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The Role of Robo-Advisors in Enhancing Investment in the Egyptian Capital Market -An Applied Study

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Abstract

Purpose – This study investigates the role of Robo-Advisors (RAs) in enhancing investment in the Egyptian capital market, focusing on key adoption drivers—awareness, perceived benefits, trust, risk/security concerns, and intention to use—and their socio-economic impact on financial inclusion and literacy.

Methodology – A quantitative survey was conducted with 693 participants across Egypt. Data were analyzed using SPSS and AMOS . The model, based on TAM and extended with trust, risk, and socio-financial variables, was validated through factor analysis, reliability tests (Cronbach's Alpha = 0.970), and multiple regression.

Findings – Awareness, perceived benefits, trust, intention to use, financial education, and social inclusion positively influenced market activation, while risk and security concerns had a negative effect. Behavioral intention mediated the link between RA features and investment engagement. RAs improved financial literacy, closed experience gaps, and increased participation among youth and women.

Originality/Value – This is the first empirical study in Egypt examining behavioral and technological factors driving RA adoption and its impact on market activation, offering insights into how AI-based FinTech can foster digital transformation and financial inclusion in emerging markets.

Keywords – Robo-Advisors; FinTech; Artificial Intelligence; Capital Market; Financial Inclusion.

1. General Framework of the Study

1.1. introduction

In recent years, emerging technologies such as artificial intelligence (AI), big data, and cloud computing have been used to enhance the delivery of financial services(Luo et al., 2024) and disrupted the financial industry by providing integrated financial services that are both efficient and cost-effective. One such technology that has significantly impacted the area of investment and wealth management is Robo-advisors (Faiz-ul-faham & Shekhar, 2024). The first RAs were launched in the late 2000s and early 2010s. Total assets under management (AUM) of RAs worldwide are estimated at USD 1.37 trillion at the end of 2023. While it is an enormous amount on an absolute basis, by comparison, the AUM of the world's 500 largest investment managers was estimated at USD 128tn at the end of 2023(Buczynski et al., 2025). projects that approximately 3.13 trillion USD will be managed worldwide by RA in 2026, which represents a circa 75 percent increase to the year 2022 (Wagner, 2024).RAs are an innovative technology that employs machine learning algorithms to provide wealth management solutions to its customers. RAs offer automated investment advice that is both cost-effective and convenient for customers. Generally, digital advice can be categorized into direct-to-consumer, business-to-business, or hybrid models (Phoon & Koh, 2018). Accordingly, an algorithm either interacts directly with the client without any human interference or supports conventional advisors in their decision-making. It is also common that the investment recommendation is determined by algorithms and the outcomes are then interpreted by the human advisor and presented to the client, which represents a hybrid solution (Metzler et al., 2022) From a functional perspective, we propose to break down RA into two main components: 1) client profiling and 2) investment advice. Profiling is usually based on a questionnaire and determines what investment style, usually on a discrete scale from Cautious to Adventurous, is suitable for the client. For various regulatory reasons – such as fair treatment of customers, nondiscrimination, best outcomes, and suitability – the profiling process should be as transparent as possible. Adding AI risks makes it potentially less transparent and more ambiguous, although we recognize it could also have certain advantages from the perspective of the WAM firm, such as operational efficiencies and cost savings(Buczynski et al., 2025).RAs request that customers complete a questionnaire regarding

their demographics, investment objectives, and risk tolerances. Based on this information, it creates dynamic, automated investment portfolios that align with their preferences. The primary advantages of RAs include accessibility, fairness, and provision of comprehensive services like retirement planning, tax-saving plans, and portfolio rebalancing(Singh & Karamcheti, 2025), it is data-driven software that runs on this activity is also referred to as risk profiling. Risk profiling can be made more efficient by the effective implementation of AI, big data approaches, and social media to psychometrics(Bhatia et al., 2020) Risk profiling is done with the objective of understanding the investment objectives, financial situation, attitude, and risk tolerance of the investor to judge the risk appetite and perform comprehensive risk analysis (Nevins, 2004). This would mean very minimal human intervention that offers two prime benefits. Firstly, it provides retail investors with access to financial advice that has not been the case previously. (Tao et al., 2021a) Secondly, it is much more cost-effective than conventional setups (Brenner & Meyll, 2020) noted that RAs are perfect substitutes for human advisors, as they offer very easy account setup, robust financial planning, portfolio optimization, as well as customized customer service(Darskuviene & Lisauskiene, 2021).

1.2.proplem statement

The adoption of RAs for financial services is dominant in the USA and the UK.(Ansari & Bansal, 2024) Robo-advisors are a global phenomenon. The first RA started in the United States in 2010(Roongruangsee & Patterson, 2024), In Egypt, the overview of RAs have been late and its adoption is still nascent, In response to global trends and the growing demand for more accessible and efficient investment services, the Egyptian Financial Regulatory Authority issued Decision No. 57 of 2024, which formally regulates the use of Robo-Advisors in Egypt's capital market(Al-Waqa'i' Al-Masriya [Official Gazette of Egypt], 2024)

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However, despite the potential benefits of RAs in terms of cost efficiency, improved access to investment advice, and enhanced financial inclusion, there remains a lack of empirical research in the Egyptian context. Specifically, it is unclear how the adoption of such technologies may influence investor behavior, the efficiency of portfolio management companies, and overall market activity. Moreover, questions remain regarding the acceptance of RAs by investors and the extent to which regulatory frameworks can ensure the security, transparency, and fairness of these digital advisory services.

Therefore, our research suggests that the propensity of "retail" investors to seek advice and take financial action(invest) is determined by the level of financial literacy and trust in capital markets. These two factors act more as complements and can reduce the vulnerable position of "retail" savers and their perceived benefits. This study seeks to investigate the impact of implementing RA's services on investment activity in the Egyptian capital market, focusing on both regulatory implications and investor response. Therefore, the current project seeks to provide a comprehensive behavioral framework to understand RA adoption willingness by investors in Egypt and its effect on stimulating the Egyptian capital Market.

1.3. Objectives of the Study:

This study aims to:
•Measure investors' awareness and knowledge of RAs.
•Analyze perceived ease of use and benefits.
•Examine the impact of trust and security on adoption intention.
•Determine the role of RAs in enhancing investment in the Egyptian capital market.

1.4. Significance of the Study:

•Scientific Importance: Contributes to filling the research gap in the Egyptian context concerning financial technologies.
•Practical Importance: Offers insights into adoption willingness by investors in Egypt and its effect on stimulating the Egyptian capital Market.

1.5. Research Questions:

Our research aims to address four principal questions:
1.What is the level of investor awareness regarding RAs?
2.Are RAs perceived as easy and useful?
3.What is the impact of trust and risk perception on usage intention?
4.How do RAs contribute to stimulating investment in the Egyptian capital market?

1.6. Research Hypotheses:

Main Hypothesis:

- **There is a statistically significant effect of the characteristics of the Investment Robo Advisor (knowledge, perceived benefits, trust and**

credibility, risk, and security) on activating investment in the Egyptian capital market.

Sub-Hypotheses

•H1: Awareness / Knowledge of the Investment Robo-advisor has a statistically significant positive effect on activating investment in the Egyptian Capital market.

•H2: Perceived Benefits of the Investment. Robo-advisor has a statistically significant positive effect on activating investment in the Egyptian Capital market.

•H3: Trust & Credibility of the Investment Robo-advisor has a statistically significant positive effect on activating investment in the Egyptian Capital market.

•H4: Risk & Security Concerns of the Investment Robo-advisor has a statistically significant negative effect on activating investment in the Egyptian Capital market.

•H5: Intention to Use the Investment Robo-advisor has a statistically significant positive effect on activating investment in the Egyptian Capital market.

•H6: RAs' contribution to social impact and financial inclusion positively affects Capital market activation.

•H7: RAs' role in promoting financial education and social financial engagement positively affects Capital market activation.

This paper is organized as follows: Section 2 presents the theoretical and conceptual framework, focusing on defining the theoretical background, key concepts, and behavioral and functional determinants related to Robo-Advisors and their impact on inventors intention to use it, and its role in activating investment in Egyptian capital market, Section 3 discuss literature review, Section 4 outlines the research methodology, including the data collection and the development of the measurement. Section 5 discusses the data analysis and the results. Finally, Section 6 provides the conclusion and suggestions for future research directions.

2. Theoretical and Conceptual Framework

2.1. Robo-Advisors (RA)

The financial advisory landscape has undergone a significant transformation over the past decade, with the rise of RAs marking a pivotal shift. These digital platforms emerged in response to the growing demand for affordable and accessible financial planning tools, disrupting traditional financial services by delivering standardized investment solutions to a broader range of investors (Huang & Rust, 2018). RAs are described as "digital platforms with interactive and intelligent user assistance features that utilize information technology to guide users through an automated investment advisory process." (Jung et al., 2018). For everyday users, the process of using RA is relatively straightforward. Initially, the service evaluates the customer's profile through a questionnaire covering aspects such as financial goals, risk tolerance, and return expectations. Based on this assessment, the system autonomously generates tailored investment recommendations or portfolio rebalancing strategies, similar to what a human advisor would provide, but driven by artificial intelligence(Belanche et al., 2019).

In the midst of rapid advances in innovation technologies, research on the prediction of intention to accept such technologies has been actively conducted to analyze and understand the pattern of technology diffusion in the market. Technology acceptance is defined as the willingness to adopt and use a new technology(Chung et al., 2023). Most studies examining the adoption of RAs concentrate on the factors that influence users' decisions. For instance, (Belanche et al. 2019) found that investors' willingness to adopt RA services is shaped by the opinions of others who use these platforms, media influence, and perceived social norms. Additionally,(Hodge et al., 2021) emphasized that the complexity of the task plays a key role in how investors respond to human-like technologies. In essence, when investment decisions are less complex, investors are more inclined to rely on recommendations provided by RAs with low anthropomorphic characteristics (Luo et al., 2024) .

There are a variety of factors that may be relevant to an advisor's investment decision. The most important thing for an advisor is to consider the personal situation of the client, which is referred to in this thesis as the "client profile". A client profile should include data about the client's demographic, psychological, and financial circumstances (Thanki & Baser, 2021). identified five main processes carried out by RAs: (1) investor profile identification, (2) asset allocation, (3) implementation of investment strategies, (4) portfolio rebalancing, and (5) performance review and reporting. Further, highlights several competitive advantages of RAs compared to traditional human portfolio management: (1) lower costs, (2) better customization opportunities, (3) a more transparent workflow, and (4) lower minimum investment sums. One of the main attractions of RAs is their ability to enhance efficiency in portfolio management. Processes that typically take time and involve numerous human interactions can now be completed in minutes. Investors simply fill out a questionnaire describing their risk profile and financial goals. Based on this data, RAs automatically allocate funds into a diversified portfolio. This process not only saves time but also reduces operational costs that often burden traditional investment management(Hasanudin, 2025) Since RAs are far cheaper than equivalent services provided by banks or traditional financial advisors. The automation of the advice process allows for lower fixed costs, generating competitive pricing (Robo-Advice-Report-2020-2021), These virtual advisors offer many benefits to the investors over their conventional counterparts. The primary factor here is the ease of access, and how many more retail investors can access financial advice through online platforms(Tao et al., 2021), Trust plays a crucial role in the adoption of RA services, particularly through investor confidence in fraud protection and the due diligence conducted on financial advisors. There is a positive correlation between trust in regulatory safeguards—such as protections against fraud and unethical sales practices—and the likelihood of adopting RAs. This suggests that individuals who feel adequately protected are more inclined to use these digital platforms. Furthermore, investors who actively verify their advisor's credentials through due diligence are more likely to place trust in and adopt RA's solutions(Scherer & Lehner, 2025)Also, and trust is built over a period of time when the customer uses the product and or service and are finding the same as reliable, while the initial trust is shaped by the

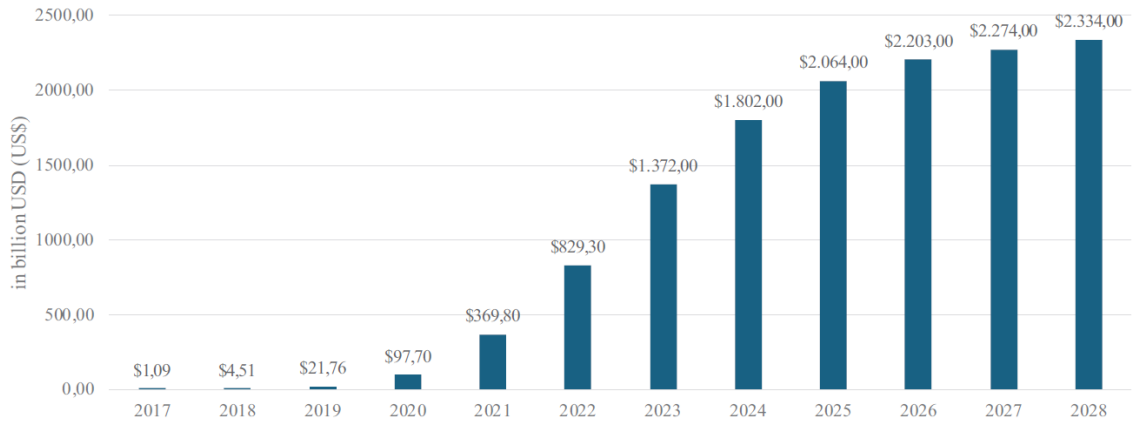
customer's perceptions based on reputation and brand (Bhatia et al., 2020). (S. Banerjee, 2025)shows that financial literacy plays a significant role in the adoption rate of RAs among retail investors. The higher the understanding of risk and technology, the more likely investors are to use RAs as the primary tool in their portfolio management.

RA automates risky, complex, long-term investment decisions requiring expert advice. Customers with higher financial literacy trust RA because they comprehend financial terms and recommendations. Customers who are knowledgeable about finance are more likely to believe recommendations made by RA(Singh & Karamcheti, 2025),(Oehler et al., 2022) identified that investors who use RAs have better financial knowledge and investment experience and tend to take more risks,(Tahvildaria, 2025) suggests that AI-driven robo-advisory systems must incorporate interactive financial education tools, such as what-if simulations and explainable risk assessments, to bridge cognitive gaps and promote responsible AI adoption.

However, it is important to acknowledge that not all consumers are willing to adopt AR financial advice, despite its potential benefits(Yang & Lee, 2024). Consumer resistance can be attributed to various factors, including a lack of trust, perceived loss of control, privacy concerns, and discomfort with technology (Chang & Hsiao, 2024). Additionally, perceived complexity and a less anthropomorphic interface may contribute to consumer resistance(Hyun Baek & Kim, 2023)

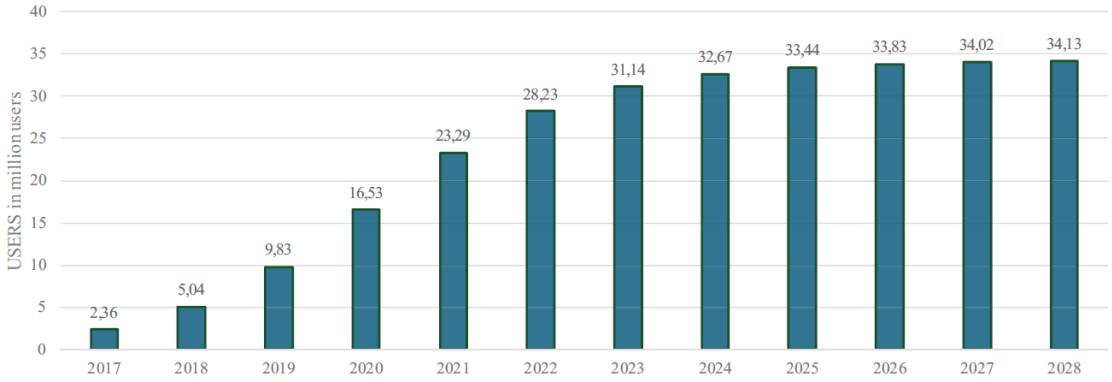
2.2 Investment in the Egyptian Stock Market:

Global financial markets have undergone a significant transformation due to technological advancements, especially with the rise of artificial intelligence-based tools such as Robo-Advisors. The global amount of average assets under management per user in the RAs segment of the fintech market was forecast to continuously increase between 2024 and 2028 by in total of 13.2 thousand U.S. dollars (+23.93 percent). After the ninth consecutive increasing year, the number of average assets under management per user is estimated to reach 68.39 thousand U.S. dollars, and therefore a new peak in 2028. Notably, the amount of average assets under management per user of the 'Robo-Advisors' segment of the fintech market has continuously increased over the past years(Statista, n.d.2024).



Source: Statista Market Insights (3 / 01/2024)(Statista, n.d.,2024)

Figure 1: Assets under management



Source: Statista Market Insights (3 / 01/2024)(Statista, n.d.,2024)

Figure 2: Number of RA users worldwide

The Egyptian Stock Exchange is one of the oldest in the region, yet it suffers from low individual participation. Key challenges include financial illiteracy, limited access to information, and a lack of digital investment tools. As the Egyptian Stock Exchange seeks to enhance investor participation and market liquidity, a key question arises: Can RAs influence investor behavior and help stimulate investment activity?

The Chairman of the Financial Regulatory Authority (FRA) stated that the issuance of regulations governing the operation of RA investment programs marks the first time in Egypt that RA services can be offered.

In this context, algorithms designed for RA services must rely on comprehensive client inputs—including financial status, investment goals, and risk tolerance (Know Your Customer – KYC)—to assess the client's acceptable risk level. Moreover, they must incorporate data on the financial instruments under consideration, including their historical and expected performance (Know Your Security – KYS), enabling accurate classification and risk assessment in relation to the broader market. The FRA has set specific standards that financial instruments must meet to qualify for trading through RA platforms.

Furthermore, algorithms developed for portfolio management and rebalancing must be based on portfolio policy inputs (Know Your Portfolio – KYP) and performance indicators such as return, risk, trading volume, and risk-adjusted returns. This enables the system to issue automated trading recommendations for portfolio rebalancing. Where RA platforms are integrated with brokerage firms for execution, those firms must operate electronic systems that comply with Article 9 of the FRA regulations and all other relevant technological requirements. Execution must occur automatically, without human intervention.

This paves the way for companies wishing to provide such services to apply to the Authority after fulfilling the necessary requirements and conditions. Moreover, offering RA investment services will enhance the competitiveness of the Egyptian capital market by diversifying investment products to meet the aspirations of various types of investors. This also contributes to supporting the FRA's vision of accelerating digital transformation by relying on technological applications to improve financial inclusion and expand the base of beneficiaries from non-banking financial services, especially investment in the stock market(Al-Waqa'i' Al-Masriya [Official Gazette of Egypt], 2024).

The awareness and perception of RAs among individual investors vary, with factors such as cost-effectiveness, trust, data security, and behavioral biases influencing their perception. Using RA services has positively influenced investment decision-making but may not fully mitigate behavioral biases. The adoption of RAs has increased middle-class households' participation in financial markets and improved their welfare through better diversification(Kamarudin et al., 2025)

3. Literature review

3.1. Robo-Advisory Services and Customers' Willingness to Adopt

Previous studies in the field of RAs services have adopted various models, such as the Unified Theory of Acceptance and Use of Technology (UTAUT) creates a robust framework to understand the adoption and effectiveness of these technologies (Panakaje et al., 2025)This model consists of four main factors to explain behavioral intention, namely, performance expectancy, effort expectancy, social influence, and facilitating conditions. Performance expectancy reflects the level of usefulness that people feel when using a technology to perform a certain task, while effort expectancy reflects the extent of usability and convenience that people feel when using it (Venkatesh et al., 2003).

TAM (technology acceptance model) also explains consumer behavior toward RA services(Mehrab Ashrafi, 2023). TAM is one of the best frameworks by which to understand users' reactions toward technological innovations because it is able to explain, to a great extent, consumer adoption of many innovations. As a result, this model has been widely used in previous literature in both finance and online settings(Belanche et al., 2019).(Aw et al., 2023) developed an exhaustive framework to investigate how technological features, human-like traits, and consumer variables interact to promote the adoption of RAs and gain insights into customer acceptance(Nourallah, 2023), used the UTAUT2 model to investigate young customers' initial trust in RAs,(Baptista & Oliveira, 2015) examined the effect of the value of openness to change on the customers' intention to use RAs through the mediating role of the BRT framework, (Atwal & Bryson, 2021)An exploratory study was conducted to identify the factors influencing German investors' willingness to adopt Robo-Advisors (RAs) for investment management. The findings indicated that key elements influencing the Technology Acceptance Model (TAM) included perceived risk, perceived usefulness, and social influence—factors broadly aligned with the TAM framework. (Seiler & Fanenbruck, 2021)Expanded upon TAM and found that both perceived usefulness and privacy significantly and positively impact the intention to use RAs.

However, only a limited number of studies have ventured beyond widely adopted models such as UTAUT and TAM.(Nguyen et al., 2023) also used the UTAUT framework and observed that relative advantage, effort expectancy, and social influence positively relate to the intention to use RAs.

3.2. Capital markets activation:

Financial RAs are services that offer automated and algorithmic online advice on private asset management without requiring human participation(Mohapatra et al., 2025) Unlike the traditional method of obtaining investment advice from human advisers, financial RAs utilize algorithms to quickly filter data and simulate asset portfolios to give personalized investment advice(Hong et al., 2023).

In understanding how Robo-Advisors influence investor behavior, it is essential to consider the foundations of behavioral finance. Several studies have shown that psychological factors such as fear, overreaction, and underreaction significantly impact market behavior. For instance, (Shen et al., 2023) revealed that fear has a substantial effect on stock returns and volatility. Proponents of behavioral finance argue that traditional financial theories—based solely on rationality and profit maximization—are insufficient for explaining real investor decisions. Instead, integrating psychological dimensions is necessary to develop a more accurate understanding. In this context, financial innovations such as Robo-Advisors are considered potential tools to mitigate behavioral biases. However, they may also unintentionally reduce investors' confidence in assessing the risks associated with such technologies(Banerjee et al., 2025). RA adoption rates are driven by performance expectancy – the idea that RAs improve investment outcomes. It has been empirically supported that RAs reduce cognitive biases and increase the rationality of investment decisions indirectly. Robo-advisors enable financial markets to be more accessible to the masses and democratize investment processes by providing low-cost and accessible services. These systems, which offer personalized portfolios according to individual risk tolerance and investment goals, ensure individual investors achieve their financial goals more effectively. (Caran & Başarır, 2025) Found that RAs create a new paradigm shift in the financial sector within the framework of Schumpeter's concept of creative destruction while discussing the

challenges these technologies face in terms of cybersecurity and transparency. Moreover, in the future, RAs are predicted to have significant potential in areas such as more personalization and more integration (Back et al., 2023). Wealth management is no longer limited to affluent clients; middle-class investors also show strong demand. RAs, enabled by FinTech innovations, meet this need by offering accessible and advanced investment features, such as dual glide paths and multi-risk exposure. These sophisticated tools significantly drive demand, sometimes more than basic offerings like market diversification. Although the overall benefits are moderate, they are most impactful for older, lower-middle-class investors. This helps explain the ongoing growth of automated wealth management services(Reher & Sokolinski, 2024).

(Hu et al., 2025)Found that RA has demonstrated significant competitive advantages over traditional human advisors by obtaining more objective results through investors' trading records in a more efficient manner. The application of RAs can also reduce reliance on professionals and labor costs within the wealth management industry. However, several significant challenges still hinder the further development and widespread adoption of RAs, such as a lack of explainability, inability to handle time-arriving data flow, and the cold-start problem.

The adoption of RA's services offers notable diversification benefits to investors. Previously under-diversified individuals tend to increase their equity holdings, resulting in portfolios with lower volatility and improved returns. In contrast, already well-diversified investors reduce the number of stocks held, yet still experience modest declines in volatility and demonstrate increased trading activity post-adoption. Across all user groups, engagement intensifies, as evidenced by more frequent online account logins. Furthermore, adopters exhibit significant reductions in key behavioral biases, including the disposition effect, trend-chasing behavior, and rank effect. These findings highlight both the potential advantages and inherent limitations of RA tools, which are rapidly gaining global prevalence(D'Acunto et al., 2019).

One emergent challenge of RA regulation is the complex overlaps and even inconsistencies between different regulations. We think that the connections and dependencies between various regulations may get

increasingly complex and nuanced as RA adoption in the financial services industry accelerates. Regulators may need to consider flexible, anticipatory, timely, and technology-neutral approaches to RA regulation to avoid it becoming static and "aging out" of relevance. They may even consider employing AI either to assist them in drafting the new regulations or to identify potential inconsistencies before they arise (Buczynski et al., 2025).

Therefore, the role of Robo-Advisors should be examined not only in terms of algorithmic efficiency and data-driven recommendations but also in their ability to alleviate psychological biases and improve decision quality, especially for less experienced or retail investors.

Recent studies highlight that RAs possess a strong capability to diversify retail investors' portfolios. This allows small-scale investors to access broader and more diversified investment opportunities at significantly lower costs than those associated with traditional asset managers. Such diversification not only mitigates investment risk but also enhances the potential for higher returns.

3.3 Research gap

Due to the novelty of RA services in the Egyptian context, there is currently a lack of knowledge about the key determinants of their adoption by regular customers in Egypt and the expected role of its adoption in stimulating and activating investment in the Egyptian capital market, current research seeks to close this gap by proposing a broad, comprehensive model that includes the main global drivers of customer adoption of RA.

4. Methodology

4.1.Measures

All measurement instruments utilized in this study were adapted from established literature to ensure the reliability and validity of the constructs. Specifically, the scales assess knowledge, perceived benefits, trust and credibility, risk, and security.

While this study does not employ the Technology Acceptance Model (TAM) as the primary analytical framework, it draws upon its conceptual foundations to support the formulation of research

constructs and hypotheses. The original TAM, developed by (Davis, F.D. (1986) proposes that users' acceptance of a technology is primarily influenced by perceived usefulness (PU) and perceived ease of use (PEOU), which in turn shape behavioral intention to use (BI).

In the context of this study, several constructs such as awareness, perceived benefits, usability, trust, and intention to use echo the core components of TAM, thereby offering theoretical support. However, the model is expanded to include additional constructs—such as trust, risk/security concerns, and socio-economic impacts (e.g., financial inclusion and education)—to better reflect the complexity of financial behavior in emerging markets like Egypt.

Thus, TAM serves as a theoretical reference point that informs but does not limit the study's broader conceptual model.

4.2.Data collection

The data were collected through a survey-based approach, utilizing a self-administered questionnaire made available online via Google Forms. This platform is considered one of the most widely adopted tools for online data collection globally. Participation in the survey was entirely voluntary, and no incentives were offered. The sample included respondents from a broad range of demographic categories, such as age, gender, income level, educational background, and geographic location across Egypt. All participants were given the assurance that their responses would be kept confidential. We used a five-point Likert scale to rate all items, from 1=strongly disagree to 5=strongly agree.

4.3.Sample Description

This study provides an in-depth analysis of the characteristics of the collected sample, which comprised 693 participants.

In the following table (1), the demographic distribution of the sample shows a male dominance of 65.50%, which may reflect the nature of the financial sector or challenges in achieving balanced gender representation in studies related to investment and financial technology. The most represented age group is between 25-35 years (37.20%), followed by the 36-50 age group (29.40%). This focus on young and middle-aged groups indicates that the study targets an active segment, potentially more open to modern technologies such as RAs.

In terms of educational level, the vast majority of participants are university graduates (48.90%) or hold postgraduate qualifications (41.10%). These high educational levels suggest that the sample possesses a high level of awareness and knowledge, making their opinions on RAs highly valuable and reliable. However, a significant proportion of participants (71.10%) are not currently engaged in investment activities, which presents both a challenge and an opportunity. On one hand, this might affect their practical understanding of investment concepts; on the other hand, this group could be the primary target for financial literacy efforts and encouraging investment through RAs.

Factor analysis revealed that the statements used in the questionnaire possess high credibility, with acceptable KMO values for all axes, confirming that the questions indeed measure what they were designed to measure. Furthermore, Cronbach's Alpha test showed very high reliability for all study dimensions (overall Cronbach's Alpha of 0.970), reinforcing confidence in the internal consistency of the data. The positive and strong correlations among all theoretical axes indicate the interconnectedness of the studied concepts, such as awareness, perceived benefits, trust, risks, intention to use, social impact, Capital market activation, and financial literacy. These results confirm a strong relationship between individuals' understanding and acceptance of RAs, and their potential impact on financial inclusion and Capital market activation

Table (1)

Sample Description and Demographic Variables

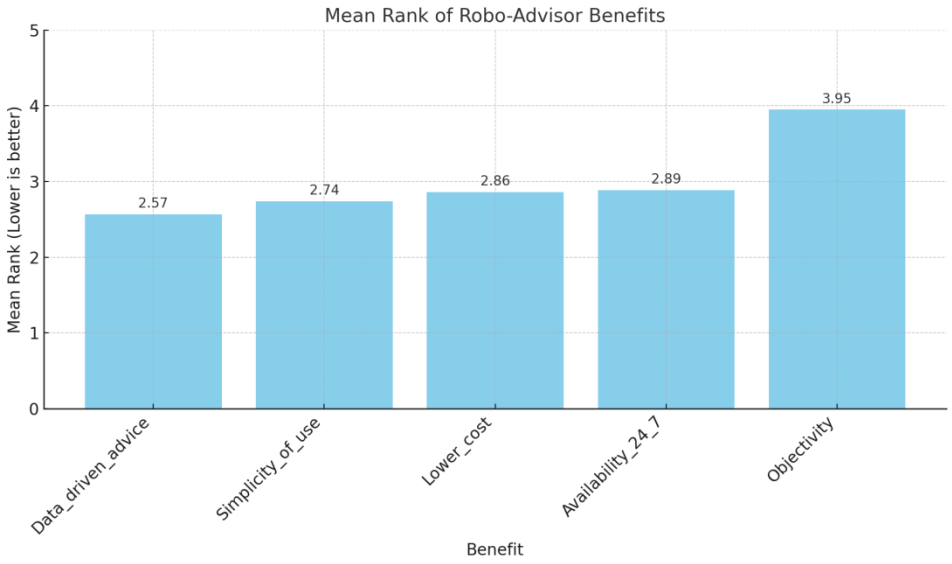
variable	Frequency	Percent (%)
Gender		
male	454	65.50%
female	239	34.50%
Age		
under 25	158	22.80%

25-35	**258**	**37.20%**
36-50	**204**	**29.40%**
Over 50	**73**	**10.50%**
Educational level		
Undergraduate	**69**	**10%**
University graduate	**339**	**48.90%**
Postgraduate	**285**	**41.10%**
investment		
no	**493**	**71.10%**
yes	**200**	**28.90%**

Source: The Authors, according to the outputs of SPSS V27

- **Rank analysis of RAs' benefits**

The rank analysis highlights the relative importance assigned by participants to various benefits of RAs. Data-driven advice was ranked highest (Mean = 2.57), suggesting that users prioritize algorithmic recommendations based on analytical evidence. Simplicity of use was followed closely (Mean = 2.74), indicating that usability plays a critical role in adoption. Cost efficiency, while important (Mean = 2.86), was not prioritized above decision-quality features.24/7 availability ranked moderately (Mean = 2.89), showing that while accessibility is valued, it does not outweigh the importance of accurate insights. Interestingly, objectivity (Mean = 3.95) was perceived as the least critical, implying that users may not fully recognize the value of bias-free decision-making. These findings provide strategic insights into the features most likely to influence RA's engagement. We can show that clearly in the following graph.



Source: The Authors, according to the outputs of SPSS V27

Figure 3: Mean Rank of Perceived Benefits

- **descriptive analysis statistics**
  - **The data was analyzed using descriptive statistical methods to analyze trends, as these analyses help identify the main benefits and challenges associated with the financial robots in accounting practices and the activation of Capital markets.**
  - **To assess the normality of the data, the Shapiro-Wilk and Kolmogorov-Smirnov tests were conducted. The results indicated that the significance values for all key variables exceeded 0.05, suggesting that the data follow a normal distribution. Accordingly, parametric statistical techniques were deemed appropriate for subsequent analyses, and the following statistical methods were used.**
- **Table 2 presents the results of the descriptive analysis of the study variables. The analysis includes the calculation of the arithmetic mean, standard deviation, and variance for each axis. The results were as follows:**

- **The awareness or knowledge axis recorded a mean of 3.4185 with a standard deviation of 0.91885 and a variance of 0.844. This falls**

within the range (3.40 – 4.19), indicating a moderate to high level of agreement among the respondents.

- **The perceived benefits axis had the highest mean value of 3.6332, with a standard deviation of 0.88748 and a variance of 0.788, reflecting a high level of agreement.**
- **The trust and credibility axis showed a mean of 3.4145 and a standard deviation of 0.96388, with a variance of 0.968, indicating moderate to high agreement with some variability in responses.**
- **The risk & security concerns axis recorded a mean of 3.4763, a standard deviation of 0.86294, and a variance of 0.780, indicating a moderately high level of agreement.**
- **The intention to use the axis had a mean of 3.6187, a standard deviation of 0.94659, and a variance of 0.896, which also reflects a moderate to high agreement.**
- **The Capital market activation axis scored a mean of 3.5798 with a standard deviation of 0.92526 and a variance of 0.856, indicating a positive perception from the respondents.**
- **The financial education and social engagement axis recorded a mean of 3.6005, standard deviation of 0.95284, and a variance of 0.861, suggesting a moderate to high agreement.**
- **Finally, the social impact & financial inclusion axis had a mean of 3.5883, with a standard deviation of 0.86192 and a variance of 0.743, reflecting moderate approval among the sample.**

  - **Overall, the descriptive statistics indicate that respondents generally expressed a positive and moderately high perception across all study axes. The means ranged between 3.41 and 3.75, which reflects a favorable orientation, while the standard deviations show acceptable levels of response variability.**

Table (2)

The results of the descriptive analysis of the variables

Axis	Mean	Std. Deviation	Variance
Awareness Or Knowledge	3.4185	0.91885	0.844
Perceived Benefits	3.6332	0.88748	0.788
Trust And Credibility	3.4145	0.98388	0.968
Risk & Security Concerns	3.4753	0.88294	0.780
Intention To Use	3.6187	0.94659	0.896
Capital Market Activation	3.5798	0.92714	0.860
Financial Education and Social Engagement	3.6095	0.92784	0.861
Social Impact Financial Inclusion	3.5883	0.86192	0.743

Source: The Authors according to the outputs of the SPSS V27.

- **Reliability tests**

- **Factor Analysis Test**

The researchers used factor analysis to ensure that the phrases express a kind of credibility and to reach the most related and influential phrases in each of the eight axes.

Table (3)

Matrix of factor analysis elements

Questions	Axes							
	1	2	3	4	5	6	7	8
I Have Heard of RAs Before	0.754							
I Understand How RAs Generally Work	0.724							

I Know the Difference Between RAs And Traditional Financial Advisors	**0.661**							
I Am Aware of The Main Advantages of Using RAs	**0.66**							
I Follow News or Articles Related to AI In Financial Services	**0.725**							
RAs Help Me Make Better Investment Decisions		**0.779**						
RAs Save Time and Effort Compared to Traditional Advisors		**0.824**						
I Can Access RAs Easily Via Phone or the Internet		**0.761**						
RAs Offer Services at A Lower Cost		**0.705**						
They Support Building a Balanced Investment Portfolio								
I Trust the Recommendations Made by RAs			**0.713**					
I Believe Their Decisions Are Based on Objective Analysis			**0.693**					
I Consider RAs Reliable for Financial Decision-Making			**0.59**					
I Feel Comfortable Relying on RAs Instead of Human Advisors			**0.523**					

I Am Concerned About Data Breaches or Theft of Financial Information				**0.755**				
I Fear Fully Depending on Automated Systems with No Human Involvement				**0.747**				
I Think Automated Decisions May Not Be Flexible During Sudden Market Changes				**0.797**				
I Doubt RAs Can Fully Understand My Personal Financial Needs				**0.682**				
The Lack of Clear Regulations in Egypt Is a Barrier to Using RAs				**0.741**				
I Would Use RAs If I Had the Opportunity					**0.858**			
I Would Recommend Others to Try RAs					**0.835**			
A Version in Arabic Would Encourage Me to Use It					**0.794**			
I Believe RAs Can Help Activate the Egyptian Capital Market					**0.523**			
RAs Could Facilitate Youth Participation in The Capital Market						**0.717**		

They May Encourage Non-Traditional Segments (E.G., Women, Small Investors) To Invest						**0.717**		
RAs Help Reduce the Gap Between Experienced and New Investors						**0.688**		
They Can Be Used as A Tool to Spread Financial Literacy and Inclusion						**0.68**		
Integrating RAs In Egypt Could Increase the Number of Individual Investors						**0.676**		
RAs Could Support Access to Financial Services for Underserved Segments						**0.676**		
They Can Help Introduce Low-Income Individuals to Basic Investment Opportunities						**0.668**		
RAs Can Bridge the Gap Between Individuals and Formal Financial Institutions						**0.744**		
They Can Play an Educational Role for Those with Low Financial Literacy						**0.633**		
RAs May Help Empower Women						**0.563**		

and Youth to Manage Personal Finances								
RAs Can Boost Participation Rates in The Egyptian Capital Market							**0.802**	
They Can Enhance Liquidity by Simplifying Entry into The Market							**0.821**	
Their Use May Increase Transparency and Efficiency in Market Transactions							**0.828**	
The Presence of RAs Might Rebuild Trust in The Capital Market							**0.785**	
They Could Stimulate Long-Term Investment Culture Among Small Investors							**0.795**	
RAs Can Serve as Tools for Improving Financial Awareness								**0.631**
I Believe They Can Be Integrated into Financial Education Platforms or Programs								**0.804**
Their Wide Availability Could Increase Financial Dialogue in Society								**0.554**

They Help Individuals Understand the Risk-Return Relationship in Investments								0.559
Using RAs May Increase Confidence in Making Independent Financial Decisions								0.781

Source: The Authors, according to the outputs of the SPSS V27

According to the previous table, the results were as follows :

- **The element of the first axis contains 5 statements that explain %62.3 of the axis variation, and the results confirmed the significance of the KMO and Bartlett's test at a confidence level of 99%, where the KMO value was equal to 0.851 ,which is an acceptable value.**
- **The element of the second axis statements contains 5 statements that explain 59.4% of the axis variation, and the results confirmed the significance of the KMO and Bartlett's test at a confidence level of 99%, where the KMO value was equal to 840, which is an acceptable value.**
- **The element of the third axis statements contains 4 statements that explain 66.3% of the axis variation, and the results confirmed the significance of the KMO and Bartlett's test at a confidence level of 99%, where the KMO 0.807 value was equal to, which is an acceptable value.**
- **The element of the fourth axis statements contains 5 statements that explain 55.5 % of the axis variation, and the results confirmed the significance of the KMO and Bartlett's test at a confidence level of 99%, where the KMO value was equal to 0.817, which is an acceptable value.**
- **The element of the fifth axis statements contains 4 statements that explain 67.8% of the axis variation, and the results confirmed the significance of the KMO and Bartlett's test at a confidence level of**

99%, where the KMO value was equal to 0.806, which is an acceptable value.

- **The element of the sixth axis statements contains 10 statements that explain 57.8% of the axis variation, and the results confirmed the significance of the KMO and Bartlett's test at a confidence level of 99%, where the KMO value was equal to 0.955, which is an acceptable value.**
- **The element of the seventh axis statements contains 5 statements that explain 65% of the axis variation, and the results confirmed the significance of the KMO and Bartlett's test at a confidence level of 99%, where the KMO value was equal to 0.859, which is an acceptable value.**
- **The element of the eighth axis statements contains 5 statements that explain 64.3% of the axis variation, and the results confirmed the significance of the KMO and Bartlett's test at a confidence level of 99%, where the KMO value was equal to 0.873, which is an acceptable value**

➢ **Cronbach's Alpha test.**

The researchers used the stability coefficient Cronbach's Alpha and the self-validity coefficient to measure the stability of the content of the axes as well as the stability of the content of the study, the results according to: table (4) presents the results of the reliability analysis conducted using Cronbach's alpha coefficient to assess the internal consistency of the measurement scales (dimensions) employed in the study. The analysis encompasses eight distinct dimensions, as illustrated in the aforementioned table. All individual dimension alpha values exceed the widely accepted threshold of 0.70, indicating good to excellent internal consistency reliability for each scale .Furthermore, the overall Cronbach's alpha coefficient for all 43 items included in the analysis (*Valid N List wise*) is exceptionally high at 0.970, demonstrating the very strong overall reliability of the measurement instrument used in this research .

Table (4)

Cronbach's Alpha

Variables& Axes of The Study	No. Of Items	Cronbach's Alpha
Awareness Or Knowledge	5	0.847
Perceived Benefits	5	0.828
Trust Or Credibility	4	0.831
Risk & Security Concerns	5	0.799
Intention To Use	4	0.841
Social Impact & Financial Inclusion	10	0.918
Capital Market Activation	5	0.865
Financial Education & Social Engagement	5	0.861
Valid N (List Wise)	43	0.971

Source: The Authors, according to the outputs of the SPSS V27

- **Correlations**

Table 5 presents the Pearson correlation coefficients (r) examining the linear relationships between the eight theoretical axes of the study. The lower triangle of the matrix is displayed to avoid redundancy. Significance levels (p-values) are indicated where applicable.

Interpretation:

The correlation matrix reveals statistically significant relationships between all pairs of the eight theoretical study variables at the $p < .001$ level. The strength of the correlations ranges from moderate to strong. For instance, very strong positive correlations were observed between Financial Education and Capital Market Activation ($r = .786$), and between Social Impact and Capital Market Activation ($r = .751$). Strong correlations were also found between Intention to Use and Capital Market Activation ($r = .738$), Intention to Use and Financial Education ($r = .740$), and Intention to Use and Social Impact ($r = .740$). Moderate correlations connect variables like Awareness and Perceived Benefits (r

= .717), and Risk & Security with Capital Market Activation (r =.672). The consistent positive and significant correlations suggest a high degree of multicollinearity among these theoretical axes, which might warrant further investigation, especially if these variables are used together as predictors in regression models. The results indicate that higher levels on one axis tend to be strongly associated with higher levels on the other axes.

Table (5)

Correlation matrix

SIFI	FESAE	SMA	ITU	RSC	TC	PB	AOK	correlation	
							1	Pearson Correlation	Awareness or knowledge (AOK)
						1	.717**	Pearson Correlation	Perceived Benefits (PB)
					1	.678**	.640**	Pearson Correlation	Trust Or Credibility (TC)
				1	.552**	.616**	.577**	Pearson Correlation	Risk & Security Concerns (RSC)
			1	-.638	.660**	.713**	.638**	Pearson Correlation	Intention To Use (ITU)
		1	.738**	-.672	.667**	.693**	.622**	Pearson Correlation	Capital Market Activation (SMA)
	1	.786**	.740**	-.639	.640**	.692**	.638**	Pearson Correlation	Financial Education Social Engageme

									nt (FESAE)
1	.766**	.751**	.740**	-.644	.651**	.683**	.598**	Pearson Correlation	Social Impact & Financial Inclusion (SIFI)
**. Correlation is significant at the 0.01 level (2-tailed).									

Pearson Correlation Matrix for Study Variables (8 Theoretical Axes)

**** p < .001 (based on Sig. = .000 reported in the source image for all visible correlations). N = 693 for all correlation interpretations**

5. Finding and dissection

5.1. Inference Statistics

5.1.1. SUB Hypothesis Tests

Table (6)

Results of regression analysis for hypotheses

Hypnosis	Independent Variable	Dependent Variable	R	R2	F	Sig.	B	Significance
H1	Awareness Or Knowledge	Capital Market Activation	.622[a]	0.848	435.33	.001	0.627	Statistically Significant
H2	Perceived Benefits	Capital Market Activation	.693[a]	0.48	638.46	.001	0.724	Statistically Significant
H3	Trust Or Credibility	Capital Market Activation	.667[a]	0.445	553.16	.001	0.628	Statistically Significant
H4	Risk & Security Concerns	Capital Market Activation	.672[a] (-)	0.451	568.68	.001	0.706 (-)	Statistically Significant
H5	Intention To Use	Capital Market Activation	.738[a]	0.545	827.02	.001	0.723	Statistically Significant
H6	Social Impact & Financial Inclusion	Capital Market Activation	.751[a]	0.564	893.64	.001	0.808	Statistically Significant

H7	Financial Education & Social Engagement	Capital Market Activation K	.786[a]	0.617	1113.4	.001	0.785	Statistically Significant

Source: The Authors, according to the outputs of SPSS V27.

- **Detailed Explanation of Each Hypothesis**

- **H1: Awareness or Knowledge Independent Variable (AOK): Awareness or Knowledge Correlation Coefficient (R): 0.622 Coefficient of Determination (R^2): 0.387 Regression Coefficient (B): 0.627 Explanation: The correlation coefficient (R = 0.622) indicates a moderate positive relationship between Awareness or Knowledge and Capital Market Activation. The R^2 value (0.387) shows that 38.7% of the variation in Capital Market Activation can be attributed to this variable. Moreover, the regression coefficient (B = 0.627) reveals that for every one-unit increase in Awareness or Knowledge, Capital Market Activation rises by 0.627 units. This demonstrates that enhancing investors' understanding and awareness strongly contributes to market participation, making it a vital factor in activating investment in Capital market engagement.**

- **H2: Perceived Benefits Independent Variable (PB): Perceived Benefits Correlation Coefficient (R): 0.731Coefficient of Determination (R^2): 0.534Regression Coefficient (B): 0.731Explanation: With a strong positive correlation (R = 0.731), Perceived Benefits significantly influences Capital Market Activation, explaining 53.4% of its variance (R^2 = 0.534). The regression coefficient (B = 0.731) indicates that a one-unit increase in Perceived Benefits results in a 0.731-unit increase in Capital Market Activation. This powerful relationship highlights that the more investors perceive tangible benefits from the Capital market, the greater their engagement becomes, positioning this variable as a key driver of market activity.**

- **H3: Trust or Credibility Independent Variable (TC): Trust or Credibility Correlation Coefficient (R): 0.745Coefficient of**

Determination (R^2): 0.555Regression Coefficient (B): 0.745Explanation: Trust or Credibility exhibits a robust positive correlation (R = 0.745) with Capital Market Activation, accounting for 55.5% of its variance (R^2 = 0.555). The regression coefficient (B = 0.745) shows that each one-unit increase in Trust or Credibility boosts Capital Market Activation by 0.745 units. This strong effect emphasizes that confidence in market institutions and the reliability of financial information is critical in encouraging investor participation, reflecting the foundational role of trust in market dynamics.

- **H4: (RSC), There is a statistically significant negative effect of Risk and Security Concerns on Capital Market Activation. Independent Variable: Risk and Security Concerns. Direction of the Relationship is negative Correlation Coefficient (R): -0.159, Coefficient of Determination (R^2): 0.493, F-Statistic: 568.68. Significance Level (Sig.): 0.000. Unstandardized Coefficient (B): -0.702. Interpretation: A one-unit increase in risk and security concerns leads to a 0.702-unit decrease in Capital market activation. This inverse relationship is statistically significant (p = 0.000) and indicates that approximately 49.3% of the variation in Capital market activation is explained by changes in security concerns.**

- **H5: Intention to Use Independent Variable (IU): Intention to Use Correlation Coefficient (R): 0.756 Coefficient of Determination (R^2): 0.572Regression Coefficient (B): 0.756 Explanation: Intention to Use shows a strong positive relationship (R = 0.756) with Capital Market Activation, explaining 57.2% of its variance (R^2 = 0.572). The regression coefficient (B = 0.756) indicates that a one-unit increase in Intention to Use leads to a 0.756-unit rise in Capital Market Activation. This highlights the significant influence of investors' willingness to engage with Capital market platforms, suggesting that fostering positive intentions is a powerful strategy to boost market activation.**

- **H6: Social Impact & Financial Inclusion Independent Variable (SIFI): Social Impact & Financial Inclusion Correlation Coefficient (R): 0.786 Coefficient of Determination (R^2): 0.617Regression Coefficient (B): 0.808 Explanation: This hypothesis demonstrates the strongest positive correlation (R = 0.786) among all, with an R^2 of 0.617, meaning it explains 61.7% of the variance in Capital Market Activation. The regression coefficient (B = 0.808) reveals that each one-unit increase in Social Impact & Financial Inclusion results in a 0.808-unit increase in Capital Market Activation. This exceptional strength underscores the profound role of inclusive financial policies and social initiatives in driving market participation, marking it as the most influential factor in the analysis.**
- **H7: Financial Education & Social Engagement Independent Variable (FEASE): Financial Education & Social Engagement Correlation Coefficient (R): 0.786 Coefficient of Determination (R^2): 0.617Regression Coefficient (B): 0.786 Explanation: Financial Education & Social Engagement also exhibits a very strong positive correlation (R = 0.786), explaining 61.7% of the variance in Capital Market Activation (R^2 = 0.617). The regression coefficient (B = 0.786) indicates that a one-unit increase in this variable leads to a 0.786-unit increase in Capital Market Activation. This powerful relationship highlights the immense impact of educational initiatives and social engagement in encouraging market activity, rivaling H6 in its influence.**

5.1.2. Main Hypnosis Test

- **Hypotheses of the Study: There is a statistically significant effect of the characteristics of the Investment Robot Advisor (knowledge, usability, perceived usefulness, security, and reliability) on activating investment in the Egyptian Capital Exchange**
- **Interpretation of Regression Results and Diagnostic Plots**

- **Interpretation of the Regression Tables:**

The regression results indicate a statistically significant effect of the characteristics of the Investment Robot Advisor, namely knowledge, usability, perceived usefulness, security, and reliability, on the activation of the Egyptian Capital Exchange. The model displays a high explanatory power, with an R-value of 0.847, suggesting a strong positive correlation between the independent variables and the dependent variable. The R-squared value of 0.717 indicates that approximately 71.7% of the variance in Capital market activation can be explained by the predictors included in the model. The regression coefficients (B) for each variable reveal the magnitude and direction of the effect: all coefficients are positive, indicating that increases in each respective characteristic are associated with greater Capital market activation. Multicollinearity diagnostics (VIF values below 5 and Tolerance above 0.2) confirmed the absence of harmful multicollinearity, ensuring the stability of the regression coefficients The results were as the following tables:

Table (7)

Results of multiple regression

Model	R	R Square	Adjusted R Square	Std. Error of The Estimate	F	Sig.
1	.848[a]	0.719	0.716	0.49387	292.126	.001

Source: The Authors, according to the outputs of SPSS V27

Table (8)

coefficients

variables	Unstandardized Coefficients		t	Sig.	Collinearity Statistics	
	B	Std. Error			Tolerance	VIF
(Constant)	0.007	0.090	0.076	0.940		
awareness or knowledge	0.136	0.045	3.022	0.003	0.242	4.125

perceived benefits	0.070	0.037	1.897	0.058	0.331	3.021
trust and credibility	0.108	0.029	3.711	0.000	0.429	2.330
financial education and social engagement	0.330	0.036	9.149	0.000	0.315	3.174
Social impact of financial inclusion	0.202	0.038	5.312	0.000	0.327	3.055
Risk & Security Concerns	- 0.159	0.031	5.212	0.000	0.483	2.069

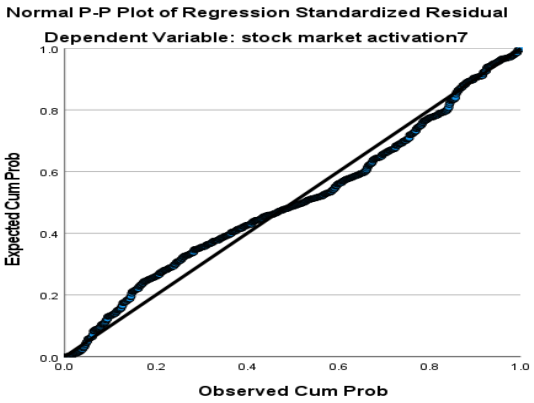
Source: The Authors according to the outputs of SPSS V27.

- **The equation of the regression model in the previous table is shown as follows:**

$$Y = 0.007 + 0.136x1 + 0.070x2 + 0.108x3 + 0.330x4 + 0.202x5 - 0.159x6$$

- **Interpretation of Diagnostic Plots**

1. Normal P–P Plot of Standardized Residuals: The P–P Plot shows that the standardized residuals are closely aligned with the diagonal line, indicating that the residuals are approximately normally distributed. This satisfies one of the key assumptions of linear regression and confirms the validity of the model's statistical inference.

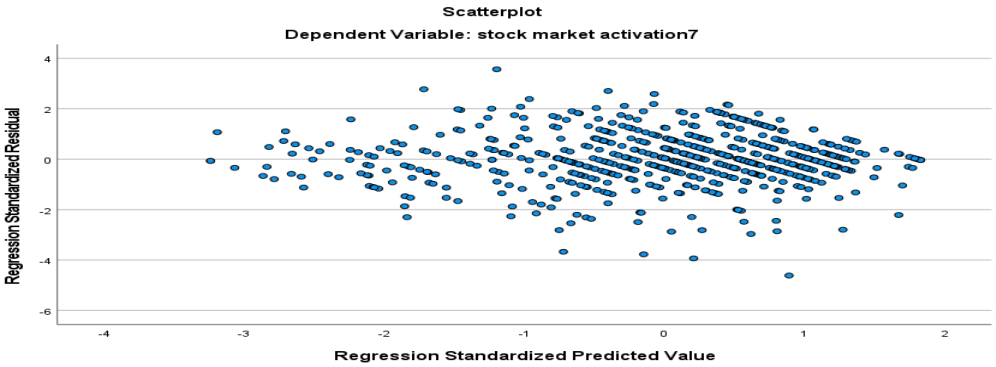


Source: The Authors, according to the outputs of SPSS V27.

Figure 4: Normal P–P Plot of Standardized Residuals

2. Scatterplot of Standardized Residuals vs. Predicted Values: The scatterplot shows a random dispersion of points with no apparent

pattern or funnel shape, indicating that the assumption of homoscedasticity is met. This suggests that the variance of the residuals is constant, validating the use of OLS estimation.



Source: The Authors, according to the outputs of SPSS V27.

Figure 5: Scatterplot of Standardized Residuals vs. Predicted Values

- **Path analysis using the AMOS program:**

The researcher used the path analysis model in the AMOS program, where this analysis shows the effect of the intermediate variable, after being exposed to the effects of independent variables, on the dependent variable, which cannot be done by the tests used previously.

- **The model fit indices indicated a good overall fit of the proposed model to the data. The Chi-square divided by degrees of freedom (CMIN/DF) was 2.648, which falls within the acceptable range (1 to 3), suggesting a reasonable fit.**
- **The Goodness of Fit Index (GFI) was 0.879, which is close to the recommended threshold of 0.90 and considered acceptable. The Comparative Fit Index (CFI) reached 0.906, indicating a good fit, while the Tucker-Lewis Index (TLI) was 0.886, reflecting an adequate and acceptable fit.**
- **In terms of error measures, the Root Mean Square Residual (RMR) was 0.009, and the Root Mean Square Error of Approximation (RMSEA) was 0.040, both of which fall within excellent fit criteria (RMR < 0.08, RMSEA < 0.05) These results confirm that the model demonstrates a statistically acceptable and**

strong fit to the observed data, making it suitable for further interpretation and analysis.

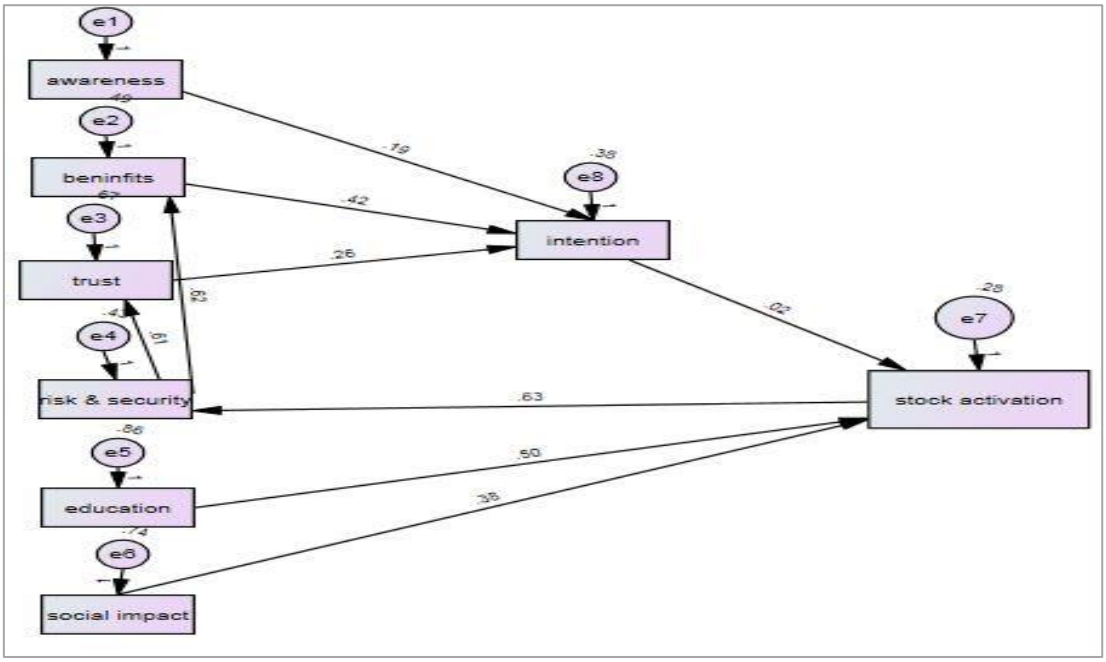
All these results are shown in the following table (9)

Table (9)

Goodness of Fit indices for the structural model

Measure	Estimate	interpretation
CMIN/DF	2.648	good fit
GFI	0.879	acceptable
CFI	0.906	good fit
TLI	0.916	acceptable
RMR	0.009	excellent fit
RMSEA	0.041	excellent fit

Source: The Authors, according to the outputs of the AMOS V26



Source: The Authors, according to the outputs of the AMOS V26

Figure 6: Path analysis model for study variables

- **The path diagram illustrates the relationships among the variables in the model, showing a good fit with the observed data as supported by the fit indices. The standardized estimates reflect meaningful connections aligned with the theoretical framework.**
- **This model reflects the theoretical framework and hypotheses tested in the study, particularly the mediating role of intention to use between the independent variables and Capital market activation. All regression paths and standardized estimates shown in the figure are consistent with the results presented in the regression and fit indices tables.**

5.2 Discussion

This discussion provides an in-depth analysis of the findings derived from this study, contextualized within the existing literature on RAs and artificial intelligence in accounting practices and foreign exchange markets. It aims to offer a comprehensive interpretation of the identified relationships between variables and elucidate the theoretical and practical implications of these results.

1. **Awareness of RAs and Their Impact on Capital Market Activation**

Results demonstrated a moderately positive relationship between awareness of fintech robotics and Capital market activation (R = 0.622). This indicates that enhanced investor understanding and knowledge of RAs directly contribute to increased market participation. As individuals recognize the opportunities afforded by RAs, such as accessible automated financial advisory and algorithmic analysis, their confidence and willingness to engage in investment activities increase.

2. **Perceived Benefits and Their Role in Capital Market Activation**

Perceived benefits exhibited a strong positive effect on Capital market activation (R = 0.731). This implies that investors who discern tangible advantages from financial robotics, including time efficiency, cost reduction, and improved investment decisions, are more likely to participate actively in the market. When investors recognize the added value of financial robotics, they become more inclined to overcome

potential apprehensions and integrate these tools into investment management.

3. Trust and Credibility as Critical Factors in Market Activation

The study confirmed the pivotal role of trust and credibility in Capital market activation, revealing a strong positive correlation (R = 0.745). This suggests that establishing confidence in automated advisors and their objective decision-making substantially enhances investor engagement. Investors require assurance that automated systems are reliable, transparent, and aligned with their interests, necessitating clear regulatory frameworks and high credibility standards.

4. Security and Risk, and Concerns: Negative Impact

Contrasting positive factors, security risks, and concerns showed a moderately negative relationship with Capital market activation (R = −0.672). This signifies that apprehensions regarding data breaches, financial information theft, and over-reliance on automated systems without human oversight diminish investor participation. Clear regulatory guidelines in this domain can further build trust and alleviate reservations.

5. Usage Intention as a Predictor of Future Engagement

Usage intention displayed a strong positive correlation with Capital market activation (R = 0.738). This indicates that investors with a strong intent to utilize automated advisors are more predisposed to market participation. Consequently, fostering usage intention through positive user experiences, technical support, and benefit clarification can increase actual market engagement.

6. Social Impact and Financial Inclusion: Expanding the Investor Base

Social influence and financial inclusion demonstrated a robust positive relationship with Capital market activation (R = 0.751). This suggests that RAs can bridge the gap between individuals and formal financial institutions, empowering non-traditional participants, including women, youth, and small-scale investors, to engage in markets. By simplifying access to financial services and reducing costs, financial robotics can broaden the investor base and promote more inclusive economic growth.

7. Financial Literacy and Social Participation as Enabling Factors

Financial literacy and social participation exhibited a very strong positive relationship with Capital market activation (R = 0.786). This confirms that enhancing financial awareness and providing financial education platforms empower individuals to comprehend risk-return dynamics and make confident, autonomous financial decisions. Integrating fintech robotics into financial literacy programs can cultivate a financially literate society, stimulate financial discourse, and foster broader, more informed Capital market participation.

- **Collectively, this discussion indicates that RAs hold significant potential to activate Capital markets and advance financial inclusion. However, addressing security and trust concerns through clear regulations and continuous education is essential. Emphasizing perceived benefits and strengthening usage intention can further accelerate adoption.**

6. Conclusion and future research directions

6.1. Conclusion

Based on the findings of this study, several key conclusions can be drawn regarding the potential of financial RAs (robots) and artificial intelligence in advancing financial functions and revitalizing the Capital market :

- **The study revealed a strong positive correlation between investor awareness of RAs and their Capital market participation. This underscores that disseminating knowledge about these technologies is essential for driving adoption .**

- **Perceived advantages of RAs, such as time savings, reduced effort, lower costs, and improved investment decisions, proved to be pivotal motivators for investor adoption and market engagement .**

- **Trust in RAs' reliability and credibility emerged as fundamental to investor acceptance and willingness to rely on these systems for financial decision-making .**
- **Despite benefits, data security and cyber-risk apprehensions remain significant obstacles to adoption. Effectively addressing these concerns is vital for building investor confidence .**
- **The study demonstrated that investors' intention to use RAs strongly predicts actual Capital market participation, highlighting the importance of factors influencing behavioral intent .**
- **RAs hold substantial promise for enhancing financial inclusion, enabling non-traditional investors to access financial services, and broadening the Capital market's investor base .**
- **Financial literacy plays a vital role in boosting investor awareness and trust, empowering informed decisions, and increasing Capital market engagement.**

Overall Implications: These conclusions indicate that RAs and AI represent a transformative force in finance, with significant potential to enhance efficiency, promote financial inclusion, and stimulate equity markets. RAs represent a promising innovation capable of revitalizing Egypt's capital market by enhancing accessibility, reducing biases, and encouraging participation. However, concerns about data security and regulatory transparency must be addressed to increase investor trust and adoption. Financial education remains a critical enabler of RA success

6.2. future research directions

Future studies could adopt a longitudinal design to evaluate actual investment behaviors over time post-RA adoption. Moreover, qualitative investigations into investor perceptions, regulatory challenges, and comparative studies across emerging markets would enrich the understanding of RA integration in the MENA region

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