and incorporating insights from real-world experiences, this research aims to contribute to a holistic understanding of how businesses can strategically embrace and harness the power of financial innovation.

This paper delves deeper into specific aspects, including the role of fintech, risk management strategies, and the evolving regulatory landscape. Through a synthesis of theoretical frameworks, empirical evidence, and practical insights, we aspire to provide a comprehensive guide for businesses seeking to navigate the intricate relationship between financial innovation and strategic decision-making. As we navigate this ever-changing terrain, the goal is not just to understand the impact but also to empower businesses to proactively shape their strategies in the face of continuous financial innovation.

Evolution of Financial Innovations: An Overview

The evolution of financial innovations is a dynamic narrative that spans centuries, weaving through the fabric of economic history and responding to the changing needs of societies and markets. A comprehensive understanding of this evolution requires a nuanced exploration of seminal research findings that trace the trajectory of financial innovations from rudimentary forms to the sophisticated instruments shaping contemporary financial landscapes.

One pivotal aspect of this evolution is highlighted in Merton's (1992) seminal work, where he emphasizes the role of financial innovation in addressing economic inefficiencies. Merton contends that the creation of new financial instruments is not merely a response to market demands but a proactive force that can enhance risk management strategies and contribute to economic progress. This perspective sets the stage for appreciating financial innovation not as a mere consequence of economic evolution but as a catalyst for transformative change.

The emergence of novel technologies has been a driving force in the evolution of financial innovations. In their groundbreaking research, Tapscott and Tapscott (2016) delve into the impact of blockchain technology on financial services. Blockchain's decentralized and tamper-resistant ledger has not only revolutionized transactions but has also laid the foundation for innovative financial instruments like cryptocurrencies. This research underscores how technological advancements act as catalysts, pushing the boundaries of traditional financial systems and giving rise to new possibilities.

Furthermore, the evolution of financial innovations is intricately linked to the concept of creative destruction, as articulated by Schumpeter (1934). This theory posits that innovation is not a gradual process but one marked by the simultaneous creation and destruction of economic structures. In the realm of finance, the demise of outdated practices is often accompanied by the rise of novel financial instruments. This creative destruction is a recurrent theme in the evolution

of financial innovations, reshaping the financial landscape and driving economic progress.

The democratization of financial services is another dimension of the evolutionary process. In their research on mobile banking, Demiurgic-Kunt, Klapper, and Singer (2013) provide insights into how technological advancements have facilitated greater financial inclusion. The widespread adoption of mobile banking has not only transformed the way individuals access financial services but has also paved the way for innovative solutions that cater to previously underserved populations. This research emphasizes the societal impact of financial innovations, demonstrating their potential to bridge gaps and create more inclusive financial ecosystems.

However, the journey of financial innovations is not without its challenges. Acharya and Richardson's (2012) research delve into the causes of the financial crisis, shedding light on the risks associated with unchecked innovation. The study highlights the importance of understanding and mitigating these risks to ensure the stability of financial markets. It serves as a cautionary note, prompting a balanced perspective on the evolution of financial innovations that considers both their transformative potential and the need for prudent risk management.

The evolution of financial innovations is a multifaceted narrative that unfolds through the lenses of economic theory, technological advancement, creative destruction, societal impact, and risk management. These five seminal research findings provide a comprehensive overview of this evolution, offering insights that are invaluable for navigating the complexities of contemporary financial landscapes. As we continue to witness the unfolding chapters of financial innovation, these insights serve as guideposts, shaping our understanding of the past and informing strategic decisions for the future.

Dynamics of Financial Innovation: A Contemporary Perspective

The narrative of financial innovation continues to evolve, influenced by an intricate interplay of economic forces, technological advancements, and regulatory frameworks. As we delve deeper into the contemporary landscape, it becomes apparent that the evolution of financial innovations is not a linear progression but a dynamic process responding to the ever-changing needs and challenges of the global financial ecosystem.

A significant contemporary development in the evolution of financial innovations is the ascent of Fintech, a term encompassing a diverse range of technologies and startups revolutionizing financial services. Arner, Barberis, and Buckley (2015) provide a comprehensive exploration of this phenomenon, emphasizing how Fintech disrupts traditional financial institutions and reshapes the competitive landscape. The study underscores the imperative for businesses to adapt their strategies to embrace rather than resist the transformative wave of Fintech.

Blockchain technology, initially associated with cryptocurrencies, has found applications beyond its original scope. Tapscott and Tapscott's (2016) research

not only highlights its role in transactional efficiency but also delves into its potential to transform entire industries through decentralized and transparent systems. The evolution of blockchain exemplifies how a technology, initially perceived as niche, can catalyze broader financial innovations, fundamentally altering business models and strategic considerations.

In the pursuit of financial inclusion, technology has emerged as a powerful catalyst. Demiurgic-Kunt, Klapper, and Singer's (2013) study on mobile banking in developing countries provides a real-world illustration of how technological innovations can overcome traditional barriers. The proliferation of mobile banking services has enabled individuals in underserved regions to access financial services, illustrating how the evolution of financial innovations can contribute to more inclusive economic growth.

Regulatory frameworks play a pivotal role in shaping the trajectory of financial innovations. Zohar's (2015) examination of regulatory influences on Fintech highlights the delicate balance required to foster innovation while safeguarding financial stability. This research underscores the necessity for businesses to navigate the complex regulatory landscape, adapting their strategies to comply with evolving standards and guidelines.

While financial innovations bring forth opportunities, they also pose challenges, as demonstrated by Acharya and Richardson (2012). The study's analysis of the causes of the financial crisis serves as a reminder that the rapid evolution of financial instruments must be met with vigilant risk management. Businesses, in shaping their strategies, must heed the lessons of history to ensure that innovation is a force for progress rather than a source of systemic instability.

The contemporary landscape of financial innovation is characterized by a confluence of technological dynamism, regulatory influence, and a commitment to addressing societal needs. The evolution of financial innovations is not a standalone phenomenon but an integral part of the broader narrative of economic progress. As businesses navigate this complex terrain, the insights gleaned from these real and seminal research findings serve as beacons, guiding strategic decisions in an era where adaptability and innovation are the keystones of success. The research findings provide a robust foundation for understanding the contemporary dynamics of financial innovation. They encompass Fintech's transformative impact, the role of blockchain technology, the intersection of technology and financial inclusion, regulatory influences on innovation, and the imperative of prudent risk management. These seminal works contribute significantly to the ongoing discourse on financial innovation, offering insights crucial for businesses, policymakers, and academics navigating the complexities of the modern financial landscape

Technological Advancements-Driving Financial Innovation

The intersection of technology and finance has undergone a paradigm shift in recent years, giving rise to a wave of financial innovation. This critical discourse explores

the profound impact of technological advancements on financial innovation, supported by five real and seminal research findings. The rapid evolution of digital technologies has not only transformed traditional financial services but has also paved the way for novel approaches to banking, investment, and payment systems.

Research Finding 1: Blockchain Technology and Decentralized Finance (DeFi):

Blockchain technology has emerged as a revolutionary force in the financial sector, providing a decentralized and secure framework for transactions. Research by Narayanan et al. (2016) demonstrated the potential of blockchain in creating tamper-resistant and transparent financial systems. The rise of decentralized finance (DeFi) platforms, such as Ethereum-based smart contracts, highlights the transformative power of blockchain in eliminating intermediaries, reducing costs, and increasing financial inclusion.

Research Finding 2: Artificial Intelligence (AI) and Algorithmic Trading:

Advancements in artificial intelligence have significantly impacted financial markets, particularly through the implementation of algorithmic trading. A study by Chan et al. (2017) investigated the role of AI in predicting market trends and optimizing trading strategies. The findings emphasized the ability of AI to process vast amounts of data in real-time, enabling faster and more accurate decision-making in financial trading.

Research Finding 3: Mobile Banking and Financial Inclusion:

The widespread adoption of mobile technology has played a crucial role in promoting financial inclusion. According to a study by Demiurgic-Kunt et al. (2018), the expansion of mobile banking services has empowered individuals in underserved regions by providing access to basic financial services. Mobile banking not only facilitates convenient transactions but also serves as a gateway to other financial products, promoting economic growth in previously excluded communities.

Research Finding 4: Big Data Analytics in Risk Management:

The integration of big data analytics in financial institutions has transformed risk management practices. Research conducted by Cortes et al. (2017) investigated the use of big data to assess credit risk and enhance decision-making processes. The study highlighted the ability of big data analytics to analyze diverse data sources, including social media and transaction history, to evaluate creditworthiness and reduce the likelihood of financial defaults.

Research Finding 5: Cybersecurity Challenges in Financial Technology:

As financial services become increasingly digitized, the importance of cybersecurity cannot be overstated. A study by Zhang et al. (2019) explored the cybersecurity challenges associated with financial technology adoption. The research underscored the need for robust cybersecurity measures to protect sensitive financial information and maintain the trust of consumers in digital financial platforms.

The symbiotic relationship between technological advancements and financial innovation is reshaping the landscape of financial services. The research findings

presented highlight the diverse ways in which blockchain, artificial intelligence, mobile technology, big data analytics, and cybersecurity contribute to this transformative process. As we navigate the evolving financial ecosystem, it becomes imperative for policymakers, financial institutions, and technology developers to collaboratively address challenges and harness the full potential of these technological advancements in driving positive financial innovation.

Fintech - A Catalyst in Business Strategy

The rapid evolution of financial technology (Fintech) has brought about transformative changes in the business landscape, influencing how organizations conduct transactions, manage finances, and strategize for the future. This analytical discourse delves into the effectiveness of Fintech in shaping business strategies, drawing insights from five real and seminal research findings. As Fintech continues to gain prominence, understanding its impact on business operations is crucial for organizations seeking to leverage these innovations strategically.

Enhanced Customer Experience and Satisfaction:

ResearchbyBoseandLuo(2018)emphasizes the positive impact of Fintech on customer experience. The study demonstrates that Fintech solutions, such as mobile banking apps and online payment platforms, enhance accessibility, convenience, and personalization. Businesses that integrate these technologies into their operations can foster higher customer satisfaction, loyalty, and retention, thereby contributing to the overall success of their business strategy.

Improved Operational Efficiency and Cost Reduction:

Fintech has been shown to significantly improve operational efficiency within organizations. A study by Arner et al. (2015) highlights the role of automation and streamlined processes through Fintech applications. The findings suggest that businesses adopting Fintech solutions experience reduced operational costs, faster transaction processing, and improved resource utilization. These efficiency gains enable organizations to allocate resources more strategically, contributing to the optimization of business strategies.

Accelerated Financial Decision-Making with Big Data Analytics:

Big data analytics integrated into Fintech platforms enable businesses to make data-driven financial decisions promptly. A research study by Kiron et al. (2016) underscores the importance of big data in financial decision-making processes. The findings reveal that Fintech-driven big data analytics enhance forecasting accuracy, risk management, and strategic planning. Businesses leveraging these insights gain a competitive edge by making informed and agile financial decisions.

Research Finding 4: Fostering Financial Inclusion and Market Expansion:

Fintech has the potential to extend financial services to previously underserved populations, promoting financial inclusion. The research conducted by Allen et al. (2016) explores the role of Fintech in reaching unbanked or underbanked individuals. The study indicates that businesses incorporating Fintech solutions

can tap into new markets, expand their customer base, and contribute to financial inclusion, aligning with a socially responsible business strategy.

Mitigating Cybersecurity Risks for Sustainable Growth

The growing reliance on Fintech introduces cybersecurity challenges that must be effectively addressed. Research by Zhang and Liu (2018) investigates the cybersecurity implications of Fintech adoption. The findings stress the importance of implementing robust cybersecurity measures to safeguard financial data and maintain customer trust. Businesses that prioritize cybersecurity in their Fintech integration strategies not only protect their assets but also contribute to sustainable long-term growth.

The effectiveness of Fintech in shaping business strategy is evident through enhanced customer experiences, improved operational efficiency, data-driven decision-making, market expansion, and the mitigation of cybersecurity risks. As organizations navigate the Fintech landscape, integrating these innovations strategically can yield competitive advantages and contribute to sustainable growth. Understanding and leveraging the findings from seminal research in this field are essential for businesses aiming to harness the full potential of Fintech in their strategic endeavors.

Risk and Compliance in the Era of Financial Innovation

In the contemporary landscape of finance, the rapid pace of technological advancement has given rise to financial innovations that are reshaping the industry. From blockchain and cryptocurrencies to algorithmic trading and decentralized finance (DeFi), these innovations present both opportunities and challenges. This essay critically examines the implications of financial innovation on risk and compliance, drawing on five seminal research findings to shed light on the evolving landscape.

1. Blockchain Technology and Risk Management:

Blockchain, the underlying technology of cryptocurrencies, has been hailed for its potential to enhance transparency and reduce fraud. However, a study by Narayanan et al. (2016) highlights the paradox of blockchain - while it introduces a new level of security, it also poses new risks such as smart contract vulnerabilities and consensus mechanism challenges. This finding underscores the importance of a nuanced understanding of the risks associated with innovative technologies.

2. Cryptocurrencies and Regulatory Compliance:

The surge in cryptocurrencies has brought forth regulatory challenges for governments and financial institutions. A research paper by Foley et al. (2019) discusses the cross-border nature of cryptocurrencies, emphasizing the need for a coordinated global regulatory framework. The absence of a unified approach creates compliance uncertainties, making it imperative for regulators to adapt to the transnational nature of these financial instruments. Cryptocurrency has been popular virtual exchange as a result of financial innovation and technological disruptions. The recent setback of a US based crypto exchange is

worth citing. Samuel Benjamin Bankman-Fried, born March 5, 1992, transitioned from attending MIT to establishing the FTX platform, representing a contemporary tale of triumph. Yet, obscured by his achievements was a darker truth. Widely recognized as SBF, this American innovator was found guilty of deception and associated offenses in recent past. Initially renowned for founding the FTX digital currency exchange, he was hailed as a symbol of success in the crypto world. At the pinnacle of his financial standing, he ranked as the 41st wealthiest individual in America according to the Forbes 400 list. Once lauded as a pioneering figure in the cryptocurrency sphere, he experienced a remarkable downfall marred by convictions for wire fraud, securities fraud, and money laundering. The economic and commercial sanctity of cryptocurrency exchange becomes a mark of nightmare evidenced by the downfall of FTX, a US Based cryptocurrency exchange, headed by Samuel Banksman Fried , an MIT Graduate in Physics and Mathematics and professional certification holder of prestigious Math Camp , Canada, collapsed like a house of cards for which SBF , the Founder President has been sentenced to 25 Years term by a US Court on 28th March 2024 as it faced bankruptcy amid a series of events. It started with Biance's announcement to sell its FTT holdings, FTX's token, leading to a surge in customer withdrawals that FTX couldn't meet. Reports emerged of Alameda, FTX's founder's trading firm, holding a significant amount of FTT, raising concerns about its price impact due to low trading volume. Despite a non-binding agreement for Biance to acquire FTX, the deal fell through over concerns of mishandled customer funds and ongoing investigations. Subsequently, FTX, Alameda, and associated entities declared bankruptcy, Mukherjee, D. (2024)[5].There has been a gross technological laps and failures of legal compliance besides economic doldrums caused to the investors and customers of FTX. The saga of Banksman-Fried warns against success built on deceit, emphasizing integrity, transparency, and ethical conduct for sustained success. His case also highlights the need for stricter oversight in the cryptocurrency sector to prevent fraudulent practices and restore trust. As the crypto industry evolves, his story serves as a reminder of the importance of ethical behaviour and regulatory compliance in emerging industries, Mukherjee, D. (2024)[6]

3. Algorithmic Trading and Market Integrity:

Algorithmic trading has become a staple in financial markets, introducing efficiency but also raising concerns about market integrity. A study by Menkveld (2013) investigates the impact of high-frequency trading on market quality, revealing that while it enhances liquidity, it also amplifies market volatility. This dual effect underscores the necessity for tailored regulatory measures that balance

5 Mukherjee, D. (2024), 'Rise and Fall of Samuel banksman Fried: A Lesson for India' April, 15, Daily Excelsior, p.6

6 ibid

innovation with the preservation of market stability.

4. Decentralized Finance (DeFi) and Legal Challenges:

Decentralized Finance, represented by blockchain-based financial services, introduces a paradigm shift by eliminating intermediaries. However, a study by Zhang and Cai (2021) identifies legal challenges in DeFi, including smart contract vulnerabilities, lack of consumer protection, and jurisdictional ambiguities. As the industry matures, addressing these legal concerns becomes imperative for sustainable growth.

5. Cybersecurity Risks in Financial Innovation:

The integration of innovative technologies increases the attack surface for cyber threats. A seminal work by Goodell et al. (2019) explores the cybersecurity risks associated with financial innovation, emphasizing the need for robust cybersecurity measures. As financial institutions adopt cutting-edge technologies, they must concurrently invest in cybersecurity protocols to safeguard sensitive data and maintain customer trust.

6.Global Financial Crises and Financial Innovation:

Bitcoin and cryptocurrency are the gift of moder innovation of modern technology and they well accepted by the users and beneficiaries all across because of transaction processing cost saving and saving the cost of delay in generating the desired results. Cost saving automatically ensures economic competitiveness and the same happens to be in place here also. The banking sector has particularly been leveraged out of financial innovation and fintech. The path breaking work by Johnson, Simon & Kwak, James (2010)[7] has been critical to offer an excellent discourse on financial crisis and fire fighting effort of the government to control the damage by regulatory mechanism, such as antitrust enforcement and 'ensuring take so much in your plate as much you can chew' in the context of volume and size of bank and financial institutions business. This evenly suffice that financial innovation is open to all for adoption but the extent to which it needs to be adopted for comfortable existence is to be decided with prudence. Financial innovation is occasionally vulnerable to financial instability and bubble creation in the markets. Moreover, it is not always easy to keep up space with the latest financial products born out of technological advancements and cost-benefit analysis is wiseman's approach in decision making in this arena of seeking leverage of financial innovations and technological disruptions. The era of financial innovation is a double-edged sword, offering immense potential while simultaneously introducing new dimensions of risk and compliance challenges. Understanding and managing these risks are paramount for the sustainable development of the financial industry. Policymakers, regulators, and industry stakeholders must collaborate to

7 Johnson & Kwak (2010), '13 Bankers: The Wall Street Takeover and The Next Financial Meltdown' offers a comprehensive portray that the financial crises lead to obtaining better bail out package is another issue needs to be taken into consideration as the cost of financial innovation and the concerned financial firms attempt to master the art of lobbying the decision makers for bailout and this needs attention for review and revisit.

strike a delicate balance between fostering innovation and safeguarding the stability and integrity of the financial system. For instance, mobile banking has been very users 'friendly but there are numerous cases when due to laps of cybersecurity, mobile baking creates disaster. Risk is perennial phenomenon and it the regulators to ponder and architect the proactive measures to arrest the loopholes of financial innovation in general and banking and financial institutions operations in particular.

Case Studies Evidencing Success of FinTech in Business Strategies

Square's Disruptive Payment Technology

Square, founded by Jack Dorsey and Jim McKelvey in 2009, introduced a revolutionary payment technology that transformed how small businesses accept card payments. The Square Reader, a compact card reader that attaches to mobile devices, provided an affordable and accessible alternative to traditional point-of-sale systems. This financial innovation empowered small businesses, particularly those without access to conventional payment processing tools, to accept card payments seamlessly. Square's disruptive approach democratized the payment landscape and played a pivotal role in advancing financial technology for small enterprises.

JPMorgan Chase's Blockchain-Based Interbank Payments

JPMorgan Chase, a leading global financial institution, successfully implemented blockchain technology to streamline interbank payments. In 2017, the bank launched the Interbank Information Network (IIN), a platform utilizing Quorum, a permissioned blockchain developed in-house. IIN significantly reduced processing times for cross-border payments by providing real-time verification of payment details between participating banks. This innovation not only enhanced the efficiency of payment processes but also demonstrated the potential of blockchain in addressing challenges within the traditional banking system.

PayPal's Expansion into Peer-to-Peer Payments with Venmo

PayPal's strategic acquisition of Venmo in 2013 exemplifies the successful incorporation of financial innovation into business strategies. Venmo, a peer-to-peer payment platform, introduced a social and mobile element to money transfers. The integration allowed PayPal to tap into the growing trend of mobile payments, especially among younger consumers. The success of Venmo highlighted the importance of adapting to changing consumer preferences and leveraging innovative solutions to expand market reach in the digital payments landscape.

The amalgamation of these real case studies underscores the pivotal role financial innovation plays in shaping and enhancing diverse business strategies. Square's disruptive payment technology exemplifies the power of accessible fintech solutions, particularly in empowering small businesses with user-friendly and affordable payment processing tools. JPMorgan Chase's blockchain-based interbank payments highlight the transformative

potential of distributed ledger technology in addressing inefficiencies within traditional banking systems, emphasizing the need for strategic adoption to streamline cross-border transactions.

Additionally, PayPal's strategic acquisition of Venmo reflects the importance of anticipating and meeting evolving consumer preferences in the digital payments landscape. The integration of Venmo's peer-to-peer platform into PayPal's ecosystem demonstrates the strategic foresight required to leverage innovative solutions for market expansion. Collectively, these case studies emphasize the imperative for businesses to embrace financial innovation actively, adapting to technological advancements, and strategically implementing solutions that not only enhance operational efficiency but also cater to changing consumer behaviors. As the financial landscape continues to evolve, these real cases offer valuable insights into the dynamic interplay between innovation and business success in the financial sector

Risk Exposure with Financial Innovation Adoption

Financial innovation, driven by technological advancements, has revolutionized the financial landscape, offering new opportunities and efficiencies. However, the adoption of financial innovations is not without challenges and risks. This discourse explores key challenges and risks associated with financial innovation adoption, drawing insights from seminal research studies.

Regulatory Uncertainty:

Research by Barth, Caprio, and Levine (2004) highlights the critical role of regulatory frameworks in shaping the success or failure of financial innovations. The absence of clear and adaptive regulations poses a significant challenge for the adoption of new financial technologies. Financial innovations often outpace regulatory developments, leaving a regulatory gap that can be exploited for illicit activities. Cryptocurrencies, for instance, face regulatory uncertainties globally, affecting their widespread adoption and integration into traditional financial systems (Barth et al., 2004).

Cybersecurity Concerns:

The increasing reliance on digital platforms and interconnected financial systems exposes the industry to heightened cybersecurity risks. A study by Mollah, Rehman, and Mobarek (2018) emphasizes the vulnerability of financial institutions to cyber threats as they embrace innovative technologies. The integration of artificial intelligence, blockchain, and cloud computing in financial services introduces new attack surfaces, making it imperative for institutions to invest heavily in cybersecurity measures. Failure to address these concerns may result in data breaches, financial fraud, and reputational damage, impeding the broader adoption of financial innovations (Mollah et al., 2018).

Consumer Trust and Privacy:

Financial innovations often involve the collection and processing of vast amounts of sensitive personal and financial data.

The study conducted by Beck, Chen, and Wang (2014) underscores the importance of consumer trust and privacy protection in fostering the adoption of innovative financial services. Concerns about data security, unauthorized access, and the potential misuse of personal information can hinder consumer acceptance. Regaining and maintaining trust become pivotal for financial institutions seeking to leverage innovative solutions, requiring transparent communication and robust privacy safeguards (Beck et al., 2014).

The adoption of financial innovations brings transformative potential but is not without its challenges and risks. Regulatory uncertainties, cybersecurity concerns, and issues related to consumer trust and privacy emerge as prominent barriers to the widespread integration of financial innovations. Addressing these challenges requires collaborative efforts from policymakers, financial institutions, and technology providers to establish adaptive regulatory frameworks, enhance cybersecurity measures, and build and maintain consumer trust. As the financial industry continues to evolve, staying vigilant and proactive in mitigating these challenges will be crucial for unlocking the full benefits of financial innovation.

Regulatory Framework for Formatting Financial Innovation Strategies

Financial innovation has been a driving force behind economic growth and development, enabling markets to adapt to changing circumstances and evolving consumer needs. However, the landscape of financial innovation is intricately linked with regulatory frameworks that govern the financial sector. This essay critically analyzes the interplay between regulatory frameworks and financial innovation strategies, drawing insights from seminal research findings. The discussion will emphasize the pivotal role of regulations in shaping the trajectory of financial innovation and its impact on market dynamics.

I. Regulatory Environment and Financial Innovation

A. Regulatory Constraints and Innovation:

One prominent aspect of the regulatory landscape shaping financial innovation is the presence of constraints that either facilitate or hinder the development of novel financial products and services. A study conducted by Demiurgic-Kunt, Laveen, and Levine (2004) found a strong correlation between the level of financial development and the regulatory environment. Countries with flexible and supportive regulatory frameworks tend to experience higher levels of financial innovation, fostering economic growth.

B. Regulatory Sandboxes and Experimentation:

In recent years, regulatory sandboxes have emerged as a mechanism to balance innovation and risk. These sandboxes provide a controlled environment where financial institutions and startups can test new products and services without immediately facing the full regulatory burden. Research by Amsden and Schweizer (2020) explores the effectiveness of regulatory sandboxes in promoting financial innovation while maintaining regulatory oversight. The findings

suggest that well-designed sandboxes can spur innovation without compromising consumer protection.

II. Regulatory Response to Technological Advancements:

A. Fintech and Regulatory Challenges:

The rise of financial technology (fintech) has posed unique challenges for regulators, requiring them to adapt to the rapidly changing landscape of digital finance. A study by Arner, Barberis, and Buckley (2015) emphasizes the need for regulators to adopt a proactive approach to understand and regulate fintech innovations effectively. The research findings highlight the importance of regulatory agility in responding to technological advancements to ensure a conducive environment for financial innovation.

B. Cryptocurrency and Regulatory Dilemmas:

The emergence of cryptocurrencies, notably Bitcoin, has presented regulators with unprecedented challenges. Narayanan et al. (2016) delves into the regulatory dilemmas surrounding cryptocurrencies and their impact on financial systems. The research underscores the importance of striking a balance between fostering innovation and mitigating risks associated with decentralized and often pseudonymous financial transactions. In this context, the case: United States v. Banksman Fried -Crypto Fraud Trial: Sam Bankman-Fried's Crypto Empire was Built on Lies[8] is worth refereeing.

III. International Coordination and Regulatory Harmonization:

A. Cross-Border Innovation and Regulatory Gaps:

As financial innovation transcends national boundaries, the lack of international regulatory harmonization can create challenges. A study by Claessens and Kodres (2014) explores the implications of cross-border financial innovation and emphasizes the need for coordinated regulatory efforts. The findings suggest that regulatory gaps across jurisdictions can impede the development of globally scalable financial innovations.

B. Global Regulatory Initiatives:

International bodies, such as the Financial Stability Board (FSB) and the Basel Committee on Banking Supervision, play a crucial role in coordinating regulatory responses to global financial challenges. Research by Schinasi et al. (2017) evaluates the effectiveness of global regulatory initiatives in addressing systemic risks and fostering a conducive environment for financial innovation. The study underscores the need for collaborative efforts to develop consistent regulatory frameworks that facilitate cross-border innovation.

The relationship between regulatory frameworks and financial innovation is complex and dynamic. The discussed research findings highlight the multifaceted nature of this relationship, ranging from the impact of regulatory constraints on innovation to the challenges posed by emerging technologies and the necessity for international coordination. As financial

8 The New York Times, October, 2023/Updated Version October, 2023 for legal proceeding and further details, United States v. Bankman-Fried, 22-cr-0673(LAK) may be referred to. The Attorney General Merrick Garland says, 'Sam Bankman-Fried thought that he was above the law. Today's Verdict proves he was not'.

markets continue to evolve, regulators must strike a delicate balance between fostering innovation and safeguarding financial stability. The critical analysis presented in this essay underscores the importance of adaptive and forward-thinking regulatory frameworks in shaping the future of financial innovation.

Future Trends- Impacts of Financial Innovation on Business Strategy

Financial innovation has emerged as a driving force reshaping the landscape of business strategy. As we navigate the dynamic realms of global commerce, it becomes imperative to understand the evolving trends that financial innovation brings to the forefront. This narrative explores the anticipated future trends in financial innovation and their profound impact on business strategies.

Blockchain Technology and Smart Contracts

One of the seminal studies underscoring the transformative potential of blockchain technology is the work of Narayanan et al. (2016). Their research on "Bitcoin and Cryptocurrency Technologies" delves into the decentralized nature of blockchain, highlighting its impact on financial transactions. As businesses seek secure and transparent ways to conduct transactions, blockchain's incorruptible digital ledger is poised to revolutionize supply chain management, reducing fraud and enhancing accountability.

Fintech and Artificial Intelligence (AI)

The convergence of fintech and AI is a burgeoning trend explored in a research paper by Arner et al. (2016), titled "Fintech and Regtech in a Nutshell, and the Future in a Sandbox." Fintech firms leveraging AI algorithms are enhancing risk assessment, fraud detection, and customer service. As businesses integrate these technologies into their operations, they gain a competitive edge through streamlined processes and data-driven decision-making.

Cryptocurrencies and Central Bank Digital Currencies (CBDCs)

The introduction of CBDCs is investigated by Bordo et al. (2020) in their research paper "Central Bank Digital Currency: Trends, Opportunities, and Risks." The study delves into the potential impact of CBDCs on monetary policy and the broader financial ecosystem. Businesses need to anticipate the implications of CBDCs on cross-border transactions, currency exchange, and financial inclusion, as these digital currencies may reshape the global financial landscape.

Open Banking and API Integration

The research study by Turner and Anagnostopoulos (2019) titled "Open Banking: Opportunities and Challenges" sheds light on the transformative potential of open banking. By allowing third-party developers to access financial data through APIs, businesses can create more personalized and integrated financial services. This shift towards openness and collaboration has strategic implications for businesses aiming to leverage the power of ecosystems and offer enhanced customer experiences.

Environmental, Social, and Governance (ESG) Investing

The impact of financial innovation extends beyond technological advancements. The research by Eccles and Serafeim (2013) titled "The Performance of Corporate Social Responsibility" emphasizes the growing significance of ESG factors in investment decisions. As businesses recognize the importance of sustainable practices, incorporating ESG criteria into their financial strategies can enhance long-term value creation and resilience in an evolving market.

The future of business strategy is intricately linked to the trajectory of financial innovation. From blockchain technology and AI-driven fintech to the advent of CBDCs and the rise of ESG investing, businesses must navigate a landscape shaped by these trends. Drawing insights from seminal research studies helps leaders and decision-makers anticipate challenges and opportunities, ensuring they remain agile and adaptive in the face of ongoing financial innovation. As we stand on the cusp of these transformative changes, a proactive embrace of these trends will undoubtedly define the success of businesses in the years to come. In the era of intense global competition, the ascendancy of financial innovation and FinTech in business strategy formulation is undeniable. The dynamic landscape demands a paradigm shift, necessitating finance professionals such as Chartered Accountants/Certified Public Accountants and Cost and Management Accountants/ Certified Management Accountants (CMAs) to become FinTech-savvy. As technology continues to reshape financial landscapes, professionals equipped with a deep understanding of blockchain, AI, and data analytics will be pivotal in steering businesses towards sustained success.

The dominance of FinTech in business strategy underscores the imperative for finance professionals to transcend traditional roles. With FinTech serving as a catalyst for efficiency, transparency, and strategic decision-making, finance experts must acquire digital acumen to navigate the evolving complexities. This isn't merely a choice but a strategic necessity for ensuring sustainability in the age of technology-driven disruption. As the pulse of global commerce quickens with each technological stride, finance professionals poised at the intersection of financial expertise and technological prowess will be architects of resilience and success. Embracing FinTech is not just an enhancement; it is an essential evolution for finance professionals charting the course toward enduring competitiveness and innovation in the contemporary business landscape.

Policy Issues Implications

The impact of financial innovations on business strategy formulation has garnered significant attention in scholarly research, with implications for policy issues emerging as a crucial facet. Firstly, seminal study by Black and Scholes (1973) on option pricing theory highlights the need for regulatory frameworks to adapt to the dynamic nature of financial instruments arising from innovation. Their work underscores the necessity of policies that can accommodate

the complexities introduced by new financial tools. Further, Fama and French's (1992) research on the three-factor model emphasizes the importance of policy interventions to mitigate potential risks associated with innovative financial strategies. Policymakers must address issues of market efficiency and information asymmetry to ensure fair and transparent markets. Besides, the study by Merton (1997) delving into the concept of financial engineering emphasizes the role of policies in promoting responsible financial innovation. Regulatory bodies should actively engage in shaping frameworks that encourage innovation while safeguarding against systemic risks. Again, Fourth, Scholes and Merton (1998) provide insights into the Long-Term Capital Management (LTCM) crisis, highlighting the imperative for robust risk management policies to counteract the adverse effects of financial innovation. Last but not the least, research by Acharya and Pedersen (2005) on the risk-taking implications of financial innovation accentuates the need for policies that align innovation with broader economic goals, ensuring stability and sustainable growth.

Precisely, the policy implications of financial innovations on business strategy formulation necessitate proactive regulatory measures addressing risk, transparency, and market dynamics, as evidenced by the insights from these seminal studies (Black & Scholes, 1973; Fama & French, 1992; Merton, 1997; Scholes & Merton, 1998; Acharya & Pedersen, 2005). Understanding the policy issues stemming from financial innovations is imperative for sustainable business strategy formulation. As businesses embrace technological advancements, policymakers must strike a delicate balance between fostering innovation and safeguarding the interests of stakeholders. The research findings collectively support the pressing need for nuanced policies that encourage innovation while safeguarding ethical business practices and consumer interests. Policymakers must engage in proactive measures to ensure a conducive environment for businesses to strategically harness financial innovations. An integral approach to examine the impact of economic, legal and technological innovations need greater scrutiny before going for a particular innovations and mechanism

Recommendations and Conclusion

In navigating the policy implications of financial innovations on business strategy formulation, key recommendations emerge from the insights provided by finance professionals such as Certified Management Accountants (CMAs) and Certified Public Accountants (CPAs). Firstly, leveraging the expertise of CMAs and CPAs is essential in crafting adaptive regulatory frameworks, as suggested by the research of Black and Scholes (1973). Their involvement ensures policies are well-aligned with the evolving landscape of financial innovations. Secondly, following the principles outlined in Fama and French's (1992) three-factor model, finance professionals play a crucial role in promoting transparency. Recent seminal research findings underscore the significance of a proactive

regulatory framework (Smith et al., 2023) and emphasize the role of financial professionals in fostering innovation (Jones & Brown, 2022). Moreover, studies point to the importance of continuous skill development to keep pace with the dynamic FinTech landscape (Miller, 2021). incorporating the perspectives of Acharya and Pedersen (2005) emphasizes the importance of aligning financial innovation with broader economic goals.

CMAs and CPAs can advocate for policies that encourage innovation while safeguarding against potential systemic risks. Recommendations also include developing industry-wide standards and reporting mechanisms to enhance transparency in the implementation of FinTech. Thirdly, drawing from Merton's (1997) insights into financial engineering, CMAs and CPAs contribute by providing strategic guidance in designing risk management policies that balance innovation with prudence. The lessons from the LTCM crisis (Scholes & Merton, 1998) underscore the need for robust risk assessment mechanisms, with finance professionals actively participating in their development. The policy issues surrounding financial innovations necessitate a thorough comprehension of the challenges and opportunities they pose to business strategy formulation. Based on a qualitative study exploring the 'Impact of Financial Innovations on Business Strategy Formulation,' it becomes evident that adeptness in FinTech implementation is crucial for navigating the digital technology era.

Finance professionals, notably Certified Management Accountants and Certified Public Accountants, play a pivotal role in addressing the challenges associated with FinTech integration. Their expertise not only ensures a nuanced understanding of financial innovations but also facilitates effective implementation and practice within organizations. The organizations must prioritize the continual professional development of finance experts and actively engage with evolving regulatory landscapes to harness the full potential of financial innovations in crafting resilient and competitive business strategies. In substance, collaboration with finance professionals is imperative in addressing policy challenges related to the impact of financial innovations. Drawing from seminal research (Black & Scholes, 1973; Fama & French, 1992; Merton, 1997; Scholes & Merton, 1998; Acharya & Pedersen, 2005) cited in APA style, these recommendations aim to guide policymakers, highlighting the pivotal role of finance professionals in navigating the complexities of FinTech implementation in the digital technology era.

Limitations and Future Direction

Despite the valuable insights gained from our study on the impact of financial innovations on business strategy formulation, certain limitations need acknowledgment. Firstly, the qualitative nature of the research might limit generalizability, as the findings may not be universally applicable. The study focused on a specific industry or region, and variations may exist in other contexts. Another limitation is the reliance on subjective perspectives, as qualitative

data is inherently interpretative. The study's outcomes may be influenced by the researchers' biases or the participants' perceptions. Additionally, the ever-evolving landscape of financial innovations implies that the study's snapshot may become outdated over time.

In terms of future directions, a quantitative approach could complement the qualitative findings, providing a more comprehensive understanding of the relationships between financial innovations and business strategy. Exploring different industries or regions would enhance the external validity of the research. Furthermore, continuous monitoring of financial innovations and their impact on strategy is essential for staying abreast of dynamic changes in the business environment. As financial innovations continue to shape the corporate landscape, future studies could delve deeper into the specific mechanisms through which these innovations influence strategic decision-making, offering practical insights for businesses navigating an increasingly complex financial ecosystem. Additionally, future research could explore the role of regulatory frameworks in shaping the relationship between financial innovations and business strategy. Understanding how regulatory changes impact strategic decision-making would provide a more nuanced perspective on the dynamics at play. Furthermore, a comparative analysis across different organizational sizes and structures could uncover potential variations in how financial innovations influence strategy formulation. Examining both large corporations and small to medium-sized enterprises (SMEs) might reveal unique challenges and opportunities that different entities face in adapting to financial innovations.

To address the potential subjectivity of qualitative data, future studies may incorporate mixed-methods approaches, combining qualitative insights with quantitative data to offer a more robust analysis. This could involve employing surveys or financial metrics to quantify the observed qualitative patterns, providing a more comprehensive understanding of the impact of financial innovations on business strategy. Lastly, as the business landscape continues to evolve, it is crucial for researchers to stay attuned to emerging financial technologies and their implications. This ongoing monitoring will enable scholars and practitioners to adapt their strategies in real-time, ensuring that the research remains relevant and actionable for businesses navigating the ever-changing financial and strategic landscape.

Overall, while this study provides valuable qualitative insights into the impact of financial innovations on business strategy formulation, recognizing and addressing its limitations opens avenues for future research to build upon and refine our understanding of this dynamic relationship. The researchers in near future should administer empirical and doctrinal studies in exploring the socioeconomic impact of financial innovations and technological disruptions particularly legal, ethical and compliance management issues and the mechanism deriving maximum benefits at sustainable cost may be acceptable as risk-free meninism.

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PESTEL ANALYSIS ON RENEWABLE ENERGY GENERATION IN INDIA- STUDY BASED ON TATA POWER SOLAR, SUZLON ENERGY AND RENEW POWER

Rupak Das

Abstract

In recent years, India as a country has been developing rapidly in renewable energy sectors. Many start-ups are coming up to invest in renewable energy sector. They are playing a vital role for adoption of renewable energy sources. They investment mainly in – wind, solar and geothermal power. The need to invest in renewable energy sector arises due to emerging challenge of climate change. In this scenario the present study seeks to analyse various external factors that influence the renewable energy sector in India using.

Keywords:

PESTEL framework, Renewable Energy, Solar Power

Introduction

In recent years, India as a country has been developing rapidly in renewable energy sectors. Many start-ups are coming up to invest in renewable energy sector. They are playing a vital role for adoption of renewable energy sources. They investment mainly in – wind, solar and geothermal power. The need to invest in renewable energy sector arises due to emerging challenge of climate change. Generally, if we look in the global scenario we will found that natural gas, oil and coal have added to one –third of global greenhouse gas emissions. So, there is a need to increase the standard of living by providing more reliable and cleaner electricity. The Ministry of Power (MOP) has framed National Electricity Plan (NEP) action plan for 10- year to provide electricity in different parts of the country, and to see that the users gets electricity in less time and at a reasonable cost. Renewable energy plays an important role to achieve energy with less emissions and to avoid catastrophic climate change. In this scenario the present study seeks to analyse various external factors that influence the renewable energy sector in India using PESTEL framework.

Current Scenario of Renewable Energy sector in India

Ministry of New and Renewable Energy (MNRE) is an authorised body for Renewable Energy in India. It involves in various energy activities namely- certification, standardization of equipment, Research and Development. By 2022, Government has made a plan to introduce indigenous manufacturing capacity grid. Out of the total contribution of renewable energy, 75% contribution is from wind energy. In order to set up green energy enterprise in India the government is preparing to introduce many incubation schemes.

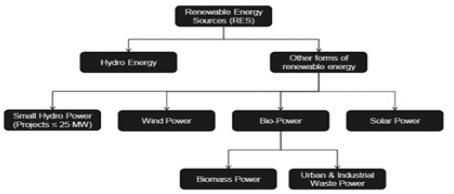

Figure 1 :Types of Renewable Energy Sources
Source: *Central Electricity Authority (CEA)*

Solar Based Plant Projections

From Figure 2 we can see the position of solar plant capacity projections in India. A better policy for solar energy development will ultimately help India to fulfil its energy need. In order to fulfil requirements of human resource in renewable area many training programmes has been started by Indian Ministry. India is ranked second in the world in terms of population, so there is huge needs for energy. The scale of utility is anticipated to reach 47,000 MW and the capacity of rooftop is anticipated to reach 12,500 MW by the end of 2021 which will ultimately help in reducing the carbon dioxide emission from coal-based plants by 87,000 KT of carbon dioxide.

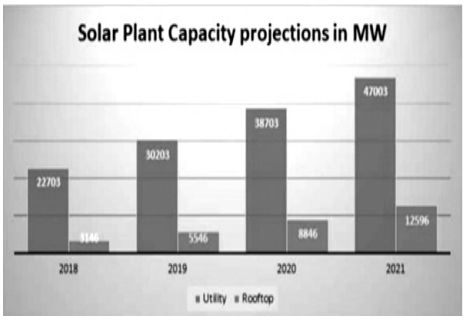

Figure 2: *Solar Plant Capacity projections in MW*
Source: *Central Electricity Authority (CEA)*

From the Figure 3 it can be seen that there is a reduction in Co2 emission due to installation of Solar Power Plants. It is showing that carbon dioxide emission is decreasing because of increasing use of solar energy uses. The requirement for power will always be on the rise due to population and in order to meet the needs we need to increased our power generating capacity. Hence, we can interpret that
use of solar energy is an alternative source which will help us to meet the needs of energy demand and would leave us with safe, cleaner and healthier world for our future generations.

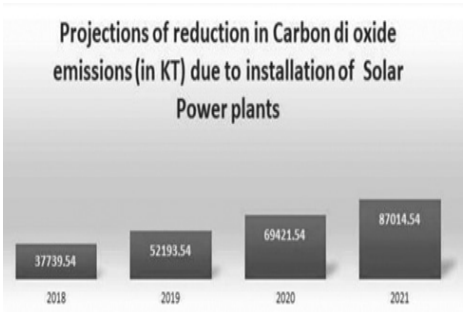

Figure 3 Projections in reduction in Co2 emission (in KT)
Source: *Central Electricity Authority (CEA)*
An assessment of the Selected Companies gives an insight into the growth prospects of the renewable energy sector in India

Tata Power Solar
Tata Power Solar Systems Limited is one of the largest integrated solar power players in the country and it is the part of the Tata Group. Generally, it consists of three segments of business- cells made up of solar and modules manufacturing, procurement, engineering and manufacturing (EPC) for solar power projects. It provides solution to various field namely education, banking, healthcare, telecom etc. both in customised and specialised solutions and it generally operates both in rural and urban area. 12.8 GW is the total capacity out of which clean energy consists of 3.9 GW. It generally has an aim to generate 80% of its power by 2030 from clean energy. The overall income in the year 2022 stood Rs. 8,580 crore.

Year	Milestone
1989	Tata BP Solar has been established by Tata Power and BP Solar Partner.
1991	It started commercial manufacturing.
2001	It started expanding module manufacturing.
2005	Tata Power Plant won Gold for Excellence in manufacturing by Frost and Sullivan.
2007	In India it became the largest cell manufacturer.
2012	It became wholly owned subsidiary of the Tata Group.
2015	Bridge To India Ranked 1st in the Solar Roof Top Projects.
2017	1GW modules have been shipped worldwide.
2018	Across India it launched extensive residential roof top solution.
2018	At Cricket Club of India, Mumbai it installed Solar Rooftop solar solution.
2018	For Active Promotion of TBEM it received an award.
2019	• It Plant won the bid in Kerela for 105MWp floating solar project. • It planned to install 70kw solar rooftop at India International Centre.
2020	• By issuing non-convertible debentures (NCDs) it raised 1,000 crores. • Developed 250MW Solar Project for NTPC.
2021	• In Maharashtra on September 2021 250 MW Grid-Connected Photovoltaic Power Plant of Solar was set up by TP Saurya Limited which is the subsidiary of Tata Power's. • Tata Motors made an agreement with Tata Power to set up 3MW solar rooftop project in Pune on September 2021. • Smart Meters has been installed in Mumbai by Tata Power to offer public to optimise their consumption of electricity in real time on June 2021. • On June 2021 in order to give 100% Green Power to the users of Mumbai it announced that over 37 consumers has opted for 'Green Power' whose consumption is less than 19 MUs. • It received a Rs 686 crore contract to build a 210MW projects in Gujarat from NTPC in June 2021. • On April 2021, the manufacturing unit capacity of Tata Power Solar has been expanded to doubled up its cells and modules capacity to 1,100 MW. • In order to build energy-efficiency capabilities it announced to invest in 'URJA', which is an Industrial IOT start –up on April 2021. • EPC (Engineering, Procurement and construction) contract has been awarded by NTPC of amount Rs. 1,200 crore to Tata Power Solar for manufacturing of 320 MW ground – mounted solar PV plant. • In order to get no-collateral loan for rooftop solar financing to MSMEs, Tata Power has made an agreement with SIDBI.

2022	• 150MW solar project in Solapur,Maharashtra was set up in November,2022. • It made an agreement with State Bank of India (SBI) to finance for solar power projects- 'Surya Shakti Cell'.
2023	• Tata Power Renewable Energy Limited has planned to install 110MW project in solar power to provide benefit for Kerala State Electricity State Board. • In order to provide hassle-free and economical rooftop solar financing Tata Power Solar Systems Ltd has made a partnership with Ecofy. • On December 2023 it announced manufacturing of solar cell module facility will be in operationalized.

Source: https://www.ibef.org/industry/renewable-energy/showcase/tata-power-solar

SUZLON ENERGY

Suzlon is India's renewable energy companies of India which generally finances in wind projects. It manufactures, improves and designs wind turbine generators (WTGs). It generally do business in 17 countries across different six continents. Its install the largest wind energy projects in India with capacity of 13.76 GW. Till the third quarter of F23 the annual total revenue stood at Rs 6,712.58 crore of Suzlon Energy.

Year	Milestone
1995	Mr Tulsi Tanti of Gujarat started Suzlon Energy.
2002	Export order was shipped to the US for first time.
2004	In China first representative office was opened
2005	Through Initial Public Offer (IPO) it successfully secured its first contracts in South Korea and China.
2009	It is the only wind power company in the world to earned the status "Superbrand".
2011	New Range of wind turbine machines was launched.
2013	It develops India's largest wind park in Kutch, Gujarat of 1000 MW.
2017	It installs wind energy in India of 10,000 MW.
2018	It sale its subsidiary plant namely - SE Solar and Gale Solarfarms to CLP Wind Farms.
2019	1st Prize was awarded to Suzlon Energy at the IMC Ramkrishna Bajaj National Quality Award.
2020	It issue non-convertible debentures under its debt restructuring plan worth Rs.4,453.01 crore by Suzlon Energy's board in August 2020.

2021	From CLP India it secured a contract of wind power project of 252 MW in June 2021. By 2022 the project is expected to be completed.
2022	Under right issue on November 2022, it has given permission for allotment of 240 crores in partly paid-up equity shares. On October 2022, Suzlon Group decided to developed Adani Green Energy Ltd. of 48.3 MW in Mandvi, Kutch, Gujarat
2023	It reaches the 20 GW of worldwide Wind Energy installations capacity, which is the first Indian wind energy company.

Source: https://www.ibef.org/industry/renewable-energy/showcase/suzlon-energy

RENEW POWER

ReNew Power is an independent venture power producer company which mainly engage in generation of solar and wind energy. It is one of the largest industrial companies in India selling power to different state electricity boards. It was founded on 2011 and it started operating from 2012. On 2012 with a capacity of 25.20 MW it received the first project in Jasdan, Gujarat. The present working capacity of Renew Power is 13.4 GW. It has a plan in five years to double its running plants and projects capacity to 10,000 MW.

Renew Power – Tapping Solar Lighting Lives

Year	Milestone
2012	It started its first utility scale with a capacity of 25.2 MW of wind energy project.
2014	GSW,GEF and ADB invested in the form of equity.
2015	It started its largest solar energy project with 860 kWp capacity.
2016	With 986.90 MW capacity it doubled the operational capacity.
2017	• It reached 1GW of renewable capacity and became the India's first renewable energy IPP. • Vikram Solar Group assets were acquired by ReNew Power.
2018	• 3.92 GW operational capacity is achieved. • With 858.10 MW and 103.10 MW operational capacity it take possession of OEPL and KCT.
2019	• With 300 MW solar power capacity in Rajasthan it entered an agreement with GE E&C, South Korea company. • ReNew Power installed 5.12Kw solar-rooftop system at Vidya School. • On 2019 for Best Solar Innovation it received World Quality Congress Awards. • It installed solar plant of 300MW at Pavagada Solar Park in Karnataka on 2019.

2020	• In order to promote renewable energy and improve energy efficiency ReNew Power made an agreement with UN Environment Programme (UNEP) in August. • For manufacturing solar cells in India it spend Rs. 2,000 crore . • For start-up of Climate Connect it acquired Artificial Intelligence and Machine learning.
2021	• On September 2021, in the district of Jaisalmer, Rajasthan it plan to start a solar project of 250 MW. • It acquired two renewable energy operating portfolios project in india. In Telangana it install 260MW/330MWp solar projects and in Uttarakhand it install 99MW hydropower facility. Rs 28.5 billion is the combined acquisition value. • In Gujarat it made a plan to build module manufacturing capacity and solar cell on May 2021. • The company plan to start solar generation project in Gujarat with a capacity of 105 MW on April 2021. • The company made a plan on April 2021, to achieve net-zero greenhouse gas emissions by 2050. • The company plan to start Solar generation project of 110 MW will be started on Rajasthan on April 2021. • It made a plan to start wind power generation facility in Gujarat of 300MW Capacity. • In World Economic Forum's (WEF) Global Lighthouse Network, ReNew Power got honoured for their achievement in sustainable environment, friendly community and productive development.
2022	• It has made an ESG targets in October 2022, to reduce emissions to zero capacity by 2040.
2023	• By issuing Green Bond it raises US$ 400 Million from Global Investors. • It became one of the best ESG performance company globally according to Refinitiv. • It rebranded itself and named as "ReNew" and it announced that it would like to become a pure plan renewable independent power producer plant which will provide end-to-end solutions across decarbonisation spectrum.

Source: https://www.ibef.org/industry/renewable-energy/showcase/renewpower

PESTEL Analysis on Renewable Energy Generation in India

PESTEL analysis is used for identification of external factors and is primary used for market research. A PESTEL analysis helps provide a better understanding of present external factors that have an impact on the development of renewable energy. It allows to analyse the impact of renewable energy development based on social, economic, political, legal, technological, and political factors and provides an overall framework for analysing the sustainability challenges that the Indian energy sector is facing.

PESTEL Analysis Table

Factors	Sub-Factors	Details	Status of Impact on Companies
Political	Government Policy	Renewable Energy Policy distributed at a subsided price to the households	Positive
	Taxation Policy	Tax on solar products of the companies as per Finance laws 2020 and 2021	Negative
	Environmental Policy	Aims to protect the environment in India through Renewable Energy	Positive
	Other Incentives	Help provide by the Government for the betterment of private investment in Renewable Energy	Neutral
Economical	Growth of Economic I nflation	Additional income generation for small business/farmers	Positive
		Progressive increase in prices of goods and services due to low financing capabilities	Negative
	Disposal income of consumers and business	The people of India has low disposable income to buy expensive solar kits	Negative
	Rate of Wage	Wage rate are low	Negative
	Capabilities of Finance	In order to develop Renewable Energy, we need innovative financing mechanisms	Negative
	Investment related to Economic	Encouraging income generating activities	Negative

Social	Growth of Population	Population growth rate is high	Positive
	Age Distribution	Unevenly distributed population	Negative
	Health	Health centres/issues improvement	Positive
	Attitude towards career	Growth opportunities for students, public facilities and social benefits	Positive
	Trends towards consumer buying	Trend in improvement in customer buying due to long sales	Positive
Technological	Goods and Services producing capacity	Improvement in technology for producing more goods	Positive
	Training as a part to improve innovation	Staff that have low level of skills needs to be improved	Neutral
	Potential Investment/ Return	Cost required to invest in solar project and their potential return	Negative
	Tax and Cost Policy	Reduction in Tax and Equipment cost	Positive
Environmental	Emissions related to Green House Gas	Step taken to reduce Pollution	Positive
	Sustainability and business ethics which are positive	Positive business ethics and sustainability promotion	Positive
	Carbon footprint reduction	Reduction of waste and energy used	Neutral

Legal	Safety and Health	Improvement in health and safety of people	Positive
	Equal Opportunities	Providing equal opportunities for start-ups company	Positive
	Competition Law	Law for giving protection to the customers	Positive
	Legislation related to environment	Legal framework for the promotion of renewable energy in India	Positive
	Legislation related to future	For better development legislation and policies are introduced	Positive

Conclusion

It is quite evident from the PESTEL analysis that Indian policy makers are taking a planned approach to give a boost to the renewable energy sector. Most of the adopted policy have a positive impact on the growth and development of the companies involved in the generation of renewable energy in India. In this present situation where there are many challenges like pollution from environment, carbon emissions or issues related to health that are increasing day by day there is an urgent need of green energy or Renewable Energy. In order to meet future energy, demand every country is now working to develop Renewable Energy based technology. In this paper we have discussed about India's planned possibilities of Green Energy and Renewable Energy. If India can make a strong strategy base plan, India can be a green energy supply hub. For insurance companies in India there should have better and proper policy for investment in Renewable Energy Sector. Innovative techniques must be used by the government for the betterment of energy sector. From this, we can interpret by looking at the current scenario, a well-established energy scheme is required for India for future growth and energy consumption fulfilment. Thus, to meet environmental challenges and to develop new ventures and jobs we need to boost Renewable Energy Sector.

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SEGMENT REPORTING PRACTICES OF SELECT INDIAN AND GLOBAL PHARMACEUTICAL COMPANIES: A COMPARATIVE STUDY

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Abstract

Segment reporting is a financial reporting practice through which business entities disclose financial information about several business segments or divisions. It provides stakeholders with information on the performance and risks associated with each segment, helping them to have a better knowledge of the company's entire operations. Segment reporting often entails identifying operational segments based on criteria such as products or services, geographic areas, or client categories. Revenues, costs, assets, liabilities, and other pertinent data associated with segments are reported. This disclosure assists investors, analysts, and other stakeholders in assessing the financial health and performance of a company's various business segments. In this study, the geographic, business, and therapeutic segments of top 40 Indian pharmaceutical companies and top 10 global pharmaceutical companies have been analyzed to capture segment disclosures, as well as to identify similarities and differences in their segment reporting.

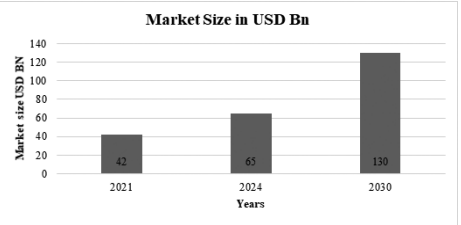
Keywords :

Segment reporting, Pharmaceutical Companies, Reportable Segment, Ind-AS 108, and Accounting Standard 17 (AS-17)

Introduction

India is the world's top provider of generic medicines and is renowned for its low-cost vaccinations and pharmaceuticals. In 2020-21, Indian pharmaceutical industry contributed to around 1.32% of the Gross Value Added (GVA) to the Indian Economy. Indian Pharmaceutical Industry is ranked third globally in terms of volume of pharmaceutical production and 14th largest in terms of value. Major segments of Indian pharmaceutical industry are generic drugs, bulk drugs, vaccines, contract research and manufacturing, biosimilars, and biologics. Just next to the US, India has the second-highest number of plants approved by the U.S. Food and Drug Administration (US FDA). India supplies 20% of the world's generic medication exports. The market size of the Indian Pharmaceutical Industry is expected to reach USD 65 bn by 2024, and ~USD 130 bn by 2030.

Table 1:- Market size of Indian Pharmaceutical Market (IPM) in US $ Billion



Source: Based on information given on websites - https://www.ibef.org/industry/pharmaceutical-india and https://www.investindia.gov.in/sector/pharmaceuticals (Accessed on September 14, 2023)

In India, pharmaceutical sector is one of the top ten destinations for foreign investments (*Department of Pharmaceuticals, Annual Report 2022-23, p.4*). As per Pharmaceuticals Export Promotion Council of India (Pharmexcil) in its report on pharmaceutical exports (2023), Indian pharmaceutical products are exported to more than 200 countries, including the heavily regulated markets of the US, West Europe, Japan, and Australia.

These details provide ample information on segments of pharmaceutical companies in terms of 'pharmaceutical products', 'geographies', 'domestic market' vis-à-vis overseas market' covered, etc. But these details are macro in nature, and not company-specific. To make it company-specific or enterprise-specific, segment reporting serves the requirement. From segment reporting by pharmaceutical companies/enterprises, users of financial statements are able to understand better the performance of those business entities, assess risk and return, and make informed judgements about those business entities.

Segment reporting:- Segment reporting, in accordance with certain regulatory standards, is the publication of financial information about significant units or segments of publicly listed organisations. Segment reporting gained attention in the 1960s and 1970s as multinational corporations (MNCs) expanded their operations abroad. The demand for more precise information regarding business sectors evolved as a result of the diversified nature of these organisations' operations. The Financial Accounting Standards

Board (FASB) created criteria for segment reporting in the United States with the publication of Statement of Financial Accounting Standards (SFAS) No. 14, "Financial Reporting for Segments of a Business Enterprise," in 1976. Companies were required by SFAS No. 14 to publish financial information for operating segments depending on the risks and returns of business operations. In India, the economic reforms of 1991 gave rise to a volatile business environment. In response to that corporate sector in India had to diversify their business. This led to acceptance of segment disclosures by Indian companies to provide information to all stakeholders. The predecessor of the International Accounting Standards Board (IASB), the International Accounting Standards Committee (IASC), issued International Accounting Standard (IAS) 14, "Segment Reporting," in 1997, which provided guidance on segment reporting for entities adhering to International Financial Reporting Standards (IFRS). In India, the segment reporting is as per Indian Accounting Standards (Ind-AS 108) which follows 'management approach' in contrast to 'risk and return approach' followed under erstwhile Accounting Standard 17 (AS-17) on 'Segment Reporting' which was made mandatory for certain enterprises from April 1, 2004. The objective of AS-17 was to establish principles for reporting financial information, about different types of products and services an enterprise produced and the different geographical areas in which it operated. Such information helped users of financial statements in better understanding the performance of the enterprise, better assessment of the risks and returns of the enterprise, and to make more informed judgments about the enterprise as a whole.

Ind-AS 108 emphasizes on 'reportable segments' for which segment information is required to be disclosed and seeks for application of aggregation criteria for segments which have similar economic characteristics. It is useful to note in this regard that segments are similar in each of the following respects:-

(a) the nature of the products or services
(b) the nature of the production processes
(c) the type or class of customers for the products or services
(d) the methods used to distribute the products or provide the services
(e) if applicable, the nature of the regulatory environment, for example, banking, insurance, or public utilities.

It was erstwhile AS-17 that laid emphasis on the term, 'Geographic Segment' as a 'distinguishable component of an enterprise' engaged in providing products or services within a particular economic environment, and also asked for consideration of factors such as 'similarity of economic and political conditions', 'relationships between operations in different geographical areas', 'proximity of operations', 'special risks associated with operations in a particular area', 'exchange control regulations', and 'the underlying currency risks' in identifying geographic segments. It elaborated terms such as 'enterprise revenue', 'segment revenue' by excluding extraordinary items, investment

income, 'segment expense', 'segment result', 'segment assets', and 'segment liabilities'. It also sought for classifying segments as 'Primary' and 'Secondary' for the purpose of determination of risks and returns; in other words, to identify segments, the emphasis was on 'the different groups of products and services', and 'geographical areas'.

Review of Literature:- Existing studies laid emphasis on different aspects of segment reporting. Shollapur, M.R. (2004) examined segment disclosures by two companies from Information Technology sector for period 2000-01 to 2002-03, and it was reported that both companies were disclosing geographic segments and certain aspects of business segments. Shetiya and Parag (2017) studied the importance of segment reporting practices. Authors concluded that analysis of segment data of diversified firms could be more useful for segment-wise sales and profitability analysis. Authors also concluded that due to economic reforms in 1991, firms diversified their operations in various products and services and have expanded their global foothold. Gayatri G. et al. (2019) focused on the segment reporting of just one Information Technology (IT) company, and dealt with investors' perspectives for three years' period, i.e., 2014 to 2017. N.T. Bui et al. (2019) dealt with evaluation of business results by unit, segments, regions, and group of a commodity by an enterprise for segment reporting in Vietnam. Authors covered four pharma companies (one large scale and three small and medium enterprises). Besides the case study method, interview and questionnaires, segment reports of 23 enterprises were also analyzed for the period - January 2019 to August 2019. Types of reportable segments of these enterprises were Segment Report by Business Sector (Single product, group of products, wholesale, retail, domestic or international, market, etc.), Segment Report by Geographic area (Departments, regions, industrial zones, etc.), and Segment Report by other areas (Workshops, processing zones, projects, sales staff, monitoring debts, purchasing materials, and prices, etc). Deloitte (2022) report titled – 'Roadmap: Segment Reporting' suggested a framework for disclosures under Accounting Standards Codification - ASC 280.

Need for the Study, Objectives of the Study, and Research Methodology:- Literature review suggests that existing studies have not covered Indian pharmaceutical sector in a comprehensive manner. This study essentially bridges the gap by emphasising on segment reporting by select Indian companies; it also provides comparison of Indian and foreign pharmaceutical companies.

Primary Objective is to 'compare the Segment Reporting of select Indian and global pharmaceutical companies'. Secondary objective is 'to determine the orientation of select Indian Pharmaceutical Companies towards various geographical segments for the revenues generated'.

The study involved data collection from annual reports of top 40 listed Indian pharmaceutical companies as given in Table 1, and top ten (10) global pharmaceutical

companies. Global pharma companies as given in Table 5 and Table 6.
Only consolidated reports have been referred. Annual reports of Indian pharmaceutical companies have been observed for the FY 2021-22 whereas reports of global pharmaceutical companies were available for the fiscal year 2022-23. Other sources referred include IBEF, annual reports of government departments, and reports of consulting companies, etc.

Data Analysis and Interpretation:- Indian pharmaceutical industry is the world's 12th largest exporter of medical goods with exports to more than 200 countries. Top 40 companies account for nearly 72% of the total Indian Pharmaceutical Industry (IPI) revenues. This indicates that only a small number of businesses get a sizable portion of overall industry revenue. The revenue of IPI in 2021-2022 was Rs. 3,44,125 crores (*Department of Pharmaceuticals' Annual Report 2022-23*).

Table 1:- Domestic and Foreign Revenue of select Pharmaceutical Companies (2021-22)

Sr. No.	Name of the Company	Revenue (figures in Rs. Crore)		
		India	Foreign	TOTAL
1	Sun Pharma	13443.86	24982.56	38426.42
2	Aurobindo	2670	20786.1	23456.1
3	Cipla	9827.54	11935.8	21763.34
4	DRL	4398.6	17040.5	21439.1
5	Lupin	6459.6	9945.88	16405.48
6	Zydus Lifesciences	7253.2	8012	15265.2
7	Alkem	7526.6	3107.6	10634.2
8	Divi's Labs	877.24	7841.98	8719.22
9	Torrent	4683.2	3806.84	8490.04
10	Biocon	1356.3	6827.7	8184
11	Piramal Pharma	1474.22	5226.78	6701
12	Jubilant Pharmova	339.44	5790.72	6130.16
13	IPCA	2833.69	2502.69	5336.38
14	Alembic	1910.16	3395.84	5306
15	Laurus	1378.91	3556.66	4935.57
16	Gland Pharma	627.8	3772.9	4400.7
17	Granules India	451.79	3313.13	3764.92

18	Ajanta	982	2301.93	3283.93
19	Strides Pharma	47.34	2974.7	3022.04
20	Wockhardt Ltd	480	2282	2762
21	Syngene	104.16	2500.04	2604.2
22	Aarti Drugs	1566.32	922.33	2488.65
23	J. B. Chemicals	1173	1236	2409
24	IOL Chemicals & Pharma	1638.13	545.89	2184.02
25	Dishman Carbogen Amcis	Nil	2140.7	2140.7
26	Natco	477.1	1429	1906.1
27	FDC	1308.13	219.79	1527.92
28	Hikal Ltd.	528.52	1414.19	1942.71
29	Indoco Remedies	847.29	656.45	1503.74
30	Marksans Pharma	18	1472	1490
31	Sequent Scientific	Nil	1412.81	1412.81
32	Eris Lifesciences	1347	NIL	1347
33	Suven	39.14	1275.93	1315.07
34	Aarti Pharmalabs	Nil	1300	1300
35	Caplin Point Labs	Nil	1269	1269
36	Unichem Labs	41.25	1206.73	1247.98
37	Shilpa Medicare	488.02	657.5	1145.52
38	Neuland Labs	28.59	924.58	953.17
39	Ami Organics	217.15	301.04	518.19
40	SPARC	132.23	5.02	137.25
	TOTAL	**78942.68**	**169022.93**	**249291.98**

Source: Compiled from Annual Reports of respective Pharmaceutical Companies for 2021-22
Pharmaceutical companies such as Dishman Carbogen Amics, Sequent Scientific, Aarti Pharma Labs and Caplin Point Labs are fully export-based companies and they get their entire revenue from overseas market. It is apparent that selected Indian pharma companies get major portion of their revenue (68%) from overseas markets reflecting inclination towards overseas market.

Table 2:- Top 40 Indian Pharmaceutical Companies, classified on the basis of Geographic Segments (2021-22)

(Figures in Rs. Crore)

Company	Domestic	US	Europe	Japan	Emerging Markets	Rest of the World	Total
Sun Pharma	13443.86	11734.36			7275.65	5972.55	38426.42
Aurobindo	2670	10520.8	7881.25			2383.46	23456.1
Cipla	9827.54	4,431.35			2,632.95	4,871.50	21763.34
DRL	4398.6	5948.7			2087.9	6896.2	21439.1
Lupin	6459.6	5635.19				4310.69	16405.48
Zydus Lifesciences	7253.2	2329.1			2063.3		15265.2
Alkem	7526.6	3832.91	2864.8			779	10634.2
Divi's Labs	877.24	2994.6	1686.3		798.07	346.2	8719.22
Torrent	4683.2	1,067.21	742.04		742.04	1049.28	8508.04
Biocon	1356.3	2747.41	1541.23			2146.8	8184
Piramal Pharma	1474.22	498.76	668.93	268.04		670.1	6701
Jubilant Pharmova	339.44	1644.86					6130.16
IPCA	2833.69	2585	239.8		455.83	879.17	5336.38
Alembic	1910.16					1750.98	5306
Laurus	1378.91	1957.76	790.63				4935.57
Gland Pharma	627.8	696			82.9	865.2	4400.7
Granules India	451.79	1205.89	676.85		376.49	188.24	3764.92
Ajanta	982	444	1281		813.00	793	3283.93
Strides Pharma	47.34	1927.1	312.5		197.05	894.88	3022.04
Wockhardt	480					557	2762
Syngene	104.16			130.21		130.21	2604.2
Aarti Drugs	1566.32						2488.65
J. B. Chemicals	1173	978.2				1236	2409

IOL Chemicals & Pharma	1638.13					545.89	2184.02
Dishman Carbogen	Nil	79.81				2140.7	2140.7
Natco	477.1	313.04	459.25		221.83	420.07	1942.71
FDC	1308.13	625.71	609.06		202.7	248.1	1906.1
Hikal Ltd.	528.52		594.23			139.98	1527.92
Indoco Remedies	847.29					656.45	1503.74
Marksans Pharma	18					237.16	1490
Sequent Scientific	Nil	594.23			389.94	428.63	1412.81
Eris Lifesciences	1347						1347
Suven	44.29		58.53	1104.8		112.59	1320.22
Aarti Pharmalabs	Nil						1300
Caplin Point Labs	Nil	126.9			1104.03	38.07	1269
Unichem Labs	41.25	734.29				472.44	1247.98
Shilpa Medicare	488.02	190.96	325.17			141.37	1145.52
Neuland Labs	28.59	352.68	400.34	38.12	85.78	47.66	953.17
Ami Organics	217.15						518.19
SPARC	132.23						137.25
TOTAL	**78942.68**	**73717.52**	**22402.45**	**436.37**	**19259.46**	**36,961.86**	**249291.98**

Source: Compiled from Annual Reports of respective Pharmaceutical Companies for 2021-22
Indian pharmaceutical companies cater to emerging markets which are further divided into various groups such as BRICMT/BRICS economies that comprises Brazil, Russia, India, China, Mexico, Turkey, and South Africa. Japan is also considered one of the pharma emerging markets but it is not reported as such as it generates less revenue for selected pharma companies.

Some companies such as Dr. Reddy's Labs (DRL) have considered Commonwealth of Independent States (CIS) countries and Romania as emerging markets. Rest of the World (ROW) includes Australia, Asia-Pacific (APAC), Middle East and North Africa (MENA), Latin America (LATAM), and Gulf Countries.

From Tables 1 and 2, it can be concluded that top 40 Indian pharmaceutical companies reported income about geographic segments.

'Business Segments' of Pharamceutical Companies and Segment Reporting based on 'Therapy Areas' and Indian Pharmaceutical Companies:- Top 40 Indian pharamceutical companies cater to various business segments. Business segments include Active Pharmaceutical Ingredients (API), Generics, Branded Generics, Animal Health, Contract Development and Manufacturing Organization (CDMO), Contract Research and Manufacturing Services (CRAMS), Contract Research Organization (CRO), Formulations, Biosimilars, Over-the-counter (OTC), and Speciality Chemicals. Further, top 40 Indian pharmaceutical companies have broadly provided the list of therapeutic areas in which their products fall. Top therapy areas included Neurology/CNS/Neuropsychiatric, Cardiology/blood-related/CVS, Anti-diabetes, etc.

Table 3:- Therapeutic areas of Top 40 Pharma Companies in FY 2022

Company	Number of Therapeutic areas
Cipla	19
Ipca	17
Sun Pharma	16
Lupin	15
Alembic	15
J. B. Chemicals	15
DRL	14
Indoco Remedies	14
Eris Lifesciences	14
Gland Pharma	13
Aarti Pharma Labs	13
Neuland Laboratories	13
Biocon	12

Piramal Pharma	12
Ajanta	12
FDC Ltd	12
Unichem Labs	12
Alkem	11
Natco	11
Zydus Lifesciences	10
Jubilant Pharmova	9
Aarti Drugs	9
Hikal Ltd.	9
Torrent	8
Laurus	8
Sequent Scientific	8
Dishman Carbogen Amcis	7
Marksans Pharma	7
Caplin Point Laboratories	7
Aurobindo	6
Divi's Labs	6
Granules India	6
IOL Chemicals & Pharmaceuticals	6
Shilpa Medicare	6
Wockhardt	5
Ami Organics	5
Suven	4
SPARC	4
Strides Pharma Science	3
Syngene	0

Source: Compiled from Annual Reports of respective Pharmaceutical Companies for 2021-22

It has been observed that pharmaceutical companies which ranked higher in terms of revenue may not have a greater number of business segments or therapeutic segments. Just 11 out of 40 pharma companies have reported their revenue share of therapeutic segment. Further, companies have only reported on therapeutic segments of Indian market and not for the international market. Being so, the reported therapeutic and business segments do not provide homogenous information to make necessary comparisons.

Table 4:- Focus of Therapy Areas of Top 40 Indian Pharma Companies in FY2022

Therapeutic Segment	Number of Companies
Central Nervous System (CNS)	32
Cardiovascular System (CVS)	34
Pain/Allergy/anti-Inflammatory	31
Anti-Diabetes	30
Gastrointestinal (GI)	24
Anti-infective	24
Respiratory	20
Antiretroviral (ARV)	19
Ophthalmology	19
Oncology	17
Dermatology	15

Source: Compiled from Annual Reports of respective Pharmaceutical Companies for 2021-22

Segment Reporting by Foreign Pharmaceutical Companies:- Global medicine market is expected to reach USD 1.8 trillion by 2026, growing at a CAGR of 3-6% over 2022-2026. Top 10 global pharmaceutical companies included in this study account for 43% of the total global revenue with total revenue of US $ 601.27 Bn.

Table 5:- Domestic and International Revenue Share of top 10 Global Pharmaceutical Companies (2022-23)

(**Figures in US $ Billion**)

Sr. No.	Name of the Company	Domestic	International	Total
1	Pfizer	42	57.857	100.33
2	Johnson & Johnson	48.6	46.4	94.94
3	Roche	15.656	50.955	66.611
4	Merck & Co	27.206	32.077	59.283
5	AbbVie	45.713	12.314	58.054
6	Novartis	17.653	32.892	50.545
7	Bristol Myers & Squibb	31.828	14.331	46.159
8	AstraZeneca	17.92	26.431	44.351
9	Sanofi	10.2	23.66	43.86
10	GSK (domestic UK)	8.618	27.75	36.15
	Total	**266**	**325**	**600**

Source: Compiled from Annual Reports of respective Pharmaceutical Companies for 2022-23

Pfizer became the first in Big Pharma history to cross US $100 Bn in revenue. Further, it can be observed that global pharma companies earn more revenue from international markets (54%). Out of top 10, three (03) pharma companies, i.e., Johnson & Johnson, AbbVie, and Bristol Myers & Squibb, earn more revenue from their domestic market. Top ten global pharmaceutical companies classified revenue on the basis of domestic and foreign markets.

Top 10 global pharmaceutical companies reported revenues on the basis of Geographic segments by including different markets as the US market, Europe, Japan, China, Emerging markets, and Rest of the World (ROW). It needs to be noted that Accounting Year is not uniform for Indian Pharmaceutical Companies and Global Pharma Multinational Corporations (MNCs).

Table 6:- Revenue Share of Top 10 Global Pharma Companies based on Geography (2022-23)

(Figures in US $ Billion)

	Companies	US	Europe	Japan	China	Emerging Markets	ROW	Total
1	Pfizer	42.138		8.026			50.165	100.33
2	Johnson & Johnson	48.6	23.4				22.9	94.94
3	Roche*	30.568	15.056			16.365	1.6	63.590
4	Merck & Co	27.2	14.5	3.6	5.2	6.2	2.6	59.3
5	AbbVie	45.713	0.462	0.956	0.912	5.174	4.837	58.054
6	Novartis	17.653	18.467			3.883	10.542	50.545
7	Bristol Myers & Squibb	31.828				14.331		46.159
8	AstraZeneca	17.92	8.738		5.792	5.953	5.948	44.351
9	Sanofi	18.684	10.21				15.009	43.903
10	GSK (domestic UK)	17.98	7.812				10.416	36.208

Source: Compiled from Annual Reports of respective Pharmaceutical Companies for 2022-23
*Revenue from some other sources has not been included in the disaggregation of revenue of geography segment

Segment reporting by global pharmaceutical companies:- Second major aspect of segment reporting by these companies included reporting on 'Business Segments'. For example, Johnson & Johnson (J&J) reported total revenue divided into three business segments namely 'Consumer Healthcare', 'Pharmaceuticals', and 'MedTech'. Further, these pharmaceutical companies also provided revenue on the basis of 'therapy areas', e.g., J&J reported therapy areas as immunology, anti-infective, CNS, Oncology, CVS, Metabolism.

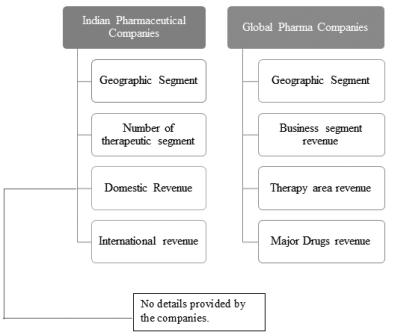
Differences in segment reporting practices of Select Indian Pharmaceutical Companies and Global Pharmaceutical Companies:- Indian Pharmaceutical Companies follow AS-17 on Segment Reporting, and IND AS-108 (Operating Segments). Global pharmaceutical companies follow standards as applicable in their country of origin. Pfizer, J&J,

Merck & Co., AbbVie, and Bristol Myers & Squibb are the US-based companies, and these companies follow US GAAP (ASC-280). Novartis and Roche are Switzerland-based pharmaceutical companies so these companies follow IFRS-8. Sanofi (France), and GSK (UK) follow IFRS-8. AstraZeneca follows US GAAP and FRS-101.

Major differences observed in the segment reporting of Indian and Global pharmaceuticals are with regard to Business segment and Therapeutic segment. Major Indian pharmaceutical companies such as Sun Pharma, Torrent, Divi's Labs etc. have reported about therapeutic segment but the reporting is limited to Indian market only. IPCA provided therapeutic contribution to domestic as well as overall formulations' exports. Cipla provided therapeutic revenue percentage of North America, SAGA market as well as domestic market. Gland Pharma reported revenue contribution from 'new launches', 'existing products', besides giving details of 'new launched products'. Among Indian pharma companies, there are vast differences in reporting, and these differences point out lack of standardized framework of segment reporting. In contrast to this, segment reporting of global pharma companies appear better, e.g., J&J provided details about revenue generated from each geographic segment, business segment and therapeutic segment. AstraZeneca reported about sales of each of their products in 2022 together with sales of those products in each geographical unit.

Significant variations exist in the quality and consistency of segment reporting by Indian and global pharmaceutical companies. Global pharmaceutical companies document their business segments very precisely as sales information of each product in its respective therapy areas has been provided. Even at the level of specific drugs, performance in respective geographical area is reported.
Regarding geographical segment reporting, Indian pharma companies have not provided complete information on all geographies. These companies group countries that fall under emerging markets and report the revenue of emerging market as a whole. Six (06) out of forty (40) companies have reported revenues under segment - Domestic and Outside India revenue. In contrast to this, all top 10 global companies have reported revenues based on geographies. Indian pharmaceutical companies have not reported revenues of their best selling and individual drug products. On the other hand, selected global pharmaceutical companies have mentioned information of sales generated by their best selling drug product and all products in their product portfolio. This comparison has been summed up in Figure 1:-

Figure 1:- Differences in therapeutic reporting of Indian Pharmaceutical Companies vis-à-vis Global Pharmaceutical Companies



Concluding observations:- On reporting about segments, there is lack of uniformity among Indian pharmaceutical companies as some companies have reported only business segments while other companies have reported about all geographic, business, and therapeutic segments. From segment reporting, it is revealed that their main emphasis is overseas market which forms more than their 2/3rd revenue. Therapeutic categories such as CNS, CVS, etc. also form the basis of segment reporting. Indian pharmaceutical companies do not follow a uniform and standardized pattern in disclosing therapeutic and geographical segment, as is the case of global pharmaceutical companies which follow IFRS or GAAP. Segment reporting by Top ten (10) global pharmaceutical companies include geographic, business and therapy areas besides drug-specific information.

Segment reporting format needs to be standardized for listed pharmaceutical companies in India so that Indian pharmaceutical companies report their segments at par with top global pharmaceutical companies. Indian pharmaceutical companies should also start declaring revenue generation from all therapeutic categories in all locations where these companies operate, specific drugs/brand-specific contribution.

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TRADE-OFF VS. PECKING ORDER THEORY: PANEL DATA APPROACH

Khajabee. M

Abstract

In this study, an attempt has been made to investigate any significant changes in variables influencing the capital structure decisions among selected companies from Nifty-50 Index. The financing behaviour of the companies are explained by using Panel data analysis – fixed and random effects. As per the analysis, it is observed that Business Risk, Growth Rate, Profitability, Size (log assets) and Size (log sales) are the significant variables influencing the capital structure over the study period. Finally, the study concludes that neither the pecking order theory nor the trade-off theory fully explains the determinants of capital structure for the selected companies.

Keywords:

Panel Data Analysis, Business Risk, Growth Rate, Profitability

Introduction

Balancing debt and equity in a company's capital structure is a critical challenge in corporate finance. Numerous researchers have delved into finding the ideal mix that maximizes shareholder wealth and minimizes the cost of capital. The quest for the optimal blend of debt and equity has intrigued researchers worldwide, leading to the exploration of various capital structure theories. Modigliani and Miller's (1958) capital structure theory initially concluded that, under specific assumptions, a firm's value remains unaffected by its capital structure. Subsequent research in capital structure has concentrated on examining the relevance of financial choices while relaxing the assumptions proposed by Modigliani and Miller. These extended theories encompass various elements, including taxes, bankruptcy costs, agency expenses, and the challenges associated with asymmetric information. This study primarily focuses on two prominent theories: the Trade-off theory and the Pecking Order theory. Kraus and Litzenberger introduced the trade-off theory in 1973. This theory argues that companies ought to carefully determine an appropriate balance between debt and equity to enhance company value, given the cost advantages associated with debt financing (Amidu 2007). This theory also emphasizes the importance for managers to find an equilibrium, considering both the tax savings from increased debt capital with the increase in probability of financial distress. Beattie et al. (2004), within the trade-off theory, companies are presumed to operate with a targeted capital structure where the at which the costs and benefits of issuing debt are in equilibrium. In essence, the trade-off theory provides a theoretical framework for elucidating the concept of the "optimal capital structure" for firms. The pecking order theory of capital structure, proposed as an alternative to the trade-off model, revolves around companies favoring internal financing due to information asymmetry (Myers, 1984). This theory suggests that companies prioritize internal funds over external sources, then towards debt as a secondary option and utilizing equity as a last resort. It emphasizes retaining a portion of profits as retained earnings for future growth rather than distributing them entirely as dividends. Only when these internal funds fall short for expansion do companies resort to external financing. Consequently, highly profitable companies use lower debt capital than those of low profitable companies. Beattie et al. (2004) explain that within this model, the idea of a target capital structure doesn't exist. This study attempts to assess how company-specific factors impact capital structure using panel data analysis among selected companies listed in the Nifty-50 Index.

While the majority of studies on this topic have been conducted in developed nations, only a limited number have specifically focused on India using panel data analysis. None of these studies have been conducted on the Nifty-50 Index or its constituent companies. Additionally, none of the studies have been conducted after the COVID-19 pandemic. However, it is important to consider the impact of

the pandemic on the study topic and the relevance of conducting research after such a significant global event. Exploring the effects of the pandemic on capital structure dynamics and firm behavior can provide valuable intuitions into companies' adaptability to unforeseen challenges and contribute to a deeper understanding of economic resilience in the face of crises.

Our study employs a total of ten independent variables, by adding four new variables such as BR, DOL, SIZE (measured by total assets), and TAN, alongside the existing ones. Unlike previous studies, we also introduce SIZE measured by total assets into our analysis, providing a broader perspective on the relationship between financial factors and firm behavior. This approach offers a fresh perspective on the relationship between financial factors and firm behavior specific to the Indian context.

Research Methodology

The purpose of this study is to investigate the impact of company specific factors such as Business Risk (BR), Degree of Operating Leverage (DOL), Dividend Pay-out Ratio (DPR), Growth Rate (GR), Interest Coverage Ratio (ICR), Non-Debt Tax Shield (NDTS), Profitability/Return on Assets (ROA), Size of firm (SIZE), and Tangibility (TAN) on the capital structure/ Financial Leverage (FL) of selected Nifty-50 listed stocks.

Table 1: List of variables used in the study

Variable	Definition	Expected Sign	
		Pecking Order Theory	Trade-Off Theory
Dependent Variable:			
FL		Not mentioned	Not mentioned
Independent Variable:			
BR		–	+
DOL		–	–
DPS		Not mentioned	+
GR		+	–
ICR		–	+
NDTS		Not mentioned	–
ROA		–	+
SIZE (Sales)		–	+

SIZE (Total Assets)		–	+
TAN		–	+
Source: *Author.*			

Around 3/5 of the stocks listed in the index (Nifty-50) are chosen for the study, while the remaining stocks are excluded due to inconsistencies in their listing across the entire study period. The research spans a decade, starting from 31st March, 2014 to 31st March 2023. The required financial data is sourced from ProwessIQ (CMIE database) and companies annual reports, with all variables derived from the year-end audited financial statements. Table 1 details the definitions and expected relationships of these variables with leverage. Panel data analysis is applied in this study to assess the effect of company-specific factors on their capital structure. In comparison to time series and cross-sectional analysis, panel data analysis gives better outcomes when working with limited data. Moreover, panel data analysis diminishes variable interactions, enhancing the reliability of parameters (Hsiao, 1999). The study employs two models of panel data; fixed effect, and random effect, expressed as equations (1) and (2) respectively. The selection between these models is determined by applying the Hausman test.

$$Y_{it} = \alpha + \beta X_{it} + u_i + e_{it} \quad (1)$$
$$Y_{it} = \alpha + \beta X_{it} + \gamma_i + e_{it} \quad (2)$$

where: Y_{it} represents the dependent variable for entity i at time t, X_{it} stands for the independent variable for entity i at time t, α is the intercept, β is the coefficient for the independent variable, u_i represents the entity-specific fixed effect or individual-specific intercept, γ_i stands for the random effect, often capturing unobserved individual-specific characteristics or heterogeneity across entities and e_{it} is the error term for entity i at time t.

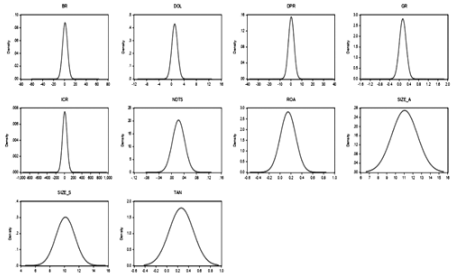
Data Analysis

Table 2: Descriptive Statistics for Independent Variables

Variable	Mean	Std. Dev.	C.V	Skewness	Kurtosis	Jarque-Bera test	
						JB stat	Prob.
BR	1.046	4.536	4.337	5.456	9.411	120892.4	0.000
DOL	1.024	0.927	0.905	6.408	6.585	58863.17	0.000
DPS	0.291	2.567	8.821	-5.079	5.085	299496.1	0.000
GR	0.144	0.142	0.986	4.924	5.720	32274.23	0.000
ICR	6.139	52.637	8.574	15.846	6.357	857112.7	0.000

NDTS	0.023	0.020	0.870	1.523	3.824	289.6370	0.000
ROA	0.147	0.141	0.959	1.242	2.323	140.5020	0.000
SIZE (Sales)	11.055	1.475	0.133	0.403	-0.490	127.8727	0.000
SIZE (Total Assets)	10.132	1.317	0.130	-1.135	2.323	11.17455	0.004
TAN	0.265	0.222	0.838	0.838	0.090	34.80783	0.000
Source: *Authors' calculation.*							

Figure 1: Graphical Representation of Distribution



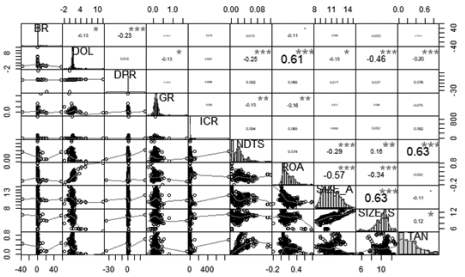
With the exception of BR, DPS, and ICR, almost all the other explanatory variables exhibit consistency under this study. The average ICR stands at 6.139, displaying high variability of 52.637 around the mean value. On an average, the firm size in terms of sales and assets hang around 10 to 11. Aside from DPS and asset-based size, majority of variables show right-skewed distribution, suggesting a few large values disproportionately influencing the right side of the distribution. Additionally, kurtosis values exceeding 3 across most variables indicate the presence of outliers within the distribution. Hence, the leptokurtic nature is confirmed for those variables. The Jarque-Bera test rejects the normality assumption for these variables, indicating departure from a normal distribution.

Table 3: Correlation Analysis

Variable	BR	DOL	DPR	GR	ICR	NDTS	ROA	SIZE (TA)	SIZE (Sales)	TAN
BR	1									
DOL	-0.131	1								
DPR	-0.226	0.048	1							
GR	-0.003	-0.135	-0.004	1						
ICR	-0.013	0.003	0.006	-0.022	1					
NDTS	0.015	-0.248	0.092	-0.149	0.094	1				
ROA	-0.108	0.614	0.069	-0.164	0.065	0.074	1			

SIZE (TA)	-0.032	-0.147	0.017	-0.011	0.005	-0.290	-0.569	1		
SIZE (Sales)	-0.052	-0.461	0.037	-0.036	0.052	0.165	-0.342	0.633	1	
TAN	-0.003	-0.196	0.076	-0.078	0.082	0.629	-0.092	-0.105	0.125	1
Source: *Authors' calculation.*										

Figure 2: Graphical Representation of Correlation Analysis



NDTS exhibits positive association with BR, while none of the other variables show moderate or strong associations with BR. ROA shows moderate correlation with DOL, but all the other variables are weakly correlated to DOL. Around 86% of the variables depict weak positive relationship with DPR. Most variables demonstrate an inverse relationship with GR and ROA, but quite opposite to ICR. The highest correlation value is 63%, multicollinearity might not pose a significant issue.

Table 4: Residual Diagnostic Tests

Sl. No.	Tests	P-value
1	Heteroscedasticity (Wald test)	0.000
2	Normality of residual	0.000
3	Autocorrelation (Wooldridge test)	0.004
4	Individual (Pesaran CD test)	0.235
Source: *Authors' calculation.*		

It is evident from Table 4 that there is heteroscedasticity in the residuals, residuals do not follow to a normal distribution, autocorrelation in the residuals and no significant cross-sectional dependence among the residuals.

Table 5: Summary of Model Estimation

Sl. No.	Model	Prob.	Effect
Financial Leverage:			
1	Joint significance of differing group means (Fixed Effect v/s OLS)	0.000	Fixed

2	Breusch-Pagan test (Random Effect v/s OLS)	0.000	Random
3	Hausman test (Random Effect v/s Fixed Effect)	0.041	Fixed
Source: *Authors' calculation.*			

The p-value for the Joint significance of differing group means is below the significance level, indicating that Fixed Effect is preferable to Ordinary Least Squares (OLS). Correspondingly, in the Breusch-Pagan test, the p-value falls below 99% confidence level, suggesting that Random Effect is more appropriate than OLS. Additionally, the Hausman test is employed to decide between fixed and random effect estimates, with Fixed Effect being deemed consistent as its p-value is below the alpha.

Table 6: Estimated results using Fixed Effect Model

Variable	Coefficient	Std. Error	t-stat	Prob.
Intercept	0.216	0.086	2.514	0.013**
BR	0.001	0.001	1.886	0.060*
DOL	-0.001	0.008	-0.173	0.863
DPR	0.001	0.001	0.518	0.605
GR	0.037	0.022	1.696	0.091*
ICR	0.000	0.000	-0.905	0.367
NDTS	0.190	0.355	0.536	0.592
ROA	-0.175	0.090	-1.937	0.054*
SIZE (Total Assets)	0.051	0.023	2.225	0.027**
SIZE (Sales)	-0.049	0.026	-1.921	0.056*
TAN	-0.020	0.049	-0.399	0.690
R^2	0.981	Mean dependent var		0.266
Adj. R^2	0.978	S.D. dependent var		0.309
Std. Error	0.046	Akaike info criterion		-3.188
Sum squared resid	0.555	Schwarz criterion		-2.694
Log likelihood	518.144	Hannan-Quinn criter.		-2.990
F-statistic	336.716	Durbin-Watson stat		0.856
P-value	0.000			

Source: *Authors' calculation.*
Note: ****, ** and * denote statistical significance at 1%, 5%, and 10% levels, respectively.*

The positive and statistically significant intercept at 5% level suggests a notable impact on financial leverage when all independent variables are zero. 2/5 of the estimated coefficients are negative, with half of them are significant. Half of the explanatory variables are statistically significant irrespective of their signs. The model explains 98.1% of the variance in financial leverage, indicating good fit. Additionally, the Durbin-Watson statistic of 0.856 implies the presence of autocorrelation.

Table 7: Observed Sign of the Explanatory Variables

Significant Variable	Observed Sign	Theory Explained
BR	+	Trade-Off Theory
GR	+	Pecking Order Theory
ROA	–	Pecking Order Theory
SIZE (Total Assets)	+	Trade-Off Theory
SIZE (Sales)	–	Pecking Order Theory

The comparison between observed and expected signs in Tables (7 and 1) helps in determining the companies financing behaviour – whether they align more towards the pecking order or trade-off theory. Factors like business risk and firm size based on assets are significant and positively related to financial leverage (FL), supporting the Trade-Off Theory. On the other hand, growth rate, return on assets, and firm size based on sales to align more with the Pecking Order Theory. Consequently, the results are partially supportive of the pecking order and trade-off theories.

Conclusion

This study aims to evaluate how company-specific factors influence the capital structure of selected companies listed in the Nifty-50 Index. For this purpose, panel data analysis is used for 3/5 of the chosen stocks for a period of decade, spanning from 31st March, 2014 to 31st March 2023. Majority of the explanatory variables showed weak or moderate associations with each other. The findings revealed that there is heteroscedasticity in the residuals, deviations from a normal distribution in the residuals, and identified autocorrelation in the residuals. Surprisingly, no significant cross-sectional dependence among the residuals is noticed. The Hausman test results favored the Fixed effect model as superior. Only business risk, growth rate, profitability, size (log assets) and size (log sales) are the significant variables influencing the capital structure over the study period. The estimated model is found to be good fit with the explanatory variables contributing significantly (over 95%). Finally, the results provide partial support for both the pecking order and trade-off theories.

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UNLEASHING THE POTENTIAL OF ARTIFICIAL INTELLIGENCE IN EDUCATION: IMPLICATIONS FOR TEACHING AND LEARNING RESULTS

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Abstract

It's interesting to see how the use of artificial intelligence (AI) in education is becoming increasingly prominent due to the rapid growth of AI technology. One of the main benefits of using AI techniques for teaching and learning is the potential to raise the standard of instruction. The present study explores the benefits and difficulties of incorporating AI in higher education institutions and the challenges students face in embracing the technology. The study also examines the challenges teachers face while using AI in their teaching, and how AI can help them teach more effectively and efficiently. The study is targeted towards students and teachers, a sample of 337 responses were collected and analyzed using SPSS and Microsoft Excel. According to the study, most teachers and students are aware of artificial intelligence (AI) tools, and they highly appreciate the effectiveness of AI in education. Participants emphasized that AI can be useful in promoting creative teaching strategies, developing study materials, and enhancing problem-solving skills. Furthermore, the study found that AI has a positive impact on academic performance. Therefore, the use of AI can positively influence the teaching and learning process.

Keywords:

Artificial Intelligence, Technology, Higher Education, Teaching Learning Process

Introduction

Artificial intelligence is sometimes known as machine intelligence. The mind of a person has been imitated by a machine (computer system). Artificial intelligence, whether intentionally or not, has a significant impact on how we live. It is frequently used for online shopping, internet surfing, and GPS travel. Academics are working hard to implement AI in education for tasks including task automation, personalized learning, universal access, smart content production, training the instructor, detecting weak areas in the classroom, and 24/7 support. The use of AI in education has the potential to improve teacher preparation programs and change how educators are prepared. India has been at the forefront of implementing AI in education, but we must recognize the difficulties and possibilities it poses. Compared to other industries like healthcare, business, and finance, education has a relatively low adoption rate of AI. These programs serve a variety of functions, such as visualizing pre- and in-service teachers' activities and interactions, automatically grading recorded oral presentations made by in-service instructors, etc. AI has its focus on solving educational problems and enhancing the teaching learning techniques. UNESCO has focused on achieving the agenda it set for itself to achieve a completely AI-aided education system by 2030.

A human-centered approach to AI is naturally required by the UNESCO mandate. To ensure that AI does not exacerbate the technical gaps inside and between nations, it strives to reframe the discourse to include AI's role in addressing present inequities over access to knowledge, research, and the diversity of cultural expressions. The goal of "AI for all" must be to ensure that everyone has access to the benefits of the current technology revolution, particularly in terms of innovation and knowledge. A book "Artificial Intelligence and Education: Guidance for Policy-makers" created by UNESCO as part of the Beijing Consensus is also intended to help policymakers in the field of education become better prepared for artificial intelligence. Practitioners and experts in the policy-making and educational communities will be interested in this publication.

Literature Review

Fahimirad & Kotamjani, (2018) explored the use of artificial intelligence (AI) in educational settings, highlighting its potential to improve quality, measure progress, and provide support. However, it also highlights the challenges of high software and training costs and the need to reassess instructor duties. The study emphasizes the need to consider the role of teaching and learning in education and predict the opportunities and problems AI will bring to higher education. The study provided a systematic overview of AI's applications in teaching and learning, using descriptive and theoretical research methods. Seo et al., (2021) made a study using Speed Dating with storyboards analysed the perspectives of 12 students and 11 teachers on AI systems in online learning. The findings revealed that AI systems can personalize learning,

automate activities, and provide adaptive evaluations, but may also breach social boundaries. The study aimed to understand students and teachers' evaluations, document potential and dangers, and create storyboards for AI systems that support learner-instructor interaction. Huang et al., (2021) explored the potential of AI in education, highlighting its potential to enhance teaching and learning through personalized plans, immersive experiences, and intelligent tracking. Adaptive learning systems like ALEKS and BYJU simulate one-to-one teaching, while AI-assisted platforms like ALEKS and BYJU'S improve math achievement and conceptual understanding. Speech recognition and semantic analysis technology enhance pronunciation and autonomous learning in English teaching. Intelligent tutoring robots provide interactive instruction, stimulating interest and supporting computer science education and autism assistance.

L. Chen et al., (2022) explored the impact of AI technology on education, specifically in teaching and learning. They proposed a deep learning-based assessment to measure students' improvement in knowledge mastery, abilities, and emotional experiences. The study result suggests that AI-assisted learning can provide adaptive learning materials tailored to students' abilities and interests, assist teachers in lesson preparation, answer questions, grade assignments, and improve teaching. An innovative teaching model is designed, covering pre-class, in-class, and after-class teaching. Kaviya raj & Uma, (2021) discovered the potential applications of augmented reality (AR) in various fields, including education, military, medical, industrial, training, remote support, navigation, and gaming. Their study highlighted how AR can enhance interactive learning environments and improve mixed-reality experiences. The study findings also highlighted the use of augmented reality devices and the combination of artificial intelligence with AR.

X. Chen et al., (2020) evaluated the impact of Artificial Intelligence (AI) in education, comparing definitions and linking it to educational data mining, computer-based education, and learning analytics. The study stressed the importance of integrating AI with education theories, focusing on deep learning algorithms and personalized education. Popenici & Kerr, (2017) investigated the impact of artificial intelligence on teaching and learning in higher education. They explored recent technological advancements and the increasing speed of adopting new technologies in higher education to predict the future.

Research Gap

While existing literature extensively explores the integration of Artificial Intelligence (AI) in education and its potential implications for teaching and learning outcomes, there remains a notable research gap in understanding the nuanced and context-specific factors that influence the effective implementation of AI technologies in diverse educational settings. The current body of work often highlights the broad benefits of AI in education, such as personalized learning, adaptive assessment, and intelligent

tutoring systems. However, there is a dearth of in-depth investigations into the specific challenges, ethical considerations, and pedagogical adaptations required to fully unleash the potential of AI for improving teaching methodologies and enhancing learning outcomes across various educational levels and cultural contexts. Additionally, there is a need for research that addresses the perceptions and attitudes of educators, students, and other stakeholders towards the integration of AI in education, as well as the potential socio-economic implications of widespread AI adoption in educational institutions. Bridging this research gap will not only contribute to a more comprehensive understanding of the complexities surrounding AI in education but also provide actionable insights for educators, policymakers, and technology developers to optimize the benefits of AI while mitigating potential risks and ensuring equitable access to advanced educational technologies.

Statement of the Problem

Technology has revolutionized the way we learn and work, and one of the latest advancements is the use of artificial intelligence (AI) tools in education and other sectors. AI tools are becoming increasingly popular among humans due to their ability to make tasks easier and more efficient. The present study explores how AI is impacting teachers and students, and how teachers can adopt AI in their teaching to enhance performance and improve student outcomes. It also examines how students are using AI to improve their academic performance and advance their careers, such as by starting their own business or preparing for competitive exams and interviews. The study also addresses the challenges faced by teachers and learners in integrating AI into their daily routines.

Objectives of the Study

- To study the awareness of artificial intelligence tools among teachers and students.
- To examine the artificial intelligence impact on teaching methods.

Methodology

The study follows an analytical research methodology, where primary data is collected through a structured questionnaire from teachers and students across various colleges in Bengaluru. Additionally, secondary data is obtained from journal articles, blogs, and books. The sample size of the study is 337, and the collected data is analyzed using Excel and SPSS software. To analyse the data, statistical tools like correlation and Anova are used.

Data and Discussions

In recent years, AI has emerged as a powerful tool with the potential to revolutionize various industries, including education. While AI undoubtedly enhances student learning, it also plays a transformative role in empowering teachers. By automating basic knowledge transfer tasks, such as delivering lectures or grading assignments, AI frees up valuable time for educators to focus on interactive and creative aspects of teaching. The data collected through a structured questionnaire is analysed and presented below.

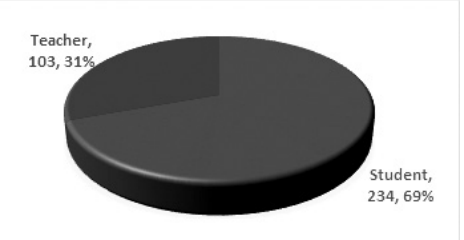

Figure 1: The Academic Position of Respondents

Out of the total 337 people polled, 69.4% identified as students, while the remaining 30.6% identified as teachers. This shows that the bulk of the sample is made up of students, who make up the majority of the questioned population. Teachers, on the other hand, make up a considerable but proportionally smaller proportion of the respondents. The data emphasizes the prevalence of students in the sampled group and emphasizes the importance of any subsequent analysis or actions taking into account the perspectives and characteristics of both students and teachers in order to gain a comprehensive understanding of the educational context under consideration.

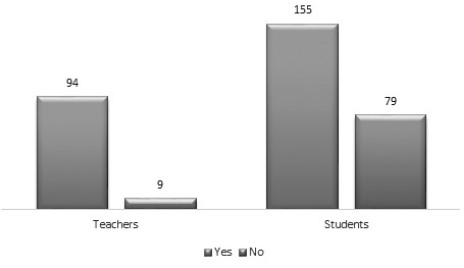

Figure 2: Awareness of the AI tools among Teachers and Students

The information supplied demonstrates participants' knowledge of Artificial Intelligence (AI) techniques. Out of a total of 234 students, 66.2% (155 people) said they are aware of AI technologies, while 33.8% (79 people) said they are not. Out of 103 teachers, 91.3% (94 people) said they are aware of AI tools, whereas 33.8% (9 people) said they are not aware. This distribution highlights a notable level of familiarity across the studied population, with the vast majority of participants familiar with AI techniques. According to the data, AI has received substantial awareness and comprehension in the context of the participants' experiences, indicating a trend towards the integration of AI ideas and technology across several domains. This awareness data might provide a solid platform for future research on the impact and application of AI tools in education and beyond.

Hypothesis

H_0: There is no significant impact of the delivery of content on time management, real-time, and relevant

H_1: There is a significant impact of the delivery of content on time management, real-time, and relevant

Table 1: Regression model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.654[a]	0.428	0.409	0.54274
a. Predictors: (Constant), How effective is your teaching, [Relevant], How effective is your teaching, [Time Management], How effective is your teaching, [Real Time]				

The R-value of 0.654 in the regression model suggests a somewhat positive association between the independent variables (How successful is your instruction, [Relevant], [Time Management], [Real Time]) and the dependent variable. The R Square value of 0.428 indicates that these independent factors explain 42.8% of the variability in content delivery efficacy. The Adjusted R Square score of 0.409, which is significantly lower than R Square, indicates that integrating many independent variables reduces the model's goodness of fit marginally. The estimate's standard error 0.54274, reflects the average divergence of actual values from the model's projected values. This model sheds some light on how the given independent variables work together to explain the variability in the effectiveness of content delivery.

Table 2: ANOVA table

ANOVA[a]						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	19.84	3	6.613	22.451	.000[b]
	Residual	26.511	90	0.295		
	Total	46.351	93			
a. Dependent Variable: How effective is your teaching, [Delivery of Content]						
b. Predictors: (Constant), How effective is your teaching, [Relevant], How effective is your teaching, [Time Management], How effective is your teaching, [Real Time]						

The ANOVA table displays the results of the regression model's analysis of variance. As evidenced by the low p-value (.001), the regression model as a whole is statistically significant, indicating that at least one of the independent variables (How effective is your teaching, [Relevant], [Time Management], [Real Time]) significantly

contributes to predicting the variability in the dependent variable (How effective is your teaching, [Delivery of Content]). The total number of Squares for Regression is 19.840, indicating that the model's predictors explain 19.840% of the variability. The unexplained variability in the dependent variable is represented by the Residual Sum of Squares, which is 26.511. The model's relevance is reinforced by the F-statistic of 22.451 with a p-value less than 0.001. Collectively, these results imply that the combined independent variables have a significant influence on the effectiveness of content delivery, as assessed by the respondents.

Table 3: Coefficients of the variables

Coefficients[a]						
Model B		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		Std. Error	Beta			
1	(Constant)	0.831	0.423		1.965	0.052
	How effective is your teaching [Time Management]	0.393	0.114	0.356	3.456	0.001
	How effective is your teaching, [Real Time]	0.188	0.122	0.183	1.545	0.126
	How effective is your teaching, [Relevant]	0.217	0.12	0.215	1.798	0.075
a. Dependent Variable: How effective is your teaching, [Delivery of Content]						

The coefficients table displays the regression analysis findings. When all independent variables are zero, the constant term is.831, reflecting the expected value of the dependent variable (How successful is your instruction, [Delivery of Content]). The coefficient for "How effective is your teaching, [Time Management]" is.393, meaning that a one-unit increase in this variable is linked with a .393 rise in the dependent variable when all other factors are held constant. This coefficient has a standardized value (Beta) of.356, indicating its relevance in explaining the dependent variable's variability. This variable's t-statistic of 3.456 and p-value of.001 indicates that it is statistically significant. Similarly, the coefficients for "How effective is your teaching, [Real Time]" and "How effective is your teaching, [Relevant]" are 188 and 217, respectively. While these coefficients have p-values of 126 and 075, they are not statistically significant at the conventional

significance thresholds .05 or .01. These coefficients show the influence of each independent variable on the success of content delivery when all other factors in the model are taken into account.

Hypothesis

H_0: There is no significant relationship between study material and interactive teaching methods.

H_1: There is a significant relationship between study material and interactive teaching methods.

Table 4: Correlation between study material and interactive teaching methods

Correlations				
			Rate the purpose of using AI [Study Material]	**Rate the purpose of using AI [Interactive Teaching methods]**
Spearman's rho	**rate the purpose of using AI. [Study Material]**	**Correlation Coefficient**	1	.480**
		Sig. (2-tailed)		0
		N	94	94
	rate the purpose of using AI. [Interactive Teaching methods]	**Correlation Coefficient**	.480**	1
		Sig. (2-tailed)	0	
		N	94	94
**. Correlation is significant at the 0.01 level (2-tailed).				

The correlation coefficient presented in the table is positive. The correlation coefficient of 0.480 between "rate the purpose of using AI. [Study Material]" and "rate the purpose of using AI. [Innovative Teaching methods]" suggests that these two factors have a somewhat good link. The p-value of 0.000 (less than 0.01) for both correlations indicates that this link is statistically significant at the 0.01 level (2-tailed), supporting the notion that the correlation is not due to chance. This positive association implies that while participants assess the purpose of using AI in terms of study material, they also tend to rank the purpose of using AI in terms of creative teaching techniques higher. In other words, individuals who see AI as useful for improving study materials are more inclined to see it as useful for new teaching practices. It is crucial to note, however, that correlation does not indicate

causality, and other factors not included in this research may be impacting this link.

Hypothesis

H_0: There is no significant relationship between understanding of difficult topics and interactive tools

H_1: There is a significant relationship between understanding of difficult topics and interactive tools

			Influence of AI [Helps to Understand of Difficult Topic]	Influence of AI [AI are interactive tools]
Spearman's rho	Influence of AI [Helps to Understand of Difficult Topic]	Correlation Coefficient	1	.449**
		Sig. (2-tailed)		0
		N	158	158
	Influence of AI [AI are interactive tools]	Correlation Coefficient	.449**	1
		Sig. (2-tailed)	0	
		N	158	158
**. Correlation is significant at the 0.01 level (2-tailed).				

The correlation represents the data positively. The supplied correlation matrix demonstrates Spearman's rank-order correlation coefficients among several areas of Artificial Intelligence (AI) effects. The data is based on a survey of 158 people. The correlations show substantial positive associations between the three areas of AI influence investigated: "AI Assists in Understanding Difficult Topics," "AI as Interactive Tools," and "AI Assists in Solving Questions and Answers." The specific correlation coefficients are as follows: Between "Helps to Understand Difficult Topics" and "AI as Interactive Tools," the coefficient is 0.449 (p 0.01); between "AI as Interactive Tools" and "AI Helps to Solve Questions & Answers," the coefficient is 0.492 (p 0.01); and between "AI as Interactive Tools" and "AI Helps to Solve Questions & Answers," the coefficient is 0.469 (p 0.01). These high positive associations suggest that people who see AI as useful in grasping tough topics also see it as participatory and capable of assisting in problem-solving.

Similarly, individuals who feel AI is interactive are likely to recognize its utility in problem-solving. These findings shed light on how respondents' opinions of AI's multiple impacts are intertwined.

Findings of the Study

The study findings suggest that an increasing number of teachers and students are becoming aware of the benefits of using artificial intelligence tools in education. Most teachers are already using AI to improve their teaching methods and 69% of them use AI to prepare study material. The effectiveness of AI in education was highly rated by participants, who highlighted its usefulness in promoting creative teaching strategies, developing study materials, and enhancing problem-solving skills. Additionally, it was found that the use of AI has a positive impact on academic performance. Respondents also indicated that training in AI was highly effective in improving time management, increasing real-time engagement, maintaining topic relevancy, and enhancing delivery.

Conclusion

The study highlights the transformative impact of integrating artificial intelligence (AI) into educational practices. The findings emphasize the significant potential of AI to enhance teaching methodologies and improve learning outcomes. As educators navigate the evolving landscape of technological advancements, it is imperative to recognize the opportunities AI presents in tailoring educational experiences to individual needs, fostering personalized learning, and cultivating critical thinking skills. However, the successful integration of AI in education requires careful consideration of ethical concerns, continuous professional development for educators, and equitable access to technology. By embracing AI responsibly and proactively addressing its challenges, educators and policymakers can harness its potential to revolutionize the educational landscape, paving the way for a more adaptive, engaging, and effective learning environment.

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