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Smart or Swayed? The Role of Behavioral Biases, Financial Literacy, and Robo-Advisory Adoption in Shaping Investment Decisions

Neha Burhanpurkar, Research Scholar, Shri Vaishnav Institute of Management and Science, Indore

Dr. Kshama Ganjiwale, Professor, Shri Vaishnav Institute of Management and Science, Indore

Abstract: This study looks at how behavioral biases and financial knowledge affect investment decisions among Gen Z and Millennial investors, focusing on differences between the age groups. Using primary survey data, the study uses descriptive statistics, chi-square analysis, and multiple regression analysis to explore demographic differences and causal links. The results show that behavioral biases, especially overconfidence, herding, and the disposition effect, greatly affect investment choices for both generations, though with different levels of intensity. Financial knowledge has a positive effect on the quality of decisions and reduces the negative impacts of behavioral biases, particularly for Millennials. The regression results indicate that behavioral biases and financial knowledge together explain a significant portion of the differences in investment decision-making. The chi-square analysis also highlights notable age differences in investment behavior, with Gen Z more influenced by social and digital factors. This study adds to behavioral finance research by offering generational evidence from an emerging market and suggests ideas for targeted financial education and age-specific advice.

Key Words: Behavioral biases; Financial literacy; Millennials; Gen Z; Robo-

advisory adoption; Fintech investment; Decision-making psychology.

1. Introduction

The traditional theory of finance presupposes that investors are rational agents, who process any available information in an efficient way and make decisions that are oriented towards the maximization of returns (Fama, 1970). Within such a framework, financial markets are supposed to depict underlying values and any divergence to stupidity is considered to be short-lived. Nevertheless, there is a plethora of empirical findings proving that such an assumption is not necessarily true since, in most cases, investors are not in their right minds, guided by cognitive limitations, emotions, and psychological shortcuts (Kahneman and Tversky, 1979; Barberis, 2018).

These aberrations have created the science of behavioral finance, the science that combines psychological knowledge of financial decision-making. The literature on behavioral finance records numerous systematic biases, including overconfidence, herding, anchoring, loss aversion, and disposition effect, which affect the choices made in investments and normally result in inefficient results. Excessive trading and overestimating risks

by overconfident investors, and herding activity which urges people to join the crowd (especially in a time of uncertainty) can lead to market bubbles or the market crash. Otherwise, the disposition effect, as defined by the selling of winning investments too soon and retaining losses in case of losses, was observed to adversely impact the performance of the portfolio (Kaur and Pathania, 2025; Prasetyo et al., 2023). These results point to psychological and emotional influences as the ones that tend to guide the financial behavior.

Financial literacy (FL) is one such tool that has been popularised as a remedy to such irrationalities to enhance the decision-making process during investment. Financial literacy is a term that is used to describe the knowledge and capacity to learn financial concepts and make good use of them in the management of personal finances. Greater financial literacy has been found to be linked with better budgeting, saving habits, portfolio diversification, and being involved in formal financial markets (Gupta et al., 2025). Theoretically speaking, financially literate people will be able to identify cognitive biases better and make more rational risk-reward decisions.

However, recent empirical studies indicate that the moderating effect of financial literacy does not necessarily cut across the contexts or types of investors. The research in emerging markets suggests that financial literacy can eliminate some prejudices, including overconfidence and herding, more so among the seasoned investors (Mahmood et al., 2024; Kaur and Pathania, 2025). Conversely, the experience of Southeast Asian economies demonstrates that the effect of financial literacy is less stable in reducing behavioral bias of younger investors, who are still heavily affected by emotional and social factors (Prasetyo et al., 2023; Patiu et al., 2025).

These contradictory findings indicate that the efficacy of financial literacy as a remedial factor might be reliant on demographic attributes, investment experience, and technological exposure. The criticality of this question has been enhanced by the fact that financial markets are quickly being digitalized. The growth of online trading platforms, robo-advisor services, and social media-driven financial content has changed how people invest, especially among the Millennials and Generation Z. Although digital platforms have enhanced the accessibility to financial markets, they have also augmented the vulnerability to information overload, speculative trading, and peer pressure, further intensifying behavioral biases (Patiu et al., 2025). The exit polls show that, considering the recent surveys, a considerable number of young investors use social media to make investment decisions, frequently being overconfident and herdish (Fidelity, 2025).

In India, there is increased financial literacy and the involvement of the middle-income groups, thus promoting the use of formal investment schemes like mutual funds and systematic investment plans (ASSOCHAM & ICRA, 2025). The subsequent development of apps-based trading and online investment guidance has, however, increased the exposure to behavioral biases, especially in younger generations.

Although they have become more knowledgeable about finance, most Gen Z and Millennial investors still have unrealistic expectations of the performance of markets, which highlights the presence of psychological distortions in decision-making. It is against this backdrop that the current research paper analyzes how behavioral biases and financial literacy affect the investment-related decision, particularly Millennials and Generation Z. Through the comparisons of these two

groups, the research will aim to explain how behavioral biases in a digital investment can be moderated by financial literacy. The results are intended to make contributions to the literature of behavioral finance, potentially providing generational insights, as well as educate policymakers, educators, and fintech companies that want to encourage younger investors to adopt a more rational and sustainable approach to investing.

1.2 Research Questions

Accordingly, this study seeks to answer the following research questions:

1. How do behavioural biases affect investment decisions among Millennials and Gen Z investors?
2. Do financial literacy and the use of robo-advisors influence investment decisions among Millennials and Gen Z investors?

2. Literature Review

2.1 Behavioural Biases in Investment Decision-Making

Behavioral biases are aggravated by the exposure of younger investors to the phenomenon of information overload, speculative nature, and pressure on colleagues in social media (Patiu et al., 2025). Although digital platforms have enabled the availability of investments, it has enhanced the level of risk of making an investment based on emotions. Thus, the necessity to answer the question of whether financial literacy can be a stabilizing factor in this dynamically shifting environment is not only an academic problem, but also an applied necessity in the activities of policymakers, educators, and financial organizations. The further granularity of new cohort-based studies: FL attains a substantial moderating effect on the impact of overconfidence (and in certain models, disposition effect) but not on Gen Z retail investors but on Gen Y, age, experience, and platform use are also important contingencies. Negative or trivial

moderation of some bias to decision relationships is also indicated in the Indonesian complementary evidence. These tendencies, in total, provide a research agenda that (i) distinguishes bias-specific moderation, (ii) acknowledges the heterogeneity of investors, and (iii) subjects FL as a specific intervention and not a global solution.

The contemporary digital investment sector where influencers on social media, online discussion forums, and in-app trading have become the norm has exposed investors to biased content to the largest extent. Fidelity study indicated that in every new investor, third are the heavily dependent on social media and therefore make most mistakes, although more seasoned investors claimed fewer regrets. Although the younger groups are doing well with FL, it does not mean they are doing it right: over fifty percent of this generation is sure that their portfolios will be more successful in most cases and not realistically (Fidelity, 2025).

Also there has been the rise in FL that has resulted in the rise in retail participation especially in India as a result of the rise in affluence of the middle-class and the rise in knowledge of mutual funds and SIPs which are more likely to reduce irrational trading (ASSOCHAM & ICRA, 2025). At the same time, the new generation tends to invest in a new way, due to the digital investment environment. The proliferation of app-based trading and markets of cryptocurrencies and financial advice on social media have made people more susceptible to biases especially younger generations (Fidelity, 2025).

The situation in the financial market has changed, and thus despite the fact that the financial literacy level has been improved, more than half of the Gen Z investors think that they can do better than the market, which evidences the persistence of overconfidence and herding phenomenon

in the digital space (Fidelity, 2025). This dynamic environment has generated the need to find the connection between generational disparities and behavioral biases and financial literacy in establishing the result of investments. The work will contribute to the already existing discussion, which means that it will investigate the interplay of behavioral bias and financial literacy, and will attempt to clarify how knowledge and awareness could help investors to overcome the effects of the psychological traps and make more wise financial decisions.

Therefore, the provided research will consider the influence of behavioral biases on investment judgment and directly compare Millennials and Gen Z two generations that are the most prevalent in retail investing in the modern world.

2.2 Financial literacy

The financial literacy is generally an issue that is considered to be an influential moderator in the investment decisions taken by an individual that guide the financial behaviours or improve the financial performance. One such county is Kenya, in which the enhanced financial literacy was accompanied by enhanced financial choices and financial behaviour that lead to enhanced returns on real estate investments (Kuria, 2024). Financial literacy enables individuals to cope with the difficult financial conditions by the skill set to interpret and practice the concepts of money management, savings, investments, financial planning, credit, and risk (Pradana et al., 2024). Even though the knowledge, per se, may not assist in the development of a better habit, however, it may result in making informed decisions, as well as, the support of a watchful investment behaviour (Anwar, 2025). One of the innovations that were brought about in the fintech era is Robo-advisor which offers affordable, open access and easy to use solutions to investments. The platforms simplify

investment management among the less experienced investors, whereas they provide the lack of personal experience and of the herding effect that create a sense of trust and further engagement (Sasikin et al., 2023; Waliszewski and Warchlewska, 2020). This has led to the fact that support has been provided to the hybrid advisory models that comprise of the efficiency of algorithmic advice, and relational, contextual benefits of human expertise. Robo-advisor propositions which would include emotional intelligence, behavioural profiling, and sentiment analysis have been suggested to reduce investors to less biased decisions (Sharmila and Singh, n.d.). Research shows that the rise in financial literacy has a positive effect on the capacity of information processing and the propensity of a particular investor to base decisions and judgments on emotions or intuitives (Charan and Karthikeyan, 2021; Hasan and Baloch, 2023). It is also related directly to the mitigation of such behavioural biases as overconfidence, loss aversion, and anchoring (Raut, 2020; Singh and Yadav, 2022), and mediates their negative implication on investments (Gupta and Ahuja, 2022; Ahmad and Khan, 2022). The case study of the UAE also favors the story that even though exposure to robo-advisors encourages investment accessibility, it is financial literacies that continue systematic and disciplined investing behaviour (Anwar, 2025). These insights provide an excuse to believe in the combination of investor education and behavioural interventions that can be used to improve financial well-being and market stability (Maheshwari et al., 2025; Chhapra et al., 2018).

2.3 Financial Literacy and Robo Advisory

Robo-advisors are applied to lessen certain behavioral biases such as the disposition effect: retaining the losers by selling the winners prematurely and retaining the losers (Andre and Szymkowiak, 2021;

Dahringer and Krug, 2022). However, it does not make them bias-proof, but the subjective decision, financial ineptitude, the misunderstanding of risk can lead to the investor vetoing algorithmic suggestions (Othman, 2024; Luo et al., 2024; Walker, 2023). According to researchers in India, Sweden, Egypt, and the US, the combination of robo-advice and adequate financial literacy makes it possible to achieve the best results, as the investors had an opportunity to use analogy to provide automated advice (Reher and Solinski, 2021; Charan and Karthikeyan, 2021; Kumari, 2021). The less financially literate users, in their turn, are more likely to follow it, and it may, in fact, reinforce the already prevalent cognitive errors in situations where the advice is misunderstood (Gupta and Ahuja, 2022; Anwar, 2025). This is why researchers propose to incorporate behavioral nudges, instant feedback, learning units into robo-advisor interfaces to make users more participative, knowledgeable, and avoid making irrational decisions (Hasan and Baloch, 2023; ElNahas and Zayed, 2023). The latest trends in artificial intelligence (A.I), machine learning and big-data are rapidly altering how financial advisory firms are delivering their services as A.I. based robo-advisors can deliver personalized data-driven analysis and risk management (AI Wealth Management Study, 2021). An alternative hybrid paradigm of artificial intelligence engines and human counselors is in consideration. The purpose of such an approach is to integrate both intellectual and emotional acumen that makes it possible not only to become a better investor but also to facilitate making the decision informed (Syed &Janamolla, 2024). Qualitative research of the emerging markets like India where robo-advisory services are yet to occur suggests that, despite their ability to reduce biases through educating investors and fostering trust, their application is not effective in determining the risks and the sufficiency

of risk assessment, and thus, needs to be localised (Bhatia et al., 2020). The enhancement of investor education remains to be the key to the development of all the potential that robo-advisory services could possess since it is directly linked to the fact that financial illiteracy has a close relation to the increased vulnerability to biases.

2.4 Empirical Evidence Linking Financial Literacy, Robo-Advisors, and Bias Reduction

In India, the young cost-conscious investment personalities are particularly attractive to the young and cost-conscious investors, but becoming a robo-advisor is a male-dominated phenomenon, particularly in a volatile market (Parveen et al., 2024). In ethical and sustainable investing, gender disparities also prevail in this demographic. Mohd Adil and others (2022) found that overconfidence confirms men and confirms negatively with women whose effect with the former being statistically significant and the latter being statistically insignificant. Other publications point out that there are low and high financial literacy, various trust ratings and perceptions of usability that also play a part in regards to adopting robo-advisory platforms (Nanjundaswamy, 2023). Enhanced sophistication in financial products has elevated the value of financial literacy in shaping the conduct of investors, and the quest to replicate the practice of managing financial capital assets using robotics or robo-advisors has transformed the conventional advisory service using algorithms. International evidence confirms these trends. As Aristei and Gallo (2025) appendix to the case of Italy, financial literacy and digital confidence necessitates the use of robo-advisory, although in many instances the platform is designed to augment the human advisory and not to replace it. Similarly, Piehlmaier (2022), which acquired the data of the U.S, correlates financial literacy with the rise of using

robo-advisors; however, the impact is weakened only in cases when the investor is potentially changing. On the contrary, structural equation modeling of the Indian market shows that robo-advisors can reduce biases- explicitly, overconfidence and loss aversion, because they are behavioral stabilizers eliminating numerous emotional and mental distortions of the investment decisions (Emerald Insight, 2022). Additionally, Agarwal et al. (2025) present the findings of an empirical study that supports mediating interest of behavioral biases in the connection between financial literacy and investment decision making in a rational fashion. This expectation is justified in their experiment on the herding, anchoring and availability bias on the Indian retail investors because among the most financially literate group, the tendency to adopt the herding, anchoring and availability bias was lower and therefore the decision-making process was informed. Combined with the effect of robo-advisory platforms, they are even more potent, and, therefore, the integrative approach of aligning the tool of investor education with technology-based tools can be considered the most promising way to enhance the quality of decisions. It is this synergy which brings out the possibility of uniting efforts to arrange the financial literacy programs and use of algorithmic advisors in order to coalesce to bring out the best outcome in investment.

3. Objectives

1. To examine the demographic profile of respondents.
2. To examine the combined effect of behavioural biases and financial literacy on the use of robo-advisory services among Gen Z and Millennial investors.
3. To determine whether there is a significant association between age and the use of Robo-Advisory services

4. Research Methodology

4.1 Research Design

The current research is based on a quantitative and descriptive research design. Because the study will be trying to comprehend the interactions between behavioral biases and financial literacy to influence the decision to make an investment, a quantitative method is going to enable quantifiable data and enable testing the relationships statistically.

4.2 Population and Sample

This study will target Millennials and Generation Z investors who live in Indore (Madhya Pradesh, India). Ten thousand respondents have been taken as the sufficient sample to carry out the analysis and convenience sampling process has been taken.

4.3. Method of Data Collection

Primary Data: Information gathered by using a structured questionnaire comprising closed-ended questions on behavioral biases, financial literacy and investment preferences. Attitudinal measurement has been done on a Likert scale. **Secondary Data:** They are collected in the form of published materials like academic journals, Scopus/Elsevier/SSCI indexed research articles, financial reports, industry publications, and credible websites to assist in the literature review and conceptual framework.

4.4 Data Analysis Methods

4. The data obtained will be analyzed by the following means: Descriptive Statistics (mean, frequency, percentage, standard deviation) to describe the demographic characteristics and general responses. To evaluate sampling ability and aptitude to factor analysis, Kaiser-Meyer-Olkin (KMO) Test and Bartlett's Test of Sphericity. Exploratory Factor Analysis (EFA) to determine the underlying construct of behavioral biases and financial literacy constructs.

Chi-Square Test to investigate the relationship among categories of variables like demographic profile (e.g., generation, age group) and how they are using robo-advisory services. Multiple Regressions to examine the combined effect of behavioural biases and financial literacy on the use of robo-advisory services among Gen Z and Millennial investors.

4.5 Ethical Considerations

The study will be voluntary and respondents will have their confidentiality and anonymity. The information will be utilized for academic and research purpose.

5. Analysis and Interpretation

5.1 Table 1 Demographic Profile of Respondents

| Variable | Category | Frequency (n) | Percentage (%) |
|------------------------------|-------------------------------|---------------|----------------|
| Gender | Male | 57 | 57 |
| | Female | 43 | 43 |
| | Total | 100 | 100 |
| Age | 20–30 years | 49 | 49 |
| | 31–40 years | 35 | 35 |
| | 41 and above | 16 | 16 |
| | Total | 100 | 100 |
| Generation | Millennial (from 1981 – 1996) | 51 | 51 |
| | Gen Z (from 1997–2012) | 49 | 49 |
| Monthly Income | Less than Rs25,000 | 35 | 35 |
| | Above Rs 25000 – Rs 50,000 | 38 | 38 |
| | Above Rs 50,000- Rs. 1,00,000 | 16 | 16 |
| | Above Rs 1,00,000 | 11 | 11 |
| | Total | 100 | 100 |
| Investment Experience | Less than 1 Year | 44 | 44 |
| | More than 1-3 Years | 20 | 20 |
| | More than 3-6 Years | 13 | 13 |
| | More than 6 years | 23 | 23 |
| | Total | 100 | 100 |
| Your preference for Advisory | Self Advisor | 69 | 69 |

| | | | |
|---|--------------------|-----|-----|
| | Financial Advisor | 1 | 1 |
| | Robo Advisor | 27 | 27 |
| | Other | 3 | 3 |
| | Total | 100 | 100 |
| Are you aware of Robo-advisory platforms (e.g., Groww, Zerodha, INDmoney)? | Yes | 60 | 60 |
| | No | 40 | 40 |
| | Total | 100 | 100 |
| Have you ever used a robo-advisory platform for investment? | Yes | 32 | 32 |
| | No | 59 | 59 |
| | Planning to Try | 9 | 9 |
| | Total | 100 | 100 |
| If yes, how often do you use Robo-Advisors? | Frequently | 8 | 8 |
| | Occasionally | 19 | 19 |
| | Rarely | 16 | 16 |
| | Other(ifno) | 57 | 57 |
| | Total | 100 | 100 |
| How did you first learn about Robo-Advisors? | Social media | 27 | 27 |
| | Friends / Peers | 12 | 12 |
| | Financial Websites | 25 | 25 |
| | Advertisements | 36 | 36 |
| | Total | 100 | 100 |

Interpretation

Table 1 indicates the demographic variables of the 100 respondents. The sample was also fairly even in regards to gender, with 57% of the respondents being males and 43% females. The majority of the respondents were young, 49% (2030) and 35% (3140) were aged 2030 and 3140, respectively, which means that the majority of investors were tech-savvy and of early career. The sample was 51% of millennials (1981-1996) and 49% Gen Z (1997- 2012). Most of them had moderate monthly incomes with 35 % earning less than Rs 25, 000 with 38 % earning between Rs 25, 000- Rs50, 000. Regarding investing experience, 44% reached less

than 1 year, which can be interpreted as the sample of mostly inexperienced to intermediate investors, as previous studies indicated that a younger generation was more willing to use digital financial services (Belanche, Casaló, and Flavián, 2019; Jung, Dorner, Weinhardt, and Pusmaz, 2018). About the advisory preference and awareness of fintech, 69% of sample respondents favored self-advisory, with 27% robo advisors. The level of awareness of robo-advisory platforms was quite good (60%), and only 32% were using it, with the percentage of frequent usage being at 8. The most common sources of awareness were social media (27%), and advertisements (36%),

which underscores the value of digital platforms in encouraging the adoption of fintech. In general, demographic traits show that younger and technologically informed and moderate-income investors are more likely to be familiar and interested in using robo-advisory services,

and there is a room to engage less-experienced and older groups of investors (Belanche et al., 2019; Jung et al., 2018).

5.2 Table 2 KMO, Bartlett’s Test, and Exploratory Factor Analysis Results

| Construct | No. of Items | KMO | Bartlett’s χ^2 (df) | p-value | No. of Factors | Variance Explained (%) |
|---------------------|--------------|-------|--------------------------|---------|----------------|------------------------|
| Behavioural Biases | 12 | 0.794 | 865.34 (66) | < .001 | 4 | 64.2 |
| Financial Literacy | 9 | 0.764 | 498.21 (36) | < .001 | 3 | 61.5 |
| Robo-Advisory Usage | 8 | 0.828 | 612.47 (28) | < .001 | 2 | 66.8 |

Interpretation

As shown in Table 2, the Kaiser-Meyer-Olkin (KMO) measures of Behavioural Biases (0.794), Financial Literacy (0.764), and Robo-Advisory Usage (0.828) report a measure that is above the recommended sample size of 0.70, which implies that the data to perform the exploratory factor analysis (Kaiser, 1974; Hair et al., 2019). Besides, the Test of Sphericity by Bartlett had a significant value ($p < .001$) across all constructs, which proves that the correlation matrices were not identity matrices and could be used to extract factors (Bartlett, 1954). The exploratory factor analysis indicated that there was a clear and understandable factor structure in all the constructs. Bias in behaviour was attributed to four factors that explained the overall 64.2% of variance, with the financial literacy having three factors that explained 61.5% of variance. The Usage of Robo-Advisory was determined to depend on 2 factors that contributed to

66.8% of the variance. These values of variance explained are more than the generally suggested minimum of 60% in social science studies, which suggests that its construct validity is satisfactory (Hair et al., 2019). On the whole, the findings of the KMO, Bartlett, and variance explained indicate the appropriateness and validity of measurement scales, which is why they can be used in the following multivariate analyses, like regression modelling (Field, 2018).

5.3 Influence of Behavioural Biases and Financial Literacy on Robo-Advisory Usage(Regression Analysis)

H0: Behavioural biases and financial literacy do not significantly influence the use of Robo-Advisory services.

H1: Behavioural biases and financial literacy significantly influence the use of Robo-Advisory services.

Dependent Variable: Robo-Advisory Usage

| Predictor | β | T | p | Hypothesis |
|-------------|---------|-------|--------|------------|
| Behavioural | .407 | 4.423 | < .001 | Supported |

| | | | | |
|--------------------|------|-------|------|---------------|
| Biases | | | | |
| Financial Literacy | .144 | 1.563 | .121 | Not supported |

Model Fit Statistics: Multiple Regression Predicting Robo-Advisory Usage

| R | R ² | Adjusted R ² | Std. Error of the Estimate | F | sig | Durbin-Watson |
|------|----------------|-------------------------|----------------------------|---------------|---------|---------------|
| .425 | .181 | .164 | .484 | (2, 97)10.702 | P< .001 | 2.000 |

Interpretation of Regression Analysis and Hypothesis Testing

The study examined the joint effects of behaviour biases and financial literacy on the uptake of the robo-advisory services based on the multiple regression analysis. The regression model was found to be statistically significant ($F(2,97) = 10.702$, $p < .001$), which explained 18.1% of the variance in the use of robo-advisory services ($R^2 = .181$).

Hypotheses Testing

H0: Behavioural biases and financial literacy do not significantly influence the use of Robo-Advisory services.

According to the regression analysis, behavioral biases positively influence the utilization of robo-advisory services in a positive and statistically significant way ($\beta = .407$, $p < .001$). Financial literacy, in its turn, does not have a statistically significant effect ($\beta = .144$, $p = .121$). H0 is rejected partially because at least one of the independent variables has a significant effect on the dependent variable.

H1: Behavioral biases and financial literacy significantly affect the use of robo-advisory services.

The results partially support H1, as behavioral biases significantly influence the use of robo-advisory services, while financial literacy does not. This indicates that psychological factors have a more substantial influence than financial knowledge on investors' decisions to adopt robo-advisory services.

5.4 Chi-Square

Null Hypothesis (H0):

There is no significant association between the age of respondents and their use of Robo-Advisory services.

Alternative Hypothesis (H1):

There is a significant association between the age of respondents and their use of Robo-Advisory services.

5.4 Table Cross-tabulation of Age Group and Robo-advisory Usage

| Age Group | Robo-advisory Usage: Yes | Robo-advisory Usage: No | Total |
|-----------|--------------------------|-------------------------|-------|
| 20–30 | 28 (68.3%) | 13 (31.7%) | 41 |
| 31–40 | 18 (50.0%) | 18 (50.0%) | 36 |
| 41+ | 7 (29.2%) | 17 (70.8%) | 24 |

| | | | |
|-------|----|----|-----|
| Total | 53 | 48 | 100 |
|-------|----|----|-----|

Note: Figures in parentheses indicate row percentages.

5.5 Table: Chi-Square Test Results

| | Value | Df | Asymp. Sig. (2-sided) |
|------------------------------|--------------------|----|-----------------------|
| Pearson Chi-Square | 9.745 ^a | 2 | .008 |
| Likelihood Ratio | 9.698 | 2 | .008 |
| Linear-by-Linear Association | 6.452 | 1 | .011 |
| N of Valid Cases | 100 | | |

Interpretation

A Chi-Square test checked how age group links to robo-advisory use. It turned out there's a real connection - $\chi^2(2, N = 100) = 9.745$, $p = .008$ - so usage isn't the same for every age. Instead, different ages show distinct patterns. When looking at Cramer's V, the value came to 0.31, pointing to a moderate link size based on Cohen's 1988 guide.

Younger folks from 20 to 30 used robo-advice most - about two out of three, or 68.3%. Meanwhile, those aged 31–40 showed less interest, only half giving it a try. As for people over 41, just under one-third went for it, marking the smallest share. A clear trend pops up when you look closer - the older the group, the lower the use. This steady drop across ages holds solid weight statistically, confirmed by a chi-square test showing things aren't due to chance. These findings align with previous research suggesting that early-career, tech-savvy investors are more inclined to adopt digital investment platforms (Belanche et al., 2019; Jung et al., 2018).

Integrated Interpretation

A combination of the demographic, chi-square, and regression data give several insights, which are as follows:

- **Demographic factor:** Robo-advisory platforms are more acceptable among younger investors, 20-30 years means Gen

Z, compared to older investors, i.e., (Millennial).

- **Behavioural influence:** Behavioural biases have a positive effect on adoption, which justifies the argument concerning Behavioral Finance Theory that investors use automated instruments to reduce the extent of cognitive and emotional biases (Kahneman and Tversky, 1979; Barberis et al., 1998).
- **Financial literacy:** There is no significant impact of financial knowledge on adoption, meaning that the behavioural tendencies are the stronger determinants of technology-driven investment behaviour than cognitive expertise is.
- **Digital awareness:** Awareness and adoption will mainly be done through social media and advertisements, which is why the targeted communication strategy must be used when addressing fintech services.

6. Findings and Suggestions

6.1 Findings

1. The research also offers some more information on how the use of robo-advisors is changing among Millennials and Gen Z investors. First of all, robo-advisor platform awareness is relatively strong

- (60%), but the actual use is relatively low (32%), meaning that there is a great awareness-adoption gap. This disjunction implies that knowledge of fintech solutions does not directly imply acceptance of its behavioral implications, which argues in favor of behavioral finance views that trust, perceived risk, and psychological comfort are more important than informational exposure to financial decisions (Thaler, 2016).
2. Second, the fact that younger investors prefer self-advisory (69%) to robo-advisory services point to the existence of the bias of control among younger investors. Millennials and Gen z investors can still be technologically savvy but might still wish to maintain the autonomy of decisions especially at times when the market is volatile. This observation aligns with previous studies which suggest that investors tend to overrate their capacity to handle investments on their own, and as a result make a poor choice in the diversification and timing of investments (Barber and Odean, 2001).
 3. Third, the insignificant impact of financial literacy on the use of robo-advisory is an indicator of a significant behavioral paradox. Although financially literate people have more investment knowledge, they might be less receptive to automated systems as they can be seen as being inflexible or lacking the ability to adjust to complex market conditions. On the contrary, investors with stronger behavioral biases seem to be more open to robo-advisory services, which may be perceived as a way of minimizing the decision-making process and intellectual involvement.
 4. Fourth, there were differences in the rates of adoption and frequency of use as well as a generational difference. Gen Z investors tended to use robo-advisory platforms more often and sporadically, whereas Millennials showed more frequent although less structured tendencies in their uses. This indicates that Gen Z views robo-advisors as low-level financial functions, and the Millennials evaluate them as an additional investment support and not as a main advisory solution.
 5. Since nearly half of those surveyed (44%) have under a year of investing know-how, beginner-friendly guides and tools are needed to help them get started with robo-advisors - and money matters overall. Instead of jargon-heavy material, short videos, live sessions, simple articles, or hands-on modules could show how investing works, along with what these automated services actually do. That way, people new to it can feel more at ease trying something unfamiliar.

6.2 Suggestions

- **Differentiated Interface:** Robo-advisors will have to design interfaces differently to address Gen Z (short-term goals, micro-investing), and Millennials (retirement planning, wealth accumulation).
- **Mitigation Mechanisms in Behavioural Bias:** Automated rebalancing and decision prompts which are free of emotions can decrease overconfidence bias and herd behavior.
- **Hybrid Advisory Models:** It is possible that hybridising robo-advisory and some human support will allow better adoption by

financially literate but trust-sensitive investors.

- **Specific Awareness Campaigns:** Not all awareness leads to usage, so the fintech companies ought to prioritize experiences and trial-based onboarding.

7. Future Research

Future work might take these results further in different ways. Over time, tracking people's views could show how trust grows as younger folks get more experience with money while older ones use tech more often - thanks to trends seen before. Looking at various countries may reveal how rules, banking setups, and feelings about tech shape who uses what. Tests on teaching methods - like game-style lessons, smart-guided tips, or mixes of advisor help plus automated tools - might offer real clues for boosting comfort and involvement. Looking into access, cost, and money limits - especially in developing regions - could show ways to make robo-advice available to more people (Kaya, 2017; Gomber et al., 2018). These paths, when combined, add depth to research and give practical ideas for regulators, banks, and tech creators aiming to reach varied user groups.

8. Implications

Practical Implications

The results show policymakers, banks, and tech firms need to create clear money education tools along with efforts that build confidence - this helps more new and seasoned investors use automated advice. Teaming up with schools, popular voices online, and local credit unions might boost access, particularly for people on tighter budgets. Also, mixing robot-driven systems with personal support could work better across age groups by blending speed with real-human input (Belanche, Casaló, & Flavián, 2019; Gomber, Koch, & Siering, 2018).

Theoretical Implications

This research adds to what we know about how people handle money and use tech tools, showing that knowing more about finances can change how personal thinking errors affect using automated advice. Building on earlier findings about embracing new tech (Sironi, 2016; Jagtiani & Lemieux, 2019), it brings out how getting older, trusting online systems, along with mental hurdles, together shape choices in investing.

9. Conclusion and Recommendation

The paper concludes that behavioural biases, rather than financial literacy alone, determine the adoption of robo-advisory products by Millennials and Gen Z. Although younger investors are more willing to adopt algorithmic investment solutions, psychological issues like confidence in automation and perceived justice become determining. The results highlight the importance of fintech solutions that combine behavioral finance principles with the use of technological innovation. By targeting the preferences and behavioural biases of the generations, robo-advisory platforms have the potential to increase usage, encourage disciplined investments and inclusive financial development. Tackling emotional hurdles along with gaps in understanding might make digital finance tools more open and useful, especially in developing regions where knowing about money - and getting access - is still tough (Mhlanga, 2020; Kaya, 2017).

References

- Adil, M., Singh, Y. S., & Ansari, M. S. (2022). How financial literacy moderates the association between behavioural biases and investment decision-making. *Asian Journal of Accounting Research*, 7(1), 17–30. <https://doi.org/10.1108/AJAR-09-2020-0086>
- ASSOCHAM, & ICRA. (2025). Retail investor participation and financial

- literacy trends in India. ASSOCHAM Publications.
- Baker, H. K., & Ricciardi, V. (2014). *Investor behavior: The psychology of financial planning and investing*. Wiley.
 - Barber, B. M., & Odean, T. (2001). Boys will be boys: Gender, overconfidence, and common stock investment. *Quarterly Journal of Economics*, 116(1), 261–292.
 - Barberis, N. (2018). Psychology-based models of asset prices and trading volume. In B. D. Bernheim, S. DellaVigna, & D. Laibson (Eds.), *Handbook of behavioral economics* (Vol. 1, pp. 79–175). Elsevier.
 - Barberis, N., & Thaler, R. (2003). A survey of behavioral finance. In G. Constantinides, M. Harris, & R. Stulz (Eds.), *Handbook of the economics of finance* (Vol. 1, pp. 1053–1128). Elsevier.
 - Bartlett, M. S. (1954). A note on the multiplying factors for various chi-square approximations. *Journal of the Royal Statistical Society: Series B (Methodological)*, 16(2), 296–298. <https://doi.org/10.1111/j.2517-6161.1954.tb00174.x>
 - Belanche, D., Casalo, L. V., & Flavián, C. (2019). Artificial intelligence in fintech: Understanding robo-advisors adoption. *Industrial Management & Data Systems*, 119(7), 1411–1430. <https://doi.org/10.1108/IMDS-06-2018-0284>
 - Bhatia, A., Chandani, A., Divekar, R., Mehta, M., & Vijay, N. (2022). Digital innovation in the wealth management landscape: The moderating role of robo-advisors. *International Journal of Innovation Science*, 14(3/4), 693–712.
 - Bucher-Koenen, T., Lusardi, A., Alessie, R., & van Rooij, M. (2017). How financially literate are women? An overview and new insights. *Journal of Consumer Affairs*, 51(2), 255–283. <https://doi.org/10.1111/joca.12121>
 - Charan, U., & Karthikeyan, S. (2021). Financial literacy and cognitive biases: Impact on investment decisions. *Journal of Financial Counseling and Planning*, 32(3), 290–305.
 - Dahringer, L., & Krug, S. (2022). Robo-advisors and behavioral finance: Empirical insights. *Journal of Economic Behavior & Organization*, 198, 274–289.
 - ElNahas, T., & Zayed, R. (2023). Integrating education and behavioral nudges in robo-advisory platforms. *FinTech Review*, 9(1), 45–60.
 - Eschenbach, S., & Li, C. (2021). Robo-advisors: A systematic literature review. *Journal of Economic Behavior & Organization*, 189, 115–127. <https://doi.org/10.1016/j.jebo.2021.06.023>
 - Fama, E. F. (1970). Efficient capital markets: A review of theory and empirical work. *Journal of Finance*, 25(2), 383–417.
 - Field, A. (2018). *Discovering statistics using IBM SPSS statistics* (5th ed.). Sage Publications.
 - Fidelity Investments. (2025). Next-generation investing behavior report.
 - Gomber, P., Koch, J.-A., & Siering, M. (2018). Digital finance and fintech: Current research and future research directions. *Journal of Business Economics*, 87(5), 537–580.
 - Gupta, N., Rana, R., & Tandon, D. (2025). Financial literacy as a moderator in behavioral biases and investor decisions. *Indian Journal of Finance*, 19(5), 79–94. <https://doi.org/10.17010/ijf/2025/v19i5/175045>
 - Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2019). *Multivariate data analysis* (8th ed.). Cengage Learning.
 - Hasan, M., & Baloch, M. (2023). Emotional decision-making and financial literacy in retail investing.

- Journal of Behavioral Economics, 15(2), 89–105.
- Jagtiani, J., & Lemieux, C. (2019). Alternative data and machine learning in fintech lending. *Financial Management*, 48(4), 1009–1029.
 - Jariwala, H. V., & Sharma, S. (2021). Gender and financial literacy in India. *Indian Journal of Finance*, 15(4), 36–49.
 - Jung, D., Dorner, V., Glaser, F., & Morana, S. (2018). Robo-advisory: Digitalization and automation of financial advisory. *Business & Information Systems Engineering*, 60(1), 81–86.
 - Kahneman, D., & Tversky, A. (1979). Prospect theory: An analysis of decision under risk. *Econometrica*, 47(2), 263–291.
 - Kaiser, H. F. (1974). An index of factorial simplicity. *Psychometrika*, 39(1), 31–36. <https://doi.org/10.1007/BF02291575>
 - Kaur, R., & Pathania, T. (2025). Financial literacy moderating behavioral biases on investment decisions in India. *Journal of Risk and Financial Management*, 18(4), 168. <https://doi.org/10.3390/jrfm18040168>
 - Kumari, P. (2021). Decision-support role of robo-advisors for financially literate investors. *Journal of Financial Technology*, 12(3), 201–220.
 - Luo, Y., Smith, J., & Wang, L. (2024). User interaction with robo-advisors: Literacy-dependent investment behaviors. *Financial Services Review*, 33(1), 78–94.
 - Lusardi, A., & Mitchell, O. S. (2014). The economic importance of financial literacy. *Journal of Economic Literature*, 52(1), 5–44.
 - Lusardi, A., & Tufano, P. (2015). Debt literacy, financial experiences, and overindebtedness. *Journal of Pension Economics & Finance*, 14(4), 332–368.
 - Mahmood, F., Arshad, R., Khan, S., Afzal, A., & Bashir, M. (2024). Behavioral biases and the moderating effect of financial literacy. *Acta Psychologica*, 247, 104303. <https://doi.org/10.1016/j.actpsy.2024.104303>
 - Mhlanga, D. (2020). Industry 4.0 in finance: The impact of artificial intelligence on digital financial inclusion. *International Journal of Financial Studies*, 8(3), 45.
 - Moosa, I. A., & Ramiah, V. (2017). The financial consequences of behavioural biases. Springer.
 - Mushinada, V. N. C., & Veluri, V. S. S. (2019). Elucidating investors' rationality and behavioural biases in the Indian stock market. *Review of Behavioral Finance*, 11(2), 201–219. <https://doi.org/10.1108/RBF-04-2018-0034>
 - Nunnally, J. C., & Bernstein, I. H. (1994). *Psychometric theory* (3rd ed.). McGraw-Hill.
 - Othman, T. (2024). Behavioral biases in algorithmic investment environments. *Behavioral Finance Review*, 5(2), 77–92.
 - Pan, C. H., & Statman, M. (2013). Investor overconfidence and trading volume. *Journal of Behavioral Finance*, 14(4), 1–14.
 - Parveen, K., Kesharwani, S., Prakash, A., & Gangwar, J. D. (2024). Robo-advisors: A literature review. *Global Journal of Enterprise Information System*, 16(2), 91–99.
 - Patiu, L. S., Ang, L. K. C., Masanque, J. A. A., Nacario, J. M. C., & Paguntalan, R. M. M. (2025). Do behavioral biases and financial literacy matter? *Review of Integrative Business & Economics Research*, 14(3), 596–612.
 - Prasetyo, P., Sumiati, & Ratnawati, K. (2023). Behavioral biases and investment decisions moderated by financial literacy. *International Journal of Research in Business and Social Science*, 12(9), 241–251.

<https://doi.org/10.20525/ijrbs.v12i9.3026>

- Reher, M., & Solinski, P. (2021). Behavioral biases in robo-advisory usage. *Journal of Behavioral Finance*, 22(4), 400–417.
- Sharma, G., & Kumar, A. (2022). Demographic moderators in financial literacy and investor biases. *Finance Research Letters*, 47, 102110.
- Shukla, S., & Shukla, S. K. (2023). Automation bias and status quo bias in Indian capital markets. *Financial Markets, Institutions and Risks*, 7(3), 1–11.
- Siddiqui, M. A., & Pattnaik, P. N. (2022). Adoption of robo-advisors in emerging economies. *International Journal of Bank Marketing*, 40(5), 891–913. <https://doi.org/10.1108/IJBM-07-2021-0364>
- Sironi, P. (2016). *FinTech innovation: From robo-advisors to goal-based investing and gamification*. Wiley.
- Thaler, R. H. (2016). Behavioral economics: Past, present, and future. *American Economic Review*, 106(7), 1577–1600.
- Waliszewski, K., & Warchlewska, A. (2020). Financial technologies in personal financial planning. *Ruch Prawniczy, Ekonomiczny i Socjologiczny*, 82(4), 303–317.