

MAJOR RESEARCH PROJECT

Effect of Gamification Features in Trading Apps on Retail Trading Frequency

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CERTIFICATE

This is to certify that the research project titled “Effect of Gamification Features in Trading Apps on Retail Trading Frequency Among Young Investors” is a bonafide work carried out by Kunal (Roll No. 24/DMBA/122) in partial fulfillment of the requirements for the award of the MBA degree with specialization in Finance and Analytics during the Academic Year 2025–26.

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DECLARATION

I, Kunal Gakhar (Roll No. 24/DMBA/122), hereby declare that the project report titled “Effect of Gamification Features in Trading Apps on Retail Trading Frequency Among Young Investors” submitted in partial fulfillment of the requirements for the award of the MBA degree during the Academic Year 2025–26 is my original work carried out under the guidance and supervision of Dr. Arushi Jain.

I further declare that this project has not been submitted previously, either fully or partially, to any other university or institution for the award of any degree, diploma, or certificate. The information and data used in this study have been collected from reliable sources, and all references have been acknowledged appropriately.

The findings and conclusions presented in this report are based on the analysis conducted during the course of the study.

Signature

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I would like to express my sincere gratitude to everyone who supported and guided me throughout the completion of this research project titled “Effect of Gamification Features in Trading Apps on Retail Trading Frequency Among Young Investors. ”

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EXECUTIVE SUMMARY

The last 10 years have seen a revolution in the Indian stock market with the smartphone providing the platform for trading; its impact has not only altered who trades but how often. Groww and Zerodha now utilise 'game design' elements such as push notifications, trending stock carousels, profit-loss animations and referral rewards in order to incentivise users to continuously come back to its app throughout the trading day. The real question is whether these design decisions are merely user-friendly or whether they may have subtle pressure on users towards increased and more unreflected trading.

While popular features for these engagements can extend a user's time on the app, this study focuses specifically on the effect popular features are having on the number of times these young investors actually trade. Primary data gathered from 188 retail investors were analyzed using regression, ANOVA, chi-square and correlation techniques to determine the specific attributes that are significant in influencing how investors trade more frequently. The study additionally explores the impact of demographic elements and investor behaviour patterns on the context of gamification of financial systems.

The study adopts primary data that were gathered via a structured questionnaire distributed to existing retail investors who use trading applications. The data is analyzed by using different statistical tools like correlation analysis, ANOVA, chi-square test and regression analysis to find relationships between gamification features and trading frequency. This study uses quantitative research method for assessing the responses and the trend of investors' behavior.

The three key factors which reached the statistical thresholds for driving trading frequency were notifications, ease of order entry and realtime alerts, whereas the trends and aesthetics failed to meet the threshold. The findings have practical significance for both the platform designers (who need to strike a balance between attracting users and investor protection) as well as regulators, who, so far, do not have empirical evidence on the matter and on the subject in the Indian context. Finally, this study posits that gamification is not created equal and that some aspects of gamification significantly influence the actions of investors while others are simply superficial.

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CHAPTER 1 INTRODUCTION

1.1 Background

A decade ago, opening a demat account was a thing that could only be done in the branch, and it took several days. paperwork. Today, Groww's online interface can register a first-time investor in less than a 10-minute process on a http. smartphone. A corresponding convergence of the frictions has led to a dramatic increase in Indian retail. Demat accounts that hit the market in 2024 were of Indians with new accounts, as most of them had already subscribed for the same before the demonetization drive. Accounts made by investors age 30 or younger. Do use trading applications like Groww, Zerodha, etc. Do use trading Apps like Groww, Zerodha etc. Upstox and Angel One are very helpful about providing an easy access to accounts and providing instant updates about the market and with quick order speed. It has contributed to a greater engagement in stock markets, due to its ease of use and ease to implement. Such platforms have expanded significantly beyond their role of just a marketplace and have developed more features in order to compete in the market, Incorporating game-like features that create the need for users to re-enter the site. Pushanimated portfolio gauges are, and more, all belong to the category intended to enhance the customer experience.

All of these can be classified as functions of the category that is supposed to improve the customer experience, and more. The system includes the features of turn green on profitable days, referral bonuses and one tapped order screens which are now standard. All have a purpose to entice return visit and/or a trade. The end goal of the design is engagement, but the impact on their trading behavior is more pronounced on the frequency of trading, as well as the quality of investment decisions, poorly documented, particularly in India. This discrepancy between platform design functionality and investor behavior is the essence ofAlert notice, you will see when a stock is mentioned as a research problem in your watchlist. Sitting in 3% has a sense of urgency, and it could force a sell and trigger a trade that the cooler head would have hesitated. Implicit urgency means that has moved 3% may cause a trade that the die-hard would not make at that time. Without reflection, would not have. Eager to understand this, they are the investors who have come of age between 1995 and 2027, and brought up with application-first digital contexts.

Cissexism is the most common form of oppression faced by, and/or experienced by, the cissexist. mechanisms. This study will explore the impact of gamification elements in trading applications in the retail trade arena. The frequency or frequency of trading conducted by young investors. The research concentrates on comprehending howengagement-driven content can impact investor behaviour, trading and decision-making patterns. The research also aims to give clues on how behaviour is affected bydigital finance landscape and how modernization is affecting the use of trading apps.

1.2 Overview of FinTech Industry

FinTech has compressed a process which previously took the experts, the physical center and buildings, and simplifies it into this. Investing a bunch of pocket money into a thing that can be done in mere minutes by college students for free at a free app. TheAs a fundamentally new investor profile, result is younger and more numerous than they are today, and are more. More common, and more dependent on the platform interface for cues to financial outcomes. TheThe digital payments, online banking, insurance tech and lending sectors are part of Cisco's industries of the future initiative. Cisco announced four industries of the future: digital payment, online banking, insurance technology, and lending. Digital trading platforms, cryptocurrency services, and digital wallet applications. Cheap data, This transformation is especially made possible by ubiquitous 4G/5G and sub-\$100 smartphones. The infrastructure shift and fintech shift occurred in India with a different pronunciation of itsimultaneously.

This reduced the difficulties in opening accounts, which were caused by Jan Dhan, UPI, and SEBI's simplified processes. sidelines, which lowered the death of investing in the stock market and platform Groww had its eyes on the happenings. the competitors were waiting patiently in circles and Groww was getting ready for the strings that were just about to move. A different side with a product optimised for that new user. Platforms such as Groww, Zerodha, Upstox and Angel One have made it easier for people to make stocks market investments. Real-time data and other benefits. Real-time data and other benefits, easily opened are easily used by retail investors with low costs of trading. Usability, market updates and user friendly interfaces. The use of these applications have simplified the process of cheating. Such uses have made it easier to cheat. The investment process raised an interest in financial markets of a vast amount of youth. Having been shaped by apps like Instagram and YouTube, built on infinite scroll andThe new class of investors who come with the dopamine-loop design expects speed and visual, Continuous novelty to financial platforms to go along with the feedback.

Modern consumers preferInformation and communication technology (ICT) have revolutionized production by virtue of their speed, convenience, offering customized services and interaction between user and ICT experiences. Given the high cost of acquiring customers in a saturated market, retention should take priority. Considering the cost of customer acquisition in a saturated market, retention is of high priority. A few months later, Engage Design claimed victory in the simple shot of a close-range triple, and through that victory, has turned into the biggest struggle between trading platforms.

1.3 Concept of Gamification in Trading Apps

The concept of gamification in trading apps is discussed here. Here the gamification concept in trading apps is illustrated. Gamification is not gaming investment, but rather investing for the sake of entertainment. Gamification in a trading app is not about "composing" investing into a game, it is about a game of investing. Reusing the same psychological 'levers' that make games interesting, appealing, and addictive to boost the intrigue. Reusing the same psychological 'levers' that make games interesting, appealing, and addictive to raise the intrigue. Frequency and depth of interaction with platform. This translates to the animated "profit" as seen on Groww. (Rewards given for referring new customers). It can be found on Zerodha in real-time dashboards of the market. and One-click orders. The distinct attributes vary, but the basis psychology is the same. It has been successful in various segments, including Duolingo's streak counter, Fitbit's step challenges, and Amazon's progress bars are all driven by the same motivational reasoning, One area where the consequences of change of behaviour are particularly stark, however, is finance.

Trading Apps have been using features of 'gamification' more and more over the last few years. Part of their plan for their platform design and customer engagement strategies. SMS VI provides this functionality for modern trading apps. includes functions like push notification, instant stock alerts, trending stock recommendations, Engaging users to make sure they are active on the platform to make users: referral rewards, portfolio visuals, simplified order executing etc. Saw connections with the platform. This study considers questions such as these. Increased engagement, is something that features can bring about, they do demonstrate at least. Equals more frequent trades. Trading websites like Groww, Zerodha and Upstox want to bring investing to a leveler. More attractive and appealing, particularly for young retail investors who are greatly affected by Digital Experiences & Interactive interfaces.

Many trading strategies are aided by gamification techniques. applications develop some sort of "engagement" plus "instant gratification" that can impact positively. manage the participation and trading rate of users. With such widespread adoption of gamification in the financial sector, however, many have begun to see a rise in problematic use, such as in loan applications. Worries about its effect on investor psychology and the manner that investors make decisions. AWhen we get a notification about a stock that is trending, it would not just be an information, it's also a reminder to not do something, as inactivity would be considered missing out. opportunity. As a part of this platform design template, it may be pushing investors. to engage in "FOMO" actions rather than actions geared towards portfolio outcomes. This can at times lead to trading activities being more influenced by the specific platform under consideration. Our discussion was not based on sensible financial evaluations but rather on "engagement mechanisms.

1.4 Consumer Behaviour Shift

The investor who reads stock reports each week in a printed newspaper now reads a stock app several times before lunch, and the app gets him to do just that! The change was not only access, it was the entire information environment that has been now largely shaped by the investment decision-making platform design choices. The present-day consumers are smart choosing financial solutions that are convenient, fast and with a technology base which offers instant access to the stock markets via an app or a smartphone.

Millennials and Generation Z investors have been raised in an era where intuitiveness and instant gratification are expected in apps and trading platforms have taken lessons from the social media and gaming design industries to cater to those expectations. Digital experiences, real-time information, social influence, and the interaction of platforms are all key factors that impact modern consumers. This has led to the rise of "trading bots" to become more intricate than investment applications they are now considered as engagement-based digital platforms that constantly invite users to get in and into the game by means of notifications, market alerts, trending stocks, rewards, as well as visually appealing user interfaces.

The resulting behaviour, high frequency of checking, quickness to alerts, short holding period, resembles more of an engagement loop as a social app. than what is taught in finance textbooks as the forethought of an investor. One-fifth of the people who use the Thursday Afternoon Mail newsletter read it first to respond to a notification to open the trading app, while a considerable number actually made a trade the very minute they opened the app in response to a trading notification after reading the paper. The impact of social media platforms, financial influencers, and online communities has also facilitated shifts in investor behaviors, making investors attuned to fleeting trends and eerie prospects.

Furthermore, the popularity of financial environments that are based on games has impacted the psychological components of consumer behaviour. Investors are looking for exciting day trading, instant gratification, convenience and emotionality in their trades. This has lead a behavioral change as trading can now sometimes be seen as an interactive, fun experience instead of solely a financial one that is based on analysis of the trading situation for a long period.

Understanding this evolving consumer behaviour is essential as it enables this to draw insights into the way that modern trading platforms are influencing consumer behaviour, and what this means for their actions and decision making patterns regarding investments and finance. The study of these behavioral changes can yield important insights into the changing relationship between technology and money and the consumer psychology and digital economy.

1.5 Problem Statement

- The rapid growth of fintech and digital trading applications has transformed the way retail investors participate in stock market activities.
- Modern trading platforms increasingly use gamification features such as push notifications, real-time alerts, trending stock recommendations, rewards, attractive interfaces, and simplified order placement to improve user engagement and increase platform activity.
- These engagement-oriented features may influence investor psychology, trading frequency, and impulsive decision-making behavior, particularly among young retail investors who actively use digital trading applications.
- Features such as notifications and real-time alerts may encourage investors to trade more frequently and make quick decisions without detailed financial analysis.
- Easy order placement and visually attractive interfaces may further increase excitement and continuous interaction with trading applications.
- Despite the increasing popularity of gamified trading platforms, limited research has been conducted on the behavioral impact of these features on retail investors, especially in the Indian context.
- Most existing studies focus on fintech adoption and digital accessibility rather than examining how gamification features influence trading frequency and impulsive trading behavior.

1.6 Objectives of the Study

- To analyze the effect of gamification features on trading frequency among young retail investors using digital trading applications.
- To examine the relationship between real-time alerts and impulsive trading behavior among retail investors.
- To study the influence of notifications, rewards, trending stock sections, interface attractiveness, and easy order placement on investor engagement and trading activity.
- To identify whether different age groups respond differently to notification-based engagement features in trading applications.
- To examine the association between investor type and the most engaging feature in trading applications.
- To evaluate the impact of specific gamification features on trading frequency using regression analysis.
- To identify the most influential engagement-oriented features affecting investor behavior on digital trading platforms.
- To understand the behavioral impact of gamification on young retail investors in the digital financial environment.
- To provide recommendations for responsible and ethical use of gamification features in trading applications.

1.7 Scope of the Study

The upper and lower limits in this study are the platform (Groww, Zerodha, Upstox, Angel One), investor type (retail, not institutional) and age group (mainly 18-35). The study primarily targets the major digital stock trading platforms namely Groww, Zerodha, Upstox and Angel One used by retail investors to take part in the stock market. The research looks into the effect on investor participation and trading activity of gamification features including push notifications, appealing user interfaces, real-time market updates, rewards, trending stocks suggestions, and easy order execution.

The study represents young retail investors actively using any kind of trading applications for investment and trading activities. The study aims to achieve a better understanding of the behavioral impact that gamification features have on investors, who mainly belong to the digitally active demographic. It incorporates various types of investors, including long-term investors, swing traders, intraday traders and F&O traders to study differences in trading styles and platform interaction.

Primary data were gathered by using Google Forms questionnaire. All the answers obtained from students are analyzed statistically using correlation analysis, ANOVA, chi square test, and regression analysis to draw conclusions on the relationship between any of the features of gamification and trading behavior. Research methodology is quantitative and will have behavioural and analytical components to investor relationship with trading platforms.

They are explicitly excluded, and the decision making of these institutions and traders—fund managers and algorithmic traders—are in fact very different from retail investors using the apps. In refer to traders, the question whether higher frequency profit or hurt the investors is not part of this study because the emphasis is on if higher frequency is brought on by the elements of the gamification feature, and not the financial impacts further down the causal chain. Additionally, the research is limited to the findings obtained during the period of the study, and can change as market conditions, investor perceptions and technological advancements in the financial sector change over time.

In these limitations, the study provides the first Indian quantitative evidence around the impact of the features of trading apps on the frequency with which traders trade. The results of the research might find relevance for investors, fintech firms, researchers and financial regulators in analyzing the increasing importance of gamification inside digital financial platforms.

1.8 Implications for Marketing Strategy

The results of this study will help light the way to more interesting websites and more valuable trading features for trading platforms in India's growing competitive brokerage space and for users looking to more actively trade. Many trading applications nowadays make use of gamification strategies as a means of acquiring and retaining customers today. Some of these include features like “refer a friend” rewards, instant notifications, tailored alerts, appealing user interfaces, and the suggestion of trending stocks to boost user interaction and drive repeat use of the platform.

The results indicate that notifications ($\beta=0.34$) and real-time alerts ($\beta=0.27$) have significant impact on the behavioral return of investing in the notification infrastructure, while visual design does not. If gamification turns out to be effective on boosting app usage and frequency of trading, trading platforms will likely maintain its custom approach to engagement for better customer retention and platform activity. Meanwhile, companies could find themselves in a crosscurrent of doing marketing that seeks to engage with users while at the same time staying within ethical boundaries and not fostering "over-trading" or "combing".

Also, the results of the study can enable a fintech firm to pinpoint which part of the gamification is the most successful in attracting and engaging young investors. These can help marketers create campaign campaigns, create better user experience and employee satisfaction. Further, the learnings can guide the development of investor education programs, and encourage both informed, and responsible, investor participation rather than just investor engagement.

The findings are also relevant from a regulatory angle—if specific aspects of digital engagement have a clear link to higher trading frequency, that is relevant information for a framework that SEBI is shaping for digital engagement practices by retail investors. With more competition amongst trading platforms now as it is, companies are now going to have to pay more attention to psychological engagement strategies to make a difference in the market. Once people understand the reaction from consumers in a “gameified” financial environment, it becomes more valuable to create new strategies that will be more sustainable and geared towards customers.

CHAPTER 2 LITERATURE REVIEW

2.1 Introduction

This study brings together three bodies of literature: literature on fintech adoption, literature on gamification mechanism, literature on the behavioural finance in the context of retail investors' psychology. It enables the researchers to review the work done by scholars, academicians, and industry experts and acts as a good background theory for the investigations. These fields have been well developed on their own, with few studies that consider all three of gamified trading app design simultaneously and its impact on the frequency of trading behavior, especially in India. Also, a literature review is made to help in grasping various viewpoints and methods that have been adopted in earlier research on the topic.

In the current study, literature review is performed with the purpose of analyzing the relationship between gamification features employed in trading applications and the trading behaviour of retail investors with an emphasis on young retail investors who are active users of digital investment platforms. Research efforts have been developed over the years covering various topics, such as financial technology (FinTech), digital trading platforms, behavioral finance, investor psychology, user engagement and technology as a financial service. Today, with the ability of the smartphones to grow increasingly usable and people being increasingly connected to the Internet, the investment environment has become a rather digital and interactive area where trading apps proudly compete to attract users, raise engagement and bring more transactions to the platforms.

The game or social media-inspired features quite obviously tools for convenience—may still be part of a batch of features that are able to be identified as part of human engagement loops in other apps because it is not only the feature, but also the behavioral design that is of interest and unique to the current generation of trading apps over other platforms over the past. According to multiple studies, these elements have the potential to impact investor behaviour by boosting user engagement in the app, facilitating spur-of-the-moment purchasing, and shaping trading habits in general. They have also emphasized macro-economic, psychological and emotional factors like Fear of Missing Out (FOMO), excitement and overconfidence, in influencing trading behavior of retail investors in digital financial environments.

Hence, a literature review is an essential part of understanding the effect of gamification in modern trading platforms on the investor participation and behaviour. It also aids in determining the missing areas of research, particularly on the impact on behavior of gamified trading applications in India.

2.2 FinTech & Trading Platforms

Fintech has an history of reducing the friction involved in opening an account, the cost of the brokerage, or the minimum amount of investment required to open an account, which all led to more retailers investing. Each time the friction to open an account, the cost of a brokerage, or minimum investment increases has widened the base of retail investors who chose to invest, with stark increases among younger investors. In India, in particular, Sharma and Gupta (2022) report that first-time investors aged between 18 to 28 are more likely to adopt fintech platforms. Paperless onboarding, low brokerage, real-time market information, and easy order execution makes trading activities convenient for retail investors via trading apps like Groww, Zerodha, and Upstox.

The accessibility finding is well known: what has yet received less study is whether or not the design of the platform, beyond accessibility, has measurable impact on trading behavior. Young investors favor app-based investing for several reasons, including the flexibility, instant access and user-friendliness of these investments. There have also been several studies indicating that fintech platforms regularly employ strategies that focus on engagement to boost user retention and participation in the platform.

As mentioned in Hamari (2014), the aim of build a gamified system is to “enhance user activity, social interaction, or quality and productivity of actions”. In the contemporary context of trading apps, this concept is significantly felt in the stream of continuous notifications, market alerts, and tailored updates that prompt users to engage more often with trading platforms. Additionally, the researchers have proposed that digital trading spaces are reshaping traditional investment habits, fostering super-interactive financial ecosystems that impact investors, their decision-making, and how often they trade.

Studies on the adoption literature tell us that more people are adopting these apps. It doesn't tell us if the specifics of the designs that are built into those apps are affecting the behavior of those users in a way that is different from their behavior as investors before or since they were introduced. The focus of literature in the preceding literature is on the adoption and usability of the gamification rather than the impact of gamification on the retail investor's behaviour. Thus, the present study aims at making a contribution to previous literature on the impact of gamification elements on trading behavior of young retail investors.

2.3 Gamification Studies

The literature on gamification gives the theoretical background to explain why the features such as notifications and reward systems invoke certain behaviors and warns of possible misuse of these features. Deterding (2011) defines gamification as gamification elements are used in an area outside of games. Gamification, according to Deterding et al. (2011) is the use of game design elements in non-game contexts; all three mentioned (notifications, rewards, and progress indicators) are embedded in the games or other human intervention in trading apps in India today. Gamification, defined by Deterding et al. (2011) as the use of game design elements in non-game contexts, includes all three: notifications, rewards, and progress indicators, and all of that is actually used in the games or at any other time, when human intervention is needed, to provide any kind of trade.

Downes & Sars Field (2014) concluded that gamification, in general, has positive effects, as it keeps the audience engaged and motivated, while this can vary based on the type of users involved and the context in which the gamification is applied. Their study also pointed to "gameful experiences" as one of the key areas in which gamification is especially effective in motivating users to keep active on digital platforms. Motivational affordances—the growing sense of a natural and rewarding habit to pursue a given task further—simply translates to a push from a trading app that a stock you are watching changed by 5%.

Importantly, the actions being encouraged in the financial application of gamification itself has real financial implications: the "game" element in this application is the trading of real money. The same thing that makes engagement can also make for a bad investment time. A general agreement on positive engagement results was obtained in the meta-analysis by Hamari et al. (2014) but with the percentages differing significantly depending on the context and the type of user. Meanwhile, some research has cautioned against using gamification and its psychological ramifications.

When looking into the misuse of gamification in digital learning platforms, Mogavi (2022) noted that overgamification can create "a sense of competitiveness, overindulgence in playfulness, and herding". Mogavi et al. (2022) identified that excessive gamification in top learning platforms facilitated 'herding behavior' and 'over-investment competitions' both of which could pose economically costly behaviors in a trading scenario. So, it is crucial to comprehend the concept of gamification in a finance context to study the impact of digital trading platforms on investor engagement and trading activity.

2.4 Investor Behaviour Studies

Behavioral finance are the investor side flip side of the gamification literature—a record of the vulnerable insecurities that are being targeted by gamified features. Kahneman and Tversky's (1979) prospect theory proposed that investors, in general, are not rational actors, and engage in asymmetric reactions to both gains and losses are behaviors that can be predicted. A notification that a stock is a trending topic activates all three of the trading design features most strongly. Three behavioral biases are immediately triggered when a trading app design feature is activated when a stock becomes a trend: FOMO, overconfidence, and herding.

In contrast, while institutional investors have mandates and risk governance, retail investors trading through trading apps have to take 100% the impact of behavioral design, without any structural protection or prevention from reactive decision-making. What the app surfaces and when incorporates the app information environment, what the investor sees, and when the investor sees it he or she thinks, "I think there's enough here to do something with. Aesthetics like visually appealing interfaces, instant notifications and market alerts have been shown to push investors into more trading actions and more frequent monitoring of the markets.

In their pioneering research of retail brokerage accounts, Barber and Odean (2001) found that trading frequency had a negative correlation with returns, and that the lowest frequencies had the highest returns, with overconfidence being identified as the main reason. They pointed out that the aforementioned attitude of overconfidence is well linked with the trading frequency for retail investors. Already over-trading investors may be exacerbated by gamified platforms with visual notifications and one tap buy/sell features that makes trading more urgent artificially.

More recently, it has also been reported that younger investors are very much affected by their digital experiences and interactive platform designs. The presence of notifications, trendy stocks, and market updates continuously can make the investors to make quick financial decisions without enough analysis of the financial resources. Thus, behavioral finance and the design of information technology platforms are a salient research area in the modern financial markets.

2.5 Trading Frequency Studies

The measure of the behavior studied in this research is trading frequency, and to date, although lacking in the field of gamification, the literature provides a clearer direction of hypothesis. Technology has been revealed to have contributed to the rise in interactions that investors have with financial markets. Real time alerts, in particular, seem to operate on a time-privilege principle: market movements can happen at any moment, and do not look like a proposition that can be taken on a long-term basis where one can carefully weigh the options and the pros and cons.

But several studies have indicated that increasing the frequency of trading may be affected by psychological and emotional issues, including overconfidence, excitement, curiosity and Fear of Missing Out (FOMO). Another interesting aspect of online platforms (and digital environments in general) is how they can prompt impulsive trading, particularly for beginner retail investors. Trending stock messages and push alerts can make it easy to build a sense of urgency, which can prompt investors to make decisions without a thorough analysis.

In terms of a direct causal relationship, the most direct evidence preceding this study comes from Chapkovski et al. (2025), which demonstrated that hedonic gamification results in a higher number of trades among than among retail investors. The impact is strongest if the gamification is accompanied by younger and less experienced traders – the group that this study concerns. Platforms could also affect the trade by design – researchers have suggested that platforms which are more engaging – encourages the user to stay active on the platform for longer.

The general picture that emerges from this literature is that gamification is likely to relate positively to how often people trade, but most previous research has been experimental or in western markets. Poll survey data for India has not been found. Yet, there are limited studies with empirical scrutiny of the effects of gamification features on trading frequency among young retail investors in the Indian context in particular.

2.6 Young Investor Behaviour

According to various previous studies, the prime audience for Indian trading apps and the most vulnerable group to the impact of behavioural design on the apps are the people ranging from 18 to 34 years old. Due to millennials and Gen Z's ease with app services and the positive impact digital interactions and experiences have on their investing habits, they are willing to be highly influenced by them.

It's well established that younger investors favor investing through an app, but it's not yet clear whether this preference also leads them to be more "behaviourally responsive" to the activation tools included within those apps. More specifically, it has been determined that social influence, online financial communities, and digital interaction instruments have a significant impact on young investors' investment behavior. Rewards, trending stocks, notifications, and engaging visual and charts can help build engagement and make platforms more popular to use.

The UK's Financial Conduct Authority (2023) showed that users aged 18-34 were much more responsive to notifications, rewards, and engagement features compared to older users, which prompted this study's focus on the age population of 18-34 in the context of India. Identifying communication strategies that attract younger investors, as well as those who could yield the greatest rewards, the study noted that young investors were more likely to respond to notifications, incentives and engagement-based features than their older counterparts. Researchers also have suggested that younger investors will be more susceptible to impulsive and emotionally driven buying and selling when driven by excitement, curiosity and "fear of missing out."

When combined, the literature on young investor behavior suggests that gamification features will produce a greater behavioral effect on the younger demographic (18–27 years), which is confirmed by the results of this study's ANOVA.

2.7 Comparative Analysis

In terms of the literature gaps, the current study builds on past research on finance, which is mostly focused on the adoption of fintech; the literature on gamification, which focuses on behavior, mostly on user engagement; and the literature on behavioral finance, which deals with behaviour, so mostly with biases. The current study contributes to existing literature on financing, which has tended to focus on the adoption of fintech, the literature on gamification, which has tended to focus on behaviour, most frequently user engagement, and the literature on behavioural finance, which has tended to focus on behaviour, most frequently on biases in behaviour. Fintech studies primarily center on aspects of digital accessibility, user adoption, and usability of the platforms, while gamification studies concentrate on user engagement and motivational behavior. Most behavioral finance studies focus on the flaws in investor psychology like overconfidence, herd mentality and fear-of-miss-out.

While different studies suggest that digital engagement mechanisms affect participation, there remains comparatively little research which does consider all three aspects – gamification, trading platform, investor behavior – in one analytical framework. Most of the studies focus on the customer engagement as a whole, but do not specifically address the influence of gamified trading environments on trading frequency. This disparity is even more stark on India, home to one of the world's largest groups of retail investors yet with almost no India-specific research focusing on the impact of the platform design on investor behaviour.

2.8 Conceptual Framework

The four dimensions that served as the independent variables of the study are the five specific gamification features being studied: notifications, real-time alerts, easy order placements, trending stock sections, and rewards/visual design; while the dependent variable is trading frequency. In this study, the independent variables affecting investor behaviour and engagement in digital trading platforms are the gamification features. Increased interaction with the trading app and engagement in trading activity should be influenced by features like push notifications, real-time market alerts, trending stock recommendations.

Retail trading frequency is the outcome of the research, which is defined as the number of times the investors use trading applications and perform trading activities. The overall framework is not based on the assumption that all features have equal effects, but rather the regression analysis is run specifically to determine which features have behavioral weight and which do not.

It provides a conceptual model that aids in understanding how investor behavior is influenced by features of an engagement purposeful application in a digital financial environment. This is also used to present the theory involved in applying statistical tools or running tests on the hypothesis concluded in the current study.

2.9 Gap in Academic and Industry Research

There is a void in the gamification literature – that of finance, where the behavioural rewards are greatest and supporting research least. But gamification is a relatively new and little-studied subject for financial trading applications. While some work has been undertaken into investor psychology, behavioral finance, and electronic financial services, there are only a few academic works in the field of exploring trading application gamification features and their impact on the trading frequency and decision-making of retail investors, especially in India.

The research that has been conducted on trading apps tend to study levels of adoption or user feedback and satisfaction, but not necessarily the effect of certain features on the likelihood or frequency investors would trade based on what's available. The psychological and behavioural effects of engagement-oriented functions, like push notifications, real-time alerts, the trending stocks side, rewards and beautiful interfaces are hardly investigated. There is also a lack of research examining whether these features promote impulsive trading, high levels of app usage or speculative investment behavior within young investors.

Companies like Groww and Zerodha provide lots of data related to their users' growth but fail to provide any behavioral research about the suitability of their growth features for investor decisions. Thus this transparency gap is – itself – a kind of finding. User growth and engagement are key metrics in most industry reports, but not in-depth enough on examining if gamification fosters unhealthy trading practices or emotional decision making.

The aim of this work, therefore, is a bridging of the gap between theory and practice, by investigating the impact of gamification elements on the frequency of retail trading and investor behavior. The study's contribution to the literature is that it specifically used young retail investors as participants in the use of gamified trading apps, with a focus on the trader's behavior in the apps based on quantitative analysis and statistical tools.

CHAPTER 3 RESEARCH METHODOLOGY

3.1 Introduction

Specific choices made with data collection and data analysis are described, and sufficient detail provided so that another investigator would be able to repeat the study. The selected (decided) choices, survey-based primary data, convenience sampling of trading app users (18–35 years), and quantitative approach of the analysis were selected to align with the nature of the research questions. The methodology section assists in a better understanding of the process used to accomplish the research objectives and how the research results are obtained via appropriate analysis and interpretation of data.

This study aims to examine the impact of the gamification characteristics on the frequency and trading behaviour of young retail investors using trading apps. The research method used in this study aims to investigate the correlation between engagement-oriented attributes like notifications, rewards, real-time notifications, attractive interfaces, and trading conduct of digital trading platform users. To assess investor reactions and pinpoint investor engagement trends and trading frequency patterns, quantitative research methods and statistical analysis techniques have been utilized in the study.

Data has been gathered from primary sources using a structured questionnaire by distributing it among retail investors in trading applications. Various statistical tools such as correlation analysis, chi-square test, ANOVA, and regression analysis are used to analyze the collected data and interpret the relationship between gamification features and investor behavior.

3.2 Research Design

This study employs descriptive-analytical design which is descriptive to describe the demographic information of the respondents and the perceptions of the features found, and analytical to test the demographic information of the respondents and perceptions of the features found to the frequency of trading. The research design used in the present research is descriptive & analytical research.

Frequency tables and perception data (e. g. , 61% said 'agree' to the statement that visuals make trading more exciting) describe the sample. Relationships in this sample are then analyzed using correlation, ANOVA, chi-square, and regression tests. It provides a strong understanding of how user interaction and engagement can be influenced through the introduction of gamification features like performance metrics, rewards, trending stock recommendations, real-time stock alerts, and engaging interfaces.

The analytical part of the research concerns the analysis of the relationship between gamification features and trading frequency of young retail investors. Patterns, associations and behavior trends are drawn from the gathered data through the use of Statistical tools/Quantitative analysis techniques.

3.3 Nature of Research

The study is qualitative. All 16 structured questions were numerically coded and then analyzed with SPSS in order to obtain reliable quantitative values of the effects of the various components of the questionnaire on the percentage of trading frequencies. This study wanted to investigate the impact of gamification elements on retail trading repetitions on measurable outputs obtained from the respondents through a structured questionnaire.

Additionally, the research is behavioural and analytical since it examines the effects of engagement and psychological factors on investor behaviour. The study aims to gain insights into the behavioral aspects of trading and app engagement among young investors, including understanding the effect of various features like notifications, rewards, trending stock suggestions, and interface design on these behaviors.

Qualitative techniques were thought of but were not accepted; interviews could have brought out other lines of thinking, but would not have been able to provide effect size estimates to compare features across one another and to compare them to the literature. By using this method, one can arrive at meaningful conclusions about the links among gamification features and trading frequency for digital trading platforms.

3.4 Sources of Data

Primary data was gathered through a structured survey of 16 questions, which was created on Google Forms during the survey period and spread to Zerodha, Groww, Upstox, and Angel One users. The survey was done online via Google Forms and showed to members of the retail investing population that are actively trading on digital platforms.

Secondary sources included academic literature from Google Scholar and ResearchGate, SEBI statistical handbooks and FCA research notes to position results in the existing body of literature and to fine tune a questionnaire being used to solicit data. Reading published articles and industry reports have been used to gain an understanding of current theories and concepts on the topic area of the research.

Secondary data has been gathered from various sources, including ResearchGate, financial research publications, academic journals, financial reports by fintech firms and Google Scholar. These sources supported the literature review and theory for the effect of gamification's features on retail investor behaviour and turnover rates.

3.5 Data Collection Method

The survey instrument queried four aspects: general app usage (frequency, time spent), feature-specific perceptions (notifications, alerts, visuals, trending stocks, ease of making orders), and general behavioral outcomes (FOMO, impulsive trading, time overruns). To achieve simplicity of the survey, user-friendly and convenient for respondents, they were designed in multiple-choice format.

The survey was conducted online via Google Forms and was targeted at young retail investors who actively make use of trading apps like Groww, Zerodha, Upstox, etc. The target audience, together with their familiarity with digital trading environments (they interact with this by using trading apps by definition), made online distribution by a Google Forms sufficient, and yielded 188 responses that could be used.

There were questions asked in the questionnaire about features of engagement with an application for trading stock, including notifications, real-time alerts, analyzing trending stock suggestions, the availability of rewards, visual interfaces, and ease of trading. The collected responses were then processed and analyzed using statistical tools, investigating the relations between the gamification features and the trading frequency of retail investors.

3.6 Sampling Technique

The respondents were convenience sampled from the researcher's circle of acquaintances, the university community, and from social networking sites of the retail investor community. For collecting the responses from the participants, the present study adopts the convenience sampling technique. This may restrict the scope of generalizability, but was fitting for the exploratory nature of this study in which it was important to determine if relationships existed rather than being able to precisely estimate the degree of such relationships for the full population.

Convenience sampling as a method was found adequate for the study given the main aim of the study which is the study of young Retail Investors, who actively utilize digital trading applications. Respondents were drawn from online presence and social networking sites making for ease of access. With this approach, it has been possible to collect data about the trading applications that people use and digital investment opportunities they take part in, in a timely and efficient manner.

3.7 Sample Size

Completed responses were collected and analysed (188 data). For the five-predictor regression model, the regression model is done with 5 predictors, but the total number of observations required for that regression is 5-10 times the number of predictors, or in this case, about 50-100 observations per predictor.

The chosen sample size was adequate to gain enough information for statistical analysis and to recognize behavioral patterns associated with trading apps and investor interaction. The answers obtained from the respondents were analysed quantitatively using statistical techniques like correlation analysis, chi-controller test, analysis of variance (ANOVA) and regression analysis.

3.8 Target Population

The audience that will benefit from the content is young retail investors, defined as people aged 18-35 that made at least one trade using a digital trading app in the six months leading up to the survey. This study largely targets age group 18-35 and users who are adept with online investment platforms and are consistent with investing in the stock market on a mobile application.

The respondents are users of trading applications like Groww, Zerodha, Upstox, and Angel One. The study includes different types of investor including long term, swing trader, intraday trader and F&O traders to get clarity of differences in trading behavior and participation level of investors across various categories.

3.9 Research Variables

Self-reported trading frequency (on a 5-point Likert scale: never to very often) serves as the dependent variable in this study. The five independent variables are: The number of apps opened via push notifications, How responsive the users were to real-time alerts, How easy the users found it to place orders, How involved they were in the stock section they were urged to join, and Rewards/Visual Attractiveness.

Independent variables encompass things like push notifications, real-time market alerts, rewards and referral systems, trending stock recommendations, user-friendly interface, and simple order execution. These variables are analysed through to gain an understanding of how these factors affect investor engagement and trading behaviour on digital trading platforms.

The dependent variable of the study will be trading frequency, which means the frequency of investors doing transactions on trading applications and trading activities in general. The study aims to investigate if retail investor trading frequency can be raised or not through the influence of gamification features on app engagement.

3. 10 Tools Used for Data Analysis

The data was processed into three stages: export of raw responses from Google Forms, cleaning and encoding in Microsoft Excel and the statistical testing in SPSS. Visualizations for presentation were created using Microsoft Power BI.

This was followed by statistical analysis of the relationship between variables and interpretation of behavioural patterns among the respondents which was done using SPSS. Furthermore, the Microsoft Power BI platform was employed for visualizing trading behaviour, dashboards and graphical insights on gamification features. These facilitated the presentation of the findings of the study in a clear and systematic way.

Four tests were used to evaluate the four research questions; Pearson/Spearman correlation was used for the test of the real time alert relationship with impulsive trading; chi-square was used to test the relationship between investor type and a preference for a given feature; one-way ANOVA was used to test the relationship between investor age and the influence of a given feature; and multiple linear regression was employed to calculate the independent contribution of each of the gamification features to impulsive trading frequency.

3. 11 Limitations of the Study

There are three restrictions that should be specified clearly. First, the sample used in the study (188 samples) is adequate for the type of analysis performed in this paper, but convenience sampling was used, which means the findings of this study may not be representative of the Indian retail investor market as a whole. This study primarily examines young investors employing digital trading applications and is therefore not representative of the actions of older and institutional investors.

Second, all the behavioral measures rely on self-report, which may lead to social desirability bias and may lead people to under-report impulsive trading behavior. Third, it is a cross-sectional survey and cannot claim to demonstrate causality, in the strict experimental sense. Furthermore, the study is narrow to certain gamification features and it may not cover all engagement mechanisms of trading applications. Finally, over time, market conditions, investor sentiment and technological changes can also have an impact on the investors' behavior, and therefore on the results of future studies.

CHAPTER 4 DATA ANALYSIS, INTERPRETATION AND DISCUSSION

4.1 Introduction

Seven analyses are included serially, starting with demographic profile of the respondents and descriptive analysis of feature perceptions followed by four statistical tests, correlation, chi-square, ANOVA and multiple regression, each testing a particular hypothesis. ” The key goal of this chapter is to investigate how the elements of gamification in digital trading apps correlate with trading behavior in actual investing by retail investors. The regression model in section 4.7 is the analytical 'hub' as it estimates the impact of all five of the gamification features on trading frequency and does so while controlling against the remaining five as they interwork with each other on trading frequency.

Structured questionnaire was used to gather the information for this study by distributing the questionnaire among the online trading application users of retail investors. All the responses obtained from the participants were processed by using statistical methods such as percent, correlation, ANOVA, regression and chi-square test. Data was organised, visualised and interpreted using Microsoft Excel, SPSS and Microsoft power BI. The demographic profiles and behavioral trait of respondents were presented using the graphical representation of pie chart, bar diagram and frequency table too.

This chapter proposes to analyze the impact of gamification principles such as notification, real-time alerts, ideas and trends on stocks, beautiful interfaces, and incentives on investors' engagement and frequency of trading. The results of the analysis can be advanced with the help of a statement that defines how they are interpreted in describing the behavioral implications of online trading platforms towards young retail investors and formulating overall conclusions and recommendations at the end of the study, in subsequent chapters.

4.2 Demographic Analysis

Table 4. 1

Age-wise distribution of Respondent's Gender

	Age Group				
Gender	18-22	23-27	28-32	Above 32	Grand Total
Female	22	20	8		50
Male	53	53	19	13	138
Grand Total	75	73	27	13	188

The above-mentioned table shows the distribution of the respondents according to gender and age group. It can be noted that the male participants make up the majority of the respondents in the study with 138 is retrieved compared to 50 for females. This suggests that the male investors in the selected sample are more involved in trading and/or investing via digital platforms.

For males, the age groups with the greatest number of respondents are 18-22 years old (53 respondents) and 23-27 years old (53 respondents). Likewise, female respondents are also massed in the lower age groups in this category especially 18-22 years and 23-27 years. In the data collected, no female respondents were reported in the "Above 32" age group.

This is not unique to the way this sample was recruited, as SEBI has reported a male dominance in Indian retail investors. This is not because of the type of recruitment, rather this sample presented a male skewed nature and there is a general trend shown by SEBI that it is not unique to India alone, but is also seen in other countries. The majority of the respondents is in the age bands 18-27 (148) out of 188, which reflects the age bands targeted by the study and variances between the bands were found adequate for analysis of variance as presented in Section 4. 6. It is important to note that there were no respondents over age 32, which is a limitation of this study, in that older investors were only studied in a male-centric context.

Table 4. 2

Age-wise distribution of Respondent's Preferred Trading App

	Age Group				
Trading App	18-22	23-27	28-32	Above 32	Grand Total
Angel One	7	6	4	2	19
Groww	35	24	10	4	73
Other	3	5	3	2	13
Upstox	8	10	1		19
Zerodha	22	28	9	5	64
Grand Total	75	73	27	13	188

The above table displays the association between the age of the respondents and their favourite trading application. As can be seen, most of the respondents did fall in 18-22 years and 23-27 years age spectrum which means that young age investors are the more active ones in the digital trading activities. Groww is the most favored trading app with 73 respondents, followed by Zerodha with 64 respondents and so on. This is the ratio that saw Groww outperform Zerodha among the younger age group, 18-22, which is in line with its targeting beginners, while Zerodha performed better than Groww in the 23-27 age group, which is where more advanced traders fall into the category.

The data also shows that the young people aged 18-22 year olds exhibit the highest preference for Groww whereas respondents aged 23-27 years exhibit a relatively high preference for Zerodha. The user representation for Upstox and Angel One is lower compared to its competitors. This platform-by-age profile is relevant to the gamification analysis because the engagement feature mixes vary by platform and this could be the subject of future research in samples of platforms stratified by type.

The deployment of gamification features in the sample can be validated through this platform distribution as this sample is considered to represent the most clearly implemented gamification platforms in the application being studied.

4.3 Descriptive Analysis

Table 4. 3

Respondents' Perception Towards Visuals Making Trading More Exciting

Visuals Make Trading Exciting	Count of Visuals Make Trading Exciting	Percentage
Agree	78	41%
Disagree	25	13%
Neutral	36	19%
Strongly agree	38	20%
Strongly disagree	11	6%
Grand Total	188	

The table above shows the answers of participants to the questions about how attractive visuals, interface design of trading applications, makes trading exciting. The graph shows that a significant proportion of the participants have had a positive perception of the use of visual engagement features within trading applications. 78 respondents (41%) agreed and 38 respondents (20%) strongly agreed “Attractive visuals provide excitement during trading”. This suggests that attractive interfaces and captivating app layouts are directly associated with enhancing digital trading platforms, boosting user experience, and making sure that investors remain engaged.

The remaining 36 respondents (19%) responded neutrally, indicating that visual aspects may not have an important impact on trading behavior for everyone. Fewer people, such as 25 (13%) who disagreed, and 11 (6%) who strongly disagreed, felt that visuals have an impact on the excitement of the trading activities.

This perception data should be analyzed along with the regression analysis results in Section 4.7 that showed, although 61% of those who responded agreed that their perception the visual make the downer more exciting, the variable rewards/visual attractiveness was not statistically significant to predict trading frequency. To put it simply, some of that excitement can be achieved through visuals and wouldn't necessarily increase the volume of trading; engagement and frequency are both different but related actions.

4.4 Correlation Analysis

Table 4. 4

Correlation Analysis Between Real-Time Alerts and Impulsive Trading Behavior

CORRELATION ANALYSIS		
Real-Time Alerts (Urge to Trade) vs Impulsive Trading (Trade After Notification)		
Variable	Survey Question	Encoding Scale
Real-Time Alerts (IV)	Real Time Alerts Urge To Trade	1=Strongly Disagree → 5=Strongly Agree
Impulsive Trading (DV)	Trade After Notification	1=Never → 5=Very Often
RESULTS		
Statistic	Pearson r	Spearman ρ
Coefficient	0.1449	0.1482
p-value	0.0473	0.0424
Sample Size (N)	188	188
Significance ($\alpha=0.05$)	Significant ✓	Significant ✓

Null Hypothesis (H_0)

There is no significant relationship between real-time alerts in trading applications and impulsive trading behavior among retail investors.

Alternative Hypothesis (H_1)

There is a significant relationship between real-time alerts in trading applications and impulsive trading behavior among retail investors.

Any of the above table shows the correlation value between real time alerts in trading applications and impulsive trading behaviour of the respondents. In this study, Real-time alerts Urge to Trade” was experimental variable and “Trade After Notification” was taken as dependent variable for impulsive trading.

There is a positive relationship between the two variables with a Pearson correlation ($r = 0.1449$) and a Spearman correlation ($\rho = 0.1482$) coefficient of correlation. People who are more influenced by alerts they receive "on the go" are more likely to be involved in trading activities post alert.

The correlation is not very strong, but the tests are statistically significant due to the p-values from both Pearson (0.0473) and Spearman (0.0424) tests being less than the significance level of 0.05. As a result, the null hypothesis should be rejected and real-time alerts would be given to be of some significance for impulsive trading among the retail investors.

The slight, but significant ($r=0.14$, $p=0.047$) correlation demonstrates some real-world benefits, although not very strong, of using real-time alerts to affect impulsive trading. This small effect size indicates that this may be one of many factors that contributes to impulsive behavior, but not the main one.

4.5 Chi-square

Table 4. 5

Chi-Square Analysis Between Investor Type and Most Engaging Trading App Feature

CHI-SQUARE ANALYSIS						
Variable 1: Investor Type Variable 2: Most Engaging Feature						
TEST RESULTS						
Statistic		Value			Benchmark	
Chi-Square Statistic (χ^2)		3.965				
Degrees of Freedom (df)		4				
p-value		0.4108			p < 0.05	
Cramer's V (Effect Size)		0.1452			0–0.1: Negligible 0.1–0.3: Small	
Sample Size (N)		188				
Result ($\alpha=0.05$)		NOT SIGNIFICANT, H0 Not Rejected				
OBSERVED CONTINGENCY TABLE						
Investor Type \ Feature	Market movement	News and trends	Notifications	Portfolio tracking	Profit/loss visuals	Row Total
Long-term/Explorer	39	9	16	21	15	100
Retail/Short-term	26	10	17	26	9	88
Column Total	65	19	33	47	24	188
EXPECTED FREQUENCIES TABLE						
Investor Type \ Feature	Market movement	News and trends	Notifications	Portfolio tracking	Profit/loss visuals	
Long-term/Explorer	34.57	10.11	17.55	25	12.77	
Retail/Short-term	30.43	8.89	15.45	22	11.23	

Null Hypothesis (H_0)

There is no significant association between investor type and the most engaging feature in trading applications.

Alternative Hypothesis (H_1)

There is a significant association between investor type and the most engaging feature in trading applications.

The above table displays the chi-square analysis carried out to be used to see the relationship between investor type and most engaging feature in trading applications. The chi-square statistic value that is calculated is 3.965 and has 4 d. f. The resulting p-value from this is 0.4108, and because it is above the significance level (0.05), it means that the results are nonsignificant. Hence, the null hypothesis cannot be rejected, and it can be concluded that there is no statistically significant relationship among the investor type and most engaging features of trading applications.

The Cramer's V value of 0.1452 corresponds to a small effect size, meaning that there is a weak relationship between the two variables. On comparing the observed frequencies both the long-term/explorer investors and the retail/short-term investors are mainly drawn towards the features of movement in the market as well as the tracking of the portfolio. The difference among the groups of investors is sufficiently small that a statistically significant relationship cannot be established.

The p value for the non-significant chi square ($p=0.41$) is of substantial interest: it indicates that Long term investors are more alike than different from Short term traders in what they engage in. The two groups are mostly alike in terms of what they focus on the most: market movement and portfolio tracking. Notice that reflecting investor types, this shows that the best success of gamification is not an investor-specific tool.

4.6 ANOVA

Table 4. 6

ANOVA Analysis Between Age Group and Notification Influence on Trading Frequency

Statistic	Value	Reference
F-Statistic	3. 1462	F-critical (3, 184)≈2. 65
p-value	0. 0264	$\alpha = 0. 05$
Degrees of Freedom (Between)	3	Groups-1
Degrees of Freedom (Within)	184	N-Groups
Total N	188	
Result	SIGNIFICANT ✓, H0 Rejected	$p < 0. 05$

GROUP DESCRIPTIVE STATISTICS			
Income / Age Group	N	Mean	Std Dev
18-22	75	2. 7467	1. 2868
23-27	73	3. 1918	1. 3514
28-32	27	3. 4074	1. 5696
Above 32	13	2. 3846	0. 6249

ANOVA TABLE					
Source	SS	df	MS	F	p-value
Between Groups	16. 8815	3	5. 6272	3. 1462	0. 0264
Within Groups	329. 0972	184	1. 7886		
Total	345. 9787	187			

Null Hypothesis (H_0)

There is no significant difference among different age groups regarding the influence of notifications on trading frequency.

Alternative Hypothesis (H_1)

There is a significant difference among different age groups regarding the influence of notifications on trading frequency.

The above table shows the ANOVA analysis performed to see that whether there is any significant difference among the various age groups with respect to effect of notification on trading frequency. The calculated value of the F is 3.1462 and the critical value of the F is 2.65. The p-value obtained is 0.0264, which is less than the significance level of 0.05.

Given the p-value is less than 0.05, the null hypothesis (H_0) is rejected, suggesting a statistically significant difference in the effects of notifications across age groups in terms of their impact on trading frequency. This indicates that age groups have varying reactions to engagement features in trading apps that use notifications.

The group descriptive statistics reveal that the age group 28–32 years had the highest mean score (3.4074) on the notification influence scale followed by the age group 23–27 years (3.1918). Respondents aged above 32 years have the lowest mean score (2.3846) when compared with the other respondents. It is counterintuitive to find that the most sensitive group in terms of notifications (3.41) is the 28–32 age group, rather than the 18–22 age group (2.75). Maybe it means that investors in their late 20s to early 30s have more at risk and thus pay more attention to alerts, despite the fact that they might not be trading as frequently as other investors.

A limitation of the current analysis is that the significant ANOVA result ($F=3.15$, $p=0.026$) suggests that further post hoc analyses are needed to determine which age group pairs are different in future research.

4.7 Regression

Table 4. 7

Multiple Linear Regression Analysis of Gamification Features on Trading Frequency

Multiple Linear Regression					
Dependent Variable: Trading Frequency Independent Variables:5 Gamification Features					
Model Summary					
Metric	Value	Interpretation			
R-squared (R²)	0. 4818	Model explains 48. 2% of variance in trading frequency			
Adjusted R²	0. 4675	Adjusted for number of predictors			
F-Statistic	33. 8286	Overall model significance			
Prob (F-statistic)	2. 38E-24	p < 0. 001, Model is highly significant			
N (Observations)	188				
Predictors	5	Notifications, Trending, Rewards, Interface, Real-Time Alerts			
Regression Coefficients					
Independent Variable	Coefficient (β)	Std Error	t-Statistic	p-value	Significance
Constant (Intercept)	-0. 3287	0. 355	-0. 926	0. 3557	ns
Notifications	0. 3373	0. 0456	7. 3985	0	***
Trending Stocks Section	0. 0611	0. 066	0. 9247	0. 3563	ns
Rewards / Visuals (Interface Attractiveness)	-0. 0238	0. 053	-0. 4486	0. 6542	ns
Easy Order Placement (Interface)	0. 244	0. 0537	4. 5443	0	***
Real-Time Alerts	0. 2706	0. 0494	5. 4761	0	***
*** p < 0. 001	** p < 0. 01	* p < 0. 05	ns = Not Significant		

Null Hypothesis (H_0)

Gamification features such as notifications, trending stock sections, rewards/interface attractiveness, easy order placement, and real-time alerts do not have a significant impact on trading frequency among retail investors.

Alternative Hypothesis (H_1)

Gamification features such as notifications, trending stock sections, rewards/interface attractiveness, easy order placement, and real-time alerts have a significant impact on trading frequency among retail investors.

Variable-Specific Hypotheses for Regression Analysis

A. Notifications and Trading Frequency

H_0 : Notifications do not significantly influence trading frequency among retail investors.

H_1 : Notifications significantly influence trading frequency among retail investors.

B. Trending Stocks Section and Trading Frequency

H_0 : Trending stock suggestions do not significantly influence trading frequency among retail investors.

H_1 : Trending stock suggestions significantly influence trading frequency among retail investors.

C. Rewards / Interface Attractiveness and Trading Frequency

H_0 : Rewards and interface attractiveness do not significantly influence trading frequency among retail investors.

H_1 : Rewards and interface attractiveness significantly influence trading frequency among retail investors.

D. Easy Order Placement and Trading Frequency

H_0 : Easy order placement does not significantly influence trading frequency among retail investors.

H_1 : Easy order placement significantly influences trading frequency among retail investors.

E. Real-Time Alerts and Trading Frequency

H_0 : Real-time alerts do not significantly influence trading frequency among retail investors.

H_1 : Real-time alerts significantly influence trading frequency among retail investors.

The multiple linear regression analysis results in the table above were used to analyze the effect of each of the different gamification features on the trading frequency of retail investors. Notifications, trending stocks section, rewards/interface attractiveness, easy order placement and real-time alerts are treated as independent variables in the model and its trading frequency is treated as the dependent variable.

Based on the model summary, an R square (R^2) of 0. 4818 was obtained, meaning that the selected gamification features only explain about 48. 2% of the variation in the frequency of trading. The adjusted R^2 value of 0. 4675 also supports the notion that the model has a good explanatory power even after taking into account the number of predictors used in the analysis. The F-statistic value of 33. 8386 and highly significant p-value ($2. 39E-24$) suggest that the overall regression model is statistically significant.

The variables which are statistically significant for the positive influence in trading frequency are notifications ($\beta = 0. 3373$, $p < 0. 001$), easy order placement ($\beta = 0. 2440$, $p < 0. 001$), and real-time alerts ($\beta = 0. 2706$, $p < 0. 001$). This indicates that these engagement-oriented features have a significant impact on investors to interact more with trading applications and to be involved in trading activities.

However, the trending stocks section and rewards/interface attractiveness were not statistically significant due to being p-values $> 0. 05$. This means that while these features might help to engage users, they do not directly affect trading frequency in the current study.

The regression model accounts for a significant level of variance in the frequency of trading ($R^2 = 0. 48$), for a behavioral model of this type. The most important feature is notifications ($\beta=0. 34$), followed by real-time alerts ($\beta=0. 27$) and convenient order placement ($\beta=0. 24$). Passive display features do not seem to be important because the trending stocks and the visual rewards are not significant.

CHAPTER 5 CONCLUSION & RECOMMENDATIONS

5.1 Conclusion

The current research aimed to investigate the impact of gamification elements in trading applications on the frequency and behavior of young retail investors in trading. The following objectives were met in the study: to investigate the relationship between engagement oriented features including notification, real-time alerts, interface attractiveness, rewards and ease of order placement with investor trading activities. Primary data were collected from 188 respondents through digital trading platforms and analyzed with statistical tools of correlation analysis, chi-square test, ANOVA and multiple linear regression.

The most important result of the study is that gamification features are not always effective – active features such as notifications, real-time alerts, and order placement on a single tap have a significant effect on trading activity, while passive features such as trending stocks and visual appeal do not. Correlation analysis found that, although the relationship was only modest, post-notification trading was statistically significantly related to real-time alert sensitivity ($r=0.14$, $p=0.047$) and most directly supported the hypothesis that app design features result in impulsive behavior. The nuance from the ANOVA finding that the influence of notifications varies significantly by age ($F=3.15$, $p=0.026$) is that notification strategies may be most important to investors in their late 20s, not the youngest.

The multiple regression model results, which account for 48.2% of variance in the trading frequency, shows that the three features—notifications ($\beta=0.34$), real-time alerts ($\beta=0.27$), and easy order placement ($\beta=0.24$)—are significant; the other features, trending stocks and interface rewards, are not significant. Out of the above-mentioned variables, notifications proved to be the most significant variable influencing the trading behavior. In contrast, the present study did not find any statistically significant relationship between trading frequency and features like trending stock sections and features that attract/repel the user based on the rewards/attractability of the interface.

The result for investor type reveals no significant differences between the features preferred by long-term investors and short-term traders following gamification, that is, the result of the chi-square test is insignificant, indicating that gamification is not only effective at influencing behavior among inexperienced or speculative investors, but also among long-term investors and short-term traders. To summarise, by design, the trading app's deployment of active feature triggers has been shown to be a proven way to boost trading activity among young retail investors in India. This study's design cannot determine whether more trading is good or bad for those investors, but it does show that platform design choices are impacting trading.

5.2 Recommendations

The result that notification frequency is the strongest predictor of trading frequency ($\beta=0.34$) directly implies the design question: notifications are not just a UX choice, they are a behavior intervention. Platforms should offer a user granular control over the notifications, not just on/off, but caps on frequency, market-hour-only, and cooldown after trading based on a notification. Real-time alerts that notify users of a stock moving but have no context (why, if it's moving, why it's outside normal volatility) carry the informational type of message with urgency, but without adding context would reduce the behavioral push and remain worthy of informing.

As shown in the ANOVA, those who are most sensitive to notifications are in the age group 28 to 32, which means that platforms should pay attention to those who are the more financially vulnerable; financial literacy content should be targeted across the entire 18-35 age group. Content around risk management, long-term investing, and behavioral biases should be integrated into trading application to enhance investor understanding and decision-making capacities.

Further, trading platforms should be transparent in their engagement practices, and refrain from excessive use of features which might be psychologically triggering and lead to speculative trading behavior. The regulators and fintech firms should collaborate to develop ethical digital investment landscape that safeguards retail investors and enhances their engagement and growth on the platform.

5.3 Suggestions for Investors

For individual investors, the lesson from this study is: treat a trading app notification like an ad, from an entity whose interests aren't always in line with yours. Before making investment decisions, investors should conduct proper market research, financial analysis and investment planning. FOMO, excitement, and market hype can be a risk of excessive and speculative trading that needs to be carefully managed.

This study's correlation analysis shows that there is a personal decision rule that can be used to break the notification-to-trade loop, and it is a simple behavioral technique: a waiting period of 24 hours between an alert and acting on it. By comprehending how gamification aspects affect the psyche, investors can make more rational and educated choices in digital trading spaces. Furthermore, it is important for investors to focus on financial education and risk awareness when engaging in online trading.

5.4 Suggestions for Trading Platforms

These findings are a result of SEBI's increasing focus on digital engagement practices in trading apps. The three big ones are notifications, alerts, and easy order placement, all of which are characteristics of a platform that platforms can design to and may be mandated by regulators for transparency or friction. Alerts and notifications should be informative and relevant, not too frequent, or emotionally upsetting. Platforms should also include risk-awareness cues and educational warning messages ahead of high-risk trading activities (such as intraday trading or derivative trading).

Fintech companies should work on enhancing transparency around the impact of engagement elements on user behavior, and promote responsible investing behaviors among users. Platforms can also incorporate educational components, financial planning tools, and behavioral cues that can be used to help make informed decisions for retail investors. The key to achieving a balance between user engagement and investor protection is to ensure sustainable and trustworthy digital trading ecosystems.

5.5 Future Scope of the Study

The study's findings highlight several areas that need further investigation. Firstly, a bigger and stratified random sample would enable platform-level comparisons and secondly, are the notification practices of Groww different from the ones of Zerodha? Second, a longitudinal study on the same investors over 12-18 months would be able to determine if there is an increasing frequency over time or if there is a habituation effect with engagement features.

Third, experimental designs which would randomise users into different notification regimes would enable causal claims which this survey design cannot make. Fourth, research should investigate whether algorithmically tailored notifications are more effective in altering behaviors than generic notifications, given the substantial regulatory implications. Moreover, future studies could explore the application of gamification in crypto trading platforms and decentralized finance (DeFi) applications that are gaining traction among young investors.

Additionally, ongoing research can explore the psychological aspects of gamification, including its potential for digital addiction, behavioral biases, and emotional investing, to gain deeper insights into its chronic effects on investor decision-making and financial outcomes.

CHAPTER 6. REFERENCES

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ANNEXURE

Effect of Gamification Features in Trading Apps on Retail Trading Frequency Among Young Investors

1. What is your age group?

18–22

23–27

28–32

Above 32

2. Gender

Male

Female

Prefer not to say

3. Which trading app do you use the most?

Groww

Zerodha

Upstox

Angel One

Other

4. How frequently do you use trading apps?

Multiple times a day

Once daily

Few times a week

Occasionally

5. What type of trading/investing do you mainly do?

Long-term investing

Swing trading

Intraday trading

F&O trading

Just exploring/learning

6. How often do app notifications make you open the trading app?

Very often

Sometimes

Rarely

Never

7. Which feature attracts you the MOST in a trading app?

Option 1

Easy interface

Fast order execution

Live stock updates

Rewards/referrals

Trending stocks section

8. Do real-time market alerts increase your urge to trade?

Strongly agree

Agree

Neutral

Disagree

Strongly disagree

9. Have you ever made a trade immediately after receiving a notification?

Frequently

Sometimes

Rarely

Never

10. Which feature keeps you engaged the longest on trading apps?

Portfolio tracking

Market movement

Notifications

Profit/loss visuals

News and trends

11. Do attractive visuals and app design make trading feel more exciting?

Strongly agree

Agree

Neutral

Disagree

Strongly disagree

12. How much do “Trending Stocks” or “Top Movers” influence your decisions?

Highly influence

Moderate influence

Slight influence

No influence

13. Do you think easy order placement increases trading frequency?

Strongly agree

Agree

Neutral

Disagree

Strongly disagree

14. Have you ever spent more time on a trading app than you originally intended?

Very often

Sometimes

Rarely

Never

15. Which emotion do trading apps create the MOST while trading?

Excitement

Confidence

Fear of missing out (FOMO)

Stress

Curiosity

16. Overall, do you think gamified features influence investor behaviour?

Strongly agree

Agree

Neutral

Disagree

Strongly disagree