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Article

Determinants of Individual Investors' Investment Decisions: Evidence from the Pakistan Stock Exchange Using the UTAUT Framework

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Abstract

This study examines the applicability of the Unified Theory of Acceptance and Use of Technology (UTAUT) in explaining the factors that influence individual investors' investment decisions in the Pakistan Stock Exchange. Originally developed to analyze technology adoption behavior, the UTAUT framework is adapted in this study to assess the antecedents of investment behavior within the context of a developing financial market. Specifically, the study investigates the four core constructs of the model—performance expectancy, effort expectancy, social influence, and facilitating conditions—and their effects on individual investment decisions. Quantitative data were collected from a sample of 210 individual investors using a structured questionnaire based on a five-point Likert scale. Structural equation modeling (SEM) was employed to examine the relationships among the study constructs. In addition, the moderating effects of age, gender, investment experience, and voluntariness of use were analyzed to provide deeper insights into investor behavior within the Pakistan Stock Exchange context. The findings are expected to offer meaningful contributions to both theory and practice. From a theoretical perspective, the study extends the application of the UTAUT model to individual investment decision-making in emerging financial markets. Empirically, the results indicate that financial capital and financial literacy are critical determinants of investment decisions. Furthermore, perceived profitability, perceived productivity, and expectations of performance improvement emerge as significant factors, reflecting the central role of performance expectancy within the model. The study yields important policy, educational, and managerial implications for Pakistan and other emerging economies. In particular, it highlights the need for targeted technology adoption and financial literacy interventions that align with the specific characteristics and expectations of individual investors in the Pakistan Stock Exchange. By applying the UTAUT framework to the investment context of a developing market, this research enriches the literature on financial decision-making and technology acceptance and provides a robust foundation for future research and practical interventions aimed at enhancing investor participation, confidence, and overall market development.

Keywords: individual investors; investment decision-making; Pakistan Stock Exchange; technology adoption; financial literacy; emerging financial markets

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1. Introduction

Understanding the determinants of individual investors' decision-making has become increasingly important in the context of rapidly evolving and technology-driven financial markets. Investment behavior is no longer influenced solely by traditional financial indicators; rather, it is shaped by technological adoption, behavioral factors, perceived risk, and access to financial knowledge (Willis, 2008). This shift is particularly relevant for emerging economies such

as Pakistan, where increasing digitalization of financial services and growing retail investor participation demand a deeper understanding of how individuals make investment decisions within the stock market.

The Unified Theory of Acceptance and Use of Technology (UTAUT), developed by Venkatesh et al. (2003), offers a comprehensive framework for explaining individuals' acceptance and use of technology. The model identifies four key determinants—performance expectancy, effort expectancy, social influence, and facilitating conditions—that jointly explain behavioral intention and usage behavior. Although originally designed for information systems research, UTAUT has been increasingly applied in financial contexts to explain technology-enabled decision-making, making it a relevant framework for examining investment behavior in modern capital markets.

Existing studies highlight the importance of social influence in shaping financial decisions, as individual investors frequently rely on the opinions and experiences of family members, peers, and social networks before committing capital (Mohamed et al., 2023). Similarly, performance expectancy has been shown to play a central role in technology-based investing, as investors are more likely to adopt digital platforms when they perceive them to enhance profitability, productivity, and overall investment performance. Investors with higher levels of financial literacy and greater familiarity with digital technologies demonstrate stronger intentions to utilize technological tools in their investment decisions (Kurniawan, 2023).

Investment decision-making is inherently complex and sensitive, as it is influenced by multiple interrelated factors, including facilitating conditions, social pressure, performance expectations, and financial knowledge (Zhang et al., 2023). In developing financial markets, limitations in infrastructure, unequal access to information, and varying levels of investor literacy may further exacerbate inefficiencies in investment behavior. Despite the growing relevance of technology in financial markets, empirical evidence on how these factors jointly influence individual investors' decisions in the Pakistan Stock Exchange remains limited.

This study addresses this gap by applying the UTAUT framework to examine the determinants of individual investors' investment decisions in the Pakistan Stock Exchange. By integrating technology adoption constructs with financial knowledge considerations, the study provides a context-specific understanding of investor behavior in an emerging market. In doing so, it contributes to the literature on behavioral finance and technology acceptance by extending the application of UTAUT beyond traditional technology adoption settings.

The findings of this study have important implications for multiple stakeholders. For policymakers and regulators, understanding technology adoption behavior can support the development of regulatory structures that enhance market transparency, transaction security, and investor protection. For financial institutions and brokerage firms, insights into investors' expectations and constraints can inform the design and improvement of digital trading platforms that better align with user needs, thereby enhancing trust and user experience (Behl et al., 2022). Additionally, the Pakistan Stock Exchange may benefit from these insights in strengthening risk management practices and investor education initiatives. Finally, individual investors can gain greater awareness of the factors influencing their investment decisions, enabling more informed and rational participation in capital markets.

2. Literature Review

2.1. Social Influence

Social influence plays a critical role in shaping individual investors' behavior, particularly in financial markets that are characterized by uncertainty and information asymmetry. Because financial markets are dynamic rather than static, understanding how social factors affect investor decisions is essential for predicting behavioral patterns and market movements. Prior literature provides strong evidence that individual investors' actions are often influenced by the behavior and opinions of others. Barber et al. (2008) offers a seminal contribution by examining whether retail trading activity affects financial markets. Their findings demonstrate that trades made by individual investors can influence market dynamics, thereby highlighting the collective impact of socially driven investment behavior. This suggests that social interaction is not merely peripheral but a fundamental component of investment decision-making. Similarly, Hong and Stein (2007) emphasize the role of social interaction and information diffusion in financial markets, showing that trading volume and stock prices are closely linked to social processes such as information sharing and conformity pressures. Their empirical analysis indicates that investors often move in herds, responding to signals generated within social networks rather than relying solely on independent analysis.

In emerging markets such as Pakistan, where cultural and familial ties are strong, social influence may exert an even greater effect on financial decisions. Awais et al. (2016) demonstrate that peer and family networks significantly shape investment choices, particularly in collectivist societies characterized by high levels of familism. In such contexts, investment behavior is often socially embedded, with individuals relying heavily on community-based information and advice. Moreover, the growing prevalence of social media has introduced new channels through which financial opinions and information are disseminated. Cookson et al. (2024) document how social media platforms amplify investor sentiment and can trigger market movements through influencer endorsements and trending narratives. Collectively, these findings suggest that social influence remains a powerful determinant of

individual investment decisions, especially in developing financial markets. Thus, the following hypothesis is proposed.

H1: Social influence has a positive impact on the investment decisions of individual investors in Pakistan.

2.2. Facilitating Conditions

Facilitating conditions refer to the extent to which individuals believe that technical, organizational, and infrastructural resources are available to support the use of technology. Within the UTAUT framework, facilitating conditions are considered essential for enabling effective technology adoption and sustained usage. In the context of investment decision-making, such conditions may include access to reliable internet services, availability of trading platforms, technical skills, and institutional support. Although not directly focused on financial markets, Uttal et al. (2013) highlights how technological competence and environmental support influence individuals' ability to adopt home computing technologies. Their findings underscore the importance of technological readiness and skill flexibility, which can be extended to the financial domain where investors must possess adequate technical capabilities to utilize digital investment platforms effectively. A lack of such enabling conditions may constrain investors' ability to benefit from financial technologies.

Baker and Wurgler (2007), in their analysis of investor sentiment, emphasize how external environmental factors shape investor perceptions and market outcomes. While their work does not explicitly address facilitating conditions, it reinforces the idea that broader contextual factors influence investor behavior. More recent research has focused on the role of financial technology (fintech) as an enabling infrastructure within financial markets. Fintech adoption positively affects market liquidity, indicating that supportive technological architectures can enhance market efficiency and participation. Similarly, Tang et al. (2024) show that fintech innovations improve access to financial assets and investment opportunities, although they caution that disparities in technical skills may limit these benefits for some investors. These studies collectively suggest that facilitating conditions play a crucial role in enabling individual investors to effectively engage in investment activities through technology-driven platforms. Thus, the following hypothesis is proposed.

H2: Facilitating conditions have a positive impact on the investment decisions of individual investors in Pakistan.

2.3. Performance Expectancy

Performance expectancy is a core construct of the UTAUT model and refers to the degree to which individuals believe that using a particular technology will enhance their performance. In investment settings, performance expectancy relates to investors' perceptions that technology will improve decision quality, increase profitability, and enhance efficiency. The foundational work underpinning performance expectancy originates from research on perceived usefulness in technology adoption. Although early studies focused on computer usage rather than financial technologies, they established that individuals are more likely to adopt technologies they perceive as beneficial to task performance. Venkatesh et al. (2012) further elaborated on this concept by emphasizing the motivational role of performance expectancy in shaping technology acceptance and usage behavior.

In the investment context, Kurniawan (2023) demonstrates that digital trading platforms offering real-time data, analytical tools, and automated trading features significantly enhance investors' ability to make faster and more informed decisions. These performance-enhancing features increase investors' perceived value of technology and strengthen their intention to use it. Additionally, Gefen et al. (2003), in their study on trust and technology acceptance in online transactions, find that perceived utility strongly predicts users' behavioral intentions. This insight is particularly relevant to financial markets, where trust in technology and confidence in its performance are critical for adoption. Thus, the following hypothesis is proposed.

H3: Performance expectancy has a positive impact on the investment decisions of individual investors in Pakistan.

2.4. Financial Knowledge

Financial knowledge, often referred to as financial literacy, is widely recognized as a fundamental determinant of sound financial decision-making. A substantial body of literature has examined how financial knowledge influences investment behavior, risk management, and market participation. Lusardi and Mitchell (2014) provide a comprehensive overview of how financial literacy is defined and measured, highlighting the multidimensional nature of the concept and the challenges associated with its assessment. Hastings et al. (2013) investigate the impact of financial education programs and find that improved financial knowledge leads to more informed financial behaviors. Similarly, Atkinson and Messy (2012) present a global perspective on financial education initiatives, emphasizing their role in enhancing individuals' ability to navigate increasingly complex financial markets. Van Rooij et al. (2011)

specifically examine the relationship between financial literacy and stock market participation, revealing a positive association between higher financial knowledge and greater engagement in equity markets.

Furthermore, Lusardi and Tufano (2015) focus on debt literacy as a specific dimension of financial knowledge, demonstrating that individuals with a better understanding of debt management are more capable of avoiding costly financial mistakes. Effective debt management, in turn, enhances investors' capacity to allocate resources toward productive investments. Collectively, these studies suggest that financially knowledgeable individuals are more likely to participate in the stock market, diversify their portfolios, and make rational investment decisions. Thus, the following hypothesis is proposed.

H4: Financial knowledge has a positive impact on the investment decisions of individual investors in Pakistan.

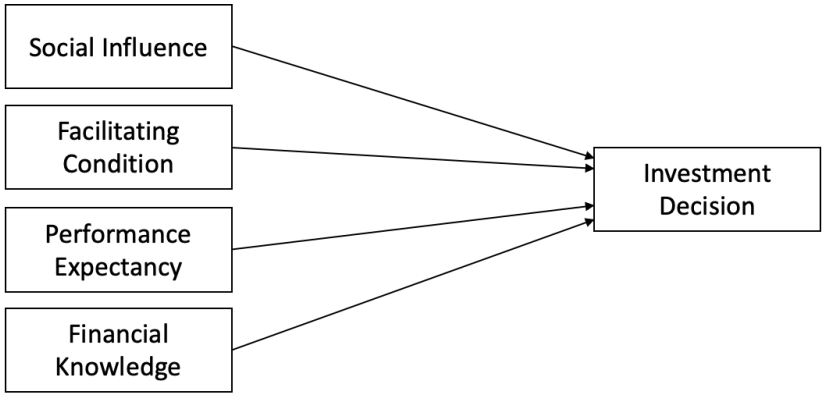

Figure 1. Theoretical framework.

3. Methodology

This study adopts a quantitative research approach to examine the applicability of the UTAUT in explaining individual investors' investment decisions in the Pakistan Stock Exchange. Quantitative methods are particularly suitable for theory validation and hypothesis testing, as they allow for systematic measurement and statistical analysis of relationships among variables. The study follows a causal research design, as it seeks to explain cause-and-effect relationships between technology adoption constructs—such as performance expectancy, social influence, facilitating conditions, and financial knowledge—and investment decision-making behavior. Measurement scales used in the study were adapted from established literature to ensure conceptual consistency and methodological rigor.

The target population of the study consists of individual investors actively participating in the Pakistan Stock Exchange. Existing investors were selected as respondents because of their practical exposure to investment decision-making and familiarity with the study variables. Data were collected from a sample of 210 individual investors, all of whom were requested to complete a structured questionnaire. Convenience sampling was employed due to its efficiency and feasibility in accessing respondents who were readily available and willing to participate. Although non-probabilistic, this sampling technique is widely used in behavioral and financial research, particularly when the study population is specialized. The sample size of 210 respondents is considered adequate for Structural Equation Modeling (SEM), as it exceeds the recommended minimum threshold of 200 respondents for reliable model estimation (Kline, 2017). Additionally, power analysis using G*Power software indicated that a minimum sample size of 129 would be sufficient, further supporting the adequacy of the selected sample. The sample comprised individual investors who frequently engage in stock market activities and are employed in either the public or private sectors in Pakistan. All 210 distributed questionnaires were returned and deemed usable for data analysis, resulting in a response rate of 100 percent. This ensured sufficient statistical power and enhanced the credibility of the empirical findings.

Data were collected in May 2025 using a structured questionnaire designed to capture quantitative responses. The instrument employed a five-point Likert scale, ranging from 1 (strongly disagree) to 5 (strongly agree), which is commonly used in behavioral and technology adoption research. The questionnaire items were adapted from prior validated studies, particularly those grounded in the UTAUT framework proposed by Venkatesh et al. (2003), to ensure content validity and reliability. Careful attention was given to questionnaire design to minimize respondent fatigue and ambiguity. Items were simplified and clearly worded to reduce confusion and enhance response accuracy.

The questionnaires were personally administered to individual investors in Pakistan, which facilitated higher response quality and ensured that respondents clearly understood the questions. Completed questionnaires were carefully reviewed and organized to maintain data consistency and support robust statistical analysis. Overall, the

data collection process was structured to align with the study's objectives and to ensure the reliability and validity of the findings derived from the analysis.

4. Results

Table 1 presents the demographic profile of the 210 individual investors surveyed. The sample is predominantly male, reflecting the current participation pattern in the Pakistan Stock Exchange. Most respondents fall within the 30–49 age range, indicating an economically active investor group with stable income and investment capacity. The majority hold at least a bachelor's degree, with a substantial proportion possessing postgraduate qualifications, suggesting a well-educated investor base. In terms of investment experience, most respondents have more than three years of market exposure, indicating familiarity with investment platforms and decision-making processes. Employment is mainly concentrated in the private and public sectors, while income levels show that a large proportion of investors earn above PKR 50,000 per month. Overall, the demographic profile suggests that the sample consists of experienced, educated, and financially capable investors, making it suitable for analyzing investment decisions and technology adoption in the Pakistan Stock Exchange.

Table 1. Participants profile (n=210).

Variable	Category	Frequency	Percentage (%)
Gender	Male	162	77.1
	Female	48	22.9
Age Group	Below 30 years	46	21.9
	30–39 years	72	34.3
	40–49 years	58	27.6
	50 years and above	34	16.2
Education Level	Bachelor's degree	78	37.1
	Master's degree	96	45.7
	MPhil/PhD	36	17.1
Investment Experience	Less than 3 years	52	24.8
	3–5 years	74	35.2
	More than 5 years	84	40
Employment Status	Private sector	112	53.3
	Public sector	58	27.6
	Self-employed	40	19
Monthly Income (PKR)	Below 50,000	44	21
	50,000–100,000	76	36.2
	Above 100,000	90	42.9

The measurement model was assessed to ensure that the constructs were measured reliably and validly before examining the structural relationships. Convergent validity was evaluated through standardized factor loadings, while reliability was assessed using Cronbach's alpha and composite reliability. Discriminant validity and multicollinearity were also examined. Table 2 presents the standardized factor loadings for all measurement items. All factor loadings exceed the recommended threshold of 0.70, confirming strong convergent validity. Facilitation condition items loaded between 0.900 and 0.917, indicating that infrastructural and technical support is well captured. Financial knowledge items ranged from 0.867 to 0.905, suggesting that the construct effectively reflects investors' financial literacy and competence. Investment decision items showed particularly high loadings (0.929–0.946), reflecting strong measurement of the dependent variable. Performance expectancy and social influence also exhibited high loadings, validating their relevance in explaining investor behavior. Table 2 presents the reliability and validity statistics for all constructs. All constructs demonstrate high internal consistency, with Cronbach's alpha and composite reliability values exceeding the recommended threshold of 0.70. Convergent validity is confirmed, as all AVE values exceed 0.50, indicating that each construct explains more than half of the variance in its indicators.

Discriminant validity was assessed using the Heterotrait–Monotrait (HTMT) ratio, which is considered a robust criterion for SEM-based studies. Table 3 presents the HTMT values for all construct pairs. All HTMT values are below the conservative threshold of 0.85, confirming that the constructs are empirically distinct and that discriminant validity is achieved.

To ensure that multicollinearity did not bias the regression estimates, the Variance Inflation Factor (VIF) was examined. Table 4 presents the VIF values for the predictor constructs. All VIF values are well below the threshold of 5, indicating that multicollinearity is not a concern and that each independent variable contributes uniquely to explaining investment decisions.

Following confirmation of the measurement model, the structural model was evaluated to test the proposed hypotheses. Path coefficients, t-values, and p-values were examined to assess the strength and significance of the relationships. Table 5 presents the path coefficients and significance levels.

Table 2. Measurement model assessment.

Item	Loadings	Cronbach's α	Composite Reliability	Average Variance Extracted (AVE)
Facilitation Condition		0.897	0.898	0.829
FC1	0.917			
FC2	0.915			
FC3	0.900			
Financial Knowledge		0.932	0.933	0.787
FK1	0.895			
FK2	0.900			
FK3	0.905			
FK4	0.867			
FK5	0.868			
Investment Decision		0.932	0.932	0.880
ID1	0.929			
ID2	0.946			
ID3	0.938			
Performance Expectancy		0.890	0.892	0.820
PE1	0.895			
PE2	0.918			
PE3	0.903			
Social Influence		0.867	0.870	0.791
SI1	0.891			
SI2	0.907			
SI3	0.869			

Table 3. HTMT ration.

	FC	FK	ID	PE
Financial knowledge	0.753			
Investment decision	0.668	0.839		
Performance expectancy	0.536	0.621	0.626	
Social influence	0.665	0.739	0.653	0.539

Table 4. VIF values.

Predictor	VIF
Facilitation condition	2.044
Financial knowledge	2.586
Performance expectancy	1.533
Social influence	1.931

Table 5. Path coefficients and significance.

Path	β	t-value	p-value
Facilitation Condition → Investment Decision	0.093	2.009	0.022
Financial Knowledge → Investment Decision	0.580	11.699	<0.001
Performance Expectancy → Investment Decision	0.164	4.281	<0.001
Social Influence → Investment Decision	0.069	1.635	0.050

Table 6. f^2 values.

Predictor	f^2
Facilitation condition	0.012
Financial knowledge	0.366
Performance expectancy	0.050
Social influence	0.007

Facilitation conditions exhibit a positive and statistically significant effect on investment decisions, indicating that access to resources and supportive infrastructure enhances investors' ability to make investment choices. Financial knowledge shows a strong and highly significant positive effect, making it the most influential predictor of investment decisions. Performance expectancy also demonstrates a positive and significant relationship, suggesting that expectations regarding returns and efficiency play an important role in investment behavior. Social influence shows a weak but marginally significant effect, indicating that peers and social networks exert a limited yet observable influence.

The model explains 64.5% of the variance in investment decisions, indicating strong explanatory power and demonstrating that the selected predictors provide a substantial understanding of individual investors' behavior. To assess the relative contribution of each predictor, effect sizes were calculated using Cohen's f^2 (Table 6). Financial knowledge exhibits a large effect size, confirming its dominant role in shaping investment decisions. Performance expectancy shows a small-to-moderate effect, while facilitation conditions and social influence demonstrate small effect sizes, indicating that they support investment decisions but are less influential compared to financial knowledge.

5. Discussion

This study investigated the determinants of individual investors' investment decisions in the Pakistan Stock Exchange using the UTAUT framework. The results highlight the relative importance of financial knowledge, performance expectancy, facilitation conditions, and social influence in shaping investor behavior.

Financial knowledge emerged as the most significant predictor of investment decisions, with a strong positive path coefficient ($\beta = 0.580$, $p < 0.001$) and a large effect size ($f^2 = 0.366$). This finding aligns with prior research (Lusardi & Mitchell, 2014; Van Rooij et al., 2011), emphasizing that investors with greater financial literacy are more capable of evaluating investment opportunities, managing risks, and making informed decisions. In the context of Pakistan, these results suggest that financial education initiatives could substantially enhance investment efficiency and participation in the stock market.

Performance expectancy was also a significant predictor ($\beta = 0.164$, $p < 0.001$), with a small-to-moderate effect size. This indicates that investors' expectations regarding the benefits, returns, and effectiveness of investment platforms influence their decisions. Investors are more likely to engage in trading if they perceive that the investment tools and technologies provide timely, accurate, and actionable information, confirming findings by Kurniawan (2023) and Venkatesh et al. (2012). Thus, designing user-friendly and efficient trading platforms could improve investor confidence and participation.

Facilitation conditions, while statistically significant ($\beta = 0.093$, $p = 0.022$), had a relatively small effect size. This suggests that supportive infrastructure, access to financial tools, and ease of using technology contribute positively to investment decisions but are not as critical as financial knowledge. The implication is that while provision of resources and technical support is necessary, it must be complemented with investor education to maximize its impact (Hastings et al., 2013).

Social influence demonstrated a weak but marginally significant positive effect ($\beta = 0.069$, $p = 0.050$). This indicates that peer opinions, family advice, and social networks moderately shape investor behavior. These findings are consistent with Barber et al. (2008) and Hong and Stein (2007), highlighting the role of social interactions in financial decision-making. In Pakistan, where collectivist culture and peer/family influence are prominent, even a modest effect underscores the importance of social cues in investment behavior. Financial institutions may leverage this by promoting community-driven investment initiatives or social engagement platforms.

The model explained 64.5% of the variance in investment decisions (Adjusted $R^2 = 0.642$), indicating a substantial explanatory power. Among all predictors, financial knowledge is the key driver, followed by performance expectancy, facilitation conditions, and social influence. This suggests that interventions aiming to enhance investor decision-making should prioritize financial literacy and technology performance, while providing supportive infrastructure and social engagement as supplementary measures.

The findings of this study have important implications for theory, practice, and policy in emerging financial markets. Theoretically, the research demonstrates that the UTAUT can be successfully applied to understand individual investors' decision-making, particularly when combined with financial literacy. By validating the significance of performance expectancy, facilitating conditions, social influence, and financial knowledge, this study extends the applicability of technology adoption models to financial behavior, offering a robust framework for future research in behavioral finance and investment decision-making.

From a practical standpoint, the results emphasize the critical role of financial knowledge in shaping investment decisions. Financial institutions and technology providers should prioritize targeted investor education programs that enhance financial literacy and enable better risk management. The study also highlights the importance of reliable and user-friendly trading platforms, as performance expectancy positively influences investor engagement. While facilitation conditions and social influence had smaller effects, providing adequate technical resources and leveraging peer networks can still enhance participation and confidence among investors. Policy makers can use these insights to design regulations that promote digital financial education, ensure platform transparency, and support sustainable market development.

Despite these contributions, the study has several limitations. The sample consisted of 210 individual investors selected through convenience sampling, which may limit the generalizability of the findings. Institutional investors and other market segments were not included, which could affect the applicability of results across the broader market. Additionally, the study focused primarily on the UTAUT framework and financial literacy, leaving other potentially influential factors—such as risk tolerance, investment experience, and digital literacy—unexplored.

Future research can address these limitations by employing larger and more diverse samples, including institutional investors and participants from multiple emerging markets. Longitudinal studies could provide deeper insights into how investor behavior evolves over time with changes in technology adoption and financial literacy. Furthermore, incorporating additional moderating and mediating variables, such as risk perception, behavioral biases, or regulatory influences, could enhance the predictive power of the model and provide a more comprehensive understanding of investment decision-making.

6. Conclusion

This study extends the application of the UTAUT to the domain of financial decision-making in a developing market context. By examining individual investors in the Pakistan Stock Exchange, the research identifies critical factors influencing investment decisions. The findings demonstrate that financial knowledge is the most significant determinant, followed by performance expectancy, facilitation conditions, and social influence. These results provide both theoretical and practical implications. Theoretically, the study validates the UTAUT framework in a novel setting, bridging technology adoption theory with financial behavior. Practically, the results suggest that enhancing financial literacy, improving trading platform performance, and providing adequate infrastructure can promote more informed and confident investment decisions. The study also emphasizes the nuanced role of social influence, highlighting cultural and community factors that shape investor behavior in Pakistan. Policy makers and financial institutions can leverage these insights to design educational programs, user-centric platforms, and community engagement strategies that improve market participation and investor trust. Despite these contributions, the study has limitations. The sample was limited to 210 individual investors using convenience sampling, which may affect generalizability. Future research could expand the sample size, incorporate institutional investors, and explore additional moderating factors such as risk tolerance, investment experience, and digital literacy. Comparative studies across emerging markets would also provide deeper insights into the cross-cultural applicability of UTAUT in financial decision-making.

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Visualization: Sabahat Sheikh, Sadia Altaf.
Writing –original draft: Sabahat Sheikh, Sidra Gazali.
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