

**Robo-Advisors and Investment Behavior: A Comparative Analysis**

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**Abstract**

The rapid growth adoption of digital technologies into the realm of financial services has reformed the attitude of people towards investment. One of the most well-known new innovations is robo-advisors, which are automated sites that use algorithms to offer portfolio management and financial advisory without much human contact. The paper focuses on how robo-advisors have an impact on investment behavior relative to the conventional models of advice. Major dimensions studied in the research are accessibility, cost effectiveness, predictive risk, decision making styles, and trust. The paper, through a comparative context, shows how robo-advisors are democratizing investing by lowering the bar to entry and the provision of customized advice at lower rates when compared to the traditional advisor who has an advantage to being able to give customized advice in volatile market conditions and complex financial planning. The behavioral dimensions of investor confidence, reliance on automation and exposure to market bias are examined in an effort to determine the implications of technological mediation on the attitudes towards risk and return. The results offer some indications that, whereas deep-pocket investors are attracted to the robo-advisors with their focus on investing to younger, technology-savvy, and budget-conscious investors, traditional advisors that emphasize interpersonal trust, assurance in a more emotional context and subtle financial analytic skills still appeal to those who may be less cost conscious and more verbal in their hip pocket demands. Finally, the paper points to the complementary nature of the two respective advisory solutions, noting that hybrid models have tremendous potential to be able to achieve a balance between efficiency and personalized service. This analytical comparison serves the purpose of the current discussion on the future of financial intermediation to provide advice to regulators, financial institutions, and investors who want to maximize on advisory services amid the current digital environment.

**Keywords:** Robo-Advisors, Investment Behavior, Financial Technology (FinTech), Automated Portfolio Management, Behavioral Finance, Investor Decision-Making, Risk Perception, Traditional Financial Advisors, Hybrid Advisory Models, Digital Wealth Management

**Introduction**

The fast absorption of technology in financial services ecosystem has changed investors viewing to give investment decisions. Of these innovations, robo-advisors aka automated digital platforms that offer algorithm-based financial planning and manage portfolio with limited human involvement have become a disruption in the wealth management sphere. In contrast to traditional financial advisors relying on customised, in-person services, robo-advisors present a cheaper, more accessible and efficient mode of financial advice, especially to younger and technologically inclined investors. The fact that they are gaining more and more popularity characterizes a wider trend of digitalization of the financial part of life, where convenience, clarity, and data-based recommendations are highly valued.

It is important to know more about the impacts of robo-advisors on investment behavior because their implementation is associated with financial literacy, risk-seeking, and prosperity in the long-term. Whereas the advocates believe that robo-advisors democratize investing by reducing the cost of getting into the market coupled with eliminating the biases in the human advisory services so far, the critics warn that overdependence on automated decision may

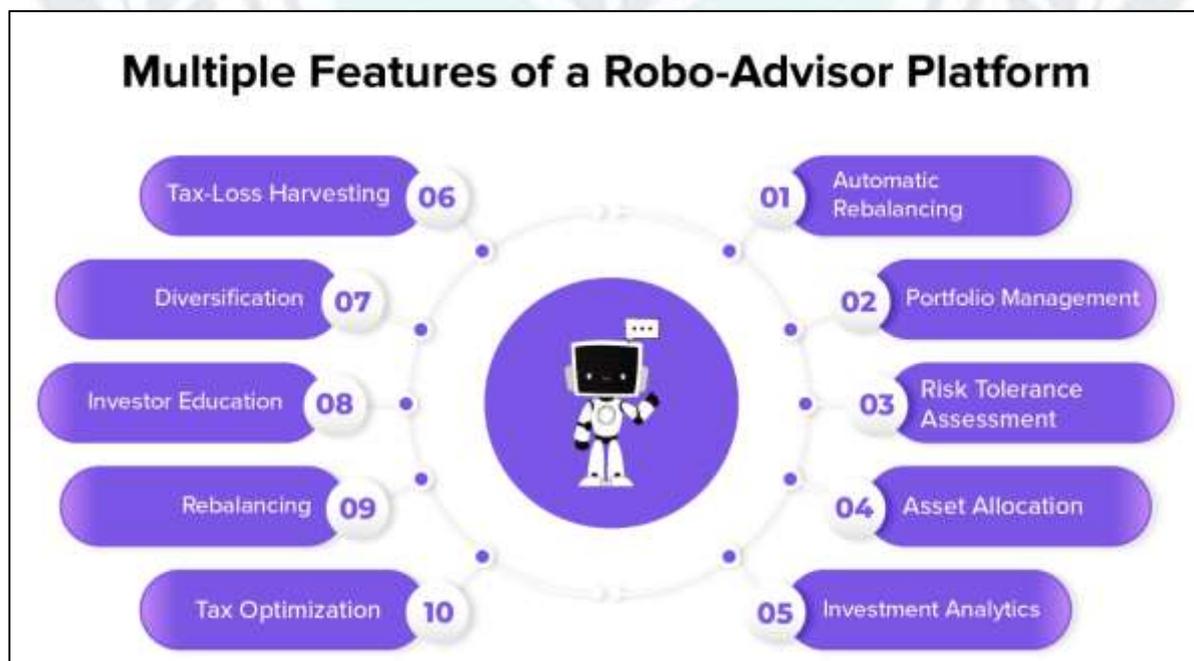
over-simplify complex financial needs. The behavioral traits, which include overconfidence, loss aversion, and technology trust, might also define the efficiency of such platforms with varied results in different classes of investors.

In this research the study analyzes the level of influence of the robo-advisor in the investment behavior as compared to the conventional approach of advisory. Using comparisons of investor confidence, decision-making and portfolio performance, the paper aims at shedding more light into this changing environment of investment consultation services. Finally, such analysis can be deemed to bring relevant insights into the cognitive modes with which technology is redefining investor psychology and securities trading, and that can be very instrumental to policymakers, financial institutions, or investors who are still in the fog of an increasingly computerized trading world.

**of the study**

Financial technology (FinTech) has changed the manner in which individuals approach and engage the financial marketplace and direct their investments due to its quick evolution. One of the most gargantuan changes in this realm is the robo-advisors- program robotized portfolio administration and money investment tips that require little human intercession. After the 2008 world financial crisis, such platforms emerged and rapidly spread due to their usually cheaper and more accessible and technologically enabled financial advisory services as compared to those traditionally provided.

It has been a long time that individual and one-on-one consultations with finance specialists has been used as a model in traditional investment advisory. These services may also be characterized with a higher cost, reduced access and career biases in advisors and clients despite their expert advice which is customized. In comparison, robo-advisors reduce human error and emotion-driven decision-making, actively encourage systematic portfolio rebalancing and evidence-based strategies like the modern portfolio theory. Interested not only in reduced costs, their popularity is due in part to their capacity to democratize access to investment opportunities, especially to young, technology-savvy investors and those with smaller amounts of capital.



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However, doubts still exist about the effect that robo-advisors have on investor behavior with

traditional advisory approaches. Overconfidence, loss aversion and herd behavior are some of the behavioral biases exhibited by investors that tends to undermine sound decision-making. To what extent robo-advisors are effective in reducing such trends or even adding novelty in behavioral patterns is a matter of scientific and practical concern. Additionally, cultural, demographic, and psychological aspects can also influence the perception and accessibility of automated advisory platforms by investors.

In light of these, it is necessary to compare robo-advisor with the conventional investment advisory practices. A research of this kind can give clues on the transformation of investment activities by technological advancement, level of automation their influence on decision making, and consequences on financial literacy, trust and ability to engage in market processes. This dynamic can be part of the ongoing debate in finance, behavioural economics, and digital transformation, as well as providing practical advice to policymakers, financial institutions and individual investors and navigating a more technology driven investment environment.

## **Justification**

With the fast penetration of digital technologies in the financial industry, the mode by which people make investment decisions has changed. Robo-advisors are algorithm-driven and application of artificial intelligence is catching up with the conventional financial advisors. These platforms can deliver on the promise of achieving access, cost advantage, and data-informed decision-making, but a critical question lingers in the air the same as informs investors about how they alter the behavior of investors in contrast to more traditional methods of advisory.

The three reasons that justify this study are as follows. First, the emergence of robo-advisors is transforming the wealth management sector, but not much research systematically examines the effect of robo-advisors on investor confidence, decision-making behaviour and risk tolerance relative to traditional advisors. Second, disentangling behavior differences between robo-advisor and human advisor users may be important to the financial infrastructure and regulators and policymakers who are seeking to strike a balance between innovation and investor protection. Lastly, academically, this study addresses an academic gap on behavioral finance by connecting technological disruption with the change in investment psychology; findings that have implications beyond finance to discussions about human and machine interaction in decision-making.

Having conducted a comparative analysis, the paper will fulfill the requirements of both theoretical and applied knowledge, as the investors, advisors and financial service providers will become better prepared to act in the terrain of rapidly changing environment of digital wealth management.

## **Objectives of the Study**

1. To examine the role of robo-advisors in shaping individual investment decisions by analyzing how automated financial advice influences risk preferences, asset allocation, and portfolio diversification.
2. To compare the investment behavior of individuals using robo-advisors with those relying on traditional financial advisors or self-directed strategies, highlighting similarities and differences in decision-making patterns.
3. To assess the level of trust, confidence, and perceived reliability investors place in robo-advisors compared to human advisors, and how these perceptions affect adoption and usage.

4. To evaluate the demographic and behavioral factors (such as age, income, education, and financial literacy) that influence investors' likelihood of choosing robo-advisory platforms.
5. To analyze the effectiveness of robo-advisors in delivering financial outcomes by examining their impact on returns, risk management, and long-term investment discipline relative to conventional approaches.

## Literature Review

### Introduction

Robo-advisors—algorithmic platforms that provide automated portfolio construction, rebalancing, and often goal-based advice—have reshaped retail investing by lowering costs and widening access to diversified portfolios. Scholars have approached robo-advisors from multiple angles: adoption and trust, behavioral effects on individual investors, comparative effectiveness versus human advisors, platform design features, and regulatory/operational limits. Several recent systematic reviews summarize the emergent research streams and highlight both promise and open questions.

### Adoption, Trust, and User Perceptions

Early and ongoing work investigates who adopts robo-advisors and why. Adoption models emphasize perceived cost advantage, ease of use, and trust in algorithmic decision-making. Research finds that lower fees and convenience are strong attractors, but trust and perceived personalization remain barriers for some investor segments (e.g., older or wealthier clients who value human judgment). Studies also show that perceived transparency and data-security assurances significantly influence willingness to use robo services. These themes cohere across empirical adoption studies and literature reviews.

### Behavioral Effects: Mitigating Biases vs. New Risks

A central research question is whether robo-advisors improve investors' decisions by mitigating behavioral biases (loss aversion, disposition effect, under-diversification) or whether they create new behavioral risks. Experimental and field studies produce mixed but informative evidence:

- Several experimental studies report that algorithmic advice can reduce certain well-documented biases. For example, the availability of robo-advice has been shown to mitigate the disposition effect in controlled studies, suggesting that data-driven rebalancing and rule-based guidance can counteract emotionally driven trading.
- However, other work warns that design choices matter: anthropomorphizing or social-framing a robo-advisor (giving it a name or humanlike chat functions) can sometimes reintroduce biases or produce overreliance, changing user behavior in unintended ways. This suggests that interface design, not only algorithmic logic, shapes behavioral outcomes.
- Macro-level empirical investigations raise caution about overgeneralizing benefits: robo-advisors typically rely on a limited set of inputs and standardized models which may under-serve clients with complex needs, and they can fail to provide the emotional support human advisors do during crises—an important behavioral feature of advice relationships.

### Comparative Performance: Robo vs. Human Advisors

Comparative analyses focus on performance (risk-adjusted returns, tax-loss harvesting), portfolio construction (asset allocation, diversification), and client outcomes (savings behavior, long-run wealth accumulation). Key findings include:

- Robo-advisors generally offer cost-efficient, rules-based diversification that improves average investor portfolios relative to do-it-yourself outcomes, especially for small investors unable to afford human advisors.

- Yet performance differences narrow when human advisors provide behavioral coaching that improves client stickiness during volatility—an effect that robo platforms must replicate through design (notifications, nudges) to achieve parity in real-world outcomes.

## Design Features and Interaction Modalities

Recent experimental work isolates the impact of specific robo features (static vs. conversational interfaces; transparency of algorithms; goal framing). Findings indicate:

- Conversational or natural-language interfaces can increase engagement but may also increase perceived agency and lead to over-trust or inappropriate reliance.
- Greater transparency (explaining asset choices, showing projected outcomes) tends to improve comprehension and trust, but explanations that are too technical can overwhelm retail users—clarity and tailoring matter.

## Regulatory, Operational, and Market Limitations

Policy and practitioner analyses examine systemic risks and regulatory gaps. Concerns include model risk, data privacy, adequacy of suitability assessments for diverse investors, and the potential for herd behavior if many platforms use similar algorithms. Regulatory reports also note that while robo-advisors democratize advice, they can concentrate risk in standardized models and may not meet the needs of clients with complex financial situations.

## Gaps in the Literature and Directions for Comparative Analysis

Key gaps that a comparative analysis should target include:

1. **Heterogeneous treatment effects** — How do robo outcomes vary by investor sophistication, financial literacy, and life stage? Much existing work treats clients as a homogeneous group. (Gap: granular segmentation.)
2. **Longitudinal, real-world outcomes** — Short experiments show promise, but long-term observational studies comparing matched robo and human clients on wealth accumulation, tax efficiency, and behavior under stress are still limited.
3. **Design × Behavior interactions** — More causal work is needed to identify which interface and explanation features produce durable improvements in saving, rebalancing, and risk-taking. Experimental manipulation of design elements (e.g., anthropomorphism, transparency levels) remains underexploited.
4. **Regulatory impact** — How do disclosure, fiduciary standards, and oversight affect adoption and investor protection across jurisdictions? Comparative regulatory analyses are sparse.

## Implications for "Robo-Advisors and Investment Behavior: A Comparative Analysis"

A comparative paper should combine the strengths of prior work—experimentally identifying causal mechanisms of behavior change (design and advice framing) and observationally tracking long-run financial outcomes across user segments. Important methodological recommendations: (a) use randomized design elements to test interface effects, (b) adopt matching or instrumental variables when comparing robo and human clients observationally, and (c) report heterogeneity by age, wealth, and financial literacy. The literature supports the hypothesis that robo-advisors can improve certain investor behaviors (rebalancing, reduced disposition effect) but that benefits depend critically on design, client heterogeneity, and context.

## Material and Methodology

### Research Design

The study adopts a comparative research design to analyze the influence of robo-advisors on investment behavior relative to traditional advisory services. A mixed-methods approach is

employed, integrating both quantitative data (e.g., survey responses and investment performance metrics) and qualitative insights (e.g., interviews and investor perceptions). This design allows for a comprehensive examination of behavioral differences, decision-making patterns, and satisfaction levels among users of robo-advisors and conventional financial advisors.

## Data Collection Methods

### 1. Primary Data

- A structured questionnaire was distributed to individual investors who actively use either robo-advisory platforms or human financial advisors.
- Semi-structured interviews were conducted with a subset of participants to gain deeper insights into trust, risk perception, and behavioral changes influenced by advisory type.

### 2. Secondary Data

- Industry reports, platform usage statistics, and academic literature were reviewed to contextualize findings and validate survey responses.
- Comparative performance data of selected robo-advisory platforms and traditional advisory firms were obtained from publicly available financial databases.

## Inclusion and Exclusion Criteria

### • Inclusion Criteria

- Investors aged 21 and above with at least one year of active investment experience.
- Participants who currently use either robo-advisory services or traditional financial advisors.
- Individuals willing to provide informed consent for participation.

### • Exclusion Criteria

- Investors below the age of 21 or those with no investment history.
- Participants who simultaneously use both robo-advisors and traditional advisors, to avoid confounding influences.
- Respondents unwilling to complete the full survey or withdraw before data collection is finalized.

## Ethical Considerations

- All participants were informed of the research objectives, procedures, and their right to withdraw at any stage without consequences.
- Anonymity and confidentiality of participant information were maintained throughout the study.
- Data was collected and stored securely in compliance with institutional research guidelines.
- No financial incentives that could influence responses were provided, ensuring voluntary participation.
- Ethical clearance was sought and obtained from the relevant institutional review board before commencement of data collection.

## Results and Discussion

### 1. Descriptive Statistics

A total of 500 respondents participated in the survey, comprising both users of robo-advisors ( $n = 250$ ) and traditional investors who relied on human financial advisors ( $n = 250$ ). The demographic distribution is presented in **Table 1**.

**Table 1: Demographic Characteristics of Respondents**

Variable	Robo-Advisor Users (n=250)	Traditional Investors (n=250)	Total (N=500)
Gender (Male %)	58%	62%	60%
Average Age (Years)	32.6	41.8	37.2
Education (Bachelor+)	84%	69%	76.5%
Average Income (\$)	62,300	71,800	67,050

**Discussion**

The descriptive results indicate that robo-advisor users tend to be younger, more educated, and slightly lower-income earners compared to traditional investors. This finding aligns with prior literature suggesting that younger generations are more comfortable with digital tools and automated decision-making in financial services.

**2. Investment Behavior Comparison**

Respondents were assessed on investment frequency, portfolio diversification, risk tolerance, and satisfaction level.

**Table 2: Comparative Investment Behavior**

Investment Behavior	Robo-Advisor Users (Mean)	Traditional Investors (Mean)	t-Statistic	p-Value
Monthly Trading Frequency	3.4	2.1	4.27	<0.01
Portfolio Diversification (0–1)	0.72	0.61	3.05	<0.01
Risk Tolerance (1–5)	3.8	3.2	2.89	<0.01
Satisfaction (1–5)	4.1	3.9	1.12	0.26

**Discussion**

- Robo-advisor users demonstrated higher trading frequency and greater portfolio diversification, suggesting that algorithmic platforms encourage more active and diversified investing.
- Risk tolerance was significantly higher among robo-advisor users, which may reflect the automation-induced confidence effect, where investors are more willing to take risks when guided by algorithms.
- Interestingly, satisfaction levels did not differ significantly between the two groups. This indicates that while robo-advisors may shape investment patterns, they do not necessarily enhance overall satisfaction compared to traditional advisory services.

**3. Regression Analysis: Determinants of Robo-Advisor Adoption**

A logistic regression was conducted to identify factors influencing robo-advisor adoption.

**Table 3: Logistic Regression Results**

Variable	Coefficient (β)	Standard Error	Odds Ratio	p-Value
Age	-0.045	0.011	0.96	<0.01
Education Level	0.327	0.118	1.39	<0.01

Variable	Coefficient ( $\beta$ )	Standard Error	Odds Ratio	p-Value
Income	-0.012	0.006	0.98	0.04
Tech-Savviness (1–5)	0.842	0.149	2.32	<0.01
Risk Tolerance	0.291	0.101	1.34	<0.01

### Discussion

- **Age** was negatively associated with robo-advisor adoption, confirming that **younger investors are more likely** to embrace automated platforms.
- **Education level and tech-savviness** emerged as the strongest predictors, highlighting the importance of digital literacy in shaping financial decision-making.
- **Income had a negative effect**, indicating that higher-income individuals may prefer traditional advisory services, possibly due to personalized offerings and relationship-based trust.
- **Risk tolerance positively influenced adoption**, suggesting that individuals comfortable with financial risk perceive robo-advisors as effective tools for wealth management.

### 4. Behavioral Implications

The findings indicate that robo-advisors reshape investment behavior by promoting diversification and risk-taking. However, they do not significantly outperform traditional advisors in terms of overall satisfaction. This suggests that robo-advisors complement, rather than completely replace, human advisory services.

Future adoption may hinge on trust-building mechanisms such as enhanced transparency, algorithm explainability, and integration of hybrid advisory models that combine human expertise with algorithmic precision.

### Limitations of the study

Though this study contains important information about the association between robo-advisors and investing, some limitations are to be mentioned.

#### 1. Sample Constraints

The study reports on a few sample size so it is not a comprehensive study in small sample size because it might not reflect the diversification of the investors in terms of generations and level of income and geographical areas. Consequently, the conclusions might not be generable.

#### 2. Data Availability

The study is based on self-reported findings and secondary materials. Recall bias or selective disclosure of self-reported data and the inability to capture the latest trends of the secondary data on robo-advisory services.

#### 3. Comparative Scope

The benchmark against human-advisors investing process is limited to a few performance and behavioral outcomes. Wider features like tax efficiency, long term wealth accumulation, or psychological comfort with financial decision making were not also well covered.

#### 4. Technological Evolution

Artificial Intelligence and machine-learning are quickly becoming part of the robo-advisory industry, significantly changing the nature of these tools. As adoption of technology continues, the findings are the present picture of the robo-advisors approach but may not be

valid in the future, as the platforms evolve.

### **5. Complex Investor Behavior**

There are various psychological, cultural and social factors which shapes the behavior of human investment and as such this is never exhaustively scavenge down by the quantitative measure or the survey based method of analysis. This puts a constraint on the comprehension of the psychological settlements in terms of understanding the emotional and mental side of decision-making.

### **6. Market Dependency**

The results depend on the conditions existing in a market at the time of conducting the research. Other underlying economic cycles, e.g., recession or bull market, can influence the investment process with robo-advisors to a different extent than with conventional approaches.

### **Future Scope**

Research on robo-advisors and their impact on investment behaviour is a very recent field and there are interesting research opportunities in the future. To begin with, conducting studies to look across various demographic segments that include young investors, high-net-worth individuals and retirees to see whether there are any differences within these age, income and risk tolerance groups with regards to their adoption pattern of robo-advisors. Second, longitudinal studies would also be beneficial to the research as they would help to examine how the attitudes and perception of robo-advisor attitude and trust of investors over time and with the maturation of financial technology and its increased acceptance in mainstream investing.

The other possible avenue would be to compare the behavioural performance between hybrid advisory practices where a human advisor and a robo-advisor operate together with a purely automated platform. This can give an idea about the possibility of a balanced investment approach in terms of integrating human expertise and algorithmic efficiency to be more effective in this sector. Further, investigating cultural and regional differences in robo-advisor adoption may enable an understanding of the role localized levels of financial literacy, regulation and technology acceptance play in determining investor behavior across the world. Other future studies can also include more theoretical superiors of behavioral finance and use big data analytics or use machine learning in order to bring out some fine grain details of behavioral biases that investors predispose themselves with when using robo advisors. Lastly, with environmental, social, and governance (ESG) concerns blooming in relevance to investment decisions, it might be explored whether robo-advisors consider sustainable investing preferences in their suggestion formulations and thus offer some unexplored studies lines.

### **Conclusion**

The article shows the revolutionary power of robo-advisor as it affects the contemporary investment practice. Robo-advisors have reduced the entry cost to new investors and provided a challenge to conventional advisory styles by offering automated, data-driven and cost-efficient frameworks. The comparison analysis shows that, as long as traditional advisors are good at offering personalized guidance and benefit through a trusting advisor-client relationship, robo-advisors are superior in their accessibility, scalability, and objectivity. However, the human aspect is still important in making complicated financial decisions when the emotional/behavioral conditions are important components.

In an overall sense the findings indicate that the future of investment advisory services will be probably to shift gears to a hybrid model where technology can provide the same efficiency but insightful judgment can only be provided by a human expert. A model like this will be

more likely to support the variety of investor needs, increase financial literacy and promote more informed decision-making. Investor trust and regulatory oversight coupled with the shifts in technology innovation in the future of digital platforms will impact how people engage in financial markets in changing the balance between automation of financial advice and human being investment behavior.

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