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Predictive Implications of Dynamic Factors on Investors Decision in Indian Derivatives Market: An Empirical Study

[1] Tsegenet Mengistu Abebe, [2] Prafulla Kumar Swain, [3] Rabinarayan Patnaik and [4] Manoj Kumar Sahoo

[1] Research Scholar, Faculty of Management Sciences, Siksha 'O' Anusandhan (SOA) Deemed University, Bhubaneswar, Odisha, India

[1] Professor, Faculty of Management Sciences, Siksha 'O' Anusandhan (SOA) Deemed University, Bhubaneswar, Odisha, India

[1] Corresponding author and Associate Professor, Faculty of Management Sciences, Siksha 'O' Anusandhan (SOA) Deemed University, Bhubaneswar, Odisha, India, **Email**: patnaik.rabinarayan@gmail.com

[1]Assistant Professor, School of Humanities & Social Science, Siksha 'O' Anusandhan (SOA) Deemed University, Bhubaneswar, Odisha, India

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ABSTRACT

Since the Indian derivative market is growing rapidly and participation in retail increases, the study investigates factors that affect investment decisions of retail investors. Despite market growth, investor behaviours is understood, especially in emerging economies. This study examines risk tolerance, financial literacy, market dynamics, regulatory environment and how technology/access affects investment decisions to fill this difference. The study uses a quantitative explanation-induced design, with a structured questionnaire distributed to 129 retail investors. We used convenience sampling and online recruitment to increase demographic diversity. Data analysis used descriptive and subordinate figures such as Piercen's correlation and several linear regressions to determine variable conditions. The results suggest that technology/access ($\beta = 0.250$, $p = 0.002$) and economic literacy ($\beta = 0.207$, $p = 0.014$) are the leading prophecies for investment decisions. Regulatory Environment ($\beta = 0.184$, $p = 0.028$) and risk tolerance ($\beta = 0.161$, $p = 0.049$) Make considerable impact.. The model has a strong fit, explaining 76.2% of investment decision variance (Adj. $R^2 = 0.752$, $F = 77.917$, $p < 0.001$). Conclusions emphasize the requirement for integrated guidelines to improve financial literacy, technical access, and regulatory framework. The results point to integrated policies needed to improve regulatory systems, tech access, and financial education. The findings highlight the need of comprehensive policies meant to improve regulatory systems, technology accessibility, and financial literacy.

INTRODUCTION

Since the early 2000s, the Indian derivatives market has grown significantly due to economic liberalisation, technological innovation, and regulatory reform. The growth is evident in trading volumes and market capitalisation. The market's diversity, offering futures, options, and swaps, presents opportunities for higher returns but also higher risks. The dual nature of these financial instruments, providing effective risk management and the potential to create market instability, was further shaped during the COVID-19 period (Jiang, 2024; Tian, 2024). Retail investors play a crucial role in the derivatives market, enhancing liquidity and dynamism (Cirappa &Tejashwini, 2022). Their participation stabilises the market and broadens the spectrum of investment considerations (Hsiao et al,2018). However, low financial literacy and inadequate regulatory protection often hampered retail investors, impacting their decision-making (Shroff et al., 2024). Understanding their decision-making processes is crucial for developing market strategies and regulatory interventions that uphold market integrity and foster investor trust (Rahadian et al., 2024; Jain et al., 2016). Financial literacy, particularly in the context of derivatives, is a beacon of hope in improving investment decisions (Hsiao et al,2018). Conversely, investors with a good understanding of finance can better assess potential rewards and risks, thereby enhancing risk management and optimising investments (Shaheen et al., 2022; *Mishra* et al., 2009). Financial literacy in India's derivatives market allows retail investors to manage complexities and make informed decisions (Cirappa & Tejashwini, 2022). Elements such as risk tolerance, market trends, regulatory frameworks, and technology influence this. Risk tolerance guides investment approaches—risk-averse investors engage in hedging, while those open to higher risk seek more aggressive investments (Mageswari & Sasirekha, 2024; Tiwari et al., 2024).Market factors such as liquidity and volatility significantly influence investment decisions (Bordoloi et al., 2024; Golluru & Ghanathe, 2024). Furthermore, the regulatory environment greatly affects investor behaviour by shaping their perceptions of risk and reward (Arora & Rathinam, 2010; Escobar-Ange et al., 2022). Technological innovation has enabled easy access to the derivatives market, thus improving the trading efficiency for individual investors (Kuriakose & Sajoy, 2022). Moreover, digital platforms and mobile payment solutions have transformed investment and management choices (Srivastava et al., 2024; Ebirim & Odonkor, 2024). Nonetheless, a lack of financial literacy and the psychological effects of technology on decision-making limit the full advantages of financial technology (Arifin, 2024; Mondal & Sreekumar, 2024). A deeper understanding of these elements improves the ability to make informed decisions that enhance financial gains. The paper consists of sections: literature review, research methodology, data analysis, and conclusions, each offering practical implications and suggestions for future research.

1. Review of the Comprehensive Literature

The Indian derivatives market has experienced significant growth since its launch in 2000, achieving an impressive turnover of Rs. 55,606,453.39 crore in 2014-15, underscoring its vital position in the financial sector (Sarker, 2024; Gautam & Kavidayal, 2016). This growth is primarily because more people are exposure to financial derivatives products, also known digital financial platform to manage risk, speculate, and diversify portfolios, especially when the market is unstable (Mittal, 2012). Lu et al., (2024, p.4) define digital financial platform as a convenient space for investment that shape and empower investors. However, the investors desire returns; retail investors engage in derivatives trading despite the risks associated (Kuriakose & Sajoy, 2022; Hasnain et al., 2023). A mobile trading apps for example is a digital financial platform, digital trading app enable investors to access to trading features including fundamental news, technical analysis and open number of trading positions (Aljanabi HAA, 2025). These applications have fundamentally transformed conventional investment methodologies and decision-making frameworks (Bey, 2024). According to Kuriakose & Sajoy, (2022) research the digital financial derivative product enhanced awareness and self-assurance, retail investors exert considerable influence over market dynamics and liquidity. Conversely, empirical research has underscored that retail investors within the Indian derivatives market depend on a substantial body of theoretical frameworks to elucidate the factors influencing their investment decisions (Singh & Chaudhary, 2024; Mageswari & Sasirekha, 2024; Cirappa &Tejashwini, 2022; Pasha, 2013). From a financial standpoint, risk tolerance elucidates how cognitive biases may lead investors to misjudge risks, ultimately resulting in suboptimal decision-making outcomes (Tiwari et al., 2024; Garay U et al., 2021). Empirical studies show that a rise in financial literacy is associated with higher investor confidence and better decision-making capacity (Shaheen F. et al., 2022). Advancements in real-time data and technology have transformed trading behaviours, resulting in heightened engagement from younger retail investors (Kuriakose & Sajoy, 2022). Additionally, regulatory frameworks influence the marketplace and encourage ethical trading practices. Significant legislation, such as the Reserve Bank of India (RBI) Act of 1936, authorizes the over-the-counter (OTC) products, thus becoming a fundamental component of the collaborative regulatory framework shared by securities exchange board of India (SEBI) and RBI. However, SEBI clearly defined guidelines that established to promote market integrity and investor confidence (Arora & Rathinam, 2010). This regulatory framework fosters market stability, transparency, and proficient risk management, thereby enhancing investor assurance. Regulations delineate product specifications, participant roles, market maker responsibilities, and post-trade protocols, establishing a systematic environment that facilitates well-informed investment choices (Gopinath, 2010). Acute sensitivity to risk is critically significant within a derivatives market; an accurate risk evaluation is profoundly reliant on a comprehensive grasp of its intricacies. Possessing essential skills in market dynamics empowers investors to predict volatility with greater precision, while expertise in instruments such as futures, options, and swaps enables them to effectively manage risk (Tkachuk et al., 2024) However, previous occurrences, notably the Archegos liquidation, have revealed weaknesses in the market during challenging circumstances, highlighting how intricate derivatives and leverage can exacerbate risk (Sun, 2023). Therefore, fintech advancements drive the enhancement of prediction accuracy and transparency, facilitating informed decision-making (Gao, 2024). In conclusion, the Indian derivatives market exemplifies the complex interplay between the transformation of investor behaviour and technological advancements; its growth is influenced by regulatory frameworks, technological progress, and psychological dynamics. Thus, a thorough understanding of historical crises elucidates the role of derivatives in market volatility and enhances risk management strategies (Wang & Ying, 2024). Although derivatives offer prospects for heightened market efficiency and proficient risk management, their intrinsic complexity demands sophisticated risk management approaches and an emphasis on investor education. Therefore, further research is crucial to harmonize behavioural insights, technological advancements, and regulatory requirements to cultivate a resilient and inclusive market.

1.1. Research Objective:

This study examines the key determinants influencing retail investors' decisions in the Indian derivatives market, with the goal of enhancing their comprehension of financial decision-making processes.

1.2. Research Hypothesis:

There exists a positive correlation among risk tolerance, financial literacy, market dynamics, regulatory frameworks, and technological accessibility, which collectively impact the investment decisions of retail investors in the Indian derivatives market and shape their strategies.

1.3. Synthesis and Gaps:

The hypothesis is grounded in an extensive literature review that identifies the investment decision-making process as intricate. The aim of the research is to ascertain whether these factors, when considered together, significantly impact retail investors' choices, as suggested by previous studies conducted by Tiwari et al. (2024), Shaheen et al. (2022), and Kuriakose & Sajoy, (2022), thereby addressing existing gaps in the literature. A multiple linear regression analysis will be employed to evaluate each factor's predictive capability independently. While prior research focused on single factors, this study will investigate the interplay among multiple factors (Singh & Chaudhary, 2024). It provides insight into the Indian market, where regulatory reform and technological innovation are swift. The research explores how risk tolerance and market dynamics are associated with literacy and regulation, increasing knowledge of investor behaviour.

2. Methodological Framework and Research Design

This study uses a quantitative, explanatory-descriptive research framework to examine the factors influencing retail investors' choices in the Indian derivatives market. The target population consists of active retail investors who have traded on the NSE or BSE over the past year. To enhance participation coverage, we use a non-probability convenience sampling method, online recruitment through LinkedIn and broking forums, and snowball sampling (Golzar, 2022). The survey consists of three parts: demographics (age, gender, income, education, and investment experience), key factors (questions covering risk tolerance, financial literacy, market conditions, regulations, and technology), and investment decisions (questions on the decision-making process). Out of 37 structured questions, 21 were on a five-point Likert scale (Cooper, 2006). Data from 500 investors yielded 129 complete responses (77% response rate). The sample size was determined using Cochran's formula (Cochran, 1977); a post-hoc power analysis indicated an 80% statistical power (Faul et al., 2007). Additionally, we utilized secondary synthesis data from academic journal articles, along with reports from SEBI and NSE, among others, to bolster our findings. Inferential statistics, such as Pearson's correlation coefficient, examine the relationships between various variables (Cohen, 1988). Descriptive statistics provide insights into fundamental concepts and demographic information. We used multiple linear regression to evaluate the explanatory ability of the main variables, testing linearity and multicollinearity through assumption testing. We used SPSS version 28.0 (Field, 2024) to analyse the data, with reliability established through a Cronbach's alpha of greater than 0.95, supplemented by expert verification and adherence to ethical requirements, thereby providing sound basis for interpreting investment choices in the Indian derivatives market and informing policy and future research.

3. Data Analysis and Interpretations

3.1. Demographic Profile

Table 1: Respondents' Demographic Profile

Demographic Variable	Category	Frequency	Percent	Key Insights from Literature
Gender	Male	81	62.8	Research shows that men are frequently more willing to take risks (Tiwari et al., 2024; Reddy & Mahapatra, 2017).
	Female	48	37.2	Behavioural finance indicates that women might favour more cautious investment approaches (Garay et al., 2021; Kansal & Singh, 2013)
Age	20-30	5	3.9	Younger investors typically have lower financial literacy (Shaheen et al., 2022; Cirappa &Tejashwini, 2022; Sharma. M et al., 2024)
	31-40	63	48.8	This group may balance risk and literacy effectively (Jain et al., 2017)
	41-50	50	38.8	Older investors often leverage experience for informed decisions (Kuriakose & Sajoy, 2022).
	Above 50	11	8.5	Senior investors may prefer low-risk instruments (Joshipura & Joshipura, 2020)
Education	Undergraduate	9	7.0	Limited financial literacy may hinder complex investment strategies . (Anshika, 2017)
	Graduate	16	12.4	Basic literacy supports moderate investment decisions (Shaheen et al., 2022).
	Postgraduate	43	33.3	Advanced education enhances analytical decision-making (Aljanabi et al., 2025).
	Professional Degree	61	47.3	Professional qualifications correlate with sophisticated investment choices (Subnani & Todwal, 2024)
Investment Experience	Less than 1 year	8	6.2	Novices may rely on heuristic biases (Tejashwini, 2023; Garay et al., 2021)
	1-5 years	22	17.1	Emerging investors build literacy over time (Ikhsan et al., 2024; Krische, 2019)
	6-10 years	58	45.0	Experienced investors optimize risk-reward trade-offs (Nareswara et al., 2024).
	More than 10 years	41	31.8	Seasoned investors navigate market dynamics effectively (Bordoloi et al., 2024).

Source: Author SPSS analysis

Table 1 demonstrate demographic profile of the respondents, out of the total number of respondents, 81 (62.8%) were males, and 48 (37.2%) were females, exhibiting a gender imbalance characteristic of historic participation levels in the Indian stock market. However, **Table 1** further indicates that middle-aged retail investors are more prevalent due to their greater disposable incomes and financial acumen. Only 3.9% of respondents are aged 20–30, and 8.5% are over 50; the age distribution reveals a remarkable 87.6% of participants situated within the 31–50 age bracket. Moreover, a significant 80.6% of participants possessed advanced postgraduate or professional degrees, highlighting the impressive educational level among active investors. This statistic is noteworthy, as higher education is frequently linked to enhanced financial understanding and an increased capacity for risk management. Additionally, the respondents' investment experience reflects their active participation in the market: an impressive 76.8% had engaged in trading for over six years, while 31.8% had more than ten years of trading experience. These statistics indicate a well-informed group proficient in the intricacies of market derivatives.

3.2. Descriptive Statistics

Table 2, demonstrate the descriptive statistics provide significant insights into the perceptions held by investors regarding the determinants of their investment choices, corroborating existing literature. Typically, investors demonstrate a moderate inclination towards risk, which agrees with previous studies indicating that an elevated risk tolerance facilitates participation in derivatives trading (Tewari et al., 2023; Joshipura & Joshipura, 2020). The sample exhibits a relatively high level of financial literacy, reinforcing the premise that well-educated investors tend to make more judicious decisions (Shaheen et al., 2022).

Additionally, investors acknowledge the critical nature of regulatory protections, as underscored in investigations concerning SEBI's contribution to the maintenance of market integrity (Anggarani et al., 2024). Furthermore, the positive yet slightly diminished scores underscore the transformative influence of digital platforms, while also suggesting that inequalities in digital literacy may continue to exist (Kuriakose & Sajoy, 2022).

Table 2: Descriptive Statistics

Variable	N	Mean	std. deviation
Risk tolerance	129	3.12	.890
Financial literacy	129	3.15	.928
Market trade	129	3.08	.951
Regulatory Environment	129	3.08	.873
Technology and Accessibility	129	3.05	.952
Overall investment decision	129	3.29	1.004

Source: Author SPSS analysis

The mean scores of the constructs have moderate levels for all variables, with investment choices (M = 3.29, SD = 1.004) slightly higher than the rest. This reveals that the respondents have a moderate tendency for derivative investments, influenced by their attitudes towards risk, literacy, market conditions, regulatory environments, and technology access.

3.3. Inferential Analysis

3.4. Correlation Analysis

Table 3 demonstrate a correlation analysis, highlighting a strong positive correlation among all the independent variables and investment choices. All of the correlations achieving statistical significance at the 0.01 level (2-tailed). The analysis indicate that the technology and accessibility, with their correlation value standing at r = 0.793. Kuriakose & Sajoy, (2022) also notes the relevance of digital platform characteristics in facilitating market participation. In addition, the analysis also reveals that financial literacy is singled out (r = 0.790) as a defining issue, which agrees with the observation rendered by Shaheen et al. (2022) concerning the role of financial literacy.

Table 3: Correlations

Correlations							
Variable		1	2	3	4	5	6
risk tolerance	Pearson Correlation	1	.744**	.794**	.738**	.736**	.770**
	Sig. (2-tailed)		.000	.000	.000	.000	.000
	N	129	129	129	128	129	129
financial literacy	Pearson Correlation	.744**	1	.742**	.798**	.758**	.790**
	Sig. (2-tailed)	.000		.000	.000	.000	.000
	N	129	129	129	128	129	129
market trade	Pearson Correlation	.794**	.742**	1	.739**	.755**	.777**
	Sig. (2-tailed)	.000	.000		.000	.000	.000
	N	129	129	129	128	129	129
Regulatory environment	Pearson Correlation	.738**	.798**	.739**	1	.753**	.782**
	Sig. (2-tailed)	.000	.000	.000		.000	.000
	N	128	128	128	128	128	128
Technology	Pearson Correlation	.736**	.758**	.755**	.753**	1	.793**
	Sig. (2-tailed)	.000	.000	.000	.000		.000

	N	129	129	129	128	129	129
Investment decision	Pearson Correlation	.770**	.790**	.777**	.782**	.793**	1
	Sig. (2-tailed)	.000	.000	.000	.000	.000	
	N	129	129	129	128	129	129
**. Correlation is significant at the 0.01 level (2-tailed).							

Source: Author SPSS analysis

Moreover, risk tolerance (r = 0.770) and the regulatory environment (r= 0.782) confirm the results of (Tiwari et al., 2024) ; Anggariani, et al.,2024). This study illustrates the relevance of psychological and institutional variables. All these make it clear that financial and economic technological literacy, and governance are fundamental hindering factors to the participation of investors in the market, thus requiring special attention.

3.5. Regression Analysis

Table 4: Coefficients

Coefficients						
		Unstandardized Coefficients		Standardized Coefficients		
Model		B	Std. Error	Beta	T	Sig.
1	(Constant)	.007	.175		.037	.970
	risk tolerance	.182	.092	.161	1.986	.049
	financial literacy	.224	.090	.207	2.484	.014
	market trade	.179	.087	.170	2.054	.042
	Regulatory environment	.212	.095	.184	2.227	.028
	Technology	.265	.083	.250	3.171	.002
a. Dependent Variable: investment decision						

Source: Author SPSS analysis

Table 4 shows a multiple linear regression (MLR) to assess the extent to which the independent variables serve as predictors in the context of investment decision-making.

Table 5: Model Summary

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.873a	.762	.752	.501
a. Predictors: (Constant), technology, risk tolerance, regulatory environment, market trade, financial literacy				

Source: Author SPSS analysis

Table 5 highlight the overall model Summary that the regression model has a strong predictive power for explaining 76.2% of the variance in the investment decisions ($R^2 = 0.762$). This correspond with **Table 4** above. In the correlation analysis, the most important correlations were noted with technology (β = 0.250), financial literacy (β = 0.207), and regulatory environment (β = 0.184) as determinants of investment decisions. The model remains strong due to the Std. The error of the Estimate being 0.501 enhances the reliability of the predictions made.

3.6. ANOVA

Table 6 provides a formal test for the hypothesis of the regression model used in the analysis of variance. The regression model is very important at ($p < 0.001$). The independent variables, all together explain a considerable amount of the variance in investment decisions (Adj. $R^2 = 0.752$). The F-statistic (77.917) is very high, and the p value (0.000) is very low which confirms the model's strength This shows that the predictors (risk tolerance, financial literacy, etc.) are strongly and significantly associated with the dependent variable. This means that the model is useful and will assist in predicting investment decisions in the Indian derivatives market.

Table 6: ANOVA

ANOVA[a]						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	97.829	5	19.566	77.917	.000[b]
	Residual	30.636	122	.251		
	Total	128.465	127			
a. Dependent Variable: investment decision						
b. Predictors: (Constant), technology, risk tolerance, regulatory environment, market trade, financial literacy						

Source: Author SPSS analysis

3.7. Multicollinearity-Diagnostics

Table 7 shows VIFs for the indicators are less than 5 (between 3.192 and 3.557), so there is no serious multicollinearity in the models.

Table 7: Collinearity Statistics

	Collinearity Statistics	
Model	Tolerance	VIF
Risk tolerance	.297	3.371
Financial literacy	.281	3.557
Market trade	.286	3.492
Regulatory Environment	.285	3.505
Technology and accessibility	.313	3.192

Source: Author SPSS analysis

Table 7, demonstrate a tolerance value which vary from 0 to 1, with any values lower than 0.1 indicating serious multicollinearity. All the predictors have tolerance values that exceed 0.1 implying the existence of multicollinearity. These results fully supported the hypothesis, suggesting that the independent variables do not explain the same phenomenon and, thus, are dependable with the regression coefficients.

4. **Findings and discussion**

This research examines individual investors' determinants of investment choice in the Indian derivatives market using a scientific quantitative methodology. The findings support that technology accessibility, financial literacy, and regulatory system confidence are the most significant determinants of investment behaviour and explain 76.2% of the variation in the usage of derivatives (Adj. $R^2 = 0.752$, $F = 77.917$, $p < 0.001$). This finding debunks the usual focus on macroeconomic determinants and confirms the prominence of behavioural and structural determinants of investment behaviour in emerging market economies.

4.1. Financial Literacy and Technology

The research shows that technological access ($\beta = 0.250$, $p = 0.002$) and financial literacy ($\beta = 0.207$, $p = 0.014$) are the most influential predictors of investment choices. These results align with the expanding research on financial democratization (Fanto,1998). where technology has removed barriers for retail investors (Jain & Kumar, 2023). Yet, access is merely the initial step; financial literacy is crucial for informed involvement. Those lacking this knowledge avoid derivatives, thereby exacerbating inequality even in digital economies (Shaheen et al., 2022). This result highlights the need for policies that match technological progress with essential financial education.

4.2. Regulatory Trust

The regulatory landscape ($\beta = 0.184$, $p = 0.028$) significantly influences investment choices, countering the libertarian perspective that advocates for minimal oversight as a catalyst for market expansion (Shekhawat, 2017) Within the aftermath of the IL&FS crisis, Indian investors associate regulatory transparency with diminished counterparty risk, consistent with the findings of Sharma. A, (2024). This research posits regulatory trust as a crucial facilitator of market engagement, urging policymakers to emphasize transparent enforcement over reactive legislative measures.

4.3. Risk Tolerance and Market Dynamics

Risk tolerance ($\beta = 0.161$, $p = 0.049$) is consistent with prospect theory, which posits that investors assign greater weight to potential losses than to gains (Kahneman & Tversky, 1979); however, this analysis introduces an essential qualification: risk appetite is contingent upon the contextual framework of emerging markets-investors with moderate knowledge but high-risk tolerance frequently utilize derivatives for speculation, increasing volatility (Bordoloi et al., 2024). Likewise, the limited effect of market trading dynamics ($\beta = 0.170$, $p = 0.042$) indicates that frequent trading does not necessarily indicate sophistication; rather, it represents a survival strategy in unstable markets. These findings support frameworks that consider socioeconomic diversity in risk perception.

CONCLUSION

This study indicates that all the determinants of investment decisions in the Indian derivatives market are technology, financial literacy, and trust in regulatory systems. The regression evidence indicates that these determinants explain 76.2% of the variation in the utilization of derivatives and, as such, are significant. The results negate traditional models that are macroeconomic and promote an integrated approach that incorporates behavioural as well as structural determinants.

4.4. Consequences for Implementation and Regulation

Financial institutions need to create user-friendly platforms to improve technological accessibility. It is necessary to create education programs to increase the financial literacy level of retail investors. The study recommended that the regulatory agencies work with fintech companies to ensure that education programs keep up with technological development. For instance, the United States SEC's investor education programs have effectively avoided derivatives misuse (SEC, 2021), and India can take it as an example. Moreover, the financial planners & brokers need to be transparent in order to win investors' confidence. Hence, the Securities and Exchange Board of India (SEBI) must work on transparent enforcement and open communication policies to increase regulatory trust. Further, post-crisis reforms, such as those undertaken following the IL&FS crisis, must target investor protection (Sharma. A, 2024). Investors must match their risk tolerance with their financial literacy level to avoid speculative activity. Market regulators need to create guidelines on risk management to allow investors to cope with volatile market conditions.

4.5. Future Research and Limitations

Notwithstanding the immense contribution of this research, it has some limitations. Applying a non-probability convenience sampling technique might limit the generalizability of the results. This research takes a snapshot at a point in time within the context of the modern-day market environment but does not consider the dynamic changes that might occur over time. However, the future research should employ stratified random sampling techniques to achieve a representative sample. Furthermore, the cross-sectional nature of this research limits any causality interpretations. Longitudinal research can investigate the causal links between the variables in more depth. Moreover, researchers might investigate the influence of socioeconomic, cultural, and psychological variables on investment behaviour in emerging markets. This research significantly enhances knowledge in behavioural finance by providing empirical evidence on investment decision factors in the complex Indian derivatives market, thus empowering stakeholders to make informed choices that improve market stability and outcomes for all involved.

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