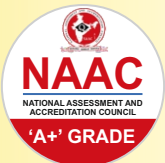


E-ISSN : 2581-8139

SPANDAN 2025

The Pulse of SFIMAR

STUDENT RESEARCH JOURNAL



St. Francis Institute of Management and Research (SFIMAR)

An Autonomous Institution

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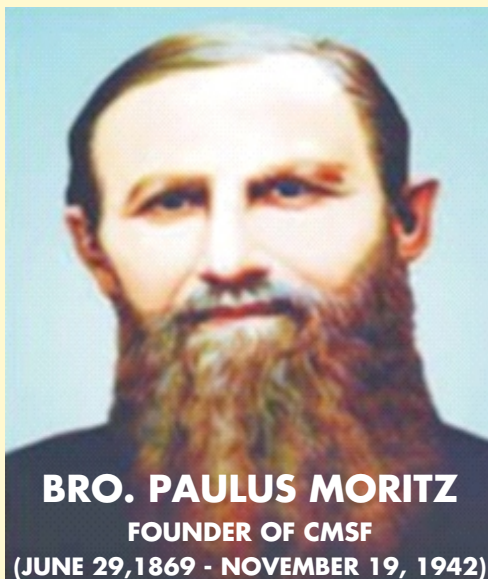
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Our Society

CONGREGATION OF THE MISSIONARY BROTHERS OF ST. FRANCIS OF ASSISI (CMSF)

About the Founder



St. Francis Group of Institutions in Mumbai are a chain of Christian/Catholic Minority Educational Institutions located in the Western Suburbs of India's Financial Capital Mumbai. St. Francis Group of Institutions have today become a pride of Mumbai and India's most sought academic community for its focus on excellence in value based education and beneficial & educative extracurricular activities. Today, after 125 years of its inception the Franciscan Brothers continue their commitment of training young minds and finding solutions to address tomorrow's challenges.

St. Francis Group of Institutions are established and run by the Franciscan Missionary Brothers, an International Organisation headquartered at Borivali (West), Mumbai. Rev. Bro. Paulus Moritz has founded the CONGREGATION OF THE MISSIONARY BROTHERS OF ST. FRANCIS OF ASSISI in the year 1901 with the vision of reaching out to the poor and the less privileged. Bro. Paulus Moritz was appointed as the first Superior General of the Congregation of the CMSF. He worked tirelessly for the welfare of the Brothers and the missions. His famous dictum was: "As long as you look after the poor, God will look after you!" He was a man with a deep spiritual conviction and of prayer and contemplation. He knew that only a deep religious person could become a great missionary, and he formed his Brothers in that pattern.

It was a relentless pilgrimage for him and his early companions in the mission of the Lord, serving the poor and needy at all costs in the villages of the entire country wherever they had been called to from 1901 till date, the inspiration of our Founder continues in the Brothers' Love and Service to the Indian people and beyond. Starting missions all over India, guiding the Brothers through many vicissitudes and storms for more than four decades, Bro. Paulus Moritz relinquished the office of Superior General in 1941. He was called for his eternal reward on 19th November 1942 after a brief illness, which he joyfully accepted as a prelude to his heavenward journey.

May he intercede for us, his children, from his heavenly dwelling to keep the mission of love to all, especially to the down-trodden and marginalized!

Peace Prayer of St. Francis of Assisi

Lord, make me an instrument of Thy Peace
Where there is hatred, let me sow love.
Where there is injury, pardon.
Where there is darkness, light.
Where there is sadness, joy.
Where there is doubt, faith.
And where there is despair, hope.
O, Divine Master, grant, that
I may not so much seek
To be consoled as to console,
To be understood as to understand,
To be loved as to love.
For it is in giving that we receive.
It is in forgiving that we are pardoned,



About the Institute

St. Francis Institute of Management and Research (SFIMAR)

St. Francis Institute of Management and Research (SFIMAR) was established in 2002 by "The Society of the Congregation of Franciscan Brothers", to impart the quality of Education in the field of Business Management. St. Francis Institute of Management and Research (SFIMAR) is a Higher Educational Institution offering Management Programme (MMS) in Mumbai. SFIMAR is conferred Autonomous status for a period of 10 years from the academic year 2024-2025 to 2033-2034 by UGC, Delhi and affiliated to University of Mumbai, approved by AICTE, New Delhi and DTE, Government of

Maharashtra. SFIMAR is Accredited with 'A+' Grade by (National Assessment and Accreditation Council (NAAC) in the second cycle and upgraded to the ISO 9001:2015 Certification by Det Norske Veritas Management (DNV) which assured consistency of the prescribed high quality of students by having robust academic and allied systems in place.

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SFIMAR VISION

To flourish as a seat of learning of international standards for developing an entrepreneurial class of value-based industrial leaders empowered with techno-managerial competence to sustain innovation for building global business of the future.



SFIMAR MISSION

To enter the realm of globally successful B-schools by imparting value-based education for creating responsible and thoughtful citizens who would lead the world by example and excel through innovation, an entrepreneurial spirit and a humanitarian attitude.



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SFIMAR is committed to the endeavor of transforming students into Global Leaders by continual improvement in its services through a student centric approach, innovations in our pedagogy and rigorous selection, development and upgradation of its faculty while meeting the regulatory & statutory requirements.

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M1: Deliver value-driven, application-based management education and research to develop industry-ready professionals.

M2: Foster an enriching learning environment that nurtures responsible and ethical leaders.

M3: Empower holistic development of students through academics, co-curricular, and extracurricular activities for personal and professional growth.

M4: Inspire entrepreneurial thinking and ignite innovative potential in the youth to drive positive change.

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The MMS professional programme of SFIMAR is accredited by NBA (National Board of Accreditation) and the Institute has received Academic Autonomy from July 2024. The MMS professional programme conducted at SFIMAR campus are in a state-of-the-art infrastructure environment with Air Conditioned Classrooms, Computer Labs, Conference Halls, Library and Other Amenities. A core team of experienced and qualified faculty member deliver various courses to the students.

Additionally, experienced professionals from various industries are invited as Eminent Speakers/Guest Faculty to provide practical orientation to the application of management principles in various fields. SFIMAR believes in the overall development of students and runs a number of Personality Development Programmes. SFIMAR also provides its students additional certification Programmes such as, Alternative Investment Industry, Project Management, National Institute for Securities

Markets (NISM) Mandatory Programmes, CIMA, Digital Marketing, etc. which improves their knowledge and employment prospects. SFIMAR has a very active

Placement Department which assist students in achieving appropriate placements and has a track record of almost 100% placement for the past several years.

St. Francis Institute of Management and Research (BMS)

The Bachelor of Management Studies (BMS) programme, offered by SFIMAR, is a comprehensive four-year graduate programme aligned with the National Education Policy (NEP) 2020 and affiliated with the University of Mumbai. It aims to provide young minds with professional knowledge spanning from basic to advance levels, covering theoretical as well as multi-disciplinary aspects in a dynamic environment.

The Bachelor of Management Studies (BMS) programme, spread over 8 semesters within 4 academic years, the BMS programme at SFIMAR incorporates NEP 2020 guidelines emphasizing a holistic approach to education.

It offers a range of electives and vocational courses, fostering inter-disciplinary and professional specialization. Moreover, the programme enriches students with business expertise through Institute-Industry Interface activities such as guest lectures, seminars, and field visits.

SFIMAR is one of the top ranked B-Schools in India. SFIMAR has achieved impressive growth over the last two decades in terms of its various academic and research related initiatives. SFIMAR plays the role of a catalyst in the development of the country's most valuable resource-its youth.

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SFIMAR - PGDM VISION

To groom excellent innovative and entrepreneurial managers who would be techno-savvy and environmentally aware to bring about holistic development in the economic and business world, armed with value based transactions.

The courses conducted at SFIMAR campus are in a state-of-the-art infrastructure environment with Air-Conditioned Classrooms, Computer Labs, Conference Halls, Library and other Amenities. A core team of experienced and qualified faculty member deliver various courses to the students. Additionally, experienced professionals from various industries are invited as Eminent Speakers/Guest Faculty to provide practical orientation to the application of management principles in various fields. SFIMAR-PGDM believes in the overall development of students and runs a number of Personality Development Programmes. SFIMAR-PGDM also provides its students additional certification



SFIMAR - PGDM MISSION

- To create business leadership with excellent managerial skills suitable to meet the requirements of the present realities.*
- To groom business community with innovative and research-oriented state-of-the-art know-how.*
- To adapt modern tools and new technologies in teaching-learning process.*
- To nurture value-based leadership qualities sensitive to environment and society.*
- To disseminate sound theoretical and practical learnings based on National and International experiences encapsulating all forms of business and economic activities.*

Programmes such as, Alternative Investment Industry, Project Management, National Institute for Securities Markets (NISM) Mandatory Programmes, CIMA, Digital Marketing, etc. which improves their knowledge and employment prospects. SFIMAR-PGDM has a very active Placement Department which assist students in achieving appropriate placements and has a track record of almost 100% placement for the past several years.

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Editorial

Spandan is a student's research journal @ SFIMAR. Over the years, it has provided platform to students to get recognition for their quality research work. SFIMAR has always put great emphasis on qualitative and quantitative research in various areas of management. Students with the help of faculty members have constantly tried to improve the standard of research work.

We are delighted to witness Spandan 2025 take its ultimate shape of distinctiveness. We express our gratitude to the members of the editorial board for their continuous involvement in the publication of the journal. We are grateful to the management for their unstinted assistance and support. We acknowledge the contributions of SFIMAR faculty members and the corporate guides that have aided the students towards the successful completion of their research projects.

Spandan 2025 Editorial Team.

Foreword



"Spandan" is SFIMAR's student research and project publication, which includes several notable research projects selected from more than 200 projects completed by our students in a variety of management-related areas during their summer

internships. The summer internships offer the students a great chance to get exposure to the real-life corporate environment and its operations. The internship gives the students an overview of the company's activities, tasks, and projects throughout the internship period. It gives students a chance to work closely with professionals and gain knowledge, skills, and experience that are directly applicable to their career objectives. They also network with several individuals from the corporate sector.

The report provides a synthesis of theoretical strategies and ways to put them into practice in the corporate world. As a result, the student learns how theoretical knowledge and business practice relate to one another, bridging the gap between the two. The report outlines the tasks carried out by the intern during the internship period with technical details. The efforts put forth by the students, their organizational supervisors, and the expert faculty guides from SFIMAR to take on this challenging task are highlighted here. The institute continuously works to forge strong partnerships with businesses, which has made it easier for our students to find suitable internships of their choice.

We are highly appreciative of the organizations' steadfast assistance in this matter. The goals of management education include the development of conceptual abilities, technical abilities, and leadership abilities. Students need to develop these skills and apply them in

real-life situations to adapt to the volatility, uncertainty, complexity, and ambiguity of the modern business environment and become successful managers or entrepreneurs in the future. Research, creativity, and innovation are essential components of any higher education curriculum. This journal is an essential component of SFIMAR's larger research and project-based study agenda. This kind of journal publishing takes a lot of excitement and active participation from numerous parties. I thank the editorial board, student editorial team, faculty reviewers, staff, SFIMAR's library team, and all the student authors for their commitment, patience, and timely revisions that made this issue possible

We are grateful to the organizations that gave SFIMAR the chance to collaborate with them on these projects, and we especially value our alumni who constantly serve as a motivator to bring out the best in our students. The vast range of topics and diversity of viewpoints showcased in this journal paves the way for future issues, in which we want to draw papers with more theoretical, experimental, and analytical content.

I do not doubt that the institute's strong emphasis on research will enable our students to build on these initiatives and keep up this remarkable trajectory in the ensuing years. I have faith that this year's issue of Spandan will work as a forum for the interaction of business and academia, as well as for the exchange of creative techniques that will benefit the industry and the well-being of society.

Dr. Shalini Sinha
Director - SFIMAR

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A Study on Indian Retail Investor's Perception and Equity Research Analysis of the Renewable Energy Sector in India

- Ms. Vaishavi Vitthal Lad
MMS Batch 2024-2026, (Finance)

ABSTRACT

India's renewable energy sector has grown rapidly over the past decade due to significant capacity additions and ambitious government targets, positioning the country as a key player in the global clean energy transition. Despite this strong growth, retail investor participation remains relatively low because of limited awareness, unclear risk perception, and a lack of understanding of company-level financial performance. This study addresses these issues by exploring how retail investors perceive renewable energy investments and evaluating the financial health of leading sector companies through an equity research approach supported by DuPont analysis. The study integrates primary data on investor sentiment to examine how growth patterns, profitability, operational efficiency, and leverage influence investment perspectives. Investors acknowledge the sector's long-term potential and strategic significance, but concerns about volatility, legislative changes, and financial transparency continue to undermine confidence. The report emphasizes the need for more reliable and transparent performance metrics to boost investor trust and encourage greater participation in India's renewable energy investment landscape.

Keywords - Renewable Energy, Retail Investor, Perception, Equity Research, Investment Behavior, DuPont Analysis.

INTRODUCTION

The renewable energy industry is among the most dynamic in India, driven by strong national objectives, government backing, and a rapid increase in renewable energy generation. India is at the forefront of the global shift towards sustainable energy. The nation's installed capacity for renewable energy increased from 81.22 GW in 2014-15 to 190.57 GW by 2023-2024, including renewable energy sources (RES) and hydro power, while renewable energy sources (RES) alone account for 143.64 GW. Solar energy experienced a remarkable 1,950 percent growth. Furthermore, India is making notable progress towards its 2030 renewable energy goals, achieving around 250 GW, which constitutes half of its 500 GW non-fossil fuel capacity target. This installed capacity not only underscores the country's environmental commitments but also highlights the growing clean energy sector.

Renewable energy sources that naturally replenish themselves include solar, wind, hydro, and biomass etc. Gradually, these energy sources contribute positively to both the economy and the environment. They help lower carbon emissions, enhance energy security, reduce India's reliance on imported fuels, and accelerate the country's progress towards sustainable development. Concurrently, the financial framework backing renewable energy is expanding rapidly, creating new

opportunities for investors to engage and achieve long-term gains.

Retail investors, utilizing their personal funds to purchase stocks within the prescribed limits set by SEBI, are playing an increasingly significant role in this evolving market. Their investment decisions influence market sentiment, the broader market, and the growth trajectory of India's sector. However, despite these developments, there remains a considerable disconnect between the sector's immense potential and retail investors' perceptions of it. This disconnect primarily arises because individuals find it difficult to access equity research and lack a grasp of financial performance indicators. To tackle this challenge, this research applies the DuPont model to examine market growth patterns, evaluate investor perspectives, and analyse the stock performance of selected renewable energy firms. By integrating insights from various disciplines with data on investor behavior and corporate success, the research offers a comprehensive analysis. Through a more thorough examination of equity research and financial performance, the study aims to clarify the opportunities and challenges in India's renewable energy investment market, thereby improving retail investors' perceptions of its investment potential.

1.1 Problem Statement

While India's renewable energy sector is growing, Investors are still unsure of the actual prospects and problems associated with. As a result, it's crucial to understand their perspective and assess the equity performance of companies in this sector.

1.2 Research Objectives

- To explore the growth, trends, and future potential of India's renewable energy market.
- To understand Indian retail investors' perceptions of the renewable energy sector.
- To analyze the equity performance of three listed renewable energy companies using the DuPont model

1.3 Research Questions

The aim of this study's research questions is to transform the general issue and goals into precise, researchable questions that guide the investigation as a whole. The questions centre on key topics such as investor demographics, investment preferences in the renewable energy sector, allocation patterns, preferred renewable energy segments, perceived risks, and the behavioural factors that influence investment decisions. Additionally, they examine the degree of trust retail investors have in the renewable energy industry, the extent to which government support is involved, and the extent to which consumers base their investment decisions on financial indicators and equity research. In line with the study's objective, the research questions delve deeper into how market changes affect investor perceptions. When considered collectively, these research topics ensure a systematic, rigorous study that can yield important insights on the financial attractiveness of India's clean energy market, the behaviour of retail investors, and the renewable energy sector as a whole.

1.4 Hypothesis

Hypothesis 1: Chi-Square Test

- H_0 (Null Hypothesis): There is no significant relationship between tenure of investment in renewable energy and percentage of portfolio allocated to renewable energy.
- H_1 (Alternative Hypothesis): There is some relationship between tenure of investment in renewable energy and the percentage of the portfolio allocated to renewable energy.

Hypothesis 2: Chi-Square Test

- H_0 (Null Hypothesis): There is no significant relationship between the age group of investors and their perception of the renewable energy sector.
- H_1 (Alternative Hypothesis): There is a significant relationship between the age group of investors and their perception of the renewable energy sector.

Hypothesis 3: Chi-Square Test

- H_0 (Null Hypothesis): There is no significant relationship between awareness of Government Schemes and Incentives for Renewable Energy Investments and Preference for Investment in Renewable Energy Sector Stocks.
- H_1 (Alternative Hypothesis): There is some relationship between awareness of Government Schemes and Incentives for Renewable Energy Investments and Preference for Investment in Renewable Energy Sector Stocks.

Hypothesis 4: Independent Samples T-Test

- H_0 (Null Hypothesis): There is no significant mean difference between gender and preference for investment in renewable energy sector stocks.
- H_1 (Alternative Hypothesis): There is a significant mean difference between gender and preference for investment in renewable energy sector stocks.

REVIEW OF LITERATURE

- The research concerning India's renewable energy sector is complex, as indicated by the academic literature. This complexity is especially evident in evaluations of financial performance, policy frameworks, and investment perspectives, all of which influence investors' decisions (Rajesh & Gupta, 2020). Recent research underscores that the sector has evolved from a developing industry into a crucial component of India's energy security and environmental sustainability initiatives, with considerable implications for both institutional investment strategies and retail investor engagement (Ghosh, 2023).
- India's national objectives, such as the pledge to reach net zero emissions by 2070 and to obtain electricity entirely from renewable sources by 2030, have been recorded in scholarly writings. This signifies a significant transformation in the methods of economic development that seek to harmonize

environmental sustainability with growth (Prajapati & Sharma, 2021). Studies highlight the critical role of renewable energy in India's energy transition and the impact of investing in renewable energy infrastructure and supportive policies. These commitments have a substantial effect on investor confidence and market dynamics (Kumar, Sharma, & Jain, 2024).

RESEARCH METHODOLOGY

Research Design: Exploratory Research and Descriptive Research

This study employs a mixed-methods approach, combining exploratory research to examine new trends and challenges in retail investor behaviour in the renewable energy sector with descriptive research to carefully examine investor perceptions, demographic influences, and financial performance patterns. Financial performance is evaluated using the DuPont analytical framework, which combines primary data collected through surveys with secondary data from government publications, firm reports, and financial statements.

Sampling: Non-probability convenience sampling

Target Population: Indian retail investors from the Mumbai Suburban area

Sample Size: 105 respondents

Data Collection Period: 27 days (19 June to 15 July 2025)

Data and Data Analysis:

Primary Data Sources:

- Structured questionnaire distributed via Google Forms
- 105 responses from retail investors in Mumbai Suburban area

Secondary Data Sources:

- Ministry of New and Renewable Energy (MNRE) reports, Central Electricity Authority (CEA) data, International Renewable Energy Agency (IRENA) publications.
- Company annual reports and financial statements
- Academic research papers and industry reports

Analysis Techniques:

- Descriptive statistics (percentages, averages)
- Chi-square tests to examine relationships between variables.
- Independent T-tests for group comparisons
- DuPont Analysis for financial performance evaluation

RESULTS & ANALYSIS

4.1 SECONDARY DATA

4.1.1 Growth, Trends, and Future Potential of India's Renewable Energy Market

- **Growth of Renewable Energy Capacity** - India's renewable energy sector has grown steadily and robustly during the last ten years. According to data from the Ministry of New and Renewable Energy (MNRE) and the Central Electricity Authority (CEA), installed renewable energy capacity from Renewable Energy Sources (RES) increased from 39.95 GW in 2014-15 to 143.64 GW in 2023-2024, a 259.55% increase with a CAGR of 15.28%. During the same period, the percentage of installed power capacity derived from renewable sources rose from 29.44% to 43.12%, indicating a clear national move toward more environmentally friendly energy sources. Solar energy remained the fastest-growing segment, expanding by an astounding 1,950.38 % from 3.99 GW to 81.81 GW.
- **Policy and Financial Support for the Sector** - Government initiatives have played a major role in accelerating the uptake of renewable energy. A key initiative is the PM Suryodaya Yojana, which seeks to lower household energy expenses by placing 10 million rooftop solar units. The program offers considerable incentives and has already spurred a nationwide increase in rooftop solar installations. Financial institutions have facilitated this expansion through loans tailored for the sector. The Indian Renewable Energy Development Agency (IREDA) reported a loan portfolio exceeding ₹47,000 crore for the financial year 2023-2024, primarily comprising solar, wind, and hydroelectric projects. This consistent funding has enhanced investor trust and guaranteed the prompt execution of projects.
- **Global Standing and Future Growth Potential** - India is well-positioned in the field of renewable energy. The country ranks fourth globally in total installed renewable capacity and seventh in the 2024 Renewable Energy Country Attractiveness Index (RECAI). These rankings represent India's advantageous policies, competitive cost structure, and growing technology capabilities. By 2030, India wants to have 500 GW of non-fossil fuel capacity. To do this, investments are required, highlighting the industry's immense long-term potential and its

importance to national energy security and climate obligations.

Table I. Cumulative Installed Capacity since 2014-15 (in GW)

Year	Mode-wise Breakup (GW)					Grand Total	Growth (%)	Share of RE (%)
	Non-Re		Renewables					
	Thermal	Nuclear	Hydro	RES*	Total RE			
2014-15	188.90	5.78	41.27	39.95	81.22	275.9	10.62	29.44
2015-16	210.68	5.78	42.78	47.09	89.87	306.33	11.03	29.34
2016-17	218.33	6.78	44.48	58.56	103.04	328.15	7.12	31.4
2017-18	222.91	6.78	45.29	70.65	115.94	345.63	5.33	33.54
2018-19	226.28	6.78	45.40	79.41	124.81	357.87	3.54	34.88
2019-20	230.60	6.78	45.70	88.26	133.96	371.34	3.76	36.07
2020-21	234.73	6.78	46.21	95.8	142.01	383.52	3.28	37.03
2021-22	236.11	6.78	46.72	109.89	156.61	399.5	4.17	39.2
2022-23	237.27	6.78	46.85	125.16	172.01	416.06	4.15	41.34
2023-24	243.22	8.18	46.93	143.64	190.57	441.97	6.23	43.12
Gr % (2014-15 to 2023-24)	28.76%	41.52%	13.71%	259.55%	134.63%	60.19%		
CAGR % (2014-15 to 2023-24)	2.85%	3.93%	1.44%	15.28%	9.94%	5.38%		

Source: Ministry of New and Renewable Energy (MNRE) and Central Electricity Authority (CEA)

RES*-Comprising of Solar, Wind, Bio Power, and Small Hydro Power

Gr= Growth (%), CAGR= Compound Annual Growth Rate

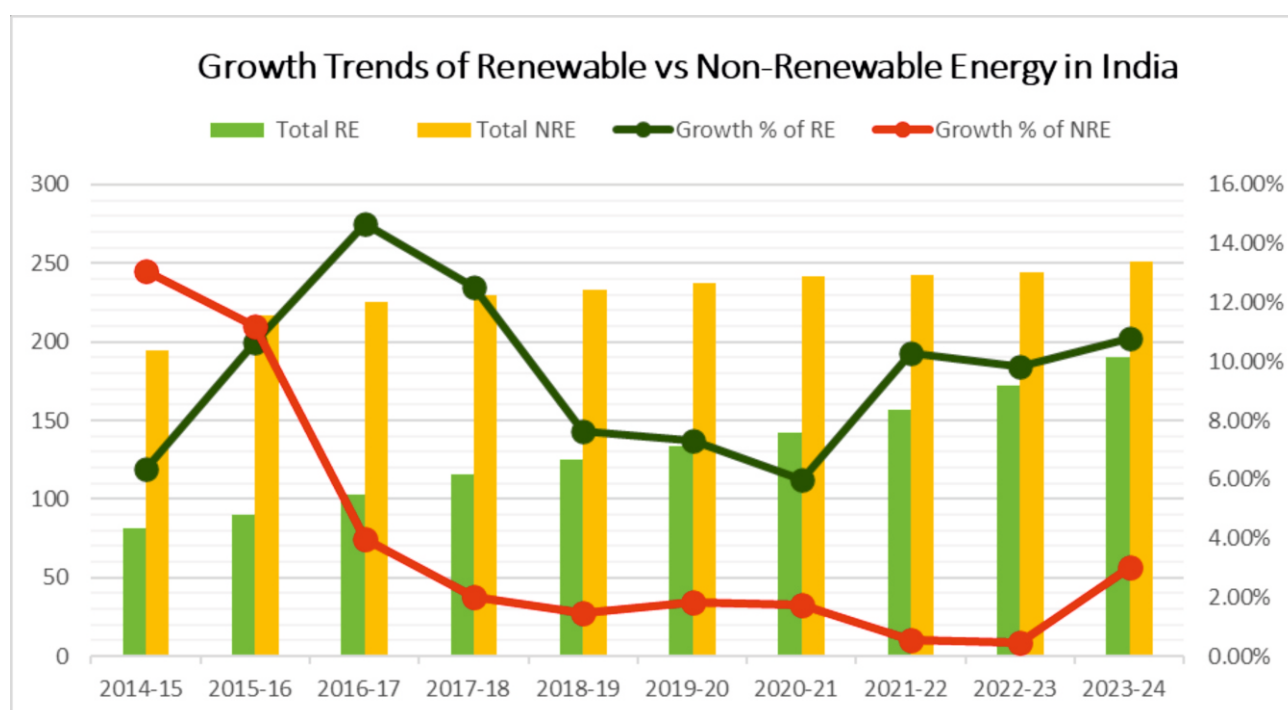


Figure 1. Growth Trends of Renewable vs Non-Renewable Energy in India

Interpretation: Between 2014-15 and 2023-24, India's installed power capacity increased from 275.9 GW to 441.97 GW, a rise of 60.19% and a CAGR of 5.38%. Renewable sources (RES*), including solar and wind, saw the biggest increase of 259.55%, from 39.95 GW to 143.64 GW. The entire amount of renewable energy (including hydro and RES*) grew by 134.63%, and its share of total capacity rose from 29.44% to 43.12%. In comparison, thermal grew by 28.76%, nuclear by 41.52%, and hydro by 13.71%.

4.1.2 Equity Research Analysis

Table II. Three-way DuPont analysis: Renewable Energy Companies (FY 2024-2025, Standalone)

Company	Net Profit Margin (%)	Asset Turnover (x)	Equity Multiplier (x)	ROE (%)
Suzlon Energy	20.43%	1.08	2.17	47.78%
KPI Green Energy	15.70%	0.52	2.27	18.39%
Adani Green Energy	3.15%	0.50	5.30	8.33%

Analysis:-

- Suzlon Energy is in the lead with the greatest ROE of 47.78%. Because of its high profit margin, efficient use of assets, and minimal reliance on debt, it is the most successful of the three. Suzlon serves as an example of how high profitability and prudent asset management can produce substantial returns for shareholders.
- KPI Green Energy is placed second with a ROE of 18.39%. Although it uses fewer assets than Suzlon, it has a high profit margin and manageable debt. This suggests that, even while it performs well overall, some efficiency improvements could bring it closer to the top rank.
- Adani Green Energy ranks last with a ROE of 8.33%. Its low profit margin and inefficient use of assets lower returns even though it generates the most income. High leverage hasn't benefited either, proving that merely taking on more debt doesn't guarantee better performance.
- In conclusion, this data shows that profitability does not require significant shareholder returns. Businesses also need to maintain the right debt-to-equity ratio and employ their resources wisely. Suzlon's strategy is the most efficient and sustainable, with the greatest ROE of 47.78%. KPI Green is performing well, with an 18.39% ROE, and has potential for growth as

productivity increases. Despite its strong revenues, Adani Green's ROE is only 8.33%, hence it needs to improve asset utilization.

4.2 PRIMARY DATA

4.2.1 Indian retail investors' perceptions of the renewable energy sector

105 retail investors from Mumbai's suburbs, mostly between the ages of 21 and 30, were surveyed for the study, the majority were salaried professionals (28.5%) and students (34.2%). Of those surveyed, 73.56% said they would be open to attending financial literacy

courses about renewable energy. Market volatility (30.4%), data scarcity (23.8%), and inconsistent policy (18.1%) were the main obstacles found.

4.2.2 Hypothesis testing

• Hypothesis 1: Chi-Square Test

The chi-square test yielded a p-value of 0.006, which is less than the 0.05 significance level. Consequently, we reject the null hypothesis, showing a significant correlation between the portion of the portfolio allocated to renewable energy and the duration of investment in renewable energy. This implies that the percentage of an investor's portfolio allocated to renewable energy investments and the duration of their tenure are statistically significantly correlated.

• Hypothesis 2: Chi-Square Test

The chi-square test yielded a p-value of 0.33, which is greater than the significance level of 0.05. Therefore, we fail to reject the null hypothesis because there is no statistically significant relationship between age group and perceptions of the renewable energy industry compared to other sectors. This suggests that attitudes toward the renewable energy sector do not vary significantly by age. Consequently, age does not seem to influence how people view the renewable energy sector in relation to other industries.

• Hypothesis 3: Chi-Square Test

The chi-square test yielded a p-value of 0.02, which is

less than the 0.05 significance level. As a result, we reject the null hypothesis, demonstrating a statistically significant relationship between awareness of government programs and incentives for renewable energy investments and preference for investing in stocks in the renewable energy industry. This implies that if people are more aware of government programs and incentives, they are far more likely to favour investing in companies associated with the renewable energy sector.

- **Hypothesis 4: Independent Samples T-Test**

The t-test produced a p-value of 0.24, which is higher than the significance level of 0.05. Because of this, we do not reject the null hypothesis, indicating that there is no statistically significant difference between men's and women's preferences for investing in stocks related to the renewable energy industry. This suggests that gender has little impact on individuals' investment choices in the renewable energy sector.

4.2.3 Weighted Average Analysis

Investors generally agree that investing in renewable energy is both financially feasible and socially responsible, based on weighted-average calculations, reflecting a positive outlook for the industry's long-term prospects. Furthermore, participants noted notable disadvantages, including a lack of industry-specific financial knowledge, limited transparency, and a higher perceived risk compared to conventional investment options. This indicates that investors remain cautious due to market information and structural challenges, despite acknowledging the economic and environmental benefits.

LIMITATION

The study's various limitations must be considered when interpreting the findings. First, the research sample of 105 participants was limited to a suburban area of Mumbai, restricting the geographical relevance of the results. Relying on self-reported data collected via structured online surveys may introduce response bias, potentially exaggerating or downplaying investors' opinions and behaviors. Additionally, the stock performance analysis focused only on three renewable energy companies, which may not accurately reflect the financial diversity within India's broader renewable energy sector. The study also overlooks external macroeconomic and global factors, such as fluctuations in commodity prices or currency values, that could influence sector performance

and investment decisions. Lastly, due to time constraints, the use of more advanced analytical methods, such as regression analysis or predictive modeling, was limited, thereby reducing the scope of statistical inference.

CONCLUSION

This research shows that India's renewable energy sector is growing rapidly, confirming its position as the fourth largest in renewable capacity globally and seventh in EY's RECAI 2024. From 2014-15 to 2023-24, solar energy grew by 1950%, while installed capacity increased by 259.55%. Rising awareness of government initiatives boosts interest in investments; 82.9% of retail investors prefer renewable investments, with solar being the most popular at 94.3%. However, challenges like limited financial knowledge and concerns about market fluctuations remain. According to the DuPont-based equity analysis, Suzlon Energy leads with a ROE of 47.78%, followed by KPI Green Energy at 18.39%. Adani Green Energy shows a lower ROE of 8.33%, despite leading in revenue, pointing to the need for better-informed decision-making. Overall, these results indicate both the sector's growth potential and the importance of improving investor literacy and access to analysis to enable more confident involvement. The survey also reveals high investor interest in India's renewable energy sector, which has strong growth prospects. Improved investor education and awareness programs are crucial. Financial analysis underscores the importance of careful stock selection by highlighting differences in company performance within the industry. Better investor education, increased access to financial analysis, and ongoing government support could significantly boost retail investor participation, benefiting both investors and industry growth.

FUTURE SCOPE OF THE STUDY

The study's prospective scope presents several opportunities for a more thorough and in-depth examination of India's renewable energy investment practices. Expanding the respondent base to encompass additional cities and regions could improve the data's applicability and include a broader spectrum of demographic and behavioral factors. Integrating viewpoints from institutional investors and retail participants might offer more comprehensive insights into overall market sentiment regarding renewable energy. Future studies should also explore the equity returns from both traditional and renewable energy assets

to enhance understanding of investment strategies. Including real-time stock market data and ESG performance metrics could further enrich the equity research analysis. Utilizing a longitudinal research method to monitor shifts in investor perceptions resulting from new regulations, technological advancements, or market changes would provide more dynamic and in-depth insight into investors' evolving behaviors in the renewable energy industry.

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ACKNOWLEDGEMENT

It is indeed a matter of great honour for me to express my sincere gratitude to the organization Aspiring Minds for providing me with this important opportunity to learn and train myself using the best available resources.

I take this opportunity to express my profound gratitude and deep regard for my Company Mentor, Mr. Vaibhav Shah, Aspiring Minds, for their exemplary guidance, monitoring, and constant encouragement throughout this project, which helped me complete this task. The help and guidance given by them time to time shall carry me a long way in the journey of life on which I am about to embark.

I am grateful to the members of Aspiring Minds for patiently guiding me through my training period, and without whose support this training would not have been successfully completed. I heartily thank my Faculty Guide, Mr. Vaibhav Shah, for his guidance and suggestions during the project work.

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Impact of USD-INR Exchange Rate Fluctuations on India's Foreign Debt: A Bloomberg-based Analysis of Risk Premiums and Debt Composition

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ABSTRACT

The study examines how variations in the USD-INR exchange rate affected India's USD-denominated foreign debt from 2015 to 2024, focusing on borrowing behaviour, debt issuance patterns, and risk premiums. Over the last decade, India's reliance on foreign borrowing has increased, primarily in US dollars, as the rupee has depreciated by 29.41%. Exchange rate volatility peaked in 2018 at 6.66% and fell to 1.50% by 2024, owing to Reserve Bank of India interventions and improved local and global conditions. The study focuses on how corporations choose to issue USD-denominated bonds during periods of low volatility, as well as how borrowing patterns vary in response to currency swings. During periods of high volatility, larger non-financial enterprises and quasi-sovereign entities dominated issuance, whereas during stable periods, a broader spectrum of borrowers, including smaller firms and financial institutions, participated. Furthermore, borrowers pay greater risk premiums during turbulent years due to elevated investor risk perceptions. The findings highlight the significance of currency stability in controlling borrowing costs and supporting economic development.

Keywords-USD-INR Exchange Rate, India's Foreign Debt, Risk Premiums, Debt Composition.

INTRODUCTION

India is now the world's fourth-largest economy, but for its growth, it has relied on foreign debt to fuel its expansion. A considerable percentage of this debt, 54.8%, is denominated in US dollars, exposing the country to currency volatility, notably the USD-INR exchange rate. As the value of the Indian rupee falls, the cost of repaying dollar-denominated debt rises, by this it hurt both government and private sector borrowers. Between 2015 and 2024, India's external debt increased by 10%, going from \$648.7 billion to \$717.9 billion. This study explores the effect of exchange rate fluctuations on India's foreign debt, specifically examining how USD-INR volatility influences borrowing behavior, debt servicing costs, and risk premiums. During periods of extreme volatility, repayment costs saw a significant increase. During periods of high volatility, corporate borrowers paid an average of ₹2,048.89 crore, while in more stable periods, the payment was ₹843.11 crore. This research aims to provide policymakers, businesses, and investors with essential insights on managing currency risks and maintaining the sustainability of India's external debt. These findings are important for making well-informed decisions in the global debt markets.

1.1 Problem Statement

The volatility of the USD-INR exchange rate has significantly influenced India's USD - denominated

foreign debt, leading to changes in risk premiums, borrower profiles, and debt issuance volumes. Despite this, there is a lack of focused research examining how these factors interact between 2015 and 2024.

1.2 Research Objectives

- To study the trends and patterns in the USD-INR exchange rate over the last ten years (2014-2024).
- To measure the volatility of the USD-INR currency pair during this period using appropriate statistical methods.
- To analyze the timing and volume of India's USD-denominated debt issuance during periods of exchange rate fluctuation.
- To study the Changes in Loan Duration and Borrower Type in India's USD debt Securities during high and low exchange Rate volatility.
- To estimate the additional interest cost risk premium that Indian borrowers pay on USD bonds compared to US government bonds.

1.3 Research Questions

Although there is substantial research on exchange rate movements and foreign debt in emerging economies, empirical data on India, especially regarding USD-INR fluctuations and their impact on loan issuance, remains scarce. Research on how borrower categories and loan tenures evolve during periods of high or low volatility is

limited. This study seeks to bridge the gap by analyzing how USD-INR volatility affects India's borrowing patterns and repayment costs, providing data-driven insights into the issue.

1.4 Hypothesis

Based on the research question, the following hypotheses were developed:

- 1 There is no difference in the volume of USD-denominated debt issued during high and low volatility periods.
- 2 There is no significant difference in the average risk premium paid by Indian Borrowers during high vs low volatility periods.

REVIEW OF LITERATURE

Over time, research on exchange rate volatility and its impact on developing countries, especially India, has increased. Kanojia and Dhamija (2017) examined the USD-INR exchange rate over ten years, focusing on how domestic policies, such as RBI interventions, and global factors, such as US inflation and bond rates, affect the rupee's stability. Their work shows the complex relationship between global economic shifts and India's currency movements. Tiwary et al. (2022) examined the third-generation model of currency crises, emphasizing that structural weaknesses, such as foreign-currency debt and capital flight, are key sources of financial stress in emerging economies. They found that weak financial institutions make exchange rate volatility even harder to manage, complicating efforts at stabilizing the economy. Joshi et al. (2023) examined how currency fluctuations affect India, observing that even with a strong export performance, a weaker rupee increases the costs of subsidies, foreign debt repayments, and corporate obligations. Many Indian businesses also face significant losses due to foreign currency exposure, highlighting how unpredictable exchange rate fluctuations can be. Lu, D., Qian, X., and Zhu, W. (2024) discussed the "original sin" problem, in which developing countries are unable to borrow in their own currencies, leading to financial vulnerabilities. They suggested that aligning foreign exchange reserves with the structure of external debt could help reduce risk, particularly during crises. Finally, Avdjiev et al. (2018) found that a stronger US dollar increases the repayment burden for countries with high foreign-currency exposure, raising borrowing costs and risk premiums. Their research showed how exchange

rate volatility affects the timing, amount, and structure of foreign borrowing by heightening the challenges Indian borrowers face during periods of instability. All of these studies underscore the complex relationship between exchange rate volatility, financial structures, and macroeconomic factors, offering valuable insights into how India can better manage currency risks in its foreign debt.

METHODOLOGY

This study looks at how changes in the USD-INR exchange rate affect India's foreign debt. By analyzing data from the Bloomberg Terminal between 2015 and 2024, the focus is on debt issuance volume, risk premiums, loan durations, and borrower types. The study examines periods of high and low volatility, examining how global events such as US interest rate hikes, COVID-19, and the Russia-Ukraine conflict have influenced these shifts. The study examines key factors such as daily USD-INR closing rates, bond coupon rates, loan terms, and the risk premium, which is determined by comparing Indian bond yields to US 10-year Treasury yields. The data is divided into years with high volatility (above 4.90%) and low volatility (below 4.90%), chosen based on a judgmental sampling approach. Basic statistical methods, like descriptive analysis, volatility measurement, and t-tests, are used to analyze the data. Volatility is calculated as the standard deviation of daily USD-INR rates. The risk premium reflects the difference between Indian bond yields and US Treasury yields. Hypothesis testing helps determine whether there are significant differences in debt issuance volumes and risk premiums across high- and low-volatility periods. The findings are presented using line plots and bar charts created with Python and Excel. The main aim of the study is to understand how exchange rate volatility impacts India's foreign debt market. By examining how Indian borrowers behave during times of currency instability, the findings aim to offer practical insights for policymakers and financial experts on managing currency risk amid global financial shifts.

RESULTS & ANALYSIS

4.1 Objective Analysis

Objective 1 : To study the trends and patterns in the USD-INR exchange rate over the last ten years, 2015-2024.

TABLE I. Table showing USD-INR exchange rate trend for the last 10 years (2015 to 2024)

Year	Closing Price	YOY%
2015	66.1537	4.95
2016	67.9250	2.68
2017	63.8713	-5.97
2018	69.7712	9.24
2019	71.3788	2.30
2020	73.0650	2.36
2021	74.3375	1.74
2022	82.7350	11.30
2023	83.2100	0.57
2024	85.6087	2.88

The table shows the USD-INR exchange rate trend over the past 10 years (2015 to 2024) from Bloomberg.

Fig.1. Graph showing USD-INR exchange rate trend for the last 10 years (2015 to 2024).

The figure shows the USD-INR exchange rate trend over the past 10 years (2015 to 2024) from Bloomberg.

TABLE II. Table showing USD-INR exchange rate volatility for the last 10 years from 2015 to 2024.

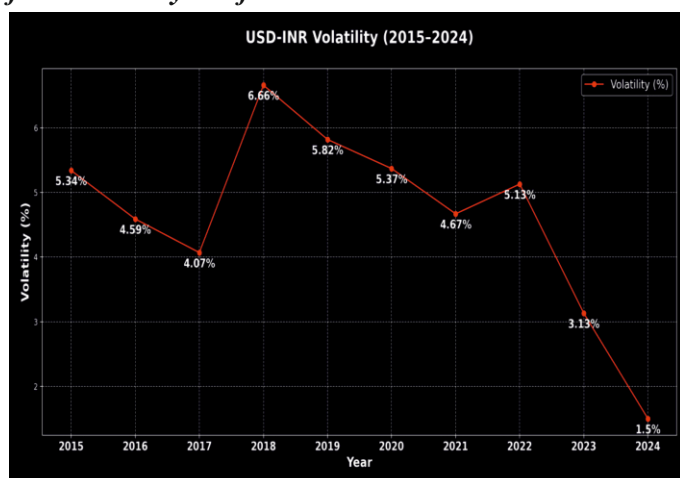
YEAR	VOLATILITY(%)
2015	5.34
2016	4.59
2017	4.07
2018	6.66
2019	5.82
2020	5.37
2021	4.67
2022	5.13
2023	3.13
2024	1.5

The table presents the USD-INR exchange rate volatility for the last 10 years from 2015 to 2024 from Bloomberg.

- Between 2015 and 2024, the USD-INR exchange rate increased by 29.41%, from Rs.66.15 to Rs.85.60. The rupee has declined in nine of the last 10 years, with significant decreases in 2022 (11.30%) owing to global instability and in 2018 (9.24%) due to rising oil prices and the US-China trade conflict. However, the currency depreciated minimally in 2023 and 2021, whereas it appreciated somewhat in 2017.

Objective 2 : To measure the volatility of the USD-INR currency pair during this period using appropriate statistical methods.

Fig.2. Graph showing USD-INR exchange rate volatility for the last 10 years from 2015 to 2024.



The figure shows the USD-INR exchange rate volatility for the last 10 years, from 2015 to 2024, according to Bloomberg.

From 2015 to 2024, the USD-INR exchange rate volatility varied significantly. It peaked at 6.66% in 2018, then fell rapidly, reaching its lowest of 1.50% in 2024. Volatility was high in 2015 (5.34%) and 2022 (5.13%) but has stabilised significantly in 2023 and 2024.

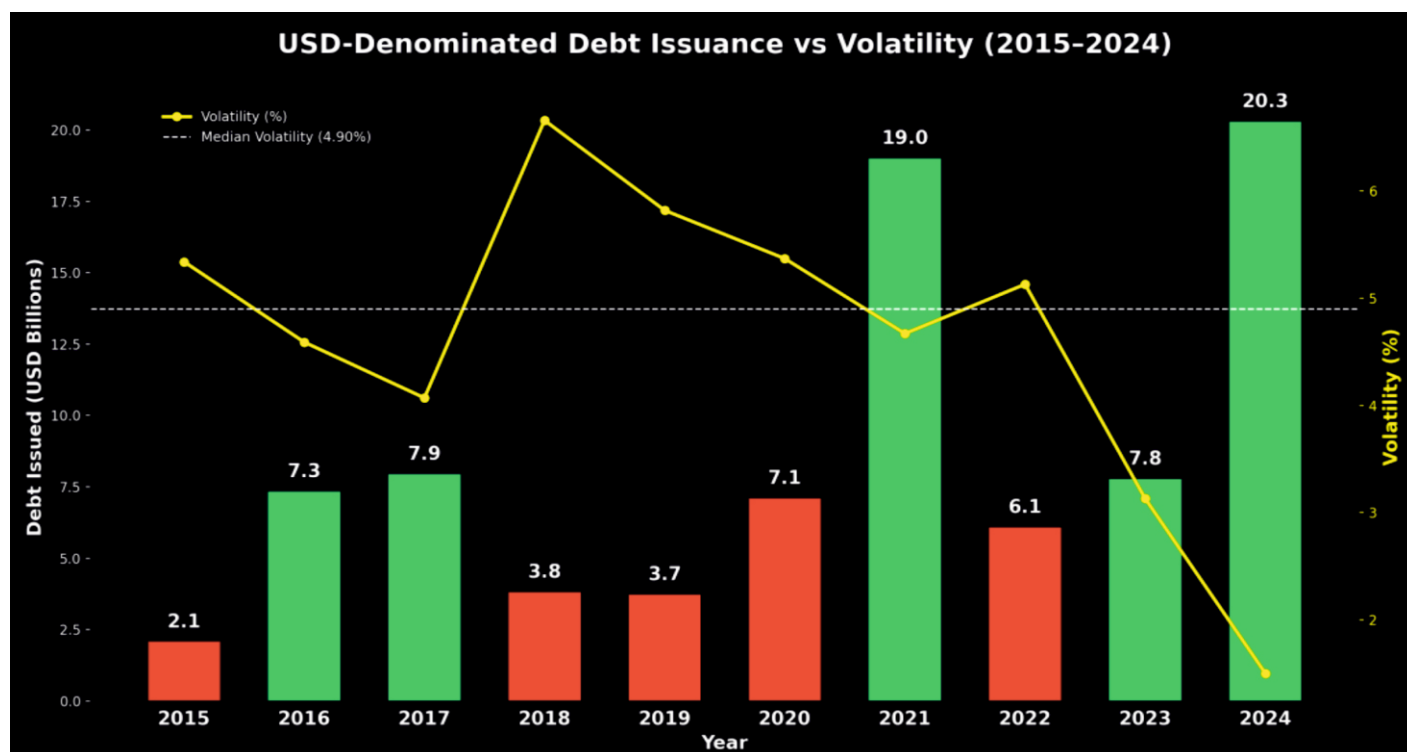
TABLE III. Table showing USD-INR exchange rate volatility and volume of USD-denominated debt for the last 10 years from 2015 to 2024.

YEAR	VOLATILITY (%)	VOLUME ISSUED (USD Billions)
2015	5.34	2.075
2016	4.59	7.33
2017	4.07	7.9453
2018	6.66	3.8
2019	5.82	3.7265
2020	5.37	7.0972
2021	4.67	19.0046
2022	5.13	6.075
2023	3.13	7.77
2024	1.5	20.29

The table displays the USD-INR exchange rate volatility and the volume of USD-denominated debt from 2015 to 2024, according to Bloomberg.

Objective 3 : To analyze the timing and volume of India's USD-denominated debt issuance during periods of exchange rate fluctuation.

Fig.3. Graph showing USD-INR exchange rate volatility and volume of USD-denominated debt for the last 10 years from 2015 to 2024.



The figure shows USD-INR exchange rate volatility and the volume of USD-denominated debt for the last 10 years, from 2015 to 2024, according to Bloomberg

When the rupee is stable, Indian corporations often issue more USD-denominated bonds, as seen in low-volatility years such as 2021 and 2024, when issuance peaked at \$19.0 billion and \$20.3 billion, respectively. Conversely, during high-volatility years like 2015 and 2018, borrowing remained low, illustrating the importance of currency rate stability on financing decisions.

Objective 4: To study the Changes in Loan Duration and Borrower Type in India's USD debt Securities during high and low exchange Rate volatility.

During high-volatility years, over 40 USD bonds were issued, largely with 10-year maturities. Around 80% came from large non-financial corporations like Reliance and Adani, highlighting their confidence in entering global markets despite currency volatility.

TABLE IV. Table showing debt issued in a highly volatile tenor

Issuer Name	Ticker	Tenor at Issue	Issue Date	Amt Issued	Cpn	Maturity	Mty Type	Currency	Issuer Type	Year	Volatility	Bonds
Reliance Communications Ltd	RCOMIN	5.5	06-05-2015	300000000	6.5	06-11-2020	AT MATURITY	USD	Non-Financial Corporations	2015	High	Corporate
ICICI Bank Ltd/Dubai	ICICI	10	08-12-2015	500000000	3.65	08-12-2025	AT MATURITY	USD	Deposit-taking Corporations	2015	High	Corporate
Reliance Industries Ltd	RILIN	30	10-02-2015	750000000	4.875	10-02-2045	AT MATURITY	USD	Non-Financial Corporations	2015	High	Corporate
Reliance Industries Ltd	RILIN	30	10-02-2015	750000000	4.875	10-02-2045	AT MATURITY	USD	Non-Financial Corporations	2015	High	Corporate
Reliance Industries Ltd	RILIN	10	26-08-2015	225000000	2.512	15-01-2026	SINKABLE	USD	Non-Financial Corporations	2015	High	Corporate
Videocon Industries Ltd	VCLFIN	5	30-12-2015	972000000	2.8	31-12-2020	CONV/PUT	USD	Non-Financial Corporation	2015	High	Corporate
Reliance Industries Ltd	RILIN	10	01-02-2018	1000000000	3.667	01-02-2028	AT MATURITY	USD	Other Financial Corporations	2018	High	Corporate
Export-Import Bank of India	EXIMBK	10	06-12-2018	500000000	3.875	06-12-2028	AT MATURITY	USD	Other Financial Corporations	2018	High	Quasi Sovereign
Power Finance Corp Ltd	POWFIN	10	08-03-2018	300000000	6.15	08-03-2028	AT MATURITY	USD	Non-Financial Corporation	2018	High	Quasi Sovereign
UPL Corp Ltd	UPLIN	10	10-08-2018	300000000	4.5	10-08-2028	AT MATURITY	USD	Other Financial Corporations	2018	High	Corporate
Power Finance Corp Ltd	POWFIN	10	19-03-2018	400000000	5.25	19-03-2028	AT MATURITY	USD	Non-Financial Corporation	2018	High	Quasi Sovereign
NTPC Ltd	NTPCIN	10	22-03-2018	300000000	6.5	22-03-2028	AT MATURITY	USD	Non-Financial Corporation	2018	High	Quasi Sovereign
REC Ltd	RECLIN	10	24-01-2018	1000000000	4.625	24-01-2028	AT MATURITY	USD	Non-Financial Corporation	2018	High	Quasi Sovereign
ABJA Investment Co Pte Ltd	TATAIN	10	03-07-2019	750000000	5.45	03-07-2029	AT MATURITY	USD	Non-Financial Corporation	2019	High	Corporate
Adani Ports & Special Economic Zone Ltd	ADSEZ	10	04-02-2019	550000000	4.375	04-02-2029	AT MATURITY	USD	Non-Financial Corporation	2019	High	Corporate
Oil India Ltd	OILINL	10	04-06-2019	500000000	5.125	04-06-2029	AT MATURITY	USD	Non-Financial Corporation	2019	High	Quasi Sovereign
Delhi International Airport Ltd	DIALIN	10	05-12-2019	300000000	6.45	05-12-2029	AT MATURITY	USD	Non-Financial Corporation	2019	High	Quasi Sovereign
Oil & Natural Gas Corp Ltd	ONGCIN	20	15-10-2019	362500000	3.375	15-10-2039	CALL/SINK	USD	Non-Financial Corporation	2019	High	Quasi Sovereign
Adani Renewable Energy RJ Ltd/Kodungal Solar Parks Pvt Ltd/Wardha Solar Maharash	ARENRJ	10	16-09-2019	450000000	4.625	16-09-2029	AT MATURITY	USD	Other Financial Corporations	2019	High	Corporate
Power Finance Corp Ltd	POWFIN	16.5	21-11-2019	500000000	3.9	21-05-2036	SINKABLE	USD	Non-Financial Corporation	2019	High	Quasi Sovereign
Adani Transmission Step-One Ltd	ADTIN	7	22-10-2019	300000000	4.25	22-10-2026	CALLABLE	USD	Non-Financial Corporation	2019	High	Corporate
HPCL-Mittal Energy Ltd	HMELIN	7	04-08-2020	750000000	5.45	04-08-2027	CALLABLE	USD	Non-Financial Corporation	2020	High	Corporate
Adani Ports & Special Economic Zone Ltd	ADSEZ	10	12-02-2020	1000000000	4.2	12-02-2030	AT MATURITY	USD	Non-Financial Corporation	2020	High	Corporate
Adani Electricity Mumbai Ltd	ADANEM	10	13-02-2020	700000000	3.949	13-02-2030	AT MATURITY	USD	Non-Financial Corporation	2020	High	Corporate
Indian Railway Finance Corp Ltd	INRCIN	30	13-02-2020	300000000	3.249	13-02-2050	AT MATURITY	USD	Non-Financial Corporation	2020	High	Quasi Sovereign
Indian Railway Finance Corp Ltd	INRCIN	10	15-01-2020	1000000000	3.95	15-01-2030	AT MATURITY	USD	Other Financial Corporations	2020	High	Quasi Sovereign
Export-Import Bank of India	EXIMBK	10	16-06-2020	500000000	3.25	16-06-2030	AT MATURITY	USD	Non-Financial Corporation	2020	High	Quasi Sovereign
UPL Corp Ltd	UPLIN	5.5	19-10-2020	750000000	4.625	19-04-2026	AT MATURITY	USD	Non-Financial Corporation	2020	High	Corporate
Periana Holdings LLC/DE	JSTLIN	10.15	21-12-2020	300000000	5.95	16-02-2031	CALL/SINK	USD	Non-Financial Corporation	2020	High	Corporate
Adani International Container Terminal Pvt Ltd	ADINCO	5	22-01-2020	500000000	3	22-01-2025	CALLABLE	USD	Non-Financial Corporation	2020	High	Corporate
Future Retail Ltd	FRETAI	10.25	23-01-2020	750000000	5.6	23-04-2030	AT MATURITY	USD	Other Financial Corporations	2020	High	Corporate
Power Finance Corp Ltd	POWFIN	7	29-01-2020	450000000	3.95	05-03-2027	CALLABLE	USD	Non-Financial Corporation	2020	High	Quasi Sovereign
Greenko Dutch BV	GRNKEN	10	12-01-2022	1500000000	3.85	12-01-2032	AT MATURITY	USD	Non-Financial Corporation	2022	High	Corporate
Reliance Industries Ltd	RILIN	30	12-01-2022	1750000000	2.875	12-01-2052	AT MATURITY	USD	Non-Financial Corporation	2022	High	Corporate
Reliance Industries Ltd	RILIN	40	12-01-2022	750000000	3.625	12-01-2062	AT MATURITY	USD	Non-Financial Corporation	2022	High	Corporate
Reliance Industries Ltd	RILIN	5.25	18-01-2022	400000000	5.75	18-04-2027	CALLABLE	USD	Non-Financial Corporation	2022	High	Corporate
India Clean Energy Holdings	INCLEN	3.5	18-01-2022	475000000	4.5	18-07-2025	CALLABLE	USD	Non-Financial Corporation	2022	High	Corporate
Shriram Finance Ltd	SHFLIN	5.25	18-01-2022	400000000	6.95	18-04-2027	CALLABLE	USD	Non-Financial Corporation	2022	High	Corporate
India Clean Energy Holdings	INCLEN	7	21-01-2022	400000000	4.5	21-01-2029	CALLABLE	USD	Non-Financial Corporation	2022	High	Corporate
JSW Infrastructure Ltd	JSWINI	10	21-01-2022	500000000	8.95	21-01-2032	AT MATURITY	USD	Non-Financial Corporation	2022	High	Corporate
Indian Railway Finance Corp Ltd	INRCIN	5	26-01-2022	300000000	3.57	26-01-2027	AT MATURITY	USD	Deposit-taking Corporations	2022	High	Quasi Sovereign

SUMMARY TABLE : DEBT ISSUED IN HIGHLY VOLATILE TENOR

Most Frequent external debt tenor	10 Years
Average external debt tenor	10 Years
Main Borrower type	Non-Financial Corporation (80.5%)
Significant Borrower	Very Few other borrower types

The table presents the debt issued in highly volatile tenors from Bloomberg.

TABLE V Table showing debt issued in low-volatility tenor

Issuer Name	Ticker	Tenor at Issue	Issue Date	Amt Issued	Cpn	Maturity	Mty Type	Currency	Issuer Type	Year	Volatility	Bonds
Adani Transmission Step-One Ltd	ADTIN	10	03-08-2016	500000000	4	03-08-2026	AT MATURITY	USD	Non-Financial Corporations	2016	low	Corporate
Adani Transmission Step-One Ltd	ADTIN	10	03-08-2016	500000000	1.87	15-01-2026	SINKABLE	USD	Non-Financial Corporations	2016	low	Corporate
Reliance Industries Ltd	RILIN	10	03-11-2016	184284000	3.375	05-08-2026	AT MATURITY	USD	Other Financial Corporations	2016	low	Corporate
Export-Import Bank of India	EXIMBK	10	05-08-2016	1000000000	3.375	05-08-2026	AT MATURITY	USD	Other Financial Corporations	2016	low	Quasi Sovereign
Export-Import Bank of India	EXIMBK	10	05-08-2016	1000000000	2.444	15-01-2026	SINKABLE	USD	Non-Financial Corporations	2016	low	Quasi Sovereign
Reliance Industries Ltd	RILIN	10	15-12-2016	204905000	4	18-03-2026	AT MATURITY	USD	Deposit-taking Corporations	2016	low	Corporate
ICICI Bank Ltd/Dubai	ICICI	10	18-03-2016	800000000	4	18-03-2026	AT MATURITY	USD	Deposit-taking Corporations	2016	low	Corporate
ICICI Bank Ltd/Dubai	ICICI	10	18-03-2016	800000000	4.25	26-02-2026	AT MATURITY	USD	Non-Financial Corporation	2016	low	Corporate
NTPC Ltd	NTPCIN	10	26-02-2016	500000000	3.75	27-07-2026	AT MATURITY	USD	Non-Financial Corporation	2016	low	Quasi Sovereign
ONGC Videsh Vankomert Pte Ltd	ONGCIN	10	27-07-2016	600000000	2.06	15-01-2026	SINKABLE	USD	Non-Financial Corporation	2016	low	Quasi Sovereign
Reliance Industries Ltd	RILIN	10	31-03-2016	190716000	5.125	31-10-2026	AT MATURITY	USD	Non-Financial Corporation	2016	low	Corporate
Delhi International Airport Ltd	DIALIN	10	31-10-2016	522600000	6.125	31-10-2026	AT MATURITY	USD	Non-Financial Corporation	2016	low	Quasi Sovereign
Delhi International Airport Ltd	DIALIN	10	31-10-2016	522600000	6.125	01-02-2022	CALLABLE	USD	Non-Financial Corporation	2016	low	Quasi Sovereign
Jain International Trading BV	JIIN	5	06-12-2017	400000000	7.125	06-12-2027	AT MATURITY	USD	Other Financial Corporations	2017	low	Corporate
Power Finance Corp Ltd	POWFIN	10	07-07-2017	450000000	3.75	07-07-2027	AT MATURITY	USD	Non-Financial Corporation	2017	low	Corporate
REC Ltd	RECLIN	10	12-07-2017	500000000	3.875	12-07-2027	AT MATURITY	USD	Non-Financial Corporation	2017	low	Quasi Sovereign
Hindustan Petroleum Corp Ltd	HPCLIN	10	13-12-2017	500000000	4	13-12-2027	AT MATURITY	USD	Non-Financial Corporation	2017	low	Quasi Sovereign
Indian Railway Finance Corp Ltd	INRCIN	10	14-12-2017	500000000	3.835	14-12-2027	AT MATURITY	USD	Deposit-taking Corporations	2017	low	Quasi Sovereign
ICICI Bank Ltd/Dubai	ICICI	10	14-12-2017	500000000	3.8	14-12-2027	AT MATURITY	USD	Deposit-taking Corporations	2017	low	Corporate
ICICI Bank Ltd/Dubai	ICICI	10	18-01-2017	600000000	3.8	18-01-2027	AT MATURITY	USD	Non-Financial Corporation	2017	low	Corporate
BPRL International Singapore Pte Ltd	BPCLIN	10	21-04-2017	500000000	4.375	21-04-2027	AT MATURITY	USD	Non-Financial Corporation	2017	low	Corporate
Oil India International Pte Ltd	OILINL	10	27-10-2017	350000000	4	27-10-2027	AT MATURITY	USD	Non-Financial Corporation	2017	low	Quasi Sovereign
GMR Hyderabad International Airport Ltd	GMRLIN	10	27-10-2017	350000000	4.25	27-10-2027	AT MATURITY	USD	Non-Financial Corporation	2017	low	Quasi Sovereign
GMR Hyderabad International Airport Ltd	GMRLIN	10	28-04-2017	375000000	4.25	28-04-2027	AT MATURITY	USD	Non-Financial Corporation	2017	low	Quasi Sovereign
HPCL-Mittal Energy Ltd	HMELIN	10	28-11-2017	81696000	4.25	30-09-2020	SINKABLE	USD	Non-Financial Corporation	2017	low	Corporate
Jaiprakash Associates Ltd	JPAIN	3	28-11-2017	38640000	4.76	30-09-2021	CONV/SINK	USD	Non-Financial Corporation	2017	low	Corporate
Jaiprakash Associates Ltd	JPAIN	4	30-06-2017	500000000	4.75	30-07-2027	CALLABLE	USD	Non-Financial Corporation	2017	low	Corporate
Adani Ports & Special Economic Zone Ltd	ADSEZ	10	30-11-2017	800000000	4	30-11-2027	AT MATURITY	USD	Non-Financial Corporation	2017	low	Corporate
Reliance Industries Ltd	RILIN	10	30-11-2017	800000000	3.667	30-11-2027	AT MATURITY	USD	Non-Financial Corporation	2017	low	Corporate
Videocon Industries Ltd	RPVIN	5	01-03-2021	500000000	5.875	01-09-2026	AT MATURITY	USD	Non-Financial Corporation	2021	low	Corporate
REC Ltd	RECLIN	10	02-02-2021	500000000	2.25	02-02-2031	AT MATURITY	USD	Non-Financial Corporation	2021	low	Corporate
Adani Ports & Special Economic Zone Ltd	ADSEZ	5	02-02-2021	300000000	3.1	02-02-2026	AT MATURITY	USD	Non-Financial Corporation	2021	low	Corporate
GMR Hyderabad International Airport Ltd	GMRLIN	20	02-08-2021	450000000	4.75	02-08-2041	CALLABLE	USD	Non-Financial Corporation	2021	low	Quasi Sovereign
Adani Ports & Special Economic Zone Ltd	ADSEZ	10.5	02-08-2021	300000000	5	02-02-2032	CALLABLE	USD	Non-Financial Corporation	2021	low	Corporate
Adani Ports & Special Economic Zone Ltd	ADSEZ	10.25	03-03-2021	750000000	3.828	03-06-2031	CALLABLE	USD	Non-Financial Corporation	2021	low	Corporate
Bharti Airtel Ltd	BHARTI	5	03-11-2021	1010000000	3.25	31-10-2026	CALLABLE	USD	Non-Financial Corporation	2021	low	Corporate
CA Magnum Holdings	HEXWIN	5	04-03-2021	150000000	5.375	04-03-2026	CONV/PUT	USD	Non-Financial Corporation	2021	low	Corporate
Sammaan Capital Ltd	IHFILN	7	09-02-2021	230000000	4.5	15-02-2028	CONV/PUT	USD	Non-Financial Corporation	2021	low	Corporate
MakeMyTrip Ltd	MMYT	5	09-06-2021	425000000	0	09-06-2026	CALLABLE	USD	Non-Financial Corporation	2021	low	Corporate
TML Holdings Pte Ltd	TTMTIN	10	10-02-2021	750000000	4.35	10-02-2031	AT MATURITY	USD	Other Financial Corporations	2021	low	Corporate
Indian Railway Finance Corp Ltd	INRCIN	5	10-03-2021	500000000	2.8	10-03-2026	CALLABLE	USD	Non-Financial Corporation	2021	low	Quasi Sovereign
HCL America Inc	HCLTIN	5	10-08-2021	334000000	1.375	10-08-2026	CALL/SINK	USD	Non-Financial Corporation	2021	low	Corporate
India Cleantech Energy	ACMSOL	10	12-08-2021	500000000	4.7	12-08-2031	CALLABLE	USD	Non-Financial Corporation	2021	low	Corporate
Summit Digital Infrastructure Ltd	SUMDIG	10	13-01-2021	1000000000	2.875	13-01-2031	AT MATURITY	USD	Other Financial Corporations	2021	low	Corporate
Export-Import Bank of India	EXIMBK	5.5	13-01-2021	600000000	2.25	13-07-2026	AT MATURITY	USD	Deposit-taking Corporations	2021	low	Quasi Sovereign
State Bank of India/London	SBIIN	10	13-01-2021	1000000000	1.8	13-01-2031	AT MATURITY	USD	Other Financial Corporations	2021	low	Quasi Sovereign
Export-Import Bank of India	EXIMBK	5.5	13-07-2021	400000000	2.25	13-01-2027	AT MATURITY	USD	Non-Financial Corporation	2021	low	Quasi Sovereign
REC Ltd	RECLIN	7	13-12-2021	1000000000	2.75	13-12-2028	CALL/SINK	USD	Non-Financial Corporation	2021	low	Quasi Sovereign
Greenko Power II Ltd	GRNKEN	7.25	14-04-2021	585000000	4.3	14-07-2028	CALLABLE	USD	Non-Financial Corporation	2021	low	Corporate
ReNew Wind Energy AP2 / ReNew Power Pvt Ltd other 9 Subsidiaries	RPVIN	10	16-02-2021	400000000	4.5	16-02-2031	CALLABLE	USD	Non-Financial Corporation	2021	low	Corporate
UltraTech Cement Ltd	UTCMIN	2.5	18-03-2021	286650349	2.8	10-09-2023	CALLABLE	USD	Non-Financial Corporation	2021	low	Corporate
Tiger Holdco Pte Ltd	TGRHLD	10	18-05-2021	707000000	13	18-05-2031	CALL/SINK	USD	Non-Financial Corporation	2021	low	Corporate
JSW Hydro Energy Ltd	HBSPIN	5	19-08-2021	414000000	4.125	19-08-2026	CALL/SINK	USD	Non-Financial Corporation	2021	low	Corporate
Azure Power Energy Ltd	AZUPOE	6	22-02-2021	460000000	3.575	22-02-2027	CALL/SINK	USD	Non-Financial Corporation	2021	low	Corporate
India Green Power Holdings	INGPHL	10	22-07-2021	300000000	4	22-07-2031	CALLABLE	USD	Non-Financial Corporation	2021	low	Corporate
Adani Electricity Mumbai Ltd	ADANEM	5	23-06-2021	750000000	3.867	23-06-2026	CALLABLE	USD	Non-Financial Corporation	2021	low	Corporate
Wipro IT Services LLC	WPROIN	10.5	23-09-2021	500000000	1.5	05-04-2032	CALLABLE	USD	Non-Financial Corporation	2021	low	Corporate
JSW Steel Ltd	JSTLIN	5.5	23-09-2021	500000000	5.05	05-04-2027	CALLABLE	USD	Non-Financial Corporation	2021	low	Corporate
JSW Steel Ltd	JSTLIN	6	25-03-2021	363000000	3.95	25-03-2027	CALL/SINK	USD	Non-Financial Corporation	2021	low	Corporate
Clean Renewable Power Mauritius Pte Ltd	CLRNPW	7	26-02-2021	500000000	4.25	26-02-2028	CALLABLE	USD	Non-Financial Corporation	2021	low	Corporate
Fairfax India Holdings Corp	FIHUCN	10.3	29-01-2021	500000000	5	16-05-2031	AT MATURITY	USD	Other Financial Corporations	2021	low	Corporate
Power Finance Corp Ltd	POWFIN	5	29-03-2021	940000000	3.35	29-03-2026	CALL/SINK	USD	Non-Financial Corporation	2021	low	Quasi Sovereign
State Bank of India/London	SBIIN	3	02-03-2023	750000000	2.49	02-03-2026	AT MATURITY	USD	Deposit-taking Corporations	2023	Low	Quasi Sovereign
HDFC Bank Ltd/Gandhinagar	HDFCB	5	05-05-2023	750000000	4.375	05-05-2028	AT MATURITY	USD	Deposit-taking Corporations	2023	Low	Corporate
State Bank of India/London	SBIIN	3	07-07-2023	150000000	4.875	07-07-2026	AT MATURITY	USD	Other Financial Corporations	2023	Low	Quasi Sovereign
Export-Import Bank Of India/London	EXIMBK	5	11-04-2023	750000000	5.37420777	11-04-2028	AT MATURITY	USD	Non-Financial Corporation	2023	Low	Quasi Sovereign
REC Ltd	RECLIN	5	11-04-2023	750000000	5.625	11-04-2028	AT MATURITY	USD	Non-Financial Corporation	2023	Low	Quasi Sovereign
REC Ltd	RECLIN	10	18-01-2023	1000000000	5.625	18-01-2033	AT MATURITY	USD	Other Financial Corporations	2023	Low	Quasi Sovereign
Export-Import Bank of India	EXIMBK	3	22-06-2023	150000000	5.5	22-06-2026	AT MATURITY	USD	Deposit-taking Corporations	2023	Low	Quasi Sovereign
HDFC Bank Ltd/Gandhinagar	HDFCB	3.5	24-08-2023	435000000	5.45512582	24-02-2027	CALLABLE	USD	Non-Financial Corporation	2023	Low	Corporate
Continuum Energy Aura Pte Ltd	COGREN	3.5	24-08-2023	435000000	9.5	24-02-2027	CALLABLE	USD	Non-Financial Corporation	2023	Low	Corporate
Continuum Energy Aura Pte Ltd	COGREN	3	27-06-2023	150000000	9.5	27-06-2026	AT MATURITY	USD	Deposit-taking Corporations	2023	Low	Corporate
State Bank of India/London	SBIIN	3.25	28-04-2023	525000000	5.46344826	28-07-2026	CALLABLE	USD	Non-Financial Corporation	2023	Low	Quasi Sovereign
Diamond II Ltd	RNW	3.5	29-03-2023	150000000	7.95	29-09-2026	AT MATURITY	USD	Other Financial Corporations	2023	Low	Corporate

TABLE V. Table showing debt issued in low-volatility tenor

Issuer Name	Ticker	Tenor at Issue	Issue Date	Amt Issued	Cpn	Maturity	Mty Type	Currency	Issuer Type	Year	Volatility	Bonds
Shriram Finance Ltd	SHFLIN	5	29-12-2023	250000000	6.67968336	29-12-2028	AT MATURITY	USD	Deposit-taking Corporations	2023	Low	Corporate
State Bank of India/London	SBIN	1	01-08-2024	10000000	5.69544751	01-08-2025	AT MATURITY	USD	Deposit-taking Corporations	2024	Low	Quasi Sovereign
State Bank of India/Hong Kong	SBIN	1	02-08-2024	9000000	5.42	01-08-2025	AT MATURITY	USD	Deposit-taking Corporations	2024	Low	Quasi Sovereign
State Bank of India/Gift City	SBIN	3.25	03-04-2024	350000000	4.8	03-07-2027	AT MATURITY	USD	Non-Financial Corporation	2024	Low	Quasi Sovereign
Sammaan Capital Ltd	IHFLIN	3.25	03-04-2024	350000000	9.7	03-07-2027	AT MATURITY	USD	Non-Financial Corporation	2024	Low	Corporate
Sammaan Capital Ltd	IHFLIN	2	03-05-2024	40000000	9.7	04-05-2026	AT MATURITY	USD	Deposit-taking Corporations	2024	Low	Corporate
HDFC Bank Ltd/Gandhinagar	HDFCB		03-12-2024	500000000	5.65	03-12-2031	CALLABLE	USD	Non-Financial Corporation	2024	Low	Corporate
Vedanta Resources Finance II PLC	VEDLN	3.5	03-12-2024	300000000	9.25	03-06-2028	CALLABLE	USD	Non-Financial Corporation	2024	Low	Corporate
Vedanta Resources Finance II PLC	VEDLN	7	03-12-2024	500000000	7.25	03-12-2031	CALLABLE	USD	Non-Financial Corporation	2024	Low	Corporate
Vedanta Resources Finance II PLC	VEDLN	3.5	03-12-2024	300000000	10.25	03-06-2028	CALLABLE	USD	Non-Financial Corporation	2024	Low	Corporate
Vedanta Resources Finance II PLC	VEDLN	4	05-04-2024	3000000	7.25	05-04-2028	AT MATURITY	USD	Other Financial Corporations	2024	Low	Corporate
Mufin Green Finance Ltd	MUGEFI	3	05-04-2024	2000000	7.12789	05-04-2027	AT MATURITY	USD	Other Financial Corporations	2024	Low	Corporate
Mufin Green Finance Ltd	MUGEFI	1	06-08-2024	16000000	5.12789	05-08-2025	AT MATURITY	USD	Deposit-taking Corporations	2024	Low	Corporate
State Bank of India/Gift City	SBIN	0.75	06-12-2024	10000000	5	05-09-2025	AT MATURITY	USD	Deposit-taking Corporations	2024	Low	Quasi Sovereign
State Bank of India/Hong Kong	SBIN	1	09-09-2024	31200000	0	08-09-2025	AT MATURITY	USD	Deposit-taking Corporations	2024	Low	Quasi Sovereign
ICICI Bank Ltd/Gift City	ICICI	1	09-09-2024	77900000	0	09-09-2025	AT MATURITY	USD	Deposit-taking Corporations	2024	Low	Corporate
HDFC Bank Ltd/Gandhinagar	HDFCB	5	09-10-2024	800000000	4.78	09-10-2029	CALLABLE	USD	Non-Financial Corporation	2024	Low	Corporate
Biocon Biologics Global PLC	BIOLIN	1	09-10-2024	10000000	6.67	08-10-2025	AT MATURITY	USD	Deposit-taking Corporations	2024	Low	Corporate
State Bank of India/Gift City	SBIN	1	10-09-2024	18000000	4.5	10-09-2025	AT MATURITY	USD	Deposit-taking Corporations	2024	Low	Quasi Sovereign
ICICI Bank Ltd/Gandhinagar	ICICI	1	10-09-2024	27500000	4.84	10-09-2025	AT MATURITY	USD	Deposit-taking Corporations	2024	Low	Corporate
State Bank of India/Hong Kong	SBIN	1	10-09-2024	966000000	4.73	09-09-2025	AT MATURITY	USD	Deposit-taking Corporations	2024	Low	Quasi Sovereign
State Bank of India/Gift City	SBIN	5	10-12-2024	50000000	5.1	10-12-2029	CONV/PUT	USD	Non-Financial Corporation	2024	Low	Quasi Sovereign
Paisalo Digital Ltd	SEIVNT	8	11-03-2024	740000000	7.5	11-03-2032	CALL/SINK	USD	Non-Financial Corporation	2024	Low	Corporate
IRB Infrastructure Developers Ltd	IRBIN	5	11-07-2024	350000000	7.11	11-07-2029	CALLABLE	USD	Non-Financial Corporation	2024	Low	Corporate
Motherson Global Investments BV	MSSIN	5	11-09-2024	300000000	5.625	11-09-2029	AT MATURITY	USD	Deposit-taking Corporations	2024	Low	Corporate
Canara Bank	CBKIN	3	11-12-2024	12000000	4.896	11-01-2028	AT MATURITY	USD	Other Financial Corporations	2024	Low	Corporate
Kinara Capital Pvt Ltd	VHNFPL	18	12-03-2024	409000000	8.86128	12-03-2042	CALL/SINK	USD	Non-Financial Corporation	2024	Low	Corporate
Adani Green Energy UP Ltd / Prayatra Developers Pvt Ltd / Parampuriya Solar Energy	ADGREG	5	12-03-2024	150000000	5.7	12-03-2029	AT MATURITY	USD	Other Financial Corporations	2024	Low	Corporate
Export-Import Bank Of India/London	EXIMBK	4	14-03-2024	11500000	5.58560694	14-03-2028	AT MATURITY	USD	Non-Financial Corporation	2024	Low	Quasi Sovereign
Aye Finance Ltd	AYEFIN	3.75	14-05-2024	750000000	8.9705	14-02-2028	SINKABLE	USD	Other Financial Corporations	2024	Low	Corporate
Muthoot Finance Ltd	MUTHIN	4	14-05-2024	300000000	7.125	12-05-2028	SINKABLE	USD	Other Financial Corporations	2024	Low	Corporate
Manappuram Finance Ltd	MGLFIN	3.75	14-05-2024	750000000	7.375	14-02-2028	SINKABLE	USD	Non-Financial Corporation	2024	Low	Corporate
Muthoot Finance Ltd	MUTHIN	5	14-06-2024	5000000	7.125	14-06-2029	AT MATURITY	USD	Non-Financial Corporation	2024	Low	Corporate
Aviom India Housing Finance Pvt Ltd	AVHFIN	5	15-02-2024	450000000	6.62951	15-02-2029	AT MATURITY	USD	Deposit-taking Corporations	2024	Low	Corporate
HDFC Bank Ltd	HDFCB	3	15-02-2024	300000000	5.18	15-02-2027	AT MATURITY	USD	Deposit-taking Corporations	2024	Low	Corporate
HDFC Bank Ltd	HDFCB	1	16-12-2024	50000000	5.196	15-12-2025	AT MATURITY	USD	Deposit-taking Corporations	2024	Low	Corporate
State Bank of India/Gift City	SBIN	5	17-01-2024	600000000	0	17-01-2029	AT MATURITY	USD	Deposit-taking Corporations	2024	Low	Quasi Sovereign
State Bank of India/London	SBIN	1	17-09-2024	50000000	0	16-09-2025	AT MATURITY	USD	Deposit-taking Corporations	2024	Low	Quasi Sovereign
State Bank of India/Gift City	SBIN	3	19-09-2024	8500000	4.85	19-09-2027	AT MATURITY	USD	Other Financial Corporations	2024	Low	Quasi Sovereign
Satya MicroCapital Ltd	SATVIN	4	20-03-2024	10000000	8.3498	20-03-2028	AT MATURITY	USD	Other Financial Corporations	2024	Low	Corporate
Lendingkart Finance Ltd	LNKFIN	3	20-06-2024	100000000	5.928399	20-06-2027	AT MATURITY	USD	Deposit-taking Corporations	2024	Low	Corporate
State Bank of India/London	SBIN	1	20-09-2024	35000000	5.40011153	19-09-2025	AT MATURITY	USD	Deposit-taking Corporations	2024	Low	Quasi Sovereign
State Bank of India/Gift City	SBIN	3	21-06-2024	3000000	4.55	21-06-2027	AT MATURITY	USD	Non-Financial Corporation	2024	Low	Quasi Sovereign
Aviom India Housing Finance Pvt Ltd	AVHFIN	3.25	22-01-2024	750000000	7.49518	22-04-2027	AT MATURITY	USD	Non-Financial Corporation	2024	Low	Corporate
Shriram Finance Ltd	SHFLIN	7	23-08-2024	120000000	6.625	25-08-2031	CONV/PUT	USD	Non-Financial Corporation	2024	Low	Corporate
Eraaya Lifespaces Ltd	ERAAYA	4.5	23-10-2024	650000000	8.5	23-04-2029	SINKABLE	USD	Non-Financial Corporation	2024	Low	Corporate
Muthoot Finance Ltd	MUTHIN	5	25-03-2024	300000000	6.375	25-03-2029	SINK/EXT	USD	Other Financial Corporations	2024	Low	Corporate
India Vehicle Finance	INVHFI	5	25-11-2024	500000000	5.85	25-11-2029	AT MATURITY	USD	Deposit-taking Corporations	2024	Low	Corporate
State Bank of India/London	SBIN	6	26-03-2024	10000000	4.125	21-03-2030	AT MATURITY	USD	Other Financial Corporations	2024	Low	Quasi Sovereign
Varthana Finance Pvt Ltd	TFPLIN	9	26-06-2024	650000000	6.15	26-06-2033	CALL/SINK	USD	Non-Financial Corporation	2024	Low	Corporate
Continuum Green Energy India Pvt / Co-Issuers	CGRNEG	9	26-06-2024	650000000	5.5	26-06-2033	CALL/SINK	USD	Non-Financial Corporation	2024	Low	Corporate
Continuum Green Energy India Pvt / Co-Issuers	CGRNEG	3	26-06-2024	5000000	7.5	26-06-2027	AT MATURITY	USD	Other Financial Corporations	2024	Low	Corporate
Pahal Financial Services Pvt Ltd	PFSVIN	5	26-06-2024	7000000	8.93316	26-06-2029	AT MATURITY	USD	Other Financial Corporations	2024	Low	Corporate
Pahal Financial Services Pvt Ltd	PFSVIN	3	26-06-2024	5000000	6.93673	26-06-2027	AT MATURITY	USD	Non-Financial Corporation	2024	Low	Corporate
Midland Microfin Ltd	MIMFIN	5	26-08-2024	12000000	5.62114	26-08-2029	AT MATURITY	USD	Other Financial Corporations	2024	Low	Corporate
Muthoot Microfin Ltd	MUTMIC	3	27-06-2024	7500000	8.02516	27-06-2027	AT MATURITY	USD	Other Financial Corporations	2024	Low	Corporate
Pahal Financial Services Pvt Ltd	PFSVIN	5	27-09-2024	120000000	4.32765	27-09-2029	AT MATURITY	USD	Non-Financial Corporation	2024	Low	Corporate
REC Ltd	RECLIN	5	27-09-2024	500000000	4.75	27-09-2029	AT MATURITY	USD	Non-Financial Corporation	2024	Low	Quasi Sovereign
REC Ltd	RECLIN	1	27-12-2024	25000000	4.75	30-12-2025	AT MATURITY	USD	Deposit-taking Corporations	2024	Low	Quasi Sovereign
HDFC Bank Ltd/Gandhinagar	HDFCB	6	28-03-2024	10000000	4.9	29-03-2030	AT MATURITY	USD	Non-Financial Corporation	2024	Low	Corporate
Aviom India Housing Finance Pvt Ltd	AVHFIN	6	28-03-2024	1700000	8.47492	26-03-2030	AT MATURITY	USD	Non-Financial Corporation	2024	Low	Corporate
Aviom India Housing Finance Pvt Ltd	AVHFIN	3	28-05-2024	10000000	6.82719	28-05-2027	AT MATURITY	USD	Other Financial Corporations	2024	Low	Corporate
Satya MicroCapital Ltd	SATVIN	5	28-10-2024	3000000	8.98505	26-10-2029	AT MATURITY	USD	Other Financial Corporations	2024	Low	Corporate
Muthoot Microfin Ltd	MUTMIC	3	29-02-2024	5000000	7.848	28-02-2027	AT MATURITY	USD	Other Financial Corporations	2024	Low	Corporate
Aviom India Housing Finance Pvt Ltd	AVHFIN	3	29-04-2024	10000000	6.39257	29-04-2027	AT MATURITY	USD	Other Financial Corporations	2024	Low	Corporate
Dvara Kshetriya Gramin Financial Services Pvt Ltd	PUDFNC	4	29-04-2024	10000000	5.88353	29-04-2028	AT MATURITY	USD	Other Financial Corporations	2024	Low	Corporate
Kinara Capital Pvt Ltd	VHNFPL	3.5	29-07-2024	450000000	8.73353	29-01-2028	SINKABLE	USD	Other Financial Corporations	2024	Low	Corporate
Piramal Finance Ltd	PICAFH	3	29-11-2024	5000000	7.8	29-11-2027	AT MATURITY	USD	Other Financial Corporations	2024	Low	Corporate
TruCap Finance Ltd	DHVRFN	3	30-04-2024	5000000	9.16788	30-04-2027	AT MATURITY	USD	Non-Financial Corporation	2024	Low	Corporate
Midland Microfin Ltd	MIMFIN	3	30-05-2024	5000000	8.431	30-05-2027	AT MATURITY	USD	Non-Financial Corporation	2024	Low	Corporate
Midland Microfin Ltd	MIMFIN	5	30-07-2024	12500000	8.98505	02-07-2029	AT MATURITY	USD	Non-Financial Corporation	2024	Low	Corporate
Kinara Capital Pvt Ltd	VHNFPL	3.5	30-09-2024	500000000	8.98505	03-04-2028	CALLABLE	USD	Other Financial Corporations	2024	Low	Corporate
Shriram Finance Ltd	SHFLIN	7	31-07-2024	305000000	6.15	31-07-2031	CALL/SINK	USD	Non-Financial Corporation	2024	Low	Corporate
SAEL/SPREPL/SSPL/GPEPL/SKREPL/UBEPL	SAELT	1	31-10-2024	30000000	7.8	31-10-2025	AT MATURITY	USD	Deposit-taking Corporations	2024	Low	Corporate

SUMMARY TABLE : DEBT ISSUED IN LOW VOLATILE TENOR	
Most Frequent external debt tenor	10 Years
Average external debt tenor	7 Years
Main Borrower type	Non-Financial Corporation (56.5%)
Significant Borrower	Deposit-taking Corporations, Other Financial Corporations

The table shows the debt issued in low-volatility tenors from Bloomberg.

In low-volatility years (2016, 2017, 2021, 2023, 2024), around 148 bonds were issued, with both non-financial and financial corporations such as SBI, HDFC, and Vedanta taking advantage of stable currency conditions.

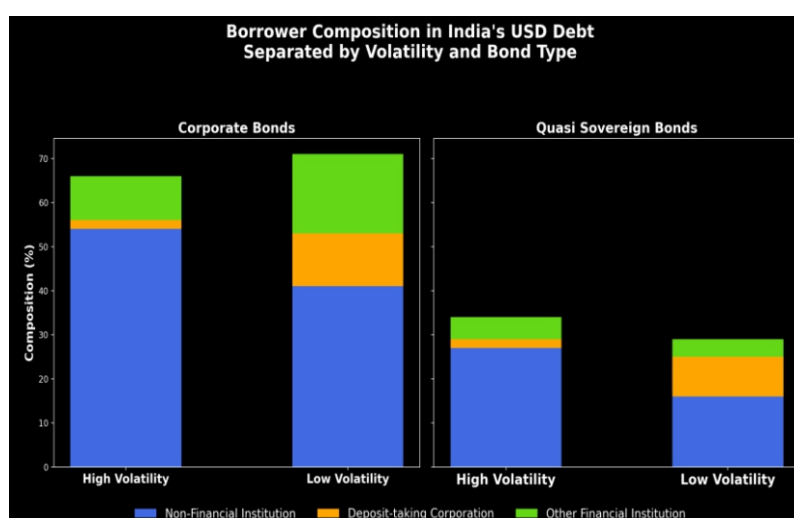
During high volatility, corporate bonds led at 66%, with non-financial organisations leading. In low-volatility years, corporate bonds surged to 71%, pushed by deposit-taking and other financial institutions, while quasi-sovereign bonds plummeted to 29%.

TABLE VI. Table showing borrower Composition in India's USD-denominated debt Securities in Bonds Separated by volatility.

High Volatility			Low Volatility		
Corporate Bonds			Corporate Bonds		
Non-Financial Institution	54%		Non-Financial Institution	41%	
Deposit-taking Corporation	2%		Deposit-taking Corporation	12%	
Other Financial Institution	10%	66%	Other Financial Institution	18%	71%
Quasi Sovereign Bonds			Quasi Sovereign Bonds		
Non-Financial Institution	27%		Non-Financial Institution	16%	
Deposit-taking Corporation	2%		Deposit-taking Corporation	9%	
Other Financial Institution	5%	34%	Other Financial Institution	4%	29%
Total		100%	Total		100%

The table presents the borrower Composition in India's USD-denominated debt securities, separated by volatility.

Fig.4. Graph showing borrower Composition in India's USD-denominated debt Securities in Bonds Separated by volatility.



The figure presents borrower Composition in India's USD-denominated debt securities, separated by volatility, from Bloomberg.

Objective 5: To estimate the additional interest cost risk premium that Indian borrowers pay on USD bonds compared to US government bonds.

Fig.5. Graph showing 10-year US yield curve.



The figure presents the 10-year US yield curve from Bloomberg.

Due to inflation and economic instability, the US 10-Year Treasury Yield rose between 2015 and 2018, fell in 2020, and then rose again in 2023-2024.

TABLE VII. Table showing the estimated additional Risk premium paid by Indian borrowers on USD-denominated Bonds during volatility.

Year	Average Coupon Rate (%)	US Treasury Yield Average(%)	Risk Premium (%)	Volatility (from Objective 2)
2015	4.2	2.13	2.07	High
2016	3.63	1.85	1.78	Low
2017	4.01	2.32	1.69	low
2018	5.33	2.91	2.42	High
2019	4.70	2.14	2.56	High
2020	4.33	0.88	3.45	High
2021	3.11	1.44	1.67	Low
2022	4.8	2.94	1.86	High
2023	5.37	3.95	1.42	Low
2024	6.21	4.21	2.00	Low

The table presents an estimate of the additional Risk premium paid by Indian borrowers on USD-denominated Bonds during volatility, according to Bloomberg.

Fig.6. Graph showing the risk premium that is paid by Indian borrowers on USD-denominated bonds during High and low volatility periods.



The figure presents the risk premium paid by Indian borrowers on USD-denominated Bonds during High- and low-volatility periods, sourced from Bloomberg.

From 2015 to 2024, Indian borrowers paid an average risk premium of 2.47% during high volatility, declining to 1.71% in low-volatility years.

4.2 Hypothesis Testing

Hypothesis 1:

H01-There is no difference in the volume of USD-denominated debt issued during high and low volatility periods.

H11-There is a significant difference in the volume of USD-denominated debt issued during high and low volatility periods.

Median Volatility = 4.90%

TABLE VIII. Table showing volume of USD-denominated debt issued in bonds during high and low volatility periods.

HIGH VOLATILITY DEBT ISSUD (USD Billions)	LOW VOLATILITY DEBT ISSUD (USD Billions)
2.075	7.33
3.8	7.9453
3.7265	19.0046
7.0972	7.77
6.075	20.29

The table presents the volume of USD-denominated debt issued as bonds during high- and low-volatility periods, sourced from Bloomberg.

TABLE IX. Table showing the Independent Sample T-test for hypothesis 1.

t-Test: Two-Sample Assuming Unequal Variances		
	HIGH VOLATILITY DEBT ISSUD (USD Billions)	LOW VOLATILITY DEBT ISSUD (USD Billions)
Mean	4.55474	12.46798
Variance	4.045004438	43.24073572
Observations	5	5
Hypothesized Mean Difference	0	
Df	5	
t Stat	-2.573204156	
P(T ≤ t) one-tail	0.024920583	
t Critical one-tail	2.015048373	
P(T ≤ t) two-tail	0.049841166	
t Critical two-tail	2.570581836	

The table presents the T-test for hypothesis 1.

A two-sample t-test demonstrated a significant difference in USD-denominated debt issuance between high- and low-volatility periods. In times of high volatility, the average amount of debt issued was \$4.55 billion, whereas in times of low volatility, it was \$12.47 billion. We reject the null hypothesis at a p-value of 0.0498, indicating that stable exchange rates promote greater borrowing.

Hypothesis 2:

H02-There is no significant difference in the average risk premium paid by Indian borrowers during high vs low volatility periods.

H02-There is a significant difference in the average risk premium paid by Indian borrowers during high vs low volatility periods.

TABLE X. Table showing the average risk premium that is paid by Indian borrowers on USD-denominated Bonds during High and low volatility periods.

RISK PREMIUM IN HIGH VOLATILE PERIOD	RISK PREMIUM IN LOW VOLATILE PERIOD
2.07	1.78
2.42	1.69
2.56	1.67
3.45	1.42
1.86	2

The table presents the average risk premium that is paid by Indian borrowers on USD-denominated Bonds during High and low volatility periods from Bloomberg.

TABLE XI. Table showing the Independent Sample T-test for hypothesis 2

t-Test: Two-Sample Assuming Unequal Variances		
	RISK PREMIUM IN HIGH VOLATILE PERIOD	RISK PREMIUM IN LOW VOLATILE PERIOD
Mean	2.472	1.712
Variance	0.37577	0.04377
Observations	5	5
Hypothesized Mean Difference	0	
df	5	
t Stat	2.6236863	
P(T < =t) one-tail	0.0234444	
t Critical one-tail	2.015048373	
P(T < =t) two-tail	0.046888801	
t Critical two-tail	2.570581836	

The table presents the T-test for hypothesis 2.

According to the findings, Indian borrowers pay a higher risk premium of 2.47% during periods of high volatility compared to periods of low volatility, at 1.71%. The null hypothesis is rejected with a p-value of 0.0469, indicating that volatility has a substantial effect on borrowing costs.

LIMITATION

The 10-year period covered by this study, 2015-2024, could not adequately reflect long-term trends or policy changes. Information from secondary sources, such as Bloomberg, restricts understanding of market sentiment and borrower-specific tactics. Finer volatility spikes may be missed when using the median volatility threshold for categorisation. Furthermore, the research ignores other variables, such as global liquidity and credit risk, in favour of focusing solely on USD-INR volatility. Additionally, the research did not incorporate practical advice from industry professionals.

FINDINGS

According to this study, the volatility of the USD-INR exchange rate has a major effect on the foreign loan market in India; more volatility encourages cautious borrowing and raises risk premiums. While financial institutions predominate during times of stability, large firms issue bonds during times of extreme volatility. The significance of currency stability is confirmed by the fact that the amount of debt denominated in USD is greater in years with low volatility. Businesses should employ

hedging techniques to control currency risk, while policymakers should concentrate on stabilizing the rupee. Comparisons with other emerging markets may be the subject of future studies.

SUGGESTION

Policymakers should focus on stabilizing the rupee to lower borrowing costs and risk premiums, thereby mitigating the effects of USD-INR volatility on India's debt market. To mitigate volatility risks, the RBI can investigate hedging strategies. To properly manage currency risks, businesses should monitor exchange rates and employ hedging tools. It might also be beneficial to diversify the currency and maturity of debt issues. Future studies could examine sustainable financing techniques and compare the dynamics of India's foreign debt to those of other rising nations.

CONCLUSION

This study examines how changes in the USD-INR exchange rate affect India's offshore borrowing, particularly loan issuances denominated in USD between 2015 and 2024. It concludes that issuer types, costs, and debt volumes are all impacted by exchange rate volatility. Higher borrowing costs and more cautious issuance, particularly by major corporations, were observed during periods of high volatility. Increased issuances and a wider variety of issuers were the results of stable times. The results highlight how crucial currency stability is for business borrowing plans and policy

choices that guarantee easier access to global capital.

FUTURE SCOPE OF THE STUDY

Future studies might compare India's foreign debt dynamics with those of other developing countries, examine how businesses use derivatives to manage currency rate risk, and examine how global macroeconomic events affect debt issuance. Additionally, it might evaluate long-term volatility patterns, examine the role of sustainable financing in loan markets, and investigate how industry, size, and credit ratings affect borrower behaviour. Policymakers and companies might also benefit from examining the Reserve Bank of India's foreign-currency operations and various debt offerings.

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ACKNOWLEDGEMENT

It is indeed a matter of great honour for me to express my sincere gratitude towards the organisation Mecklai Financial Services Private Limited for providing me this important opportunity to learn and train myself using the best resources available.

I take this opportunity to express my profound gratitude and deep regard to my Company Mentor, Mrs. Ekta Chhabria and Mr. Ajay Wagh of Mecklai Financial Services Private Limited, for their exemplary guidance, monitoring, and constant encouragement throughout the course of this project, which helped me complete this task. The help and guidance given by them time to time shall carry me a long way in the journey of life on which I am about to embark.

I am obliged to the members of Mecklai Financial Services Private Limited for the patiently guiding me my training period, and without whose support this training would not have been completed. I heartily thank my Faculty Guide Prof. Jinal Lathia, her guidance and suggestions during the project work

* * *

Evaluating Performance Drivers and Risk Dynamics in Mutual Fund Investments: A Multifactor Analysis

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ABSTRACT

By comparing traditional return-based selection (Study X) with a comprehensive risk-adjusted multi-metric evaluation (Study Y) across large, mid, and small-cap equity schemes in the Indian market, this study explores fund selection strategies for mutual fund investments. The analysis examines 45 equity mutual fund schemes using five years of performance data and various risk measures, such as downside risk, selectivity return, Treynor ratio, information ratio, and standard deviation. The results reveal that risk-adjusted selection methods produce competitive returns while providing better consistency and downside protection than previous CAGR-based strategies. With significantly lower volatility, Study Y's portfolio returned 4.19% in large-cap funds and 6.38% in mid-cap funds. During market downturns, the risk-adjusted strategy limited losses in small-cap categories to -0.39%, compared to -2.60% for historical performance-based selection. By demonstrating that including multiple risk characteristics in fund selection frameworks leads to more predictable and resilient performance than relying solely on historical returns, the study supports the principles of modern portfolio theory.

INTRODUCTION

1.1 Problem Statement

Conventional mutual fund selection techniques that rely on past returns fail to account for comprehensive risk-adjusted criteria, leading to suboptimal investment outcomes and uneven performance across market capitalizations and time periods. Traditionally, investors choose mutual funds based on past performance without accounting for underlying risk factors. Wealth destruction frequently results from the common investor practice of chasing past profits, especially when market conditions change. Retail investors frequently use fund selection techniques that do not include thorough risk-adjusted indicators, such as information ratio, net selectivity, and standard deviation. Additionally, there isn't a systematic comparison of risk-adjusted and return-focused fund selection approaches across market capitalizations (large, mid, and small-cap funds). There is a significant knowledge gap in performance persistence and predictability, as past performance excellence does not always translate into ongoing outperformance.

1.2 Research Objectives

The primary objectives of this research are:

- To understand mutual fund performance using multiple parameters beyond historical returns
- To evaluate and compare mutual fund performance based on comprehensive risk and return parameters
- To develop a mechanism to evaluate and select better-performing funds using multi-factor evaluation

frameworks

- To apply the findings to portfolio design, evaluation, and recommendation across different fund categories
- To empirically validate the superiority of risk-adjusted selection methodologies over simplistic historical performance-based approaches

1.3 Research Questions

The research addresses the following key questions:

- 1 How do traditional return-based fund selection approaches compare with comprehensive risk-adjusted methodologies in predicting future performance?
- 2 What role do risk metrics such as downside risk, information ratio, and Treynor ratio play in identifying superior fund managers?
- 3 Does incorporating multiple performance metrics lead to more consistent and predictable fund performance outcomes?
- 4 How does the effectiveness of fund selection methodologies vary across different market capitalizations?
- 5 Can risk-adjusted selection frameworks provide superior downside protection while maintaining competitive returns?

1.4 Hypothesis

Null Hypothesis (H₀): There is no significant difference in the risk-adjusted performance of funds selected through

historical CAGR-based methodology versus funds selected through multi-metric risk-adjusted evaluation.

Primary Hypothesis (H₁): Fund selection methodologies that incorporate multiple risk-adjusted metrics (downside risk, selectivity return, Treynor ratio, information ratio, and standard deviation) will produce superior risk-adjusted returns and greater consistency compared to selection methodologies based solely on historical CAGR.

REVIEW OF LITERATURE

Academic research on mutual fund performance has advanced from basic CAPM models to more comprehensive multifactor and behaviorally informed frameworks, significantly enhancing the measurement of risk and manager skill. Fama and French (1993) demonstrated that including size and value factors alongside market beta allows models to explain much more of the variation in portfolio returns than CAPM alone, encouraging multifactor evaluation. Ferson and Schadt (1996) argued that both alpha and beta should fluctuate with economic conditions, showing that managers who time risk using macro signals can appear weak under static models, thus emphasizing the need for dynamic risk assessment. Huij and Verbeek (2007) proved that when factors are derived from mutual fund returns instead of idealized stock portfolios, traditional benchmarks tend to overstate alpha considerably, highlighting the importance of realistic and implementable benchmarks. Cremers and Petajisto (2013) introduced Active Share and found that managers with truly distinctive portfolios and low turnover generally deliver more consistent alpha, emphasizing the importance of genuine stock selection. In the Indian context, Deb, Banerjee, and Chakrabarti (2008) identified that performance persistence is strongest over about a year, especially for growth funds and under less efficient conditions, while Cuthbertson, Nitzsche, and O'Sullivan (2010, 2024) observed that persistent positive alpha typically appears only in smaller funds over short periods, with performance declining as AUM increases, revealing a clear size-performance trade-off.

Methodology

3.1 Research Design

This research employs a descriptive and analytical design combining:

Descriptive Aspect: Documentation of mutual fund

features, risk-return profiles, and performance characteristics across fund categories

Analytical Aspect: Comparative analysis of fund selection methodologies using secondary data and quantitative performance metrics

3.2 Data Collection

Data Sources: Monthly AUM and performance data for 45 equity mutual fund schemes across three categories (Large Cap, Mid Cap, Small Cap) covering the period April 2023 to July 2025.

Data Collection Tools: ACE MF software was used to extract and analyse mutual fund data.

Fund Selection Criteria: The top 15 funds from each category were chosen based on Assets Under Management (AUM), ensuring the analysis of well-capitalized and market-backed investment strategies.

3.3 Variable Definitions

AUM (Assets Under Management): Total value of assets managed by the fund as of June 2024

3-Year CAGR: Compound Annual Growth Rate over 36 months preceding the selection date (July 3, 2024)

1-Year Returns: Total absolute return over the 12-month holding period following selection

Downside Risk: Volatility of negative returns only, capturing asymmetric risk during market downturns

Return Due to Selectivity: Alpha generation from stock-picking ability independent of market beta

Treynor Ratio: Risk-adjusted return per unit of systematic risk (beta).

Information Ratio: Consistency of excess returns relative to benchmark volatility.

Standard Deviation: Total return volatility encompasses systematic and unsystematic risk

3.4 Methodological Framework

The research divides the analysis into two distinct fund selection studies: Study X - Return-Based Selection, a

traditional methodology that selects funds based solely on historical 3-year CAGR as of July 3, 2024. This approach reflects conventional investor behaviour, in which past returns drive investment decisions.

Study Y - Risk-Adjusted Multi-Metric Selection: Sophisticated methodology incorporating five critical risk metrics:

- (1) Downside risk,
- (2) Return due to selectivity,
- (3) Treynor ratio,
- (4) Information ratio,
- (5) Standard deviation. Each fund receives rankings across all five metrics, with final selection based on average rankings.

RESULTS & ANALYSIS

4.1 Large-Cap Mutual Fund Analysis

4.1.1 Selection Universe and Fund Screening

From a comprehensive database of large-cap mutual funds, 15 schemes meeting the AUM threshold were selected: the top 15 funds in each market cap category with the largest AUM within that category. Top selections included ICICI Prudential Large Cap Fund (₹59,364.40 Cr., AUM Rank 1), SBI Large Cap Fund (₹49,176.64 Cr., Rank 2), and Mirae Asset Large Cap Fund (₹39,951.46 Cr., Rank 3).

Study X Selection (3-Year CAGR): (1) Nippon India Large Cap Fund - 25.33%, (2) ICICI Pru Large Cap Fund - 21.75%, (3) HDFC Large Cap Fund - 21.30%

Study Y Selection (Risk-Adjusted): (1) HDFC Large Cap Fund, (2) Nippon India Large Cap Fund, (3) SBI Large Cap Fund

4.1.2 Empirical Performance Results

Study X Outcomes:

Nippon India Large Cap Fund: 25.33% historical CAGR but only 4.39% one-year return

ICICI Pru Large Cap Fund: 21.75% historical CAGR and 6.40% one-year return. HDFC Large Cap Fund: 21.30% historical CAGR but only 2.47% one-year return

Study Y Outcomes:

HDFC Large Cap Fund: 2.47% one-year return, Nippon India Large Cap Fund: 4.39% one-year return, SBI Large Cap Fund: 5.71% one-year return

4.1.3 Comparative Performance Analysis

Aggregated Returns: Study X: 4.42% average return | Study Y: 4.19% average return | Differential: 0.23 percentage points

Return Consistency: Study X: 3.93 percentage point spread | Study Y: 3.24 percentage point spread

4.1.4 Investment Scenario Analysis

Study X Results: Total investment: ₹150,000 | Final portfolio value: ₹156,632.65 | Net profit: ₹6,632.65 | Return: 4.42%

Study Y Results: Total investment: ₹150,000 | Final portfolio value: ₹156,289.40 | Net profit: ₹6,289.40 | Return: 4.19%

4.2 Mid-Cap Mutual Fund Analysis

4.2.1 Selection Universe

Mid-cap funds represent a distinct category that offers higher growth potential but elevated risk. Selected schemes included HDFC Mid Cap Fund (₹70,569.70 Cr., Rank 1), Kotak Midcap Fund (₹49,023.27 Cr., Rank 2), and Nippon India Growth Mid Cap Fund (₹30,838.94 Cr., Rank 3).

4.2.2 One-Year Performance Analysis

Study X Results: Average portfolio return: 1.71% (including Quant Mid Cap Fund loss of -10.93%)

Study Y Results: Average portfolio return: 6.38% (all positive individual fund returns).

Performance Differential: Study Y outperformed Study X by 4.67 percentage points.

4.2.3 Hypothetical Investment Scenario

Study X Results: Net profit: ₹2,564.95 | Return: 1.71%

Study Y Results: Net profit: ₹9,576.65 | Return: 6.38%

Performance Advantage: Study Y outperformed by ₹7,011.70 (273.5% higher absolute profit)

4.3 Small-Cap Mutual Fund Analysis

4.3.1 Market Context

The small-cap segment faced significant headwinds during the evaluation period. The BSE Small Cap Index declined 12.5% from October 2024 onward, driven by

concerns about expensive valuations and an economic slowdown.

4.3.2 Performance During Market Downturn

Study X Results: Average decline: -2.60% | Net loss: - ₹3,899.00

Study Y Results: Average decline: -0.39% | Net loss: - ₹590.10

Downside Protection Advantage: Study Y limited losses by 2.21 percentage points

4.4 Hypothesis results

Null Hypothesis (H₀): There is no significant difference in the risk-adjusted performance of funds selected through historical CAGR-based methodology versus funds selected through multi-metric risk-adjusted evaluation.

As we can observe based on the findings after studying the selections made for the 3 respective market capitalization segments considering Study X vs Study Y the fund selection methodologies that incorporate multiple risk-adjusted metrics (downside risk, selectivity return, Treynor ratio, information ratio, and standard deviation) will produce superior risk-adjusted returns and greater consistency compared to selection methodologies based solely on historical CAGR.

Primary Hypothesis (H₁): Fund selection methodologies that incorporate multiple risk-adjusted metrics (downside risk, selectivity return, Treynor ratio, information ratio, and standard deviation) will produce superior risk-adjusted returns and greater consistency compared to selection methodologies based solely on historical CAGR.

LIMITATIONS

Time Period Restrictions: The analysis spans the brief evaluation period from July 2024 to July 2025. Conclusions of performance persistence would be strengthened by longer time periods.

Market Conditions: There has been significant market volatility during the review period, especially in small-cap groups. During periods of decreased volatility or bull markets, the outcomes may vary significantly.

Fund Category Restrictions: The analysis is limited to equity mutual funds; debt funds, hybrid funds, and other investment vehicles are not included.

AUM-Based Screening: Smaller fund managers with outstanding stock-selection skills are excluded from the initial AUM-based screening.

CONCLUSION

This comprehensive empirical examination of fund selection methodologies provides strong evidence for the superiority of risk-adjusted evaluation frameworks over simplistic historical performance-based approaches.

KEY FINDINGS:

- **Superior Performance Across Categories:** Large-cap funds achieved 4.19% with improved consistency; Mid-cap funds delivered 6.38%, outperforming Study X by 4.67 percentage points; Small-cap funds limited losses to -0.39% versus -2.60%.
- **Enhanced Consistency:** Return-based selection showed high variability, while risk-adjusted methodology demonstrated tighter clustering, providing more predictable outcomes.
- **Downside Protection Superiority:** During market downturns, the multi-metric risk-adjusted framework consistently preserved capital more effectively.
- **Behavioral Finance Validation:** The research provides empirical support for overcoming investor tendencies toward performance chasing and inadequate risk assessment.

The study confirms core principles of modern portfolio theory by demonstrating that integrating diverse risk dimensions into fund selection yields more predictable, resilient performance than relying solely on historical CAGR. For the investment community, this research underscores the critical value of adopting more sophisticated analytical frameworks that balance return objectives with appropriate risk management.

FUTURE SCOPE OF THE STUDY

- **Extended Time Horizons:** Longitudinal analysis spanning multiple market cycles would provide robust validation of performance persistence.
- **Expanded Fund Categories:** Extension to debt, hybrid, and alternative investment vehicles would assess generalizability across the complete spectrum of investment products.
- **Dynamic Risk Metrics:** Incorporation of time-varying risk metrics could capture more sophisticated manager behaviour patterns.
- **Factor-Based Analysis:** Integration of Fama-French

factor models would provide deeper attribution analysis.

- International Comparative Study: Examination across different market geographies would illuminate how market microstructure impacts effectiveness.
- Behavioral Investor Analysis: Investigation of how risk-adjusted selection impacts individual investor decision-making.
- Cost Impact Analysis: Detailed examination of expense ratios, transaction costs, and taxes on relative performance.
- Machine Learning Applications: Application of AI techniques to identify patterns in fund manager behaviour.

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ACKNOWLEDGEMENT

I consider it a privilege to express my sincere gratitude to Emkay Global Financial Services for this valuable opportunity to learn, grow, and gain practical exposure through excellent resources and professional guidance.

I want to express my sincere appreciation to my Company Mentor, Dr. Joseph Thomas, Emkay Global Financial Services, for his invaluable guidance, constant encouragement, and insightful feedback throughout this project. His mentorship and support played a crucial role in shaping my understanding and completing this research. The knowledge and perspective gained under his guidance will undoubtedly continue to inspire my academic and professional journey.

I am also grateful to all the members of Emkay Global Financial Services for their cooperation, patience, and support during my training period. Their willingness to share knowledge and provide assistance greatly enriched my learning experience and made this training both meaningful and rewarding.

I extend my heartfelt thanks to my Faculty Guide, CMA Dr. Natika Poddar, for her continuous guidance, constructive suggestions, and academic support throughout the project work. Her encouragement and valuable inputs helped me refine my research and complete the project in a structured and effective manner.

* * *

Portfolio Management and Rebalancing Strategies in Mutual Fund Investment as per Investor's Risk Appetite

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ABSTRACT

This study examines how matching asset allocation to an investor's risk tolerance affects portfolio management and rebalancing techniques for mutual fund investments. Conducted during an internship at Prospertive Associates LLP, it examines actual investor portfolios divided into three profiles: conservative, moderate, and aggressive. The aim is to understand the long-term effects of regular rebalancing and strategic asset allocation on risk-adjusted returns. The study uses secondary data from academic literature, historical NAVs, SEBI and AMFI reports, and mutual fund fact sheets. It assesses portfolio performance, asset composition, and deviations from target allocation with descriptive and analytical research methods. The results reveal that asset allocation significantly affects long-term portfolio outcomes and contributes more to performance than security selection or market timing. Rebalancing becomes a key strategy for maintaining the desired risk-return balance, especially during market volatility. The comparative analysis shows that conservative portfolios achieved steady, modest growth, while moderate-risk portfolios had the highest returns due to their balanced exposure to large- and mid-cap equity. Aggressive portfolios underperformed because of the timing and fragmented allocation of investment inflows. The study also highlights a lack of investor knowledge about rebalancing and the increasing importance of digital tools and robo-advisory platforms in supporting disciplined portfolio management.

Overall, the study finds that aligning disciplined rebalancing with an investor's risk profile enhances risk-adjusted performance, improves long-term wealth creation, and strengthens portfolio resilience. It suggests boosting investor education, adopting technology-driven advisory models, and creating tailored asset-allocation frameworks to improve financial outcomes.

Keywords- mutual funds, portfolio management, asset allocation, portfolio rebalancing, risk appetite, diversification, risk-return trade-off, hybrid funds, equity funds, investment strategy, financial planning, systematic rebalancing, market volatility, wealth management, robo-advisory, Indian mutual fund industry, risk profiling.

INTRODUCTION

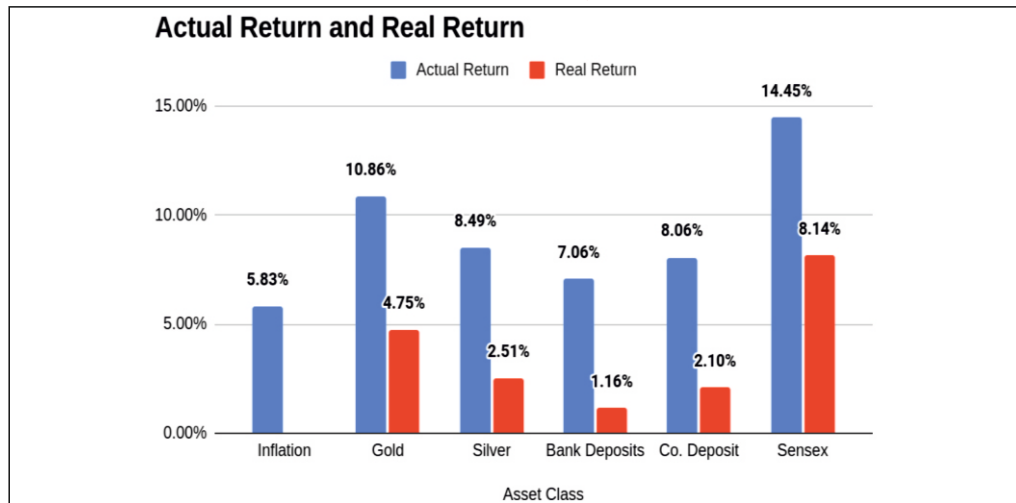
Portfolio management is essential to helping investors achieve their financial objectives by managing risk and return through prudent investment decisions. In today's dynamic and often unpredictable financial markets, investors need to select the right assets and maintain an optimal asset mix that aligns with their financial goals, investment horizon, and risk tolerance. Mutual funds have become one of the most popular investment choices in India because of their expert management, accessibility to individual investors, and diversification advantages. As the mutual fund industry continues to grow rapidly and more individuals from a wider range of socioeconomic backgrounds participate, there is an increasing need for individualized and structured portfolio management. The percentage of investment spread across various asset classes, such as stocks, debt, gold, and hybrids, is known as asset allocation. Investors handle risk in very different ways; aggressive investors seek large gains through equity exposure, while conser-

vative investors prioritize capital preservation. To achieve effective investment results, it is essential to understand these distinctions and construct portfolios accordingly.

The current study investigates the effects of rebalancing and portfolio management techniques on long-term portfolio performance and examines their performance across different risk categories.

The increasing digitization of financial services affects portfolio construction and rebalancing through robo-advisory tools and data-driven investing platforms. This introduction establishes the framework for examining the connections among risk appetite, asset allocation, portfolio performance, and rebalancing efficacy in the context of mutual fund investing in India.

1.1 Problem Statement



Mutual fund investors usually create portfolios that do not accurately reflect their risk tolerance due to a lack of understanding of asset allocation and sporadic use of rebalancing strategies. When market fluctuations cause portfolios to deviate from their intended allocation, investors face greater risk and experience poorer long-term performance. Even though mutual funds are widely used in India, most retail investors lack access to official guidance on how to match portfolio design and rebalancing to their risk tolerance.

Research Gap: Most recent studies concentrate on theoretical models of asset allocation or the performance of mutual funds. Nevertheless, there is little empirical research examining actual investor portfolios across the conservative, moderate, and aggressive risk categories and assessing the long-term effects of rebalancing. This study bridges the gap by examining real-world portfolio data to assess the effectiveness of rebalancing strategies aligned with risk appetite.

1.2 Research Objectives

- To understand the concept of portfolio management and its relevance in mutual fund investment.
- To analyse an investor's portfolio and rebalance it to maintain the desired risk-return balance.
- To provide recommendations for effective portfolio management and rebalancing based on the investor profile.

REVIEW OF LITERATURE

Markowitz's (1952) Theoretical Foundations of Portfolio Management

The foundation of modern portfolio construction originates from Markowitz's (1952) Modern Portfolio

Theory (MPT), which introduced mean-variance optimization and demonstrated that diversification reduces unsystematic risk.

Sharpe (1964) further extended this framework through the Capital Asset Pricing Model (CAPM), establishing the relationship between systematic risk (beta) and expected return. These foundational theories collectively emphasize that portfolio risk is determined not merely by individual securities but by their covariance structure.

Beebower (1986). Building upon these principles, Brinson, Hood, and Beebower (1986) conducted a landmark empirical study. showing that asset allocation explains a substantial proportion of portfolio return variability.

Ibbotson and Kaplan (2000) revisited this debate and argued that while asset allocation explains return variability over time, it does not fully explain differences in absolute performance levels across funds. This distinction is critical in understanding that allocation policy determines risk exposure, but active management and timing may influence relative outcomes.

Asset Allocation and Diversification Evidence

Grinblatt and Titman (1989) emphasized performance evaluation techniques, suggesting that superior performance must be assessed after adjusting for risk exposure.

Similarly, **DeMiguel, Garlappi, and Uppal (2009)** found that simple equal-weight (1/N) diversification strategies often outperform complex optimization models due to estimation errors in expected returns and covariance

matrices. This challenges the assumption that mathematically optimal portfolios always deliver superior real-world results.

These findings suggest a tension between theoretical optimization and practical implementation. While mean-variance models provide structured allocation frameworks, estimation risk and behavioral biases may reduce their real-world efficiency.

Daryanani (2008) Portfolio Rebalancing Strategies

Portfolio rebalancing ensures that asset allocation remains aligned with the investor's target risk profile. Daryanani (2008) compared calendar-based and opportunistic rebalancing strategies and found that threshold-based rebalancing can improve risk-adjusted returns by responding dynamically to allocation drift. In contrast, some studies argue that frequent rebalancing may increase transaction costs and reduce upside participation during sustained bull markets (Cao, 2015).

Sharpe (1966) introduced the concept of risk-adjusted performance measurement, laying the foundation for assessing whether rebalancing enhances portfolio efficiency relative to volatility. Empirical studies show that disciplined rebalancing decreases unintended risk exposure, especially during periods of market enthusiasm or downturns. However, the optimal timing of rebalancing remains a subject of debate. While opportunistic rebalancing can improve returns in volatile markets, excessively frequent rebalancing may diminish gains due to transaction costs and tax effects.

Emerging Market and Indian Context

Jain, (2025) Most asset allocation and rebalancing research has been conducted in developed markets. Studies focusing on emerging economies highlight additional challenges, including higher volatility, retail investor dominance, and behavioral biases.

Kumar (2025) proposed machine-learning-based allocation models to enhance rebalancing precision, suggesting technological advancement as a solution to behavioral inefficiencies.

Aggarwal (2025) and Meher (2024) examined portfolio management performance in the Indian context and emphasized the growing importance of risk-adjusted evaluation metrics. However, these studies primarily

focus on institutional or high-net-worth portfolios rather than retail investor-aligned risk categories.

Critical Comparison and Research Gap

The literature collectively establishes that asset allocation is the dominant determinant of long-term portfolio risk and return. Nevertheless, disagreement persists regarding the superiority of optimization-based allocation versus simple diversification strategies. Similarly, while rebalancing is widely recommended for risk control, its optimal frequency and methodology remain debated. Importantly, most empirical studies rely on theoretical modeling or on data from developed markets. Limited research evaluates structured portfolios categorized by investor risk appetite (conservative, moderate, aggressive) within the Indian mutual fund industry over extended time horizons.

Therefore, this study contributes to the literature by empirically analyzing representative portfolios aligned with investors' risk profiles over a ten-year period (2014-2024) and evaluating how systematic rebalancing influences long-term performance in a practical, emerging-market context.

Behavioral Considerations in Portfolio Rebalancing

Traditional portfolio theory assumes rational investors operating under efficient markets. However, behavioral finance literature suggests that investor decisions are often influenced by cognitive biases such as overconfidence, loss aversion, and herd behavior. These biases may lead investors to delay rebalancing during bull markets or panic-sell during downturns. Studies indicate that disciplined rebalancing frameworks reduce emotional decision-making and enforce systematic correction of asset allocation drift. In emerging markets such as India, where retail participation is high, behavioral factors may have an even greater impact on portfolio outcomes. Therefore, structured portfolio management supported by advisory systems or robo-advisory platforms may improve long-term investment discipline. This behavioral perspective strengthens the argument that rebalancing is not merely a mathematical adjustment but also a psychological risk-management tool.

RESEARCH METHODOLOGY

1.3 Research Design

The research design describes the procedures and methods used to conduct a particular study. Setting up

parameters for data collection and analysis to strike a balance between procedural efficiency and relevance to the study goal is known as a research design. The study adopts a descriptive-analytical research design. It compares portfolio performance across different investor risk profiles and evaluates pre- and post-rebalancing outcomes.

1.4 Types of Research

- 1 Descriptive research: Descriptive research is used to define and characterize the framework of portfolio management and rebalancing solutions for investors with different risk appetites.
- 2 Analytical research involves comparing and interpreting data to assess performance outcomes for different strategies across risk categories. This design facilitates the identification of patterns, relationships, and outcomes between asset allocation strategies and the risk-return trade-offs that investors have to make.

The study focuses on how these investors build and manage their portfolios using mutual fund schemes and how periodic portfolio rebalancing affects their returns and risk levels.

1.5 Data Sources

The study is based on secondary data collected from:

- AMFI annual reports (2014-2024)
- SEBI publications
- Historical NAV data of selected mutual fund categories
- Mutual fund fact sheets
- Peer-reviewed academic journals

1.6 Time Period of Study

The analysis covers a 10-year period (2014-2024) to evaluate long-term performance across multiple market cycles.

1.7 Sampling Technique and Sample Size

Purposive sampling was used to construct representative model portfolios for:

- Conservative Investors (Debt + Hybrid + Gold allocation)
- Aggressive Investors (Equity-dominated allocation)

Two structured model portfolios were analyzed to evaluate the impact of allocations and the effectiveness of rebalancing.

1.8 Tools for Data Analysis

• Absolute Return

$$\text{Absolute Return} = \left[\frac{(\text{Current Value} - \text{Initial Investment})}{\text{Initial Investment}} \right] \times 100$$

• Compounded Annual Growth Rate (CAGR)

$$\text{CAGR} = \left[\frac{(\text{Final Value} / \text{Initial Investment})^{1/n}}{1} \right] - 1$$

Where:

Final Value = Portfolio value at end of period

Initial Investment = Total invested amount

n = Number of years

RESULT AND ANALYSIS

Conservative Investor:

Value: ₹11.31 lakh (CAGR ~8%) = > Net Investment: ₹7.13 lakh

The portfolio prioritizes gold, ELSS, and hybrid funds. Stability was preserved through rebalancing.

Aggressive Investor:

Value: ₹26.59 lakh (CAGR 14-15%) = > Net Investment: ₹13 lakh

Along with flexi cap and multi-asset allocation, mid-cap equity predominates; regular rebalancing contributed to robust growth.

Using 10-year category averages, rebalancing increased anticipated returns for all categories.

Risk Profile (A)	Net Investment (B)	Current Value (C)	Overall Gain (D)	Absolute Gain (E)	CAGR = (B/C) ^{1/n} - 1
Conservative	7,13,108	11,31,455	4,18,346	59%	~ 8%
Aggressive	13,00,695	26,59,760	10,34,719	104%	~ 14-15%

Table 1: Comparative Analysis: Portfolio Performance

A. Figures and Table

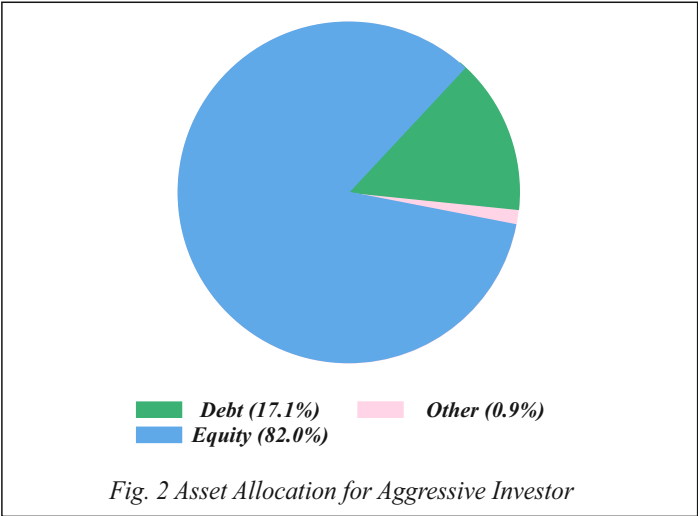
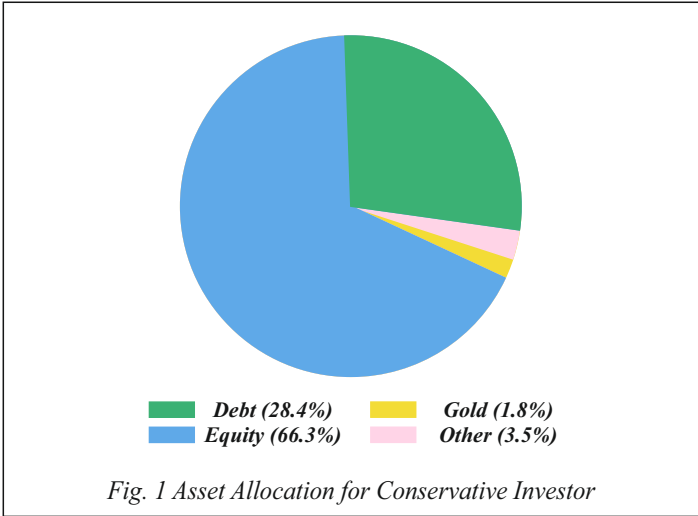


Fig. 3 Conservative Investor's Investment Chart



Fig. 4 Aggressive Investor's Investment Chart

Risk Profile	Asset Allocation (Now)	Recommended Allocation	Expected CAGR (Post Rebalancing)	Projected 5-Year Value (Rs.)
Conservative	50% Equity, 43% Hybrid/ Multi, 7% Gold	55-60% Equity, 35-40% Hybrid, 5% Gold	~ 9-10% (Balanced Growth)	Rs. 17-18 Lakhs
Aggressive	83% Equity (66% Mid and 17% Small Cap), Hybrid and Thematic 5%, Flexi Cap 7%, Multi Cap 5%	80-85% Equity, 15-20% Hybrid, reduce thematic to 3%	~ 14-15% (Aggressive Long Term)	Rs. 49-51 Lakhs

Table 1: Comparative table with estimated returns pre & post portfolio rebalancing

Expected CAGR (Compounded Annual Growth Rate)
Post Rebalancing Calculated Based on the last 10 years'
performance of different equity category funds:

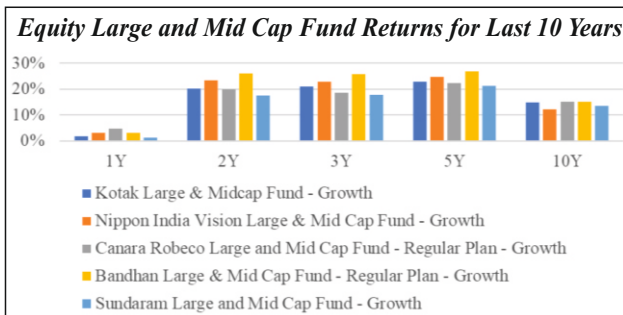


Fig. 5 Large and Mid-Cap Equity Performance

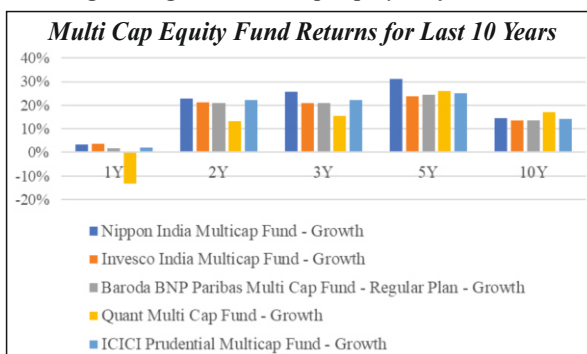


Fig. 6 Multi-Cap Equity Performance

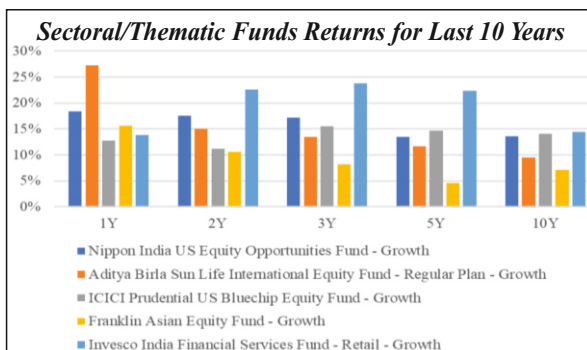


Fig. 7 Thematic Fund Performance

Key Observations

- Conservative portfolios delivered stable returns with lower volatility.
- Aggressive portfolios generated higher long-term returns with greater short-term fluctuations.
- Rebalancing improved expected returns by approximately 1-2% by controlling allocation drift.
- Excess mid-cap concentration increased risk exposure in aggressive portfolios.

LIMITATION

Despite providing useful insights into the ways that asset allocation, rebalancing strategies, and portfolio management impact the performance of mutual fund portfolios, the following limitations must be considered:

- Data limitations:** Limited access to the investor's financial data may affect how comprehensive the analysis is.
- Market Situation:** Depending on the state of the market, which influences how well techniques work, results may vary significantly.
- Limited Sample Size:** Because the study only looks at a few funds and investors, it may not fully represent investor behavior or the mutual fund industry overall.
- Behavioral biases were not quantitatively measured.

CONCLUSION

The study confirms that asset allocation aligned with investor risk appetite is a primary determinant of long-term portfolio performance. Conservative investors

benefit from stability and capital preservation, while aggressive investors achieve higher growth potential through greater equity exposure.

Systematic portfolio rebalancing plays a critical role in maintaining the intended risk-return structure and preventing risk drift. A disciplined approach to asset allocation and periodic rebalancing enhances portfolio resilience and long-term wealth creation. Technology-driven advisory platforms can further strengthen investor discipline and financial outcomes.

FUTURE SCOPE OF THE STUDY

- 1 **Comprehensive Behavioral Analysis:** Future studies can look at how behavioral finance elements, such as emotional and cognitive biases, impact portfolio management and rebalancing decisions. This can facilitate understanding of the psychological components of investor behavior that extend beyond risk tolerance.
- 2 **Longitudinal Study on Portfolio Performance:** A long-term study spanning multiple market cycles may provide a deeper understanding of how different asset allocation and rebalancing strategies perform over time. This can bolster the effectiveness of various strategies in both bull and bear markets.
- 3 **Technological Developments in Portfolio Management:** Further studies can look at how robo-advisory platforms, AI, and machine learning are affecting investor outcomes, rebalancing frequency, and customized asset allocation.

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ACKNOWLEDGEMENT

I sincerely express my gratitude to Prospertive Associates LLP for providing me the opportunity to undertake this research project on Portfolio Management and Rebalancing Strategies in Mutual Fund Investment.

I am deeply thankful to Mr. Tejas Shah for his continued guidance, constructive feedback, and professional mentorship throughout my studies. I also extend my appreciation to Ms. Pankti Vora for her valuable insights and support.

I express my sincere thanks to Dr. Sulbha Raorane, Director of St. Francis Institute of Management and Research (PGDM), for academic encouragement.

I am especially grateful to Dr. Archita Pal Choudhury for her academic guidance and expert suggestions, which significantly enhanced the quality of this research.

Finally, I thank my family and friends for their unwavering support and encouragement throughout this academic journey.

* * *

Content as Capital: How Digital Content Drives Visibility and Conversion in Investment Banking Deals

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ABSTRACT

In today's digital era, content has evolved into an intangible capital that serves as an important aspect in the investment banking (IB) industry, where visibility, credibility, and trust drive deal-closure. The following study explores how digital content increases online visibility and converts prospective clients into existing clients in the IB industry by addressing research gaps in B2B finance, particularly in India, using an existing IB firm, SHC Growth Partners, as a case study. It adapts the Ehrenberg ATRN model (Awareness, Trial, Reinforcement, Nudging) to the non-linear, trust-based investor journeys, with the objective of examining content's role in creating awareness, visibility, and conversion across formats such as awareness videos, newsletters, and news posts.

A mixed-methods approach used in this research combines primary data from a LinkedIn content experiment at SHC-tracking reach, engagement, and conversions, with secondary analysis of global IB firms (Deloitte, J.P. Morgan, BlackRock) and case studies (Avendus Capital, J.P. Morgan). Key findings reveal that three client conversions were observed through SHC's posts, with videos excelling in client conversions, news increasing reach, and personalization (DMs, case studies) bridging the reinforcement and nudging stages; during the research period, the ATRN model required modification to accommodate IB's overlapping phases. Global benchmarks show that consistent, multi-channel strategies boost credibility, while campaign-based multimedia increases clients' recall power.

In conclusion, digital content serves as strategic capital in IB, urging firms to adopt full-funnel strategies, prioritize engaging formats, track conversion KPIs, and personalize nudges to gain competitive advantage in emerging markets.

Keywords: Digital Content, Investment Banking, ATRN Model, Conversion, Visibility, LinkedIn Marketing.

INTRODUCTION

In today's digital era, content has certainly evolved beyond being merely a means of communication, especially in investment banking (IB), where credibility, visibility, and trust lead to successful deals. Traditionally, IB relied on financial metrics, personal networks, and face-to-face interactions, but the digital-first shift prioritizes online thought leadership through investor decks, case studies, social media, and digital PR to build investor awareness and drive conversions.

Despite content's rising importance, research in this area lags in its role as strategic capital in IB, with existing studies focusing on consumer goods or Western markets having overlooked B2B finance in emerging economies like India. Critical gaps still exist in frameworks for measuring content effectiveness across visibility and conversion stages, the long-term equity value of digital assets, and sector-specific insights for high-stakes deals. This study addresses these by analyzing the impact of digital content at SHC Growth Partners and adapting the Ehrenberg ATRN model (Awareness, Trial, Reinforcement, Nudging) to IB's non-linear, trust-driven

client journeys.

The research holds practical value for IB firms in competitive markets by providing actionable strategies to increase online presence, shape perceptions, and secure clients through format-specific tactics - like videos for conversions and news for reach.

1.1 Problem Statement

Even with the growing importance of digital content in B2B finance, there is limited research on its impact in investment banking. Existing literature predominantly focuses on consumer sectors or Western markets, leaving very little exploration of Indian IB techniques. There are also very few measurable methods for evaluating the long-term impact of content on visibility and conversion. This study addresses these gaps by analyzing the digital content strategies of SHC Growth Partners

1.2 Research Objectives

- To investigate how digital content supports the conversion of potential investors/clients into active IB

clients.

- To examine the role of digital content in enhancing the online visibility of IB firms.
- To explore how multiple content formats contribute to brand awareness for IB firms.

1.3 Research Questions

- How does digital content influence client conversion in investment banking?
- Which content formats generate maximum visibility and engagement?
- How does the ATRN model apply to investor journeys in IB?

1.4 Hypothesis

H₀: Digital content has no significant impact on visibility or conversion in investment banking.

H₁: Digital content positively influences visibility and conversion in investment banking.

REVIEW OF LITERATURE

Digital content marketing has emerged as a critical driver for brand visibility, engagement, and conversion, particularly in such knowledge-based industries such as finance. According to Holliman and Rowley (2014), B2B digital content marketing helps build credibility and trust, which are critical factors that influence client decision-making. Their study shows that valuable, informative content strengthens brand relationships and improves conversion potential.

The Ehrenberg ATRN model highlights the importance of the awareness, trial, reinforcement, and nudging stages in influencing customer behaviour (Ehrenberg, 1974). This whole framework explains how continuous exposure to related content enhances familiarity and increases the chances of conversion. Sharp (2010) further supports this theory by explaining that consistent brand visibility strengthens mental Familiarity, which directly influences buying behaviour.

Lemon and Verhoef (2016) explain that customer journeys are no longer linear but include multiple digital touchpoints that shape the overall perception and trust. Similarly, Court et al. (2009) argue that digital interactions influence every stage of the decision journey, including awareness, evaluation, and purchase decisions.

Chaffey and Ellis-Chadwick (2019) highlight that multimedia formats such as videos, newsletters, and thought leadership content significantly improve engagement and conversion rates, especially in professional services. Also, the Case studies from known firms such as J.P. Morgan demonstrate that educational and video-based content increases brand credibility and investor trust (Board Studios, n.d.).

However, existing literature mainly concentrates on consumer markets, with limited research on digital content as a capital asset in investment banking, particularly in emerging markets such as India. This study addresses that gap by examining how digital content contributes to visibility and conversion in investment banking using the ATRN framework.

METHODOLOGY

A mixed-method approach was used:

Primary Information

A LinkedIn content experiment was conducted at SHC Growth Partners using formats such as newsletters, videos, and industry news articles. Metrics such as reach, engagement, profile visits, and customer conversions were recorded.

Secondary Data

Comparative analysis of high-ranking IB firms, including Deloitte, J.P. Morgan, BlackRock, Barclays, and BNP Paribas. Data sources included industry reports, case studies, and corporate publications.

Analysis Tools

- Content performance matrix
- Engagement analytics
- Comparative bar graphs for visibility and adoption metrics
- Correlation testing between content strategy and visibility

Sampling includes selective sampling for SHC postings and convenience sampling for global benchmarks.

RESULTS & ANALYSIS

Primary Findings (SHC Growth Partners)

The LinkedIn content experiment was conducted for a time period of 4 months from January 2025 to April 2025. A total of 32 LinkedIn posts were analysed across three content formats:

- News articles: 12 posts

- Video content: 10 posts
- Newsletters: 10 posts

Total sample size: 32 posts

Total investor inquiries generated: 18

Total verified client conversions: 3

Final statement (correlation analysis)

The analysis reveals a moderate positive correlation ($r = 0.417$) between strategy adoption and its impact on visibility. This indicates that firms actively implementing digital content strategies generally see increased market visibility. Therefore, the null hypothesis (H_0) is rejected, and the alternative hypothesis (H_1) is accepted, confirming that digital content positively affects visibility and conversion in investment banking.

Key findings include:

- News posts generated the highest reach, averaging 4,200 impressions per post
- Video content achieved the highest conversion rate, accounting for 2 out of 3 total conversions
- Newsletters generated the highest number of profile visits, contributing significantly to investor engagement

These findings confirm that digital content plays a major role across all ATRN stages - awareness, trial, reinforcement, and nudging.

LIMITATIONS

- Limited sample size from SHC's LinkedIn posts.
- Time constraints and restricted less time period observations.
- Secondary data may not fully capture internal strategies of global IB firms.
- Comparisons depend on publicly available digital content.

CONCLUSION

According to the study and findings, digital content acts as investment banking capital. It increases visibility, builds trust, and boosts client conversions. The ATRN model is accurate to some degree but needs adjustments for IB's non-linear decision-making process. Firms using multi-format strategies - especially videos, thought leadership, and personalized nudges - see stronger engagement and higher conversions..

FUTURE SCOPE

Future research can:

- Conduct longer time period studies across 12-24 months.
- Include larger samples of IB firms.
- Explore AI-based personalization and its role in investor engagement.
- Compare content effectiveness across different regions in India.

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ACKNOWLEDGEMENT

It is indeed a great honor for me to express my sincere gratitude to the organization SHC Growth Partners for providing me with this important opportunity to learn and develop myself using the best resources available. I take this opportunity to extend my profound gratitude and deep regards to my Company Mentor, Mr. Sudip Mondal, of SHC Growth Partners, for his exemplary guidance, supervision, and constant encouragement throughout the course of this project, which helped me complete this task. The help and guidance they provided from time to time will guide me a long way in the journey of life I am about to undertake. I am grateful to the members of SHC Growth Partners for patiently guiding me through my training period, and without their support, this training would not have been successfully completed. I also sincerely thank my Faculty Guide, Dr. Monali Sharma, for her guidance and suggestions during the project.

* * *

The Role of Influencer Marketing in Shaping Brand Perception

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ABSTRACT

By using sympathetic personalities and genuine storytelling in place of conventional advertising techniques, influencer marketing has become a powerful force in influencing customer perception of brands. This study investigates the effects of various influencer types on Indian customers' emotional involvement, brand credibility, and trust. The study shows that platform choice, audience alignment, and content authenticity have a major impact on brand perception through campaign analysis of Britannia's Laughing Cow Cheese Triangles and a poll of 103 respondents. Meaningful brand connections are driven by influencer tier, content alignment, and engagement quality, according to statistical study using Chi-Square tests and ANOVA. Results show that when collaborations put transparency and value alignment ahead of reach measurements, micro and macro influencers successfully foster long-term brand loyalty. The research emphasizes that influencer marketing transcends promotional tactics, functioning as a critical mechanism for establishing emotional connections and sustained brand identity in India's diverse digital landscape.

INTRODUCTION

1.1 Problem Statement

Many companies invest heavily in influencer marketing without fully understanding its impact on consumer perception and brand value. Vanity metrics like likes, views, and follower counts are heavily relied upon in current industry practice; these measures do not accurately show changes in customer trust, brand loyalty, or perception. Additionally, it is unclear how audience perceptions of brand trustworthiness, personality, and relevance are affected differently by various influencer levels, content types, and platform environments. More research is needed to address this gap between investment and measurable impression impact.

1.2 Research Objectives

- To investigate how influencer-driven content cultivates emotional customer involvement and humanises brands
- To determine the best criterion for choosing influencers based on audience demographics, platform dynamics, and engagement authenticity
- To evaluate how customer trust levels are affected differently by macro, micro, and nano influences
- To examine the connection between long-term customer brand perception and influencer-brand alignment

1.3 Research Questions

- What effects do various influencer types have on customer trust and brand perception?
- How can content authenticity contribute to the development of favourable brand associations?
- What impact does platform selection have on influencer campaigns' ability to improve brand perception?
- Which influencer selection factors have the most correlation with enduring brand loyalty?

1.4 Hypothesis

Hypothesis 1: There is a significant relationship between influencer-driven content and consumer brand perception in terms of trust, relatability, and emotional connection.

Hypothesis 2: Different types of influencers have a significantly different impact on consumer engagement and brand perception.

REVIEW OF LITERATURE

Influencer marketing differs from traditional celebrity endorsements in that it relies on embedded authenticity and parasocial connections, according to existing research. According to De Veirman et al. (2019), influencers use relatability to include promotional messages into lifestyle narratives, building trust. According to Haenlein et al. (2020), Gen Z consumers

view influencers as real peers rather than marketers, thereby enhancing brand impressions through emotional resonance. According to Appel et al. (2020), platform context is crucial: YouTube facilitates thorough product explanations, whereas Instagram's attractive interface enhances aesthetic brand storytelling.

According to Tanwar et al. (2022), who distinguish between active and passive social media use, engaged individuals are better at internalising brand messaging. Congruence theory, introduced by Belanche et al. (2021), posits that perceived brand trustworthiness is greatly enhanced when influencer personality, product attributes, and audience expectations align. According to Voorveld et al. (2018), emotional storylines incorporated into influencer content increased engagement and long-term brand commitment. Recent research emphasises the growing significance of micro-influencers, whose smaller but highly active audiences generate higher conversion and trust metrics than macro-influencers, despite their lower reach.

METHODOLOGY

Research Design: This study employs a mixed-methods approach combining exploratory and descriptive research.

Primary Research: Exploratory research via survey questionnaire examining consumer perceptions, trust levels, and behavioral responses to influencer marketing.

Secondary Research: Descriptive analysis of Britannia's Laughing Cow Cheese Triangles campaign, evaluating influencer selection, content strategy, and performance metrics.

Sampling: Convenience sampling targeting Indian social media users aged 18+ actively engaging with influencers on Instagram and YouTube. Minimum 100 responses collected.

Data Collection: Structured Google Form questionnaire incorporating demographic questions, awareness assessment, trust rating scales (1-5), purchase behavior inquiry, and platform preference analysis.

Statistical Tools: Descriptive statistics (percentages, averages), Single-Factor ANOVA examining purchase frequency variation across influencer categories, Chi-

Square test analyzing gender and unfollowing behavior relationship.

RESULTS AND ANALYSIS

Survey Demographics: Respondents distributed across age groups 18-24 (52%), 25-34 (35%), 35-44 (10%), 45+ (3%). Gender split: 62% female, 38% male. Occupations: 48% students, 38% working professionals, 14% others.

Platform Engagement: Instagram was the most preferred platform, with 89.3% of respondents choosing it. YouTube followed at 49.5%, then Facebook at 17.5%, and emerging platforms at 5.8%. This trend shows that Instagram's strengths in visual storytelling work well for influencer content.

Trust Analysis: Friends and family received the highest trust scores at 4.2 out of 5. Online reviews scored 3.9 out of 5. Influencers ranked 3.4 out of 5, higher than TV advertisements at 2.8 out of 5 and celebrities at 2.6 out of 5. This shows that influencers are generally seen as more trustworthy.

Purchase Behavior: 44% of respondents said they made a purchase after seeing an influencer's promotion, with 18% buying frequently. This strong conversion rate shows a real impact on business beyond just engagement numbers.

Content Relatability: The results showed that consumers find influencer content more authentic than traditional advertising, supporting the idea of authenticity.

Influencer Type Preferences: The survey revealed that 31% prefer micro-influencers and 28% prefer macro-influencers, with similar preferences across different demographics. ANOVA testing showed no significant variance in purchase frequency across influencer categories ($p > 0.05$), suggesting that type selection depends on campaign specifics.

Britannia Campaign Performance: Four mom influencers generated a combined reach of 1,478,600. Top performer (Farha Shaikh, 240K followers) achieved 1,027,562 views and 1.2M reach - 67% of total campaign impact. Engagement rates ranged 2.02-3.42%, exceeding industry benchmarks. Chi-Square analysis revealed no significant gender difference in unfollowing

behavior ($\chi^2 = 1.23$, $p = 0.27$).

LIMITATIONS

This study examined Indian social media users, mainly aged 18 to 44, which limits the applicability of the findings to older groups. The sample size ($n = 103$) is relatively small for making broad national conclusions. The cross-sectional survey design captures perceptions at a specific point in time rather than tracking how attitudes change over time. The campaign analysis focused on a single product category (dairy/cheese) within an urban family context, which may bias the results toward the effectiveness of parenting and lifestyle influencers. Attribution analysis is difficult because it's hard to separate the influence of influencers from other marketing efforts happening at the same time. Self-reported purchase behavior may also be influenced by social desirability bias.

CONCLUSION

This study shows that, by being relatable, authentic, and intentionally reaching the right audience, influencer marketing can significantly change how consumers view a company. This study shows that significant changes in perception are more strongly correlated with engagement quality and influencer-brand congruence, even though vanity metrics remain the industry norm. Micro-influencers build loyalty, while macro-influencers increase reach. Although they have a modest number of followers, the Britannia campaign demonstrated effective targeting of mom influencers, resulting in significant impact. Instagram's strength in storytelling is evident in its leading role as an influencer platform. Importantly, influencer marketing is a way to build community rather than just promote products. Consumers increasingly view influencer recommendations as advice from peers. This creates a mindset where brand connections feel personal rather than imposed by companies. The shift in attitude shows that influencer marketing has value beyond just sales data.

FUTURE SCOPE OF THE STUDY

To gain a better understanding of the impact of regional and vernacular influencers, future study might compare the effectiveness of influencers in various Indian areas, languages, and cultural contexts. It can also look into how short-form video content is changing audience engagement and influencer marketing on new platforms

such as Instagram Reels, Threads, and Moj. Beyond personal opinions, methods like eye tracking or brain response research may be used to capture emotional reactions to influencer content. Expanding research to less-studied industries, including B2B, fintech, and education, would help understand influencer marketing beyond consumer goods. Furthermore, by studying online brand interactions during influencer campaigns, real-time sentiment analysis using language-processing algorithms can reduce the need for surveys.

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ACKNOWLEDGEMENT

It is indeed a matter of great honour for me to express my sincere gratitude to Greenroom Now for providing me with this valuable opportunity to learn and gain practical exposure through the best available resources.

I take this opportunity to express my profound gratitude and deep regards to my Company Mentor, Ms. Harsha Sharma, Assistant Campaign Manager at Greenroom Now, for her exemplary guidance, constant support, and encouragement throughout the course of this project, which helped me in successfully completing the same.

The guidance and insights she provides from time to time will remain valuable throughout my professional journey.

I am also thankful to all the team members at Greenroom Now for patiently guiding me during my internship; without their support, this project wouldn't have been successfully completed. I sincerely thank my Faculty Guide, Dr. G. Ramesh, for his ongoing guidance, constructive suggestions, and encouragement throughout my project.

* * *

A Study on Employee Value Proposition, Performance-Linked Pay, Retention, and Organizational Commitment at Bombay Dyeing

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ABSTRACT

This research examines how employees at Bombay Dyeing perceive the company's Employee Value Proposition (EVP) and Performance-Linked Pay (PLP). It also explores how these views influence their decision to stay and their commitment to the organization. Responses were collected from 56 employees using a structured questionnaire and findings from exit interviews. The data were analyzed using weighted averages, Friedman tests, and simple linear regression. The results show that employees are satisfied with the company's ethical standards, anti-harassment policies, psychological safety, and recognition practices. However, they are dissatisfied with health benefits, transparency in appraisals, fairness in promotions, workload distribution, and clarity in career paths. Regarding PLP, key motivators include recognition for performance, bonuses, clear key results, and timely incentives. Yet, the regression analysis reveals no significant link between overall EVP satisfaction and either affective or continuance commitment. It also indicates a slight negative relationship with normative commitment. In conclusion, if Bombay Dyeing wants to retain employees and increase their commitment, it should improve communication about appraisals, clarify performance metrics, and enhance transparency regarding career growth.

Keywords - Employee Value Proposition, Performance-Linked Pay, Employee Retention, Organizational Commitment.

INTRODUCTION

In India's textile sector, maintaining a steady, skilled workforce is essential. Retaining talented employees has become a major focus. Workers seek more than just pay; want recognition, real opportunities for growth, psychological safety, and open communication. Fair and clear PLP systems boost motivation and trust in the company. Bombay Dyeing has introduced several HR initiatives, including ethics programs, health benefits, formal reviews, and incentive plans. However, exit interviews show that concerns persist. Employees remain worried about the fairness of appraisals, the merit-based nature of promotions, their workload, and the visibility of career advancement. This led to an investigation into how employees rate EVP and PLP and how these ratings impact their intention to stay committed to company.

1.1 Problem Statement

Bombay Dyeing has introduced several HR initiatives to improve employee experience. However, it is unclear if these efforts connect with staff or are effective. Key aspects of the employee value proposition, such as growth, fairness, and balanced workloads, may not meet employee expectations. The impact of the performance linkage program on motivation is also uncertain. When the company's offerings do not align with employees' priorities, engagement decreases, and turnover increases. This study aims to determine whether the

current employee value proposition and performance linkage practices truly resonate with employees and affect retention and commitment.

1.2 Research Objectives

- To examine the components of the Employee Value Proposition and Performance-Linked Pay implemented at Bombay Dyeing and assess employee perceptions of these elements.
- To analyze the organizational factors influencing employee retention.
- To measure the impact of overall EVP satisfaction on affective, continuance, and normative organizational commitment.

1.3 Research Questions

- 1 How do employees view different EVP components like ethical standards, benefits, communication, work-life balance, recognition, and career opportunities?
- 2 Which PLP elements do employees find most and least valuable regarding motivation, fairness, and relevance?
- 3 What factors drive employees to stay with the organization?
- 4 How much does satisfaction with EVP impact emotional, ongoing, and social commitment?

1.4 Hypothesis

- H₀₁: There is no significant difference in employees' perceptions across EVP components.
- H₁₁: There is a significant difference in employees' perceptions across EVP components.
- H₀₂: There is no significant difference in employees' preferences for PLP elements.
- H₁₂: There is a significant difference in employees' preferences for PLP elements.
- H₀₃: EVP satisfaction has no significant effect on affective commitment.
- H₁₃: EVP satisfaction has a significant effect on affective commitment.
- H₀₄: EVP satisfaction has no significant effect on continuance commitment.
- H₁₄: EVP satisfaction has a significant effect on continuance commitment.
- H₀₅: EVP satisfaction has no significant effect on normative commitment.
- H₁₅: EVP satisfaction has a significant effect on normative commitment.

REVIEW OF LITERATURE

Recent studies define EVP as a combination of financial rewards, growth opportunities, organizational culture, leadership, and psychological safety. A positive view of EVP leads to higher satisfaction, stronger engagement, and better retention. In labor-intensive industries, fair performance systems, supportive management, and safe workplaces are key to keeping talent. PLP can improve motivation significantly if guidelines are clear, expectations are understood, and incentives are provided promptly. However, if performance reviews feel random or key result areas (KRAs) are unclear, motivation drops, especially in manufacturing, where performance can be measured. Research generally shows that EVP enhances affective and normative commitment, but its influence on continuance commitment is weaker due to external factors. There is limited research on EVP and PLP in India's textile industry, making this study an important addition to the sector's HR literature.

METHODOLOGY

Sampling and Data Collection

A descriptive research approach was used to capture employee perceptions. Primary data was collected from 56 employees using a structured questionnaire. This questionnaire addressed EVP factors, PLP preferences,

retention drivers, and organizational commitment. Secondary data, such as organizational reports, policy documents, and exit-interview narratives, offered valuable context. Stratified random sampling ensured representation across production, administration, operations, and support functions.

Data Analysis

Weighted averages summarized EVP satisfaction levels. The Friedman tests evaluated differences in PLP preferences. Linear regression assessed the relationship between EVP satisfaction and commitment. Thematic analysis was applied to open-ended responses and to trends in exit interviews.

RESULTS & ANALYSIS

A Employee Perceptions of EVP

Employees report positively about the company's ethical standards, handling of harassment, and the general sense of psychological safety. They also mention recognition and appreciation, which show a supportive workplace culture. However, some areas receive low ratings. Employees see health benefits as basic and say they provide little beyond minimal coverage. Many are concerned about the clarity of appraisal processes and whether promotions are based on merit. Problems like uneven workloads and unclear career paths also come up. Although the culture is considered strong, practical areas like benefits, advancement, and workload management need improvement.

B PLP Preferences

Employees prefer rewards that are directly related to performance. Key motivators include recognition of achievements, financial bonuses, clear KRAs, and timely incentives. Rewards not linked to performance, such as job security or team-building events, hold less value. The Friedman Test supports this and shows important differences in what employees prioritize ($p < 0.01$).

C Retention Drivers

Crucial factors for retention include supportive colleagues, fair policies, clear expectations, and recognition from supervisors. Interestingly, while career advancement and learning opportunities are valued, they are not as crucial as daily experiences and work relationships.

D Influence of EVP on Organizational Commitment

Regression analysis indicates:

- **Affective Commitment:** Satisfaction with EVP does not significantly increase emotional attachment; merely having a positive view of EVP does not strengthen the connection to the company.
- **Continuance Commitment:** No significant relationship is observed. This indicates that retention is more affected by external opportunities than internal offerings.
- **Normative Commitment:** A slight negative link exists. This suggests that a strong EVP motivates employees to stay voluntarily rather than out of obligation. It indicates a shift from feeling duty-bound to choosing to remain willingly.

LIMITATION

The study includes 56 respondents from one organization, which limits its applicability. Its cross-sectional design does not allow for analysis of changes over time. Since the data comes from self-reports, it may be biased. Additionally, using average EVP scores might hide the impact of individual EVP components.

CONCLUSION

Bombay Dyeing is recognized for its ethical practices, psychological safety, and focus on employee value. These qualities foster satisfaction and cultivate a positive environment. However, challenges persist. Limited health benefits, unclear appraisal systems, promotions that do not consistently reward merit, uneven workloads, and vague career paths weaken the employee value proposition (EVP). Performance-based rewards are highly motivating, especially when expectations are clear and rewards are provided promptly. Rewards not linked to performance have little effect. Overall, satisfaction with the EVP does not significantly increase emotional or ongoing commitment. It shows a slight negative correlation with normative commitment, suggesting that employees stay out of choice rather than obligation. To build trust and enhance long-term retention, the company should improve communication regarding career advancement and appraisal processes.

FUTURE SCOPE OF THE STUDY

Future studies should include larger samples and several organizations, ideally from the textile industry, to evaluate how widely these findings apply. Long-term

studies would help monitor changes in EVP perceptions over time. Adding in-depth interviews could offer deeper insights into what motivates employees. Using analytical methods such as Structural Equation Modelling could help explain the connections among EVP, PLP, engagement, and retention.

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ACKNOWLEDGEMENT

It is indeed a matter of great honor for me to express my sincere gratitude to The Bombay Dyeing and Manufacturing Company Limited for providing me with this opportunity to learn and train myself using the best available resources. I take this opportunity to express my profound gratitude and deep regard to my company mentors, Ms. Nisha Vaish and Ms. Lydia Naik, for their exemplary guidance and constant encouragement throughout this project, which helped me complete this task. The support and advice they have provided will be valuable as I start my professional journey. I am obliged to the members of The Bombay Dyeing and Manufacturing Company Limited for patiently guiding me through the training period; without their support, this would not have been successful. I sincerely thank my faculty guide, Dr. Sonali Shiralkar-Tatkar, for her help and recommendations during this project. * * *

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