

Investor Awareness, Preferences and Adoption Intentions toward Robo-Advisors in Mumbai

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Abstract—The rapid growth of financial technology has transformed the investment landscape through the emergence of robo-advisory services, which provide automated and algorithm-driven investment recommendations. This study examines the awareness, investor preferences, and factors influencing the adoption of robo-advisory services among retail investors in Mumbai. The study adopts a descriptive and analytical research design using a quantitative approach. Primary data was collected from 256 respondents through a structured questionnaire using convenience sampling. Statistical tools such as percentage analysis, weighted average analysis, and Chi-square tests were used for data interpretation.

The findings reveal that awareness and adoption of robo-advisory services are significantly influenced by demographic variables such as age, gender, and income. Investors aged 25–35 years and higher-income groups demonstrated greater awareness and acceptance of robo-advisory platforms. The study also identified key adoption drivers such as personalized investment strategies, future-oriented financial planning, and improved customer support. However, lack of personal interaction, concerns regarding algorithmic investment decisions, and data security risks emerged as major barriers to adoption.

The study concludes that although robo-advisory services possess strong growth potential in Mumbai, investor trust, financial awareness, and human-centered support remain essential for wider acceptance. The findings provide valuable insights for fintech companies and financial institutions in designing more secure, personalized, and investor-friendly robo-advisory platforms.

Index Terms— Robo-advisory services, fintech, retail investors, investment behaviour, financial technology, investor perception.

I. INTRODUCTION

Mumbai, often referred to as the financial capital of India, has long been a hub for traditional investment avenues, with a significant portion of its populace engaging in stock markets, mutual funds and other financial instruments. However, the advent of technology-driven solutions has begun to reshape the investment landscape. Among these innovations, robo-advisory services have emerged as a transformative force, offering automated, algorithm-driven financial planning services with minimal human intervention.

The global financial ecosystem has witnessed a paradigm shift with the integration of technology into wealth management. Robo-advisors, leveraging artificial intelligence (AI) and machine learning algorithms, provide clients with tailored investment advice, portfolio management, and financial planning services at a fraction of the cost of traditional financial advisors. This democratization of financial advice has made wealth management accessible to a broader audience, including those previously underserved by conventional financial institutions.

The global robo-advisory market has experienced exponential growth over the past decade. According to KPMG's "The Race for Robo Advice" report, assets under management (AUM) for Robo-advisor in the United States are projected to reach \$1.459 trillion by 2024, reflecting a growth rate of over 7% (KPMG, 2024). This surge is attributed to the increasing

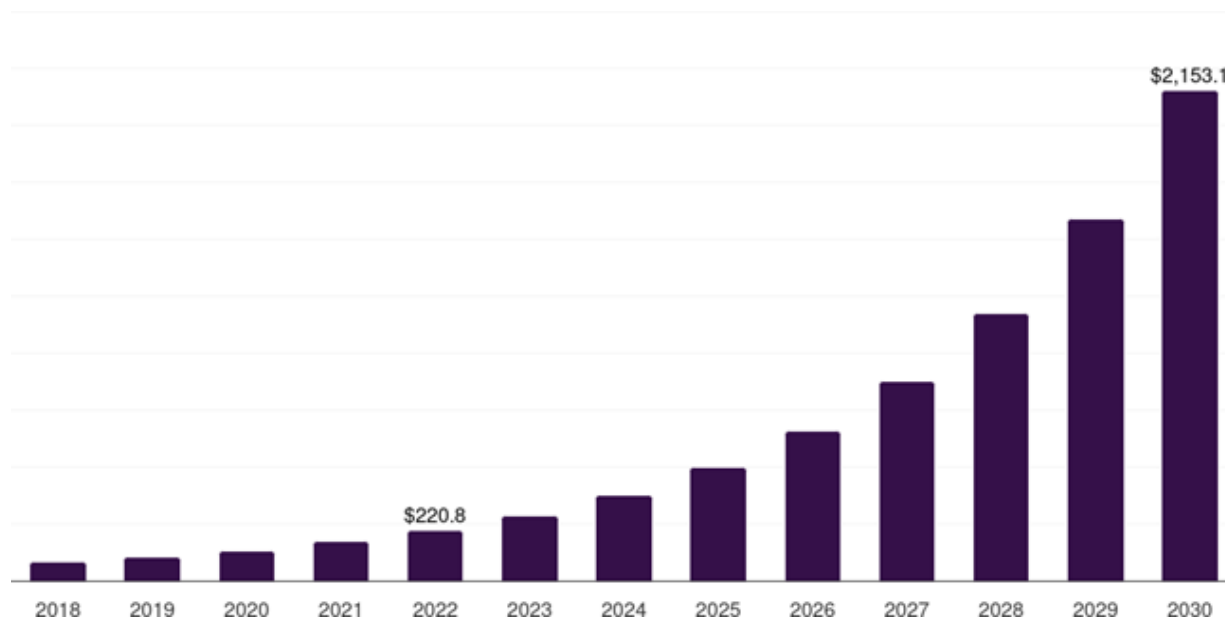


Figure-1: Source: India Robo-advisory Market Size C Outlook, 2022-2030

Demand for cost-effective investment solutions, the proliferation of digital platforms and the growing trust in algorithm-based financial planning.

The Robo-advisory sector in India is still in its nascent stages but shows immense potential. According to the India Robo-advisory Market Size Outlook, 2022-2030 by Grand View generated a revenue of USD 220.8 million in 2022 and is expected to reach USD 2,153.1 million by 2030, growing at a CAGR of 33.4% from 2023 to 2030. This growth trajectory is fuelled by factors such as increasing internet penetration, a burgeoning middle class and a tech-savvy younger population seeking convenient and affordable investment options. In terms of segment, hybrid Robo-advisor was the largest revenue generating Robo-advisory type in 2022. Whereas pure Robo-advisor is the most lucrative Robo-advisory type segment registering the fastest growth during the forecast period.

The rapid advancement of fintech in India—through mobile apps, digital KYC, algorithm-based advisory, and widespread internet access has dramatically transformed the investment ecosystem. These innovations have made investing more seamless and accessible, especially for individuals in Tier 2 and Tier 3 cities. As a result, between March 2020 and March 2024, India's retail investor base nearly tripled to 19.43 crore. States like

Maharashtra lead in absolute numbers, while Karnataka (9.98%), West Bengal (9.67%), and Gujarat (8.58%) saw the highest annual growth rates. This surge highlights how technology has played a crucial role in democratizing access to financial markets across regions. Mumbai, as India's financial nucleus, plays a pivotal role in this transition. The city's blend of experienced investors and digitally native youth makes it an ideal hub for innovation in investment services. Robo-advisors, with their low-cost, automated solutions, bridge this gap by offering personalized investment advice without the hefty price tag. Platforms such as Kuvera, Zerodha's Coin, and Paytm Money have already made significant inroads into the market, providing users with intuitive interfaces and algorithm-driven investment recommendations.

Despite the rapid growth of fintech and robo-advisory platforms in India, investor adoption remains uneven due to concerns related to trust, data security, lack of personal interaction, and limited awareness. While robo-advisory services are increasingly gaining popularity globally, limited empirical research has examined investor preferences, awareness levels, and adoption barriers specifically among retail investors in Mumbai. Therefore, the present study attempts to analyze the factors influencing the adoption of robo-advisory services and identify the key barriers affecting investor acceptance.

II. LITERATURE REVIEW

The early foundations of artificial intelligence (AI) adoption in financial services can be traced back to 2014, when venture capitalists invested nearly \$300 million in artificial intelligence, highlighting the growing momentum behind the AI revolution in financial services (Ahmed et al., 2022). Fein (2015) described robo-advisors as “smart money machines”, emphasizing their low cost, high speed and analytical intelligence. His work underlined a balanced outlook, suggesting that robo-advisors could be effective tools if paired with human judgment. This marked the initial framing of robo-advisors not as replacements for human advisors but as complementary systems that could democratize access to investment advice. By 2016, researcher Kim and Huxley began acknowledging robo-advisors as a potential disruptive force within financial services. Their efficacy, however, was seen to depend largely on the algorithmic integrity and investment logic encoded into the systems. Mezzanotte (2020) and Van Doorn et al. (2017) supported the idea of blended advice models emphasizing on situations where human intervention remains necessary, especially when clients fail to understand algorithmic recommendations or when the advice lacks contextual suitability. Huang C Rust (2018) and Phoon C Koh (2017) explored Robo-advisors' potential to eliminate human interaction in financial advising. Their work pointed to enhanced accessibility and cost efficiency, particularly for underbanked or financially underserved segments. Burton (2014) and Jung et al. (2018) further also emphasized on this shift, noting robo- advisors' growing legitimacy and industry disruption. Day et al. (2018) and Fan C Chatterjee (2020) framed Robo-advisors as catalysts reshaping financial behaviour and asset management through the incorporation of automated and intelligent systems. Fisch et al. (2018) presented a comparative view, contrasting Robo-advisors with traditional advisors, highlighting their reliance on systematic algorithms, machine learning, and automated decision-making. Jung et al. (2018) observed that Robo-advisory services were expanding to previously underserved client segments. A Statista (2019) report revealed that the global assets under management

(AUM) in the Robo- advisory segment had surpassed \$1 trillion in 2021, with projections of \$2.67 trillion by 2023, underscoring rapid adoption. Several scholars (Arikan et al., 2023; Luo et al., 2019; Ma C Sun, 2020; Marchand C Marx, 2021) began to explore acceptance drivers and barriers, specifically the interplay of trust, security, risk perception, and technological awareness. These constructs are foundational in the cybernetic model, which views users as continuously evaluating system feedback to guide their acceptance or rejection of AI systems. D'Acunto, Prabhala, C Rossi (2019) argued that Robo-advisors democratize finance by lowering entry barriers and offering objective advice devoid of emotional biases. Baker C Dellaert (2019) examined how algorithmic advice could reduce behavioural inefficiencies in financial decision-making.

D'Acunto and Rossi (2020) proposed conceptual model of Robo-advisory systems: portfolio personalization, client involvement, client discretion and human interaction. The current research model adopts two of these — portfolio personalization and client involvement — to capture the essential feedback loops between users and Robo- systems. Personalized advice is achieved by gathering behavioural inputs from users, while client involvement ensures active participation in the decision-making process. Recent research explores how algorithmic decision-making systems are enhancing client advisory experiences through intelligent feedback mechanisms innovation (Grewal et al., 2020; Hashimy et al., 2022). (De Gauquier et al., 2023; Hoyer et al., 2020; Puntoni et al., 2021). Varghese et al. (2024) documented increased adoption of Robo- advisors in Mumbai due to improved user interfaces, AI integration, and the perceived reliability of automated systems. Their findings underscore a shift in user perceptions, where confidence in AI systems is increasingly influenced by awareness, security, and prediction accuracy — all key components of the proposed human-AI symbiotic model.

Existing studies primarily focus on the technological advancement and global growth of robo-advisory services. However, limited studies have examined investor awareness, preferences, perceived risks, and

demographic influences affecting robo-advisory adoption in the Indian context, particularly among retail investors in Mumbai. Therefore, the present study attempts to bridge this gap by examining the major factors influencing investor adoption and acceptance of robo-advisory services.

III. OBJECTIVES OF THE STUDY

1. To identify the factors influencing the adoption of robo-advisory services.
2. To analyze investor preferences regarding features and functionalities of robo- advisors.
3. To assess the impact of demographic variables on robo-advisory awareness and adoption.
4. To explore perceived risks, benefits and barriers to using robo-advisors.

Data Interpretation

A survey of 256 respondents from Mumbai was conducted to assess the awareness and perception of Robo-advisory services. The objective was to Table: 1

understand how demographic variables such as age, gender, and income influence awareness levels of online investment platforms and Robo-advisory services, which are becoming increasingly relevant in India's evolving financial ecosystem. The study sought to capture whether individuals were aware of Robo-advisory services and to identify any statistically significant differences in awareness across demographic groups.

Demographic Profile and Awareness Levels

Chi-Square test is performed to assess the responses. Out of the 256 respondents, approximately 83.2% reported being aware of Robo-advisory services.

Since all p-values are significantly less than 0.05, null hypothesis is rejected for each demographic variable. This indicates that awareness of Robo-advisor is significantly influenced by demographic variables such as age, gender, and income.

Demographic Profile and Awareness Levels

Demographic Variable	Category	Yes	No	% Aware
Age	Under 25 years	92	33	73.6%
	25–34 years	113	5	95.8%
	35–44 years	6	4	60.0%
	45 years and above	2	1	66.7%
Gender	Male	128	9	93.4%
	Female	84	35	70.6%
Income (INR/Month)	Below ₹25,000	35	22	61.4%
	₹25,000–₹50,000	51	2	96.2%
	₹50,000–₹75,000	2	2	50.0%
	₹75,000–₹1,00,000	25	0	100.0%
	Above ₹1,00,000	98	19	83.8%

The demographic analysis reveals that awareness of robo-advisory services varies significantly across different age groups, gender categories, and income levels among retail investors in Mumbai. Among the age groups, respondents

aged 25–34 years demonstrated the highest awareness level (95.8%), indicating greater familiarity and engagement with digital financial technologies among young investors. Respondents below 25 years also showed

comparatively high awareness (73.6%), whereas respondents aged 35–44 years (60.0%) and 45 years and above (66.7%) exhibited relatively lower awareness levels. This suggests that younger investors are more inclined toward adopting technology-driven investment platforms compared to older investors, who may prefer traditional advisory services.

Gender-wise analysis indicates that male respondents demonstrated significantly higher awareness (93.4%) compared to female respondents (70.6%). This finding suggests comparatively higher exposure and participation of male investors in digital investment platforms

and fintech-based financial services.

Income-wise analysis shows that awareness of robo-advisory services generally increases with income levels. Respondents earning between ₹75,000 and ₹1,00,000 per month reported the highest awareness level (100%), followed by respondents earning between ₹25,000 and ₹50,000 (96.2%). In contrast, lower awareness levels were observed among respondents earning below ₹25,000 per month (61.4%). These findings indicate that higher-income individuals are more likely to engage with robo-advisory platforms due to greater financial exposure and investment participation.

Chi-Square Test Results

Table: 2

Variable	Chi-Square Value (χ^2)	Degrees of Freedom (df)	p-value	Interpretation
Age	20.84	3	0.00011	Significant
Gender	21.77	1	0.000003	Significant
Income	32.73	4	0.000001	Significant

Since the p-values for age, gender, and income are less than 0.05, the null hypotheses are rejected. This indicates that demographic variables such as age, gender, and income have a statistically significant association with awareness of robo-advisory services among retail investors in Mumbai.

Age Group Analysis

The Chi-square analysis indicates a significant association between age and awareness of robo-advisory services ($\chi^2 = 20.84$, $p < 0.05$). Investors aged 25–35 years demonstrated the highest awareness levels, indicating greater digital familiarity and engagement with fintech platforms. Older respondents showed comparatively lower awareness levels, suggesting lower adoption of digital investment technologies.

Gender Analysis

A significant association was observed between gender and awareness of robo-advisory services ($\chi^2 =$

21.77, $p < 0.05$). Male respondents demonstrated higher awareness compared to female respondents, indicating differences in financial technology exposure and investment participation.

Income Group Analysis

Income was also found to have a significant association with awareness of robo-advisory services ($\chi^2 = 32.73$, $p < 0.05$). Higher-income respondents demonstrated greater awareness and acceptance of robo-advisory platforms compared to lower-income groups.

Hypothesis Testing

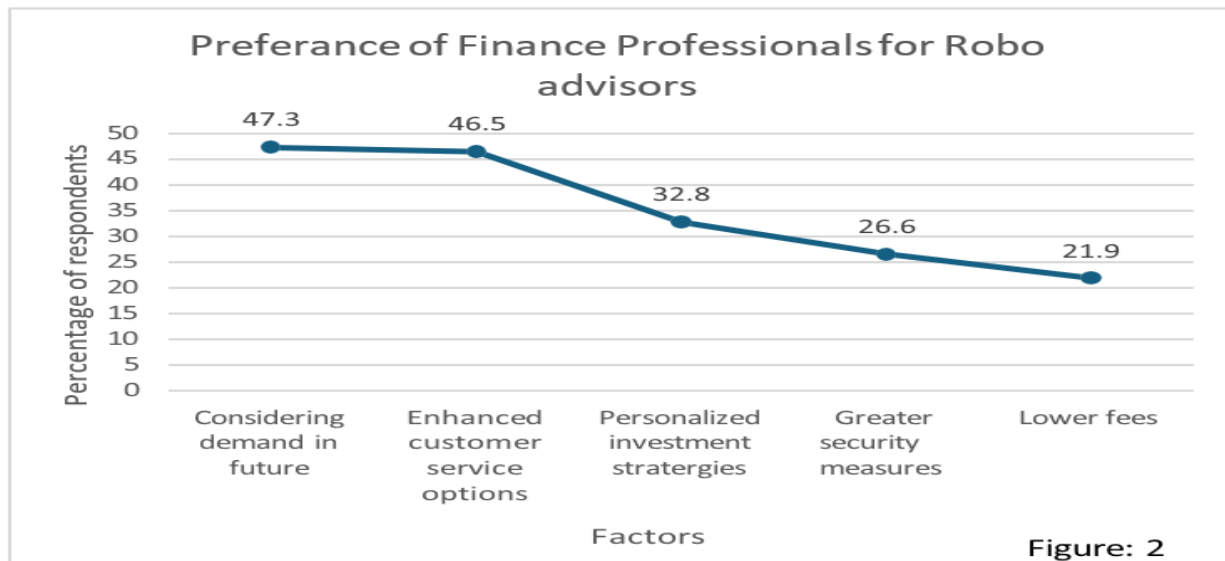
H01: There is no significant association between age and awareness of robo-advisory services.

H02: There is no significant association between gender and awareness of robo-advisory services.

H03: There is no significant association between income and awareness of robo-advisory services.

Since all p-values are less than 0.05, all null hypotheses are rejected.

Investor Preferences Regarding Robo-Advisor Features and Functionalities



This section analyses investor preferences concerning the features and functionalities of robo-advisors, as revealed by a survey of 256 finance professionals.

Respondents were asked, "Which of the following would encourage you to use or continue using a robo-advisor?" The results, depicted in Figure 2, highlight key drivers influencing the adoption and continued use of robo-advisor platforms (multiple responses were allowed).

The survey findings indicate a strong preference among finance professionals for Robo- advisor that offer forward-looking capabilities and robust customer support.

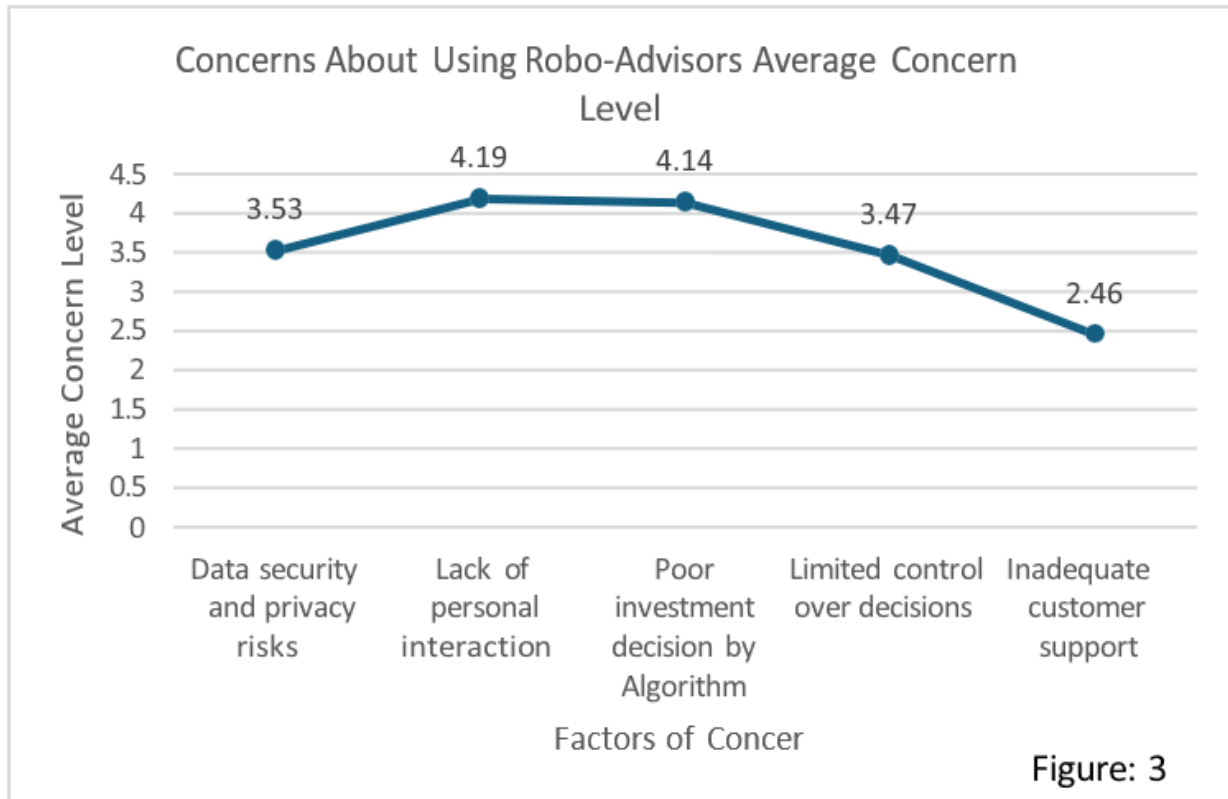
Factors Influencing the Adoption of Robo-Advisory Services (Concerns)

This section examines the factors that concern finance professionals when considering the use of

robo-advisory services, directly addressing Research Objective 1: "To identify the factors influencing the adoption of robo-advisory services." A survey of 256 finance professionals utilized a 5-point Likert scale (where 1 = Strongly Disagree/Not Concerned, 2 = Disagree, 3 = Neutral, 4 = Agree/Concerned, 5 = Strongly Agree/Highly Concerned) to assess their level of concern regarding various factors. The weighted average for each factor was calculated to provide a comprehensive measure of overall concern. The range of the scale is 4 (5-1), and the interval is 0.8 (4/5). This means a weighted average between 3.2 and 4.0 ($3.2 = 3 + 0.2$, $4.0 = 3 + 1.0$) would indicate a leaning towards concern, while a weighted average above 4.0 would indicate strong concern. The weighted averages for each factor are presented below:

Table: 3

Sr.no	Weighted average	Variables
		How concerned are you about the following factors when considering the use of Robo-advisors?
1	3.53	Data security and privacy risks
2	4.19	Lack of personal interaction with an advisor
3	4.14	Potential for poor investment decisions by the algorithm
4	3.47	Limited control over investment decisions
5	2.46	Inadequate customer support



The analysis reveals that finance professionals exhibit varying levels of concern regarding different aspects of robo-advisors, with some factors emerging as significant barriers to adoption:

The analysis reveals that the foremost barrier to robo-advisor adoption among finance professionals is the lack of personal interaction, reflecting a strong preference for the human insight and empathy traditionally offered by financial advisors. Closely following is the concern over potential algorithmic

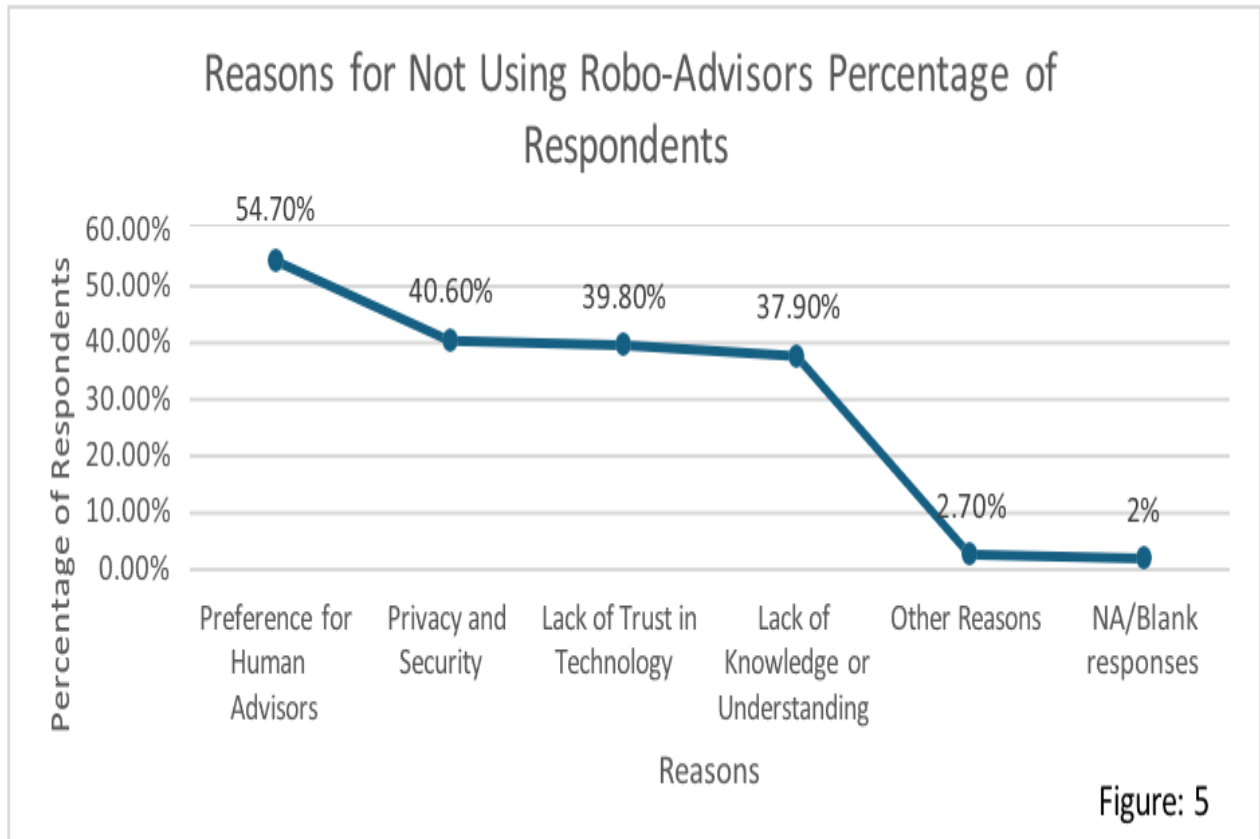
errors, indicating a cautious stance towards fully automated investment decisions, particularly under complex or volatile market conditions. Data security and privacy risks, along with limited control over investment decisions, also register as notable concerns, though less critical than the top two. Interestingly, inadequate customer support emerged as the least concerning factor, suggesting that while enhanced support is valued, its absence is not a primary deterrent—possibly due to user self-reliance or trust in platform stability. Overall, the findings emphasize the need for hybrid advisory models, increased algorithmic transparency, and robust data security measures to address key adoption barriers and align robo-advisor offerings with the expectations of finance professionals.



Figure: 4

Perceived Risks, Benefits and Barriers to Using Robo-Advisors

Figure 5 illustrates the primary reasons cited by respondents who indicated they do not use a robo-advisor. These responses highlight significant barriers to adoption among finance professionals.



The predominant barrier to robo-advisor adoption among finance professionals is a strong preference for human advisors, cited by 54.7% of respondents, highlighting the enduring value placed on personalized, empathetic, and relationship-driven financial guidance. Concerns over privacy and data security were reported by 40.6% of respondents, underscoring the importance of robust cybersecurity and transparent data practices in building trust. Similarly, a lack of trust in technology, noted by 39.8%, reflects broader apprehensions regarding algorithm reliability and digital platform safety. Additionally, 37.9% indicated that a lack of knowledge or understanding inhibits usage, pointing to the need for targeted educational initiatives to demystify robo-advisors. Only a small minority (4.7%) cited other or unspecified reasons. Collectively, these findings suggest that overcoming resistance among finance professionals requires not only technological assurance but also enhanced user education and the integration of human advisory elements to bridge gaps in trust,

familiarity, and personalized service.

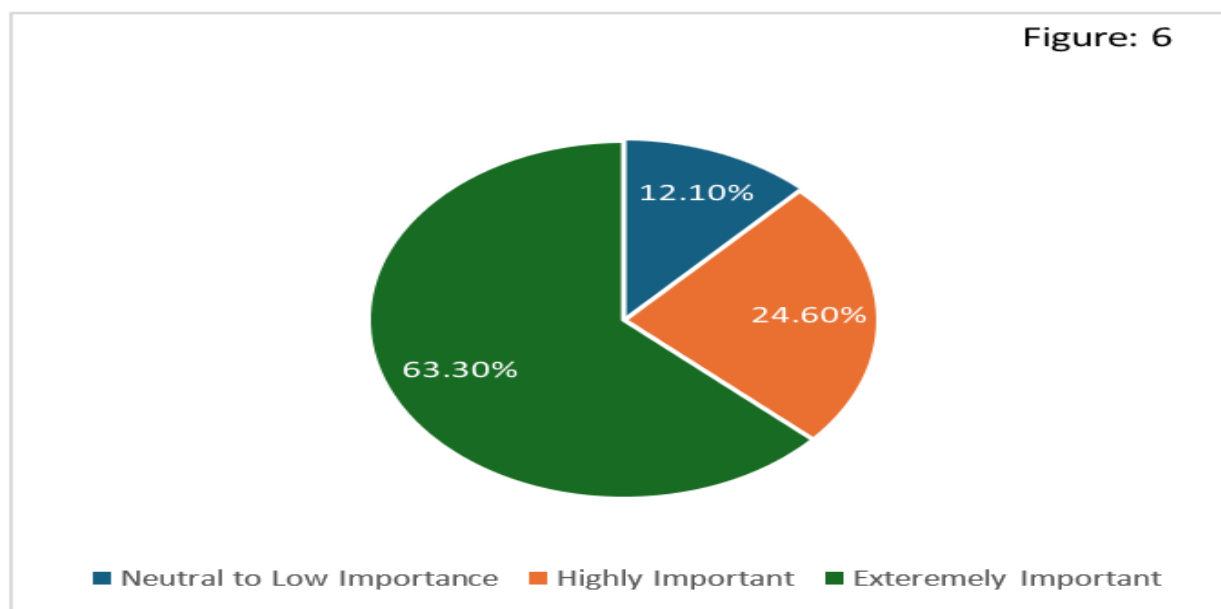
Importance of Trust in Technology (Perceived Risk/Enabler)

Figure 6 presents respondents' views on the importance of trust in technology when adopting new financial technologies, including robo-advisors. This directly addresses the perceived risk aspect by quantifying the critical role trust plays.

A significant majority of finance professionals (87.9%) rated trust in technology as highly or extremely important when evaluating new financial tools, firmly establishing it as the most critical factor influencing adoption. The data reveals that 63.3% rated trust at the highest level, while only 12.1% considered it to be of neutral or low importance. This consensus underscores that trust—encompassing reliability, security, and algorithmic transparency—is not merely a desirable attribute but a foundational prerequisite for engaging with technologies such as robo-advisors.

In parallel, the enduring preference for human advisors remains a substantial barrier to adoption.

Figure: 6



Respondents cited the irreplaceable value of emotional intelligence, nuanced understanding, and personalized interaction offered by human advisors—elements current automated platforms struggle to replicate. Moreover, concerns around data privacy, algorithmic opacity and general technological distrust further hinder adoption. While cost-efficiency is acknowledged, finance professionals place greater emphasis on future-oriented features, strategic personalization, and robust support.

IV. CONCLUSION

The study highlights that finance professionals prioritize Robo-advisor capable of adapting to future market demands, indicating a strong preference for platforms offering long-term scalability and relevance. Enhanced customer service emerged as a close second, emphasizing the continued need for human-centric support within automated systems. Personalized investment strategies also ranked highly, reflecting investor demand for tailored financial solutions aligned with individual goals and risk profiles. Security concerns remain critical, with a significant number of respondents valuing robust cybersecurity measures. Interestingly, lower fees were the least influential factor, suggesting that qualitative features such as adaptability, service quality, personalization, and security are more pivotal in shaping adoption and

continued use. These findings underscore the evolving expectations of finance professionals and offer strategic guidance for Robo-advisor providers seeking to strengthen value propositions and foster long-term user engagement.

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