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MEASURING INVESTOR INTENTIONS IN MALAYSIA: A PILOT STUDY ON ROBO-ADVISORS AMONG MILLENNIALS AND GEN Z

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Abstract: *Robo-advisors, a recent innovation in financial technology, are still emerging in the Malaysian market, primarily targeting millennials and Gen Z. However, the problem of decreasing engagement in using robo-advisors as an alternative source of investment has still been debated recently. This study explores factors influencing the intention to use robo-advisors through a pilot test to evaluate the usability and reliability of the survey questionnaire. Using a quantitative approach, data were collected via an online survey distributed through WhatsApp, Telegram, and Facebook to potential investors in Malaysia aged 18 to 45. A purposive sampling method was employed, and 30 completed questionnaires were analyzed. The pilot study assessed indicator reliability, internal consistency reliability, and convergent validity. Results revealed loadings ranging from 0.627 to 0.967, composite reliability indices from 0.903 to 0.976, and Average Variance Extracted (AVE) values between 0.613 and 0.873, confirming the constructs' reliability. These findings suggest that the questionnaire is suitable for larger-scale research. This preliminary study offers insights to refine the questionnaire content for future investigations and provides an initial understanding of the factors shaping the intention to use robo-advisors in Malaysia. It also highlights the potential of robo-advisors to influence the country's financial technology sector.*

Keywords: *Behavioural intention, Pilot study, Robo-advisors, Gen Z, Millennials*

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Introduction

Financial technology (fintech) signifies the application of technology in providing financial services to offer customer-oriented solutions. The financial services revolution has drawn the attention of major stakeholders in the industry, including banks, regulators, and customers (Daqar et al., 2020; Recskó & Aranyossy, 2024). Researchers and practitioners have also been very enthusiastic and have made the most of their efforts to study the technology adoption of fintech products and services for sustainable performance and competitiveness. The fintech revolution is closely related to the increased ease of internet use among users.

The most recent innovation emerging in the wealth-management platform is robo-advisors (Kwon et al., 2022; Nguyen et al., 2023; Sabir et al., 2023). The term robo-advisor consists of the words 'robot' and 'advisor', representing an artificial intelligence system for wealth management (Au et al., 2021). Robo-advisors, a form of investment using automation technology, play an essential role in transforming the financial industry. Au et al. (2021) also added that robo-advisors use algorithms and innovative technology to manage investor portfolios automatically. Kuah et al. (2024) define robo-advisors as an online portfolio-management solution aiming to invest in client assets by automating client advisory services and systematising financial planning using algorithm-driven software. Thus, substantially less engagement with others is required. Furthermore, it is an online wealth management provider that uses portfolio management algorithms to automatically provide investing recommendations to its clients for low fees. The introduction of robo-advisors triggered the need to understand the factors that shape investors' behavioural intentions towards this platform.

Looking at the digital transformation in the fund management industry, it is worth observing that robo-advisors are performing as well as traditional fund managers, along with the growth potential of the platforms. However, SC Annual Report 2022 and Capital Market Stability Review 2022 reported that the Assets Under Management (AUM) of fund management and Net Asset Value (NAV) of unit trust funds (UTF) recorded a decrease from the year 2021 (4.7 per cent), primarily due to a drop in the market value of assets in line with unfavourable equity markets (Figure 1).

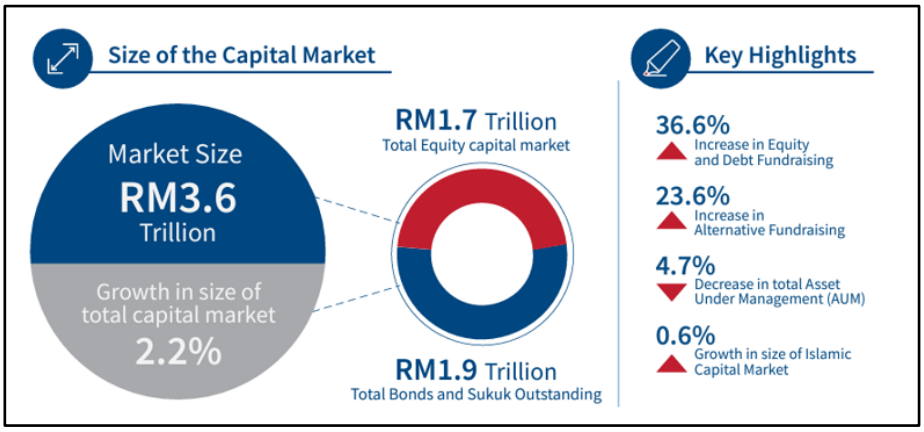

Figure 1: Assets Under Management and Net Asset Value of Unit Trust Funds
Source: SC Annual Report (2022) and Capital Market Stability Review (2022)

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Problem Statement

Although robo-advising offers numerous advantages, its usage has not yet accelerated (Chandani et al., 2021; Isaia & Oggero, 2022; Jung et al., 2018; Khoo et al., 2024). Further, Bhatia et al. (2021) discussed that information technology has been extensively used in financial markets; however, the use of robo-advisors remains low. Using the new platform in portfolio investing is crucial and needs further discussion. Numerous investors have experienced substantial financial losses from engaging in investing activities without adequate knowledge, instead relying on their inadequate understanding of financial instruments (Ruslan et al., 2022). In line with this issue is the uncertainty of financial literacy among Malaysian investors (Financial Education Network, 2023), a significant obstacle to encouraging the use of robo-advisors as an investment alternative. According to Isaia and Oggero (2022), financial literacy is crucial in robo-advising services. More precisely, those with high financial literacy are more inclined to be potential users of robo-advisors. In contrast, a basic level of financial literacy does not possess any predictive capability. The importance of financial literacy is also manifested in the ability of investors to assess the risk and return of robo-advisory investments. Less literate investors may feel less confident facing market fluctuations and make investment decisions based on in-depth analysis.

The lack of engagement by young adults in investment activities has led to serious financial issues and literacy, which in turn affect retirement planning (Mohta & Shunmugasundaram, 2024). Therefore, it is crucial to highlight determinant factors of intention to use robo-advisors among potential investors aged 18 to 45. The younger generation, who may have limited financial literacy, can utilise robo-advisors to adjust their investment portfolio and make impartial financial choices (Ruslan et al., 2022). As robo-advisory services evolve, understanding consumer perceptions and trust toward these platforms becomes essential (Yi et al., 2023).

Research Objectives

This pilot study was carried out to fulfil the objectives: (1) to analyse the reliability and validity of each measurement item and (2) to prepare a set of instruments for further investigation. Therefore, this pilot study is committed to identifying any instances of ambiguous question direction that may pose comprehension challenges throughout the research process.

Literature Review

This section discusses theories and models for comprehending and advancing the subject in the related field. In the context of information technology adoption, this study has used the Unified Theory of Acceptance and Use of Technology (UTAUT), a technological acceptance concept developed by Venkatesh et al. (2003). The UTAUT seeks to elucidate user intention to use an information system and subsequent usage behaviour. The first three are direct determinants of usage intention and behaviour, and the fourth is a direct determinant of user behaviour. The theory was developed by reviewing and consolidating the constructs of eight models that earlier research had employed to explain information systems usage behaviour. The model provides empirical insight into technology acceptance by comparing prominent technology acceptance theories, which often offer competing or partial perspectives on the subject.

Intention to Use Robo-Advisors

The actual use behaviour among investors on the adoption of robo-advisory services refers to the investors' overt propensity to utilise automated digital platforms to aid their investment

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decision-making process (Bhatia et al., 2021; Cheng et al., 2019; Hoe, 2023; Ramesh et al., 2023). Various factors have influenced the adoption of robo-advisory services. Theoretically, Venkatesh and Davis (2000) have demonstrated a habitually high correlation between behavioural intention and actual use. Thus, recent studies by Roh et al. (2023) claim that behavioural intention substantially impacts the determination of the intention to use. This research highlights the direct correlation between users' initial willingness to adopt a technology and their engagement. Behavioural intention acts as a crucial precursor to actual usage, underscoring the need for FinTech companies to foster positive attitudes and perceptions towards their platforms.

Previous study by Zamzami (2021) found that the ability to manage behaviour concerning online investment can also contribute to an increased intention to use it. This ability encompasses a user's confidence in making informed investment decisions and their comfort with the digital tools provided. When users can effectively manage their investments online, their intention to use such platforms grows stronger.

Combining those insights, it becomes evident that both performance expectancy and behavioural intention to use robo-advisors and online investment behaviours play pivotal roles in driving the adoption of FinTech services. Investment providers can leverage these findings by providing educational resources, user-friendly tools, and personalized support to boost users' confidence and perceived ease of use. By addressing both the psychological and practical aspects of user engagement, companies can enhance the overall appeal and accessibility of their robo-advisors and other financial technologies. This holistic approach ensures a more robust and sustained adoption of FinTech solutions, ultimately contributing to the industry's growth and innovation.

Performance Expectancy

Performance expectancy refers to an individual's perception that utilising technology will offer advantages to users in carrying out specific tasks (Venkatesh et al., 2003). This factor explains the belief that using certain technologies will benefit or improve the performance of the individual in executing specific tasks. In other words, performance expectancy is the user's tendency to embrace robo-advisors contingent upon their perception that robo-advisors can effectively facilitate financial and investment management (Gan et al., 2021). Furthermore, Senyo and Osabutey (2020) claim that performance expectancy is significantly related to the behavioural intention to use mobile money services. This relationship highlights the importance of users' expectations regarding the effectiveness and benefits of a technology in influencing their intention to adopt it.

A previous study by Gan et al. (2021) and Rühr et al. (2019) found a strong and positive relationship between performance expectancy and adopting robo-advisors. These studies indicate that when users perceive robo-advisors as capable of delivering substantial financial benefits, such as improved investment returns and better portfolio management, their likelihood of adopting these digital advisors increases significantly. These findings underscore performance expectancy's pivotal role in shaping users' behavioural intentions across various FinTech platforms. For mobile money services, perceived convenience, speed, and security are critical factors that drive user adoption. Similarly, for robo-advisors, the promise of sophisticated financial analysis, personalized investment strategies, and potentially higher returns are key motivators for users. This finding has also been supported by Alkhwaldi et al.

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(2022), Kurniasari et al. (2023), Rabaa'i and Zhu (2021), and Srivastava et al. (2024) claim that performance expectancy has a significant impact on users' behavioural intentions. A similar study found a significant relationship between performance expectancy and behavioural intention in Malaysia's study of Islamic adoption (Rahim et al., 2023).

Investment providers can harness these insights by emphasizing their technologies' tangible benefits and superior performance in their marketing and user education efforts. By clearly communicating how their platforms can meet and exceed user expectations, they can enhance the perceived value of their services. This strategy boosts initial adoption rates and encourages long-term user engagement and satisfaction. Thus, performance expectancy is a vital determinant of behavioural intention to use robo-advisors and other fintech services. Companies that effectively address and elevate users' performance expectations are more likely to succeed in the highly competitive fintech landscape, fostering innovation and growth in the industry.

Effort Expectancy

Effort expectancy is the degree of ease associated with using the system (Venkatesh et al., 2003). Numerous studies on the FinTech industry demonstrate that effort expectancy plays a significant role in behavioural intention to use robo-advisors (Milani, 2019; Nguyen et al., 2023; Nourallah, 2023). Several studies have shown that when potential users perceive robo-advisors as user-friendly and requiring minimal effort, their willingness to engage with these digital financial advisors increases markedly. This correlation underscores the importance of designing intuitive and accessible interfaces for robo-advisors to enhance user adoption rates. Furthermore, in the competitive landscape of FinTech, investment providers that prioritize reducing user effort can gain a significant advantage. By simplifying the user experience, these companies can attract a broader audience, including those who may be less tech-savvy or hesitant to adopt new technologies. This approach boosts initial adoption rates and fosters long-term user engagement and satisfaction. As a result, effort expectancy emerges as a crucial determinant in the successful implementation and widespread acceptance of robo-advisors in the financial services sector.

Moreover, previous research found a significant connection between effort expectancy and behavioural intention to use other fintech platforms, such as mobile banking apps, peer-to-peer lending platforms, and digital payment systems. (Alomari & Abdullah, 2023; Aseng, 2020; Kurniasari et al., 2023; Rabaa'i & Zhu, 2021; Senyo & Osabutey, 2020). Users consistently favour platforms that are easy to navigate and require minimal cognitive and physical effort, reinforcing the universal importance of effort expectancy across various FinTech services. For instance, studies have shown that mobile banking apps with straightforward interfaces and seamless user experiences enjoy higher adoption rates and user satisfaction. Similarly, peer-to-peer lending platforms that simplify the lending and borrowing processes attract more participants, boosting their overall market share. Digital payment systems prioritising ease of use also see increased transaction volumes and customer loyalty.

This widespread influence of effort expectancy highlights the necessity for investment providers to invest in user-centric design and continuous usability improvements. By doing so, they can enhance user engagement, reduce barriers to entry, and ultimately drive the growth and success of their platforms. Therefore, effort expectancy remains critical for robo-advisors

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and the broader financial technology ecosystem, shaping users' behavioural intentions and overall adoption trends.

Social Influence

Social influence is users' tendency to rely on others' opinions and recommendations when making decisions about adopting or using such systems (Venkatesh et al., 2003). This phenomenon underscores the importance of peer pressure, expert endorsements, and social networks in shaping users' attitudes toward new technologies. In the context of robo-advisors, social influence can manifest through various channels, such as online reviews, testimonials, word-of-mouth recommendations, and social media discussions. Positive feedback from trusted sources can significantly enhance users' confidence in a platform, increasing their likelihood of adoption.

A study by Nguyen et al. (2023) demonstrates that behavioural intention is influenced by the favourable impact of social influence toward using the robo-advisory system. Similarly, Gerlach and Lutz (2019), Yeh et al. (2022), and Odeh (2019) have found that users are impacted by others' expectations when deciding to use new technologies, indicating that social influence plays a vital role in shaping user opinions. Furthermore, social influence is crucial in assessing the likelihood of users adopting cryptocurrencies, as highlighted by Alomari and Abdullah, 2023). Furthermore, Kumari et al. (2023) state that social influence significantly impacts the user adoption of cryptocurrency using blockchain technology. Another study by Rahim et al. (2022) found a significant relationship between social influence and behavioural intention in Malaysia's Islamic adoption context. Additionally, social influence is an essential factor in the behavioural intention to use robo-advisors, as evidenced by the findings of Gan et al. (2021) and Rabaa'i and Zhu (2021).

Facilitating Conditions

Facilitating conditions refers to the user's perceptions of the facilities and support necessary to carry out a specific behaviour (Venkatesh et al., 2003). Facilitating conditions for using new financial technology, especially robo-advisors, encompass several key aspects. These include the availability of a robust technical infrastructure, such as high-speed internet and secure data encryption, and comprehensive user support and training resources, including tutorials and responsive customer service. Additionally, the technology must be compatible with existing financial systems and adhere to regulatory and legal standards to ensure user trust and compliance. Ease of use and accessibility, with intuitive interfaces and affordable pricing, further lower the barrier to entry. Institutional support from reputable financial organizations and increased user knowledge through educational efforts also play crucial roles in facilitating the adoption and effective use of robo-advisors.

The studies by Gan et al. (2021) highlight the significant role that facilitating conditions play in shaping users' behavioural intentions and their actual use of mobile financial services. Facilitating conditions, which include the availability of necessary resources, support, and infrastructure, directly impact whether users decide to engage with and continue using a technology. Similarly, Yeh et al. (2022) emphasize that supportive settings, particularly those related to technical infrastructure, positively influence users' behavioural intentions. This suggests that when users perceive that a strong, reliable infrastructure supports a technology, they are more likely to have a positive attitude toward using it.

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Additionally, Rahim et al. (2022) suggest that understanding consumer behaviour in the context of technology use is crucial. By analyzing how users interact with technology, we can better define individual preferences and usage patterns, leading to more effective and tailored technological solutions. This comprehensive understanding of consumer behaviour underscores the importance of facilitating conditions in the successful adoption and sustained use of new technologies.

Financial Literacy

A study by Isaia and Oggero (2022) demonstrates that financial literacy is pivotal in using robo-advising services. Alomari and Abdullah (2023), in their research of behavioural intention to adopt cryptocurrency as an investment alternative, stated that people with extensive knowledge (financial literacy) are more likely to make informed decisions about using cryptocurrencies. Individuals with greater financial literacy are likelier to adopt cryptocurrency than those with lesser financial literacy since they comprehend Bitcoin information quickly and make more informed choices (Zhao & Zhang, 2021).

Methodology

In this pilot study, the sampling of respondents is based on purposive sampling. The purposive sample method was selected to ensure that the respondents gathered were the most suitable individuals to supply the required data (Bougie & Sekaran, 2020). The sample comprises existing investors aged 18 to 45 with online investment experience. A preliminary test was conducted before proceeding with the pilot test. The pre-test is a crucial stage in which a panel of experts is enlisted to evaluate the questionnaire for its face and content validity to identify and resolve any difficulties with the instruments or questionnaire design (Memon et al., 2017). Pre-testing the questionnaire aims to verify that the respondents comprehend the items. Moreover, this can assist researchers in identifying and addressing any deficiencies before presenting the definitive version of the questionnaire to the intended participants, hence minimizing biases (Sekaran & Bougie, 2016).

The content validity of the instruments was assessed by seven panels of specialists in education, language, and methodology. The panel members were obligated to assess the items and instruments by email, considering both the face and content validity. These experts provided their perspectives and recommendations on the content of each dimension covered in the questionnaire. Finally, modifications were implemented to the questionnaire following their feedback. As the questionnaires have gone through pretests and revisions made by a group of expert panels, the validity and reliability of the instruments for the pilot study are expected to be sufficient. A pilot study was conducted to evaluate the internal consistency of each item in the questionnaire and determine its reliability. Following the recommendation from Memon et al. (2017), a sample size of 30 respondents was employed for this pilot test. All these studies agreed that a sample size ranging from 25 to 100 participants is sufficient for conducting a pilot test. In addition, the researcher aims to limit the number of respondents during the pilot test stage to avoid an excessive sample size. These respondents tend to be more receptive and cooperative (Memon et al., 2017). Crucially, to prevent data communication and bias, the participants who took part in the pilot study would be excluded from the final survey.

The pilot test was conducted over a period of two weeks. The pilot test has been commenced by generating and conducting electronic (online) questionnaires via the Google Forms platform. Subsequently, the researcher intentionally selects appropriate participants based on

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specific criteria, namely, those who are at least 18 to 45 years old and possess some knowledge of various forms of digital investment. Subsequently, the researcher distributed the survey link to the chosen participants through online applications such as WhatsApp and Telegram or social media platforms such as Facebook, Instagram, TikTok, and LinkedIn. To guarantee that all participants complete the survey within the required timeframe, the researcher has sent a follow-up communication to the chosen respondents. The survey has been supervised, and once it achieves the necessary quota, the survey link will be deactivated, and the replies from the completed survey will be downloaded from Google Forms.

The online survey was considered suitable for gathering data from current investors in Malaysia. According to the online survey, all the questions could be answered within a time frame of around five to eight minutes. Thus, it is presumed that the allocated time for the survey will be ample to obtain participants' responses (Devisakti & Ramayah, 2019). Participants were not allowed to proceed to the following questions in the online survey unless they answered the unanswered questions. This would additionally help prevent any potential data gaps in the primary trial at a later stage.

The pilot study incorporated a closed-ended question format in the questionnaire. In a closed-ended questionnaire, respondents are presented with a predetermined set of alternatives from which they must choose. All items in a questionnaire that utilize a nominal and ordinal Likert are classified as closed-ended questions (Sekaran & Bougie, 2016). All the constructs were adapted and adopted from past literature for this study. There are two sections, namely Section A for demographic profiles (six questions), Section B for Performance Expectancy (six questions), Section C for Effort Expectancy (six questions), Section D for Social Influence (six questions), Section E for Facilitating Conditions (six questions), Section F for Financial Literacy (six questions), and Section G for Behavioural Intention (five questions). All instruments in Sections B to F are being measured using a seven-point Likert scale from a scale of 1-7 (1=strongly disagree and 7=strongly agree), while Section G is being measured using a five-point Likert scale from a scale of 1-5 (1=strongly disagree and 5=strongly agree).

Results and Discussion

The 30 data were analyzed using two software programs: Statistical Product and Service Solutions (SPSS) for measuring the frequency test and SmartPLS4.1.0.9 for measuring variance-based structural equation modeling (SEM) using partial least squares (PLS) path modeling. From Table 1, most respondents were female (60%) and male (40%). About 66.7% of respondents live in urban areas, while 33.3% live in rural areas. The northern region resulted in 13.3 per cent of the respondents, the southern region (16.7%), the central region (46.7%), and the eastern region (23.3%). Most of the respondents were in the 36-40 age group (40%), followed by 41-45 years (23.3%), 31-35 years (16.7%), 26-30 years (13.3%), and 18-25 years (6.7%). The highest academic qualifications among master's degree holders were the most responded to (10%), followed by bachelor's degree holders (23.3%), PhD and Diploma holders (20%), and others (3.3%). In terms of investment experience, half of the respondents have 1-5 years of investment experience, more than ten years (23.3%), less than a year (16.7%), and 6-10 years of experience (10%).

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Table 1: Socio-demographic profiles

Profile	Description	Frequency	Per cent
Gender	Male	12	40.0
	Female	18	60.0
Residential area	Rural	10	33.3
	Urban	20	66.7
Hometown/Region	Northern region (Perlis, Kedah, Pulau Pinang, and Perak)	4	13.3
	Southern region (Johor)	5	16.7
	Central region (Selangor, Wilayah Persekutuan Kuala Lumpur and Putrajaya, Negeri Sembilan, and Melaka)	14	46.7
	Eastern region (Pahang, Terengganu, and Kelantan)	7	23.3
Age	18-25 years old	2	6.7
	26-30 years old	4	13.3
	31-35 years old	5	16.7
	36-40 years old	12	40.0
	41-45 years old	7	23.3
Highest Academic Qualification	PhD	6	20.0
	Master's Degree	10	33.3
	Bachelor's Degree	7	23.3
	Diploma	6	20.0
	Others	1	3.3
Investment Experience (in years)	Less than 1 year	5	16.7
	1-5 years	15	50.0
	6-10 years	3	10.0
	More than 10 years	7	23.3

Source: Author's work

The results of the measurement model are exhibited in Table 2. The measurement model analysis was used to evaluate the reliability and validity of the data for six variables (performance expectancy, effort expectancy, social influence, facilitating conditions, financial literacy, and behavioural intention). Loading values should be higher than 0.5 (Ramayah et al., 2018), as other items have high loading scores. The loadings for this study are between 0.627 and 0.967.

Composite reliability (CR) and average variance explained (AVE) were used to elaborate on the reliability of the data. Hair et al. (2017) proposed that convergent validity can be established if the AVE is >0.5 and the CR is>0.7. The measurement model results demonstrated that the AVE was between 0.613 and 0.873, and the CR was between 0.903 and 0.976, higher than the threshold values proposed by Hair et al. (2017) and Ramayah et al. (2018). Therefore, this pilot study was confirmed to be further analyzed for final investigation with larger respondents.

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Table 2: Results of the measurement model

Profile	Item	Loadings	CR	AVE
Behavioural Intention	BI1	0.897	0.963	0.840
	BI2	0.960		
	BI3	0.880		
	BI4	0.921		
	BI5	0.922		
Performance Expectancy	PE1	0.867	0.947	0.748
	PE2	0.868		
	PE3	0.852		
	PE4	0.863		
	PE5	0.869		
	PE6	0.872		
Effort Expectancy	EE1	0.855	0.969	0.838
	EE2	0.941		
	EE3	0.967		
	EE4	0.939		
	EE5	0.932		
	EE6	0.854		
Social Influence	SI1	0.627	0.903	0.613
	SI2	0.926		
	SI3	0.846		
	SI4	0.847		
	SI5	0.763		
	SI6	0.644		
Facilitating Conditions	FC1	0.940	0.976	0.873
	FC2	0.943		
	FC3	0.967		
	FC4	0.954		
	FC5	0.884		
	FC6	0.917		
Financial Literacy	FL1	0.758	0.955	0.781
	FL2	0.897		
	FL3	0.949		
	FL4	0.898		
	FL5	0.894		
	FL6	0.896		

Conclusions

Conducting a pilot study is crucial before commencing the leading research on the intention of millennials and Gen Z in Malaysia to employ robo-advisors. The usefulness of the questionnaire, as assessed, and the high proportion of positive responses supported the reliability of the more significant inquiry for future use. In addition, the pilot study showed that conducting an online survey was effective for gathering data. This work emphasizes the significance of conducting a pilot study and contributes to advancing best practices in researching the intention to utilize robo-advisors. The favourable feedback received from the current investors who utilize several online investment platforms validated the suitability of

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the instruments for the main study, which was a pivotal result. This pilot study demonstrated that UTAUT theory could be a helpful research paradigm for evaluating the behavioural intention and usage of robo-advisors in the financial technology setting. This paper emphasizes the significance of conducting a pilot study to enhance research design and contribute to the existing information in the context of pilot studies and robo-advisors.

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