Emotional Intelligence, Behavioral Biases, and Their Impact on Derivative Market Churning: Evidence from Hyderabad

Mrs. Pusa Sri Varsha[1], Mr. G Vinesh kumar[2]
[1]*MBA Student, Department of Management studies, Vardhaman College of Engineering, Shamshabad, Hyderabad. Telangana.*
[2]*Assistant Professor, Department of Management studies, Vardhaman College of Engineering, Shamshabad, Hyderabad. Telangana.*

***Abstract*—Derivative markets display high volatility levels, forcing the behavior of investors in these markets to be dominated by psychological elements that lead to over-churning in most instances. However, the effect that emotional intelligence has on behavioral biasing and the frequency at which derivative markets are over-churned by investors is an aspect that this paper explores. The effect that gender has in moderating these relationships is also measured. The data for testing the model was gathered using a structured survey interview and SPSS software for the analysis. To test for mediating and moderating relationships in path models, the software Hayes' PROCESS Macro for regression in path models using ordinary least squares regression/BOOTES for bootstrap estimation was employed. Results show that emotional intelligence is significant in the influence it creates on behavioral biasing that in turn causes an increase in the rate at which the markets are over-churned, presenting strong evidence that in fact, there is significant mediating effect. Emotional intelligence also creates a significant direct effect on churning behavior, indicating that not always does increased emotional intelligence lead to the cessation of over-churned rates in derivative markets. While gender creates significant direct effect on churning rate, however, significance in moderation effect is not significant in that gender does not have any significant effect in modifying behavioral biasing to churning behavior.**

Keywords:
Emotional Intelligence
Behavioral Biases
Churning Frequency
Derivative Market
Investor Psychology
Behavioral Finance
Hayes' PROCESS Macro
Mediation and Moderation Analysis
Gender Effects

JEL Classification Codes
- G02 – Behavioral Finance
- G11 – Portfolio Choice; Investment Decisions
- G13 – Contingent Pricing; Futures Pricing (Derivative Securities)
- D91 – Intertemporal Consumer Choice; Life Cycle Models and Saving *(psychological decision-making aspect)*
- J16 – Economics of Gender *(gender as a moderating variable)*

Research Paper: Empirical Investigation.

I. INTRODUCTION

Derivative trading is characterized by swift decision-making in an extremely volatile environment, where emotions and cognitive shortcuts often become the dominating forces behind investor behavior. Second, derivative markets amplify risk through leverage, whereas investors are more susceptible to psychological influences such as overconfidence, loss aversion, and herd behavior than in traditional financial markets. While emotional intelligence has long been regarded as a steadier factor that enables investors to regulate their emotions in order to make better decisions, recent evidence suggests it might also intensify some behavioral biases, which lead to frequent trading and excessive churning. Despite the increasing interest in behavioral finance, very few studies have explored jointly the impact of emotional intelligence, behavioral biases, and churning frequency, especially in the domain of derivative markets. Moreover, gender-based differences in processing emotions and perceiving risk add another layer of complexity in trading behavior. This study closes these gaps by analyzing how emotional intelligence and behavioral biases interact to influence churning behavior, with an assessment of

the moderating effect of gender, hence providing practical insights for investors, financial advisors, and policy makers aiming at reducing excessive trading and enhancing market efficiency.

II. IMPORTANCE OF THE STUDY

This study is important for theoretical, practical, and policy perspectives. Theoretically, it contributes to behavioral finance by integrating emotional intelligence and behavioral biases in explaining the churning behavior in derivative markets, while also highlighting gender-based differences in trading behavior. Practically, the findings help financial advisors and firms identify investors prone to excessive churning and design effective behavioral and investor education programs. From a policy perspective, the study supports regulators in promoting investor protection, disciplined trading, and overall efficiency in market .

III. OBJECTIVES OF THE STUDY

- To examine the impact of emotional intelligence on behavioral biases among derivative market investors.
- To analyze the effect of behavioral biases on churning frequency in the derivative market.
- To assess the impact of emotional intelligence on churning frequency.
- To examine the moderating role of gender in the relationship between psychological factors and churning frequency

IV. REVIEW OF LITERATURE

1. John Ameriks, Thomas Wranik, Peter Salovey (2009)
The study examined the role of emotional intelligence in investor behavior, focusing on emotional regulation and self-control. Using survey data from Vanguard investors, it found that higher emotional intelligence reduces trading frequency. The study concluded that emotional intelligence promotes disciplined and rational investment behavior.

2. Shalini Raheja et al. (2020)
This research analyzed the impact of emotional intelligence and behavioral biases such as overconfidence and herding on investment decisions. Based on survey data from 500 investors, regression results showed that emotional intelligence strongly influences rational decision-making. The study emphasized the importance of psychological traits in reducing irrational investor behavior.

3. Manisha Arora et al. (2020)
The study investigated the mediating role of behavioral biases between emotional intelligence and financial decision-making. Using structural equation modeling, results showed that higher emotional intelligence reduces biases like loss aversion and regret. The study concluded that behavioral biases significantly mediate the EI–decision-making relationship.

4. Cheng Chen et al. (2022)
This research examined the influence of emotional intelligence on investment decisions through optimism bias and risk perception. Using a serial mediation model, findings revealed that emotional intelligence improves decision-making but also intensifies optimism bias. The study concluded that emotional intelligence may sometimes amplify irrational trading behavior.

5. R. Annapurna & S. Basri (2024)
The paper examined the effects of emotional intelligence and biases on the churning rate among mutual fund schemes in India. With the use of SEM on 499 retail investor data, overconfidence was revealed to have increased churning rate, whereas the disposition effect had a lowering impact on churning.

6. Satyajit Rout et al. (2024)
This research examined behavioral biases such as overconfidence, herding, and loss aversion in the Indian commodity derivatives market. Findings revealed that these biases significantly increase excessive trading and market volatility. The study emphasized the need for behavioral finance interventions to improve market efficiency.

7. H. V. Vinay et al. (2024)
The study explored how demographic factors influence emotional and behavioral biases among Indian retail investors. Using ANOVA and t-tests, results showed that education, experience, and marital status affect bias intensity. Gender differences were observed in certain behavioral biases.

8. Marko Vuković & Snježana Pivac (2023)
This research investigated the effect of cognitive and emotional biases on investment decisions and

performance. Findings showed that biased investors trade more frequently and earn lower returns. The study concluded that managing psychological biases is essential for improving investment performance.

9. Emre Kaya et al. (2018)
The study aimed to predict financial customer churn using behavioral attributes rather than demographic factors. Results showed that behavioral models significantly outperform traditional churn prediction methods. The study highlighted behavioral instability as a strong predictor of churn.

10. Navid T. Hosseinkhani (2025)
This paper investigated the psychology of investors when markets are unstable. The conclusion was that market instability heightens irrational decision-making pressures as well as panic selling. This paper argued that proper psychological management is vital to limit excessive churning.

V. STATEMENT OF THE PROBLEM

- Derivative market investors frequently engage in excessive churning, adversely affecting portfolio performance.
- Existing studies inadequately explain how emotional intelligence influences churning behavior through behavioral biases.
- The moderating role of gender in the relationship between psychological factors and churning frequency remains under-researched.
- There is a need for an integrated psychological framework to explain churning behavior in derivative market.

VI. HYPOTHESIS OF THE STUDY

Objective	Hypothesis Code	Null Hypothesis (H_0)	Alternative Hypothesis (H_1)
Objective 1: To examine the impact of emotional intelligence on behavioral biases among derivative market investors.	H_{01} / H_{11}	Emotional intelligence has no significant impact on behavioral biases among derivative market investors.	Emotional intelligence has a significant impact on behavioral biases among derivative market investors.
Objective 2: To analyze the effect of behavioral biases on churning frequency in the derivative market.	H_{02} / H_{12}	Behavioral biases have no significant effect on churning frequency in the derivative market.	Behavioral biases have a significant effect on churning frequency in the derivative market.
Objective 3: To assess the impact of emotional intelligence on churning frequency.	H_{03} / H_{13}	Emotional intelligence has no significant impact on churning frequency in the derivative market.	Emotional intelligence has a significant impact on churning frequency in the derivative market.
Objective 4: To examine the moderating role of gender in the relationship between psychological factors and churning frequency.	H_{04} / H_{14}	Gender does not significantly moderate the relationship between psychological factors (emotional intelligence and behavioral biases) and churning frequency.	Gender significantly moderates the relationship between psychological factors (emotional intelligence and behavioral biases) and churning frequency.

VII. RESEARCH GAPS

- Limited empirical research focuses on churning frequency in derivative markets from a psychological perspective.
- Emotional intelligence and behavioral biases are rarely examined together within a single analytical framework.
- Prior studies report inconsistent findings regarding the role of emotional intelligence in reducing irrational trading.

- The moderating influence of gender on psychological determinants of churning behavior remains largely unexplored.

VIII. SCOPE OF THE STUDY

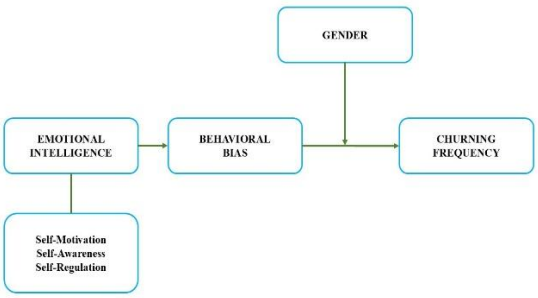
This study examines the psychological factors influencing churning frequency among retail derivative market investors. It analyzes the impact of emotional intelligence on behavioral biases and churning behavior, along with the direct effect of emotional intelligence and the moderating role of gender. Based on questionnaire data, the study provides behavioral finance insights into investor behavior, market efficiency, and portfolio stability in derivative trading.

IX. LIMITATIONS OF THE STUDY

- The study relies on self-reported questionnaire data, which may be affected by response bias and socially desirable answers from investors.
- The research considers only selected emotional intelligence dimensions and behavioral biases, potentially excluding other psychological factors influencing churning behavior.
- The cross-sectional nature of the data limits the ability to establish causal relationships between emotional intelligence, behavioral biases, and churning frequency.
- The findings are specific to derivative market investors and may not be generalizable to other financial markets or investor groups.

X. RESEARCH METHODOLOGY

- Conceptual model



- Research design

The collected data were analyzed using SPSS. Mediation and moderation analyses were conducted using Hayes' PROCESS Macro, which applies ordinary least squares regression and bootstrapping techniques to test indirect and conditional effects.

- Nature of the Study

This study is quantitative and empirical in nature. It is based on primary data collected at a single point in time, making it cross-sectional. The research focuses on understanding how emotional intelligence and behavioral biases influence churning frequency among derivative market investors. Instead of relying on opinions or theories alone, the study uses numerical data and statistical analysis to examine relationships between variables. The findings reflect the current behavior and perceptions of investors rather than changes over a long period.

- Population and Sample

The population of the study includes retail derivative market investors who actively participate in derivative trading. These investors are individuals involved in buying and selling derivative instruments in the financial market.The sample consists of derivative market investors selected from this population. Respondents include individual investors with experience in derivative trading. Data were collected from investors using a structured questionnaire, and the responses formed the basis for statistical analysis.

- Sampling Method

A convenience sampling method was adopted for the study. This method was chosen because derivative investors who were easily accessible and willing to respond were selected. Since the study explores behavioral and psychological aspects of investors, selecting respondents familiar with derivative trading helped in obtaining relevant and meaningful data.

- Data Sources

Primary Data

Primary data were collected using a structured questionnaire. The questionnaire was designed to measure:Emotional Intelligence , Behavioral Biases,Churning Frequency , Gender (used as a moderating variable)

Responses were gathered directly from derivative market investors.

Secondary Data

Secondary data were collected from: Research journals ,Published articles , Books on behavioral finance , Reports and academic sources .These

sources were used to build the theoretical background, identify research gaps, and support the analysis.

- Research Instrument – Questionnaire

A set of structured and organized questions using a rating scale served as the primary instrument for data collection. The questionnaire was designed to capture investors' psychological and behavioral characteristics related to derivative market trading. The survey consisted of statements grouped under four key dimensions:

- Emotional Intelligence of Investors
- Behavioral Biases in Investment Decision-Making
- Churning Frequency in Derivative Trading
- Gender Differences in Trading Behavior (Moderation Variable)
- Statistical Tools Used

The study employed the following statistical tools for data analysis:

- Descriptive Statistics to summarize investor characteristics
- Regression Analysis to examine relationships between variables
- Mediation Analysis to test the indirect effect of emotional intelligence through behavioral biases
- Moderation Analysis to examine the moderating role of gender
- Hayes' PROCESS Macro in SPSS was used to perform mediation and moderation analysis using ordinary least squares regression and bootstrapping techniques

XI. DATA INTERPRETATION & DISCUSSION

Cronbach Alpha

Variables	Numbers of Items	Cronbach Alpha
Emotional Intelligence	10	0,837
Behavioral Bias	6	0.705
Churning Frequency	7	0.771
Gender Bias	3	0.777
Overall Value	26	0.921

Interpretation

The reliability of the measurement instruments was evaluated using Cronbach's alpha to assess internal consistency. The results indicate that all individual constructs, as well as the overall scale, demonstrate acceptable to excellent reliability. The Emotional Intelligence scale, consisting of 10 items, reported a Cronbach's alpha of 0.837, indicating good internal consistency. This suggests that the items are highly interrelated and effectively capture the construct of emotional intelligence. The Behavioral Bias scale, measured with 6 items, yielded a Cronbach's alpha of 0.705, which meets the minimum acceptable reliability threshold of 0.70. This indicates that the scale has adequate internal consistency and is suitable for empirical analysis. The Churning Frequency construct, comprising 7 items, produced a Cronbach's alpha of 0.771, reflecting acceptable to good reliability. This confirms that the items consistently measure churning-related behavior. The Gender Bias scale, with 3 items, achieved a Cronbach's alpha of 0.777. Despite the relatively small number of items, this value indicates acceptable internal consistency, supporting the reliability of the scale. Importantly, the overall scale, consisting of 26 items across all constructs, yielded a Cronbach's alpha of 0.921, which indicates excellent reliability. This high value suggests strong overall internal consistency and confirms that the measurement instrument as a whole is highly dependable.

Mediation Analysis

Path A) (Emotional Intelligence→ Behavioral Bias)

Behavioral Bias

R	R^2	MSE	F	df1	df2	p
.8096	.6554	.2335	566.8959	1	298	.000

Predictor	Coefficient (B)	SE	T	p	LLCI	ULCI
Constant	.4788	.1083	4.4221	.000	.2657	.6918
Emotional Intelligence	.8083	.0339	23.8096	.000	.7415	.8751

Interpretation
Emotional Intelligence had a significant positive effect on Behavioral Bias (β = 0.8083, p < .001). This indicates that higher levels of emotional intelligence are associated with higher levels of behavioral bias.

Path B) (Behavioral Bias → Churning Frequency)
Churning Frequency

R	R^2	MSE	F	df1	df2	P
.7349	.5401	.3307	174.3797	2	297	.000

Predictor	Coefficient (B)	SE	T	p	LLCI	ULCI
Constant	.5938	.1330	4.4647	.000	.3321	.8556
Emotional Intelligence	.3712	.0688	5.3923	.000	.2357	.5066
Behavioral Bias	.4226	.0689	6.1295	.000	.2869	.5583

Interpretation
Behavioral Bias had a significant positive effect on Churning Frequency (β = 0.4226, p < .001). This suggests that individuals with stronger behavioral biases tend to exhibit higher churning frequency.

Direct Effect (Path C: Emotional Intelligence → Churning Frequency controlling for Mediator)

Predictor	Coefficient (B)	SE	T	p	LLCI	ULCI
Constant	.5938	.1330	4.4647	.000	.3321	.8556
Emotional Intelligence	.3712	.0688	5.3923	.000	.2357	.5066
Behavioral Bias	.4226	.0689	6.1295	.000	.2869	.5583

Emotional Intelligence continued to have a significant direct effect on Churning Frequency (β = 0.3712, p < .001), even after accounting for Behavioral Bias.

Indirect Effect (Emotional Intelligence → Behavioral Bias → Churning Frequency)
(Effect = 0.3416, BootSE = 0.0768, 95% Boot CI [0.1723, 0.4689]).
The indirect effect of Emotional Intelligence on Churning Frequency through Behavioral Bias was statistically significant

Discussion
The present study provides empirical evidence supporting the mediating role of Behavioral Bias in the relationship between Emotional Intelligence and Churning Frequency. The findings reveal that individuals with higher emotional intelligence exhibit stronger behavioral biases, which in turn significantly increase churning frequency. This outcome challenges the traditional assumption that emotional intelligence uniformly leads to rational and stable decision-making.

The significant path from Emotional Intelligence to Behavioral Bias suggests that emotionally intelligent individuals may possess heightened confidence, emotional regulation, or over-optimism, which could inadvertently intensify cognitive and behavioral biases. Such biases may encourage frequent decision reversals or excessive trading behaviors, thereby increasing churning frequency.

Moreover, the strong effect of Behavioral Bias on Churning Frequency underscores the critical role of psychological factors in explaining excessive or repetitive behavioral outcomes. This aligns with behavioral finance and behavioral decision-making theories, which argue that biased cognition often overrides rational evaluation, even among individuals with advanced emotional skills.

The persistence of a significant direct effect of Emotional Intelligence on Churning Frequency indicates that emotional intelligence also affects churning behavior through mechanisms beyond behavioral bias, such as emotional reactivity, sensation-seeking tendencies, or overconfidence in one's judgment. Hence, Behavioral Bias serves as a

partial mediator, rather than a complete explanatory mechanism.

From a practical standpoint, these findings suggest that merely enhancing emotional intelligence may not be sufficient to reduce undesirable outcomes such as excessive churning. Interventions should also focus on bias-awareness training, debiasing strategies, and structured decision frameworks to help individuals translate emotional competence into more stable and rational behavioral outcomes.

Overall, the study contributes to the literature by highlighting the complex and dual role of emotional intelligence, demonstrating that while it is generally perceived as beneficial, it can also indirectly foster biased behaviors that increase churning frequency when not appropriately regulated.

Moderation Analysis

Statistic	Value
R	0.7337
R^2	0.5383
Mean Square Error (MSE)	0.3330
F-value	115.0558
df (Model, Residual)	3, 296
p-value	< .001

Predictor	B	SE	t	p	LLCI	ULCI
Constant	2.9689	0.0385	77.0324	< .001	2.8931	3.0448
Behavioral Bias (BBias)	0.5040	0.0582	8.6602	< .001	0.3894	0.6185
Gender Bias (GenderB)	0.2479	0.0490	5.0579	< .001	0.1514	0.3444
Interaction (Behavioral Bias × Gender Bias)	0.0420	0.0347	1.2111	.2268	−0.0263	0.1103

Interpretation

The present study employed Hayes' PROCESS Macro (Model 1) to examine whether Gender Bias moderates the relationship between Behavioral Bias and Churning Frequency.

The results indicate that Behavioral Bias has a significant and positive effect on Churning Frequency ($\beta = 0.5040$, $p < .001$). This suggests that higher levels of behavioral bias are associated with a higher frequency of churning behavior, implying that individuals influenced by cognitive and emotional biases are more likely to engage in repeated switching or excessive transactional behavior.

Similarly, Gender Bias also shows a significant positive direct effect on Churning Frequency ($\beta = 0.2479$, $p < .001$). This finding implies that the presence or perception of gender bias independently contributes to an increase in churning frequency, potentially due to differential treatment, perceived unfairness, or psychological disengagement arising from biased environments.

However, the interaction effect between Behavioral Bias and Gender Bias is not statistically significant ($\beta = 0.0420$, $p = .2268$). This indicates that Gender Bias does not significantly alter or condition the strength of the relationship between Behavioral Bias and Churning Frequency. In other words, the effect of Behavioral Bias on Churning Frequency remains relatively consistent regardless of the level of Gender Bias.

The overall model explains a substantial proportion of variance in Churning Frequency ($R^2 = 0.5383$), indicating that approximately 53.83% of the variation in churning behavior is jointly explained by Behavioral Bias, Gender Bias, and their interaction. This reflects strong explanatory power for the proposed model.

Discussion

The findings of this study highlight the robust role of Behavioral Bias as a key predictor of Churning Frequency. Consistent with behavioral decision-making and consumer psychology theories, individuals prone to heuristics, overconfidence, or emotional biases tend to exhibit unstable and repetitive decision behaviors, leading to higher churn levels. This reinforces prior empirical evidence suggesting that irrational cognitive patterns significantly influence switching and transactional tendencies.

The significant direct effect of Gender Bias on Churning Frequency further underscores the

importance of contextual and socio-psychological factors in shaping behavioral outcomes. Environments perceived as gender-biased may foster dissatisfaction, reduced trust, or psychological withdrawal, which in turn manifests as higher churn-related behavior. This finding has important implications for organizations seeking to promote inclusive and equitable practices.

Contrary to expectations, the non-significant interaction effect suggests that Gender Bias does not intensify or weaken the influence of Behavioral Bias on Churning Frequency. This implies that while Gender Bias and Behavioral Bias independently affect churning behavior, they operate through parallel rather than interactive mechanisms. Behavioral Bias appears to exert its influence on churning behavior regardless of the level of Gender Bias experienced by individuals.

From a theoretical perspective, this result suggests that individual-level cognitive biases may be more stable and internally driven, whereas Gender Bias functions as an external contextual factor with an independent effect. Practically, this indicates that interventions aimed at reducing churn should address both cognitive debiasing strategies and organizational policies to mitigate gender bias, rather than assuming a combined or multiplicative effect.

Overall, the study contributes to the literature by clarifying that Gender Bias does not function as a moderator in the Behavioral Bias–Churning Frequency relationship, while still remaining an important independent predictor. Future research may explore alternative moderators (e.g., organizational culture, perceived fairness, emotional intelligence) or investigate nonlinear and conditional pathways to better understand the complex dynamics underlying churning behavior.

Discussion

The empirical evidence supports that behavioral bias is an important significant mediator between emotional intelligence and churning frequency. Increased emotional intelligence does not ensure reduced irrational activities, but it can exacerbate overconfidence, which increases churning frequency. The findings reveal that behavioral bias is a significant predictor of excessive trading. The impact of gender bias is significant on churning, but it does not function as a moderator between behavioral bias and churning frequency. The findings illustrate that psychological traits play a complex role in derivative trading activities.

XII. FUTURE SCOPE OF THE STUDY

The future studies must utilize a longitudinal approach to explore the changes that occur among investors' behaviors as time progresses. Other variables that must be considered are age, experience, level of risk tolerance, and level of financial literacy. The studies must be expanded to cover other markets/regions to enhance generalizability. Other methods that must be employed are SEM or experimental designs.

XIII. CONCLUSION

The study concludes that behavioral biases play a crucial role in driving churning behavior in derivative markets. Emotional intelligence influences churning both directly and indirectly through behavioral biases. Gender bias independently affects churning but does not alter the bias–churning relationship. The findings emphasize the need for bias-aware investor education and behavioral interventions to reduce excessive churning and promote disciplined trading behavior.

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