

Study on the Role of Technology in Empowering Individual Investors to make Investment Decisions

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Abstract

Technology is redefining the way individuals manage investments, making decision-making smarter, efficient, and highly accessible. The rise of FinTech innovations—Robo-Advisors, AI-powered analytics, and blockchain solutions—have revolutionized traditional investing, enabling investors to leverage automation, data-driven insights and real-time security. This shift reduces reliance on financial advisors and empowers individuals to take control of their portfolios. This study explores how these digital tools enhance accessibility, efficiency, and investor confidence, based on insights gathered through a survey. The findings indicate a strong shift towards digital investment platforms, with many users preferring mobile apps for transactions and AI-powered stock analysis tools to guide their decisions. However, security concerns and lack of awareness remain notable challenges that impact FinTech adoption. Statistical analysis revealed that age is not a major factor influencing satisfaction with digital platforms. Instead, elements such as ease of use, financial literacy, and trust in technology appear to be more impactful in shaping user experience. Participants also identified key areas for improvement to support broader adoption of digital investment tools. These include stronger regulatory frameworks, better platform security, improved user experience, responsive customer support, and increased education and awareness about FinTech options. Overall, this study highlights how FinTech is upgrading the investment landscape, making investing more accessible to everyone & not just high-net-worth individuals.

Keywords

Automation, Accessibility, Digital Platforms, Fintech, Investor Confidence

Introduction

The way people invest has changed dramatically with the rise of technology. Gone are the days when individuals relied solely on traditional financial advisors—today, digital platforms, AI-driven insights, and automated tools are making investing more accessible, efficient, and personalized. Technology has upgraded the playing field, allowing everyday investors to make informed decisions just like professionals.

This study explores how FinTech innovations—such as Robo-Advisors, AI-powered stock analysis, and blockchain solutions—are shaping modern investment behavior. With mobile apps and online platforms offering real-time data, smart recommendations, and seamless transactions, investors have more control over their financial future than ever before. The data collected in this study highlights a growing preference for self-managed investing and digital platforms, reflecting a shift toward tech-driven decision-making. However, while technology

makes investing easier, challenges like security concerns, lack of financial knowledge, toward automation still influence investor choices.

By analyzing real investor experiences, this research aims to understand the true impact of technology in wealth management how it empowers individuals, where it falls short, and what can be improved. As digital solutions continue to evolve, it is crucial to assess their role in bridging the gap between traditional and modern investment strategies, ensuring that technology serves as a tool for smarter, more confident financial decision-making.

As technology continues to evolve, the future of investing will not be about replacing human judgment but rather enhancing it. The fusion of AI-driven insights with human intuition has the potential to create a more dynamic, data-backed, and personalized investment landscape

Review of literature

Several empirical studies have been conducted in multiple ways to understand the effect of AI in investors decision. (Torsten Maier J. M., 2022) in his study analyses the effect of performance on trust in a robo-advisor through an empirical investment effect. Forty-five participants completed the effect where they were tasked with investing in 4 stocks or an AI that would reinvest in those same 4 stocks for them. This methodology is highly based on wide ranging prior research using monetary data for measuring trust and human behavior with investment games where this study resulted that individually neither AI nor human performance was a strong indicator for change in trust, they focused on return on investment for understanding human AI trust.

Several studies have explored the impact of personality traits on financial decision making. (Andreas Oehler M. H., 2022) in his research studied the influence of individual characteristics on young retail investors decision to use Robo- advisors. A survey of 231 undergraduate business students from a German University was conducted to analyse how retail investors features influence their decision. It indicates that risk tolerance are the key factors influencing robo-advisors and has been evaluated from this research that users of Robo-advisors invest more particularly in stocks and bonds, suggesting that trust in these platforms is still developing among young investors.

(Zhang, Zhang, & Zheng, 2023) found the determinants affecting investors' intention to employ Robo-advisor users on financial technology platforms and performed an empirical research based on the Cognitive-Affect Conation model on 248 valid questionnaires. The finding revealed that trust had a significant positive impact on willingness to use Robo-Advisors. It also highlights how financial institutions can innovate Robo-advisory services based on customer perspectives.

Findings showed that frequent changes in RA usage disturbed long-term investment goals, highlighting the need for consistent use to maximize benefits, and highlighted the need for transparency, user friendly design. And tailored services to build trust and utilize AI- driven tools. So to inferred that both the study emphasizes on the importance of trust and user management in the adoption of Robo-advisory, highlighting personalised services and transparency in enhancing user experience.

This research sought to establish from various Perspective investors who forecast Islamic unit trust (IUT) investment intentions.(Norhazimah Che Hassan, April 18, 2024) in

his study gathered a total of 392 data of IUT investors in Malaysia and examined with partial least squares structural equation modelling. Findings inferred that subjective norms have greatest effect on investment intention and provides empirical evidence on the interrelationships between Islamic financial literacy and FSE in investigating investors behaviour using the theory of planned behaviour framework.

(Lewis, 2018) in his study examined the limitations of Robo-advisors in investment decision-making. It relied on a student sample of business and used a single respondent survey which introduced the risk of common method variance, addressing potential biasness with proper procedure. It suggests that Robo-advisors may offer an advantage over human advisors by reducing overconfidence and majorly finding emphasize the need for financial literacy interventions and propose future research to compare emotional responses. (Hui-Chung Yeh and Min-Chun Yu, 2022) through this study they examined Robo advisor adopting using Unified theory of Acceptance and use of Technology framework. A survey-based approach was used collecting 242 valid responses to analyze user attitude and behavioral intentions. This study expanded the application of UTAUT in financial investments and provided insights for financial institutions to develop targeted marketing strategies for Robo-advisors.

This study determines roles of internal and external search characteristics and additional factors in investors decisions to utilize Robo-advisors platform. (Lu Fana, 2020) used 2015 state by state National Financial Capability study and investor survey, this study found that time efficiency, risk tolerance, financial knowledge positively influenced Robo-advisors adoption. With this study it was evident that individuals under 65 with higher risk tolerance and perceived investment knowledge were more likely to adopt Robo-advisors.

(Indu Nain, 2024) examined the factors influencing the acceptance and usage of Robo-advisors in financial decision-making using a scoping review approach based on Arksey and O'Malley. Adoption of Robo-advisors was positively influenced by performance expectancy, effort expectancy, trust, financial knowledge, experience, and motivation. It also highlighted the need for better awareness, security measures, and trust-building strategies to enhance Robo-advisor adoption. (Ashrafi, 2023) this study helped to focus on the roles of perceived value, risk and financial knowledge, using a quantitative approach with PLS-SEM analysis on 285 respondents from Bangladesh, the study examined both direct and indirect effects influencing adoption. This Study emphasized on service design, trust building and positioning strategies to enhance Robo-advisory adoption and reliability for consumers and simplified services for better consumer acceptance. It supports the above research on trust, financial knowledge while highlighting perceived value and complexity.

(Francesco D'Acunto, 2022) found the transformational role of fintech and Robo-advisors in personal finance focusing on how these tools empower retail investors, it highlights how fintech applications help non experts make better financial decision. The study suggests that further research is needed to understand how trust, financial literacy, and income influence the adoption and effectiveness of Robo-advising and FinTech tools in improving financial outcomes for vulnerable households. (Brière, 2023) examined the impact of emerging technologies on retails investors behaviour similar to the above research, focusing on mobile apps, Robo-advisors. This research highlights the importance of how these technologies provide easier access to investments at lower cost. This study complements previous research on FinTech, and Robo-advisors and it reinforces the idea that while these tools empower investors, they also introduce

new biases and risks that need to be addressed to maximize their potential for improving financial outcomes.

(Kristina Sutiene, 2024) examined how AI is changing portfolio management by improving planning, execution and feedback in asset allocation. Based on Markowitz's mean- variance theory, AI balance risk and reward more efficiently. The findings showed that while AI enhances decision- making it also introduces challenges like transparency, fairness due to its black box nature, making adoption in finance difficult.

This study examined Indians investors awareness and perception of Robo-advisors in wealth management. Using a logical Qualitative approach, data was collected through 5 main group discussions with active stock market investors. This finding revealed that cost effectiveness, trust, data security, behavioural biases and investor sentiments significantly influence perceptions. Both the studies emphasize trust, AI advancement and investor sentiment in Robo-Advisor adoption. While one examines global adoption, the other highlights Indian Investors preference for human advisors.

Methodology

Objectives of the Study

1. To analyse the benefits and challenges of integrating technologies like Robo-Advisors, AI and Blockchain in personal investment strategies.
2. To evaluate how technological advancements in fintech enhance accessibility, efficiency and investor confidence, empowering individuals to make informed investment decisions.

Data Collection Sources

The study relies on both Primary and Secondary data. Primary data was collected through an online questionnaire via Google forms, targeting individual investors to understand their investment behaviour, preferences and the role of technology in their decision-making. The questions in the survey revolved around investment criteria, fintech usage and awareness of digital tools.

For Secondary data, relevant e-articles, Industry reports, books, journals, websites and various research papers were reviewed from credible sources to analyse and gain insights into fintech innovations and their impact on individual investors.

Sampling

This Study focuses on how technology empowers individual investors to make investment decisions. A convenience sampling technique was used where questionnaire was distributed via Google Forms, receiving 81 responses from respondents who were individual investors with access to technology-based investment platforms. Among the respondents, 66.7% were aged 18-25 years highlighting a good preference of digital investment platforms among young investors.

Limitations of the Study

1. Study is solely focused on understanding the role of technology in empowering individual investors, by excluding other factors such as psychological, social or market conditions, the findings may not fully capture all aspects influencing investment behaviour.

2. While 75 responses are considered enough for a preliminary study for a convenience sampling. But this may introduce selection biases, where results are based only on responses from those who were easily accessible, limiting the generalizability of the results.

Formulation of Hypothesis

For the ANOVA test conducted on the satisfaction level of digital investment services across different age groups, the hypothesis is formulated as follows:

- **Null Hypothesis (H_0):** There is no significant difference in the mean satisfaction scores across the different age groups.

Alternative Hypothesis (H_1): At least one age group has a mean satisfaction score that is significantly different from the others.

Results

Table 1: Preferred Investment Management & Transaction Modes

Investment Management Approach	%	Preferred Transaction Mode	%
Through Traditional Financial advisor	6.2%	Mobile Apps	55.6%
By Yourself, own research	33.3%	Bank based investment portals	27.2%
Using a Fintech- Platform	30.9%	Desktop trading platforms	8.6%
A mix of both Traditional advisors & digital platforms	29.6%	Assisted Transactions via agents/advisors	8.6%

Based on the responses from participants, the data Fig4.1 illustrates that how individuals primarily manage their investments & which mode do you prefer for executing investment transactions.

The largest proportion of respondents i.e. 33.3% and 30.9% prefer to handle their investments through self-managed investing or using digital platforms. Conducting their own research before making any decisions, indicates a strong sense of financial knowledge among investors or rely on fintech platforms such as Zerodha, Groww and Upstox highlights a significant shift towards digital investment solutions because of the seamless managing and growing trust. The trend is further reinforced with the data from respondents clearly highlighting the upper hand of mobile apps in executing investment transactions, with a significant 55.6% of participants preferring this mode. Meanwhile, 29.6% of respondents use a combination of both traditional advisors and Digital platforms showing that a considerable segment values professional financial advice for their personal investments, where these hybrid investors around 27.2% prefer bank-based investment portals.

Meanwhile, both desktop trading platforms and assisted transactions via agents/advisors are the least preferred, indicating that investors favour direct control over their transactions rather than relying on traditional brokerage assistance.

Overall, the data reflects a clear preference for digital and self-managed investment approaches with a shift in hybrid investment strategies.

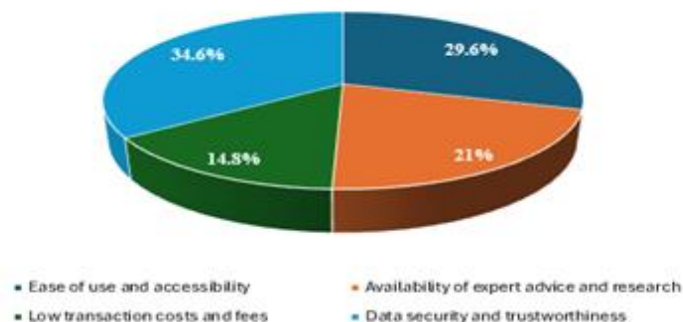


Fig 1: Factors influencing choice of an investment platform

Based on the responses from participants, the data Fig4.2 illustrates which factor influence the choice of an investment platform.

It reveals that the individual investor prioritizes data security and trustworthiness that is around (34.6%) the largest portion as because if the platforms that ensure their data is safe and secured becomes a critical key influence for individuals to opt for that platform. Ease of use and accessibility that is around 29.6% closely following that users also value seamless and hassle-free experiences without any obstacle making investment management more convenient.

Expert advice and research also play a crucial role, as 21% of individual investors suggesting that while many prefer self-investing, there are still individuals who rely on professional insights. Low transaction costs and fees (14.8%) rank the lowest, implying that investors are willing to pay higher fees for better security, reliability, and research-driven decision-making. Overall, investors seek a secure, easy-to-use, and research-backed platform, with cost being a secondary factor.

Table 2: Investor Preferences for Digital Tools in Investment Decision-Making & Usage of Digital Investment Services

Category	Percentage (%)	Digital Investment Service	Percentage (%)
Always rely on digital tools	19.8%	Robo-Advisors (e.g., INDwealth, Scripbox)	13.6%
Often rely on digital tools	43.2%	AI-powered stock analysis tools	30.9%
Occasionally use digital tools	24.7%	Blockchain-based investment solutions	11.1%
Rarely/Never use digital tools	12.3%	None of the above (No usage of digital investment services)	44.4%

Based on the survey responses, the data reveals key insights into how investors rely on digital tools and the specific services they use for investment decisions.

A significant 43.2% of respondents indicated that they often rely on digital tools while also considering some external advice, showcasing a strong inclination towards technology-driven decision-making while still valuing human expertise.

Additionally, 19.8% reported that they always use digital tools for investment decisions, reflecting a growing segment of investors who fully trust technology for financial strategies. However, 24.7% use digital tools only occasionally, highlighting a selective approach where technology is not considered that important.

While 30.9% of respondents have adopted AI-powered stock analysis tools for market insights, only 13.6% have explored Robo-Advisors, indicating that while automation is growing, it hasn't yet become main highlight for everyone. Interestingly, blockchain-based investment solutions remain on the lower end, with just 11.1% adoption, suggesting that decentralized finance (DeFi) is still in its very early adoption stage among all the retail investors. However, the most interesting fact is that 44.4% of respondents have not used any of these digital investment tools reflecting lack of awareness or a preference for traditional methods despite the increasing availability of FinTech solutions.

Overall, the findings highlight a clear shift towards digital investment strategies, with a growing number of investors leveraging AI and automation to support their decision-making.

Anova: Single Factor

SUMMARY

<i>Groups</i>	<i>Count</i>	<i>Sum</i>	<i>Average</i>	<i>Variance</i>
Age Group	4	10	2.5	1.666667
Sum of 7. How satisfied are you with the digital investment services you use?	4	279	69.75	6167.583

ANOVA

<i>Source of Variation</i>	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>P-value</i>	<i>F crit</i>
Between Groups	9045.125	1	9045.125	2.932326	0.137662	5.987378
Within Groups	18507.75	6	3084.625			
Total	27552.88	7				

The ANOVA test indicate following:

The P-value is 0.137, which is greater than the conventional significance level of 0.05. There is no statistically significant difference in satisfaction scores between the age groups, at the 5% significance level. So, age does not appear to have a meaningful effect on satisfaction with digital investment services.

Based on the results, it concludes that there is no substantial evidence to suggest that satisfaction levels with digital investment services vary significantly across different age groups. In simpler terms, age does not appear to be a major factor influencing how satisfied individuals are with digital investment platforms. This could imply that digital investment solutions are generally well-accepted across different age groups, or that satisfaction is influenced by factors other than age, such as experience with technology, financial literacy, or the usability of the platforms.

This finding suggests that while technology plays a key role in empowering investors, its effectiveness in satisfying users may not be heavily dependent on their age group. Further studies can emphasize on other variables such as ease of use, security concerns, or financial knowledge to better understand what drives satisfaction in digital investment platforms.

8. What is your primary concern when using technology for investments?
81 responses

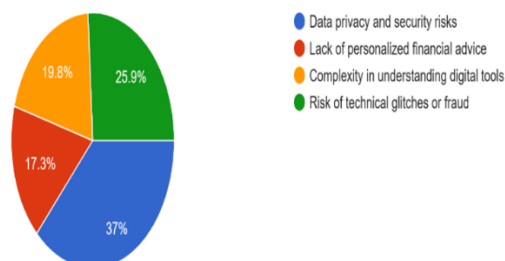


Fig 2: Primary concern when using technology for investments

Based on the responses from participants, Fig. 4.3 highlights the primary concerns individuals have when using technology for investments.

A significant 37% of respondents identified data privacy and security risks as their biggest concern, indicating that despite the growing adoption of digital investment platforms, users remain cautious about the safety of their financial data. The risk of technical glitches or fraud further supports this concern, showing that a considerable portion of 25.9% investors fear system failures or fraudulent activities that could impact their investments.

Meanwhile, complexity in understanding digital tools that is around 19.8% suggests that while technology is making investing more accessible, a portion of users still struggles with navigating these platforms efficiently. Lastly, lack of personalized financial advice highlights the gap left by automation, as 17.3% investors still prefer human guidance over AI-driven or algorithm-based recommendations.

Overall, the data suggests that while digital investing is on the rise, concerns about security, reliability, and usability continue to influence investor confidence in investment decisions.

10. What would encourage you to adopt more digital investment solutions?
81 responses

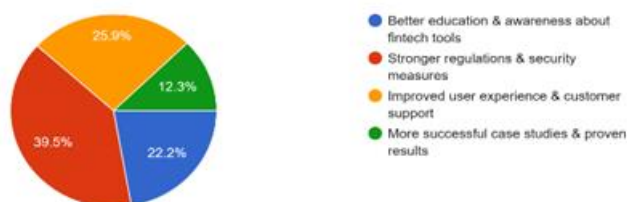


Fig 3: Factors that can encourage to adopt digital investment solutions

Based on the responses from participants, Fig. 4.4 highlights the key factors that would encourage individuals to adopt more digital investment solutions.

The majority, 39.5% of respondents, believe that stronger regulations and security measures would increase their confidence in digital investment platforms. This aligns with the previously identified concern about data privacy, emphasizing the need for immediate protections against fraud and cyber threats.

Meanwhile, 25.9% of participants opted for improved user experience and customer support as a crucial factor, suggesting that many investors find existing platforms either difficult to use or lacking in effective assistance. Similarly, 22.2% expressed the need for better education and

awareness about fintech tools, reinforcing the idea that while digital investments are growing, there is still a knowledge gap preventing from a wider adoption in technology for investments.

Lastly, 12.3% of respondents mentioned more successful case studies and proven results, indicating that investors look for real-world success stories and evidence before fully committing to digital solutions.

Overall, the findings suggest that while digital investment adoption is increasing, concerns about security, usability, education, and credibility remain key barriers that need to be addressed to drive further acceptance.

Conclusion

This study highlights the growing role of technology in shaping investment decisions among individuals. With digital investment platforms like robo-advisors, AI-powered stock analysis, and fintech apps gaining traction, investors are increasingly relying on technology for accessibility, efficiency, and informed decision-making.

From the findings, it's evident that self-managed investing and fintech platforms are the preferred choices, indicating that investors are becoming more independent and tech-savvy. The dominance of mobile apps (55.6%) as the primary transaction mode further reinforces this shift towards convenience and real-time access to markets. However, a considerable number (29.6%) still prefer a hybrid approach, combining traditional advisors with digital platforms, showing that human expertise remains valuable.

Security and trust emerged as the biggest factors influencing platform choice (34.6%), proving that while fintech is evolving, concerns around data privacy and fraud still act as barriers. Interestingly, AI-driven stock analysis tools (30.9%) are gaining popularity, but robo-advisors and blockchain solutions have yet to see widespread adoption. Additionally, 44.4% of respondents reported not using any digital investment services, signalling a need for greater awareness and education in this space.

The ANOVA test results indicate that age does not significantly impact satisfaction levels with digital investment services, suggesting that fintech solutions are widely accepted across different age groups. However, the biggest concerns remain security risks (37%) and technical glitches (25.9%), emphasizing the need for stronger regulations, better user experience, and enhanced investor education to drive wider adoption.

Overall, the study underscores a clear transition towards tech-driven investing, but trust, security, and ease of use remain critical factors. Fintech innovations are undoubtedly empowering investors, yet bridging the knowledge gap and addressing concerns around security will be key to driving further adoption.

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