Impacts of Performance Expectancy and Social Influence on Actual Use of Investment Applications in Vietnam: The Moderating Effect of Perceived Risk

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Abstract

Research purpose: *This study attempts to examine the effects of performance expectancy, social influence, and perceived risk on the actual use of investment applications in the context of Vietnam.*

Research motivation: *Fintech and its emerging trends have tremendous effects on trade and investment in financial markets, leading to increasingly common study of financial investment platforms. The Unified Theory of Acceptance and Use of Technology framework was employed to evaluate intrinsic investor adoption behaviour by examining relationships among performance expectancy, social influence, perceived risk, and actual use of investment applications.*

Research design, approach, and method: *The questionnaires were designed and delivered to users of investment apps in Vietnam, resulting in a total of 203 valid responses, which subsequently were analysed in SPSS to validate proposed hypotheses.*

Main findings*: We find that investors who have an optimistic perspective on performance expectations appraisals and supportive opinions regarding the surrounding environment are more likely to use investing apps. Moreover, the investors' risk perception not only reduces the use of investment applications directly but also moderates the impacts of performance expectancy and social influence on the actual use of investment applications.*

Practical/managerial implications: *This study highlights the importance of performance expectancy, social influence, and perceived risk towards the actual use of investment applications in the emerging financial market so that service providers of investment apps have concrete evidence to enhance features and functions of investment apps to meet investors' needs.*

Keywords: Investment apps, performance expectancy, social influence, perceived risk, actual use

1. INTRODUCTION

Technology acceptance and use by individuals has gained considerable attention among researchers and organizations when IT advancement results in digital transformation globally in different industries (Bajunaied et al., 2023; Jayawardena et al., 2023; Nair et al., 2023). The prior studies intensively examine factors impacting individuals' acceptance and use in the setting of various digital applications on smartphones such as mobile banking (Hanif & Lallie, 2021; Thusi & Maduku, 2020), or e-wallets (Abbasi et al., 2022; Daragmeh et al., 2021). Recently, investment apps have gained popularity in different industries including trading and investing in financial markets (Ellaji et al., 2021). In this way, technology-based securities trading enables issuers, intermediaries, service providers, and investors to participate in online trading (Gopi & Ramayah, 2007). Investment apps have shown advancements, especially after the COVID-19 outbreak (Pagano et al., 2021) by employing artificial intelligence to assist price pattern prediction, leading to improvement in trading efficiency (Ellaji et al., 2021; Kansara et al., 2020). Nonetheless, using investing apps is still in the early stages, allowing significant space for progress (Koenig-Lewis et al., 2010). Rapid expansion in digital finance has been spurred by technological advancements, as well as increased internet and smartphone usage. Online investing applications, in particular, are still new and underutilized, especially within developing countries, in this study – Vietnam. Although financial literature has been devoted to investor preferences, and the value function determining investor choice (Baule & Muenchhalfen, 2021; Shiva & Singh, 2020), studies concerning investors' behaviors related to technology adoption toward online trading apps are still limited (Nair et al., 2023). Thus, this study attempts to investigate the impacts of performance expectancy, social influence, and perceived risks on the actual use of investment apps in the context of Vietnam where investment apps are in the early stage of adoption.

Technology acceptance can be significantly explained by the Unified Theory of Acceptance and Use of Technology (UTAUT), especially UTAUT2 concerning how individuals accept and use new technologies (Tamilmani et al., 2021; Venkatesh et al., 2012). This theory has been employed to explain technology acceptance and use in various contexts of IT innovations, including banking services such as mobile banking, mobile wallets, and other mobile apps (e.g. Hanif & Lallie, 2021; Thusi & Maduku, 2020). However, studies employing UTAUT2 in examining determinants and mechanisms

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through which interactions between such determinants in the context of Fintech services are scarce (Bajunaied et al., 2023). Furthermore, the Risk Technology Adoption Model provides a meaningful explanation concerning investors' perceived risk.

This study contributes to the literature in two aspects. First, we employed UTAUT2 in combination with Risk Technology Adoption Models to examine determinants of actual usage of investment apps in the context of Vietnam. Our findings show that investors use investment apps because they believe that the apps can enhance their investing performance, which is possibly rooted in advanced information technology (e.g. machine learning). Moreover, the actual usage of investment apps is driven by social influence in the form of opinions of investors' friends, relatives, colleagues, or social media. Also, the results reveal that when investors' perceived risks are high the impact of performance expectancy, and social influence on actual use of investment apps and vice versus.

We organize the remaining paper in 4 sections. In Section 2, we review the literature and develop hypotheses for the study, followed by an explanation of research methods in Section 3. After that, we describe the data analysis and present the research findings in Section 4. Then, we close our study with the conclusion, discussion, implication, the study's limitations, and opportunities for future research in Section 5.

2. LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

2.1 Investment applications and users' behaviours

Investment apps refer to digital platforms where traders can invest in funds, ETFs, stocks, and bonds, which are supported by brokerage firms and financial advisory firms under the regulatory framework of stock exchanges to perform financial transactions (Kansara et al., 2020; Madhavan et al., 2020). Investment apps become increasingly appealing to investors due to a wide variety of investment opportunities, resulting in excessive behaviors (Gopi & Ramayah, 2007; Oksanen et al., 2022). The usage of artificial intelligence can improve investment pattern recognition, sentiment-based prediction trading, and speed trading (Ellaji et al., 2021)(Baluch et al. 2020)i, allowing traders to conduct investments and manage their portfolios more effectively (Chong et al., 2021).

Investors using electronic trading tend to trust the system's performance and are primarily guided by credibility, security, and the utility of mobile applications (Chaudhary & Suri, 2021). These apps enhance convenience for investors (Blakesley & Yallop, 2020), allowing them to fasten their transactions (Tai & Ku, 2013).

2.2. Theoretical background

2.2.1 Unified Theory of Acceptance and Use of Technology (UTAUT)

According to Martins et al. (2014), Unified Theory of Acceptance and Use of Technology (UTAUT) is the most comprehensive and necessary model for predicting use intention in technology adoption, accounting for 70% of differences in behaviour or intention. UTAUT was founded on eight hypotheses and models that explain technology acceptance (Venkatesh et al., 2003b). The model contains four core constructs, namely performance expectancy, effort expectancy, social influence, and facilitating factors (Slade et al., 2015) of which performance expectancy and social influence will be employed in our research in the context of investment apps in Vietnam.

2.2.2 Perceived risk model

Safety awareness and technology risk are two factors directly impacting investors' perceptions of risk, thereby affecting their inclination to utilise technology-based products and services (Gupta & Xu, 2010). Perceived risk model points out perceived risk is subjective in nature and contradicts user intent, which influence investors' evaluation on the usefulness of a given technology (Li & Huang, 2009). New investors frequently wish to avoid risk, thus a high-risk level tends to cause their negative impression (Chen, 2013). Thereby, the risk model is applied in the context of investment apps to understand how perceived risk influencing actual use of investment apps.

2.3. Hypothesis development

2.3.1 Performance expectation and actual use of investment apps

Performance expectancy (PE) is defined as the degree to which users believe that utilising the system will assist them in improving their work performance. According to research, PE has a considerable effect on technology adoption (Nikolopoulou et al., 2021). Indeed, in the context of technology adoption and usage, performance expectancy is believed to be one of the most dependable indicators of behavioural intention (Lee & Shin, 2019). Performance expectation explains a large portion of the variation in intention and action. With an increase in possibilities and resources such as time, technology, network, and money, the perceived control of the specific activity increases (Ajzen, 2002), and therefore the personal purpose towards stock trading activities increases. Thus, relationship between performance expectancy and actual use of investment apps is as follows:

H1: Expected performance is positively associated with actual use of investment apps.

2.3.2 Social influence and actual use of investment apps

Social Influence (SI) refers to the degree to which an individual perceives opinions of people around them about their usage of the new system. Social influence reflected through subjective norms and expectations is considered a major variable directly impacting the intention (Abbasi et al., 2022; Fishbein & Ajzen, 1977; Venkatesh et al., 2003b).

Investors in early phases of technology adoption tend to largely rely on peer communication when making decisions on the usage of investment apps since they usually lack information and trust in the system (Gong et al., 2019; Schierz et al., 2010). Social interaction (for example, social media and information from close friends) improves stock market investment intention and, as a result, stock market and online trading apps participation (Shanmugham & Ramya, 2012). This appear to be more popular in collectivist culture countries like Vietnam where social influence has considerable impact on individuals (Hofstede, 1998). Therefore, relationship between social influence and actual use of investment apps is as follows:

H2: Social influence is positively associated with actual use of investment apps.

2.3.3 Perceived risk and actual use of investment apps

Perceived risk is defined as investors' negative feelings of unforeseen events when they intend to make a purchase or engage to a service (Kim et al., 2010). In the context of investment apps, perceived risk can be understood as an investor's caution when beginning to use online trading platforms (Phung, 2020). Existence of inherent risks associated with technical products are primary concerns of users because they do not fully comprehend the security aspects of the new system that require extra attentions in the early stages of technology diffusion (Roboff & Charles, 1998). Although risk recognition is necessary for activation of defencing mechanism, perceived risks have a negative impact on investors' projected profits (Maziriri et al., 2019) due to its detrimental effects on performance expectancy and behavioural intention (Chao, 2019). Perceived risk resulting in more cautions is regarded as one of the most important determinants of users' willingness to adopt technology (Alam Khan et al., 2020).

Besides factors from the Unified Theory of Acceptance and Use of Technology (UTAUT), perceived risk has been suggested to be a significant driver regarding investor usage of investing platforms (Nouri et al., 2017). Users tend to be concerned about possible uncertainty caused by data entry errors, software problems, loss of connectivity, and loss of privacy (Mallat et al., 2008). In other words, the perception of functional risk is predicated on the possibility of experiencing a lack of reliability or accessibility to services. In fact, according to certain studies, a lot of people think they are exposed to identity fraud while using mobile banking services (Wessels & Drennan, 2010). Or, while completing financial transactions via mobile devices, investors are frequently concerned about service system failure or mobile Internet disconnection (Wessels & Drennan, 2010).

Hence, relationship between social influence and actual use of investment apps is as follows:

H3: Perceived risk is negatively associated with actual use of investment apps.

2.3.4 Moderating effects of perceived risk

Perceived risk considerably impact the adoption of financial service applications due to insufficient security or disruptions in platform functioning compared to traditional ways (Koenig-Lewis et al., 2010; Laukkanen & Kiviniemi, 2010; Luo et al., 2010; Wessels & Drennan, 2010), which is considered the most difficult hurdle for financial service providers when addressing client issues (Chong et al., 2021; Mallat et al., 2008). Investors have a tendency to lower risk as much as possible by making inform decisions (Dowling & Staelin, 1994). When investors' perceived risk increases, they become more cautious and less likely to rely on other factors (Dorothea Brack & Benkenstein, 2014), thus, perceived risk can magnify or degrade effects of performance expectancy and social influence on actual use of investment apps. As the results, the following hypothesises are proposed:

H4: Perceived risk moderates the relationship between performance expectancy and actual use of investment apps.

H5: Perceived risk moderates the relationship between social influence and actual use of investment apps.

2.4 Research framework

Five formulated hypotheses in Section 2.3 are presented in Figure 1- Conceptual framework of the study.

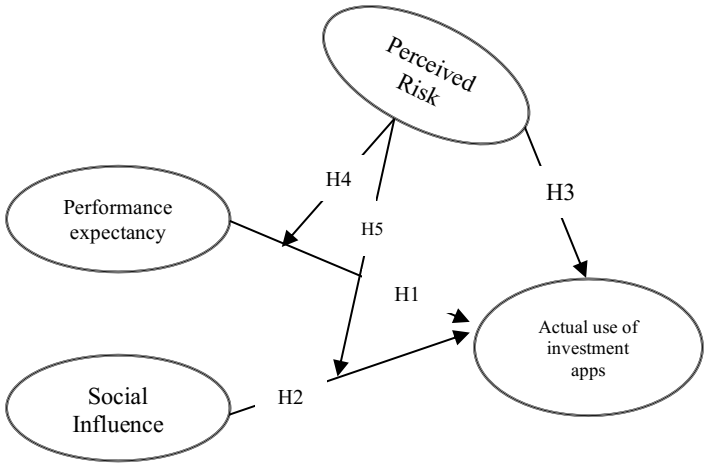


Figure 1: Conceptual framework of the study

3. RESEARCH METHOD

3.1 Measurement

Each construct of the study was measured by a set of statements being rated on a five-point Liker scale. First, performance expectancy is measured by three items: (1) Investment apps are a useful alternative, reducing the complexity of traditional processes; (2) Investment apps are convenient, offering a wide range of investment products and many detailed user-friendly instructions; (3) Investment apps enhances investment efficiency in terms of both return and function, which were adapted from Venkatesh et al. (2003a), Zhou et al. (2010) Martins et al. (2014), de Sena Abrahão et al. (2016). Second, social influence was measured by three items: (1) People close to me believe using investment apps is common nowadays; (2) People close to me believe that employing investment apps will be effective; (3) People close to me and me casually communicate topics regarding internet trading, which were adapted from Venkatesh et al. (2003a), Tai and Ku (2013). Third, perceived risk was measured by two items: (1) I am concerned that malfunctions from the apps will interfere with my transactions; (2) I believe others can have gained access to my account, and my privacy is not totally safe, which were adapted from Venkatesh et al. (2003a), Lu et al. (2011), Yang et al. (2012) Martins et al. (2014). Finally, actual use of investment apps was measured by one item stating that I will continue to use these investing apps even if they no longer have the same user-friendly programs as they have now, which were adapted from Aarts et al. (2004). By adapting construct measures from prior studies, we can ensure its validity, make our findings comparable with previous studies in the field (Bryman & Bell, 2007).

3.1 Sample and data collection

The sample of the study was investors using investment apps in Vietnam. In order to collect the data, the snowball sampling was employed to locate a group of investors and delivered the questionnaire to those are familiar with internet stock trading, with the majority of respondents hailing from Vietnam capital market (Baltar & Brunet, 2012). The questionnaire was designed in English and Vietnamese to gather responses investors who are familiar with internet stock trading, with the majority of respondents hailing from Vietnam capital market. The questionnaire is stared with basic demographic data (gender, age, occupation), financial perspective information, and market trading history, followed by the second part inquiries about behavioural intentions regarding online trading apps. Online delivery of the questionnaire resulted in 203 usable responses for data analysis, which met the requirement of the sample size greater than 50 responses (Saunders et al., 2019).

3.3 Data analysis

The data was analysed by SPSS. The procedure will begin with exploratory factor analysis (EFA), a multi-step procedure that necessitates a number of statistical and methodological judgments (Howard, 2016). The findings will be linked to statistical approaches such as correlation matrix types, factor extraction methods, and factor rotation methods. Then, as a second approach for determining the element of measuring and validating constructs (Schmitt, 2011) and how well the constructs explain the variables in the construct, confirmatory factor analysis (CFA) was used. Regression was employed for hypothesis testing.

4. RESULTS AND DISCUSSIONS

4.1 Demographic characteristics of participants

4.1.1 Respondents' characteristics

The survey gathered information on the types of apps that investors mostly use, with over 20 different apps such as: Binance, VPS smartone, and Finhay, which are the most popular types of applications for stocks and bonds trading in the market. In addition to Binance, Multi Miner, and Bimono for international trading, and also for some case invest in e-coins, pancake swaps, and local insurances. Table 1 presents integrated socio-demographic descriptions of respondents.

Table 1: Integrated socio-demographic data

			Count	Percentage
Gender	G1	Male	89	43.8%
	G2	Female	104	51.2%
	G3	Others	10	4.9%
Age	A1	<20	8	3.9%
	A2	20-29	152	74.9%
	A3	30-39	32	15.8%
	A4	>40	11	5.4%
Occupation	O1	Office worker	130	64.0%
	O2	Student, trainee	28	13.8%
	O3	Self-employed	33	16.3%
	O4	Others	12	5.9%
Main purpose	M1	Profitability	112	55.2%
	M2	Savings, to be financially secure	53	26.1%
	M3	More knowledge, more experiences	34	16.7%
	M4	All	4	2.0%
Risk Appetite (Self-rated)	R1	Risk aversion (<=5)	97	47.8%
	R2	Risk seeking (>5)	105	51.7%

The survey was contacted by persons including all genders, with females accounting for 52.2%, males accounting for 43.8%, and 4.9% coming from people in the LGBT community. Furthermore, this study was dominated by the age range 20-29 (74.9%), which is understandable given that young people in Vietnam at this age are the most likely to learn and access financial information, the primary and most technological advances faster. People are predominantly office workers (64%) and have a primary goal of increasing profits (more than 55%). Furthermore, more than half of the survey participants evaluated their personal risk appetite as above 5 on a scale of 1 to 10; or mainly tended to seek risk with many levels. Evidence from research indicates that, in practice, people who score high in risk-taking proclivity also tend to have a high frequency of stock trading, thus, with a high percentage of using online trading applications (Markiewicz & Weber, 2013).

4.1.2 Cross-comparisons

The study employed the procedure of conditional counting algorithms to cross-compare data from different questions (see

Table 2). The first is about the primary goal of each age group, such as how 62.5% of persons under 20 invest for the aim of learning, and how more than 50% of people aged 20 to under 40 utilize investing platforms to increase earnings.

Table 2: Cross relation

		Frequency	Age group	Percent
Age - Purpose	A1-M3	5	8	62.5%
	A2-M1	88	152	57.9%
	A3-M1	19	32	59.4%
	A4-M3	4	11	36.4%
			Purpose group	
Purpose - Risk appetite	M1-R2	72	112	64.3%
	M2-R1	37	53	69.8%
			Gender group	
Gender - Risk appetite	G1-R2	61	89	68.5%
	G2-R2	37	104	35.6%
	G3-R2	7	10	70.0%
			Occupation group	
Occupation - Risk appetite	O1-R2	62	130	47.7%
	O2-R2	12	28	42.9%
	O3-R2	25	33	75.8%

Then, when it comes to risk appetite and the primary goal of investment, the majority of investors not only have the primary goal of growing profits, but 64.3% of them will identify themselves as risk averse. Similarly, 69.8% of those who invest primarily for saving purposes and financial security consider themselves to be more risk averse. And demographically, those with a high proportion of riskier appetite are more likely to be male, self-employed, and full-time workers, also those with stable high incomes and highly educated (Arthur et al., 2016). Other research indicates that the association between gender and trading activities differs in men's confidence, indeed, young and single men tend to trade most frequently (Barber & Odean, 2001), and locate and employ investment platforms with the greatest frequency. In the line with previous pieces of research, it can be seen from the results of this study that the proportion of persons from the male gender and the other gender assigned their risk appetite concerning risk-taking is relatively high, respectively 68.5% and 70%, compared to the figure for female gender of only 35.6%. In addition, the data also suggest that the percentage of self-employed people ranked themselves in a high-risk position at about 75.8%.

4.1.3 Mean analysis

Table 3 shows mean and standard deviation of each variable. Most items of performance expectancy have mean values greater than 4.2, indicating that participants agree about benefits of investment apps. Also, social influence has an average value above 4, indicating that investors are influenced by opinions of people around them especially in the context of Vietnamese collective culture. However, the risk variable, which is expected to have an opposite effect to the usage of the application with the means regarding malfunction of apps and privacy security are 3.9 and 2.9, respectively. It suggests that the customers generally perceive the risk, some have recognized the benefits of investment platforms, while some are not confident in the software's ability to secure information. The application of technology in investment has only been widely accessible in recent years in Vietnam, thus, certain risks occurred are inevitable.

Table 3: Factors expected to impact the intention to use of investors.

	Variable	Mean	Std. dev.
	AU	4.06	0.874
(PE)	PE1	4.39	0.622
	PE2	4.24	0.602
	PE3	4.26	0.624
(SI)	SI1	4.25	0.765
	SI2	4.06	0.775
	SI3	4.21	0.724
(PR)	PR1	3.94	0.815
	PR2	2.93	1.190

4.2 Exploratory Factor Analysis (EFA)

The Kaiser-Meyer-Olkin (KMO) testing is one of the effective models for adequacy measurement. It was stated that the KMO coefficient is marvelous when it is above 0.9 and will be unacceptable when it falls below 0.5 (Kaiser, 1974). Thus, the results of the KMO test should be 0.5 or higher to provide an overall measure of the overlap or shared variance between the pair of variables. Table 4 shows that the KMO measure sampling adequacy reached 0.805, which can be considered a good indicator. Thus, it indicates that the degree for extracted factors is adequate. In addition, Bartlett's Test result was significant ($\chi 2$ = 480.085; df = 36), with its p-value (= 0.000) less than 0.05, indicating sufficient intercorrelations between the variables in the factor and ensuring that the input data are consistently suitable for exploratory factor analysis.

Table 4: KMO & Bartlett test

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.805
Bartlett's Test of Sphericity	Approx. Chi-Square	480.085
	df	36
	Sig.	.000

Table 5 presents factor loading indicators greater than 0.5, which met requirement as specified by Hair et al. (2010).

Table 5: The factor loadings indicators

Variable	PE	SI	PR
PE1	0.6647		
PE2	0.6831		
PE3	0.7626		
SI1		0.6655	
SI2		0.7570	
SI3		0.6512	
PR1			0.7983
PR2			0.7977

4.3 Evaluation of construct reliability and validity

Concerning construct reliability, Table 6 shows that composite reliability (CR) of all constructs greater than 0.7, indicating that the construct validity was satisfied.

Variables	CR
PE	0.747
SI	0.734
PR	0.778

Regarding construct validity, Table 7 show the extracted correlation matrix reflecting the construct validity. There was no correlation above 0.7 or the validity of this model is considered to be relatively strong.

Table 7: Correlation matrix among variables

Correlation Matrix					
		AU	PE	SI	PR
Correlation	AU	1.000			
	PE	0.367	1.000		
	SI	0.460	0.394	1.000	
	PR	-0.170	0.010	0.011	1.000

Also, Table 8 presents VIF values of dependent variables less than 5, indicating that multi-collinearity is not a problem (Kock, 2015).

Table 8: VIF values of independent variables

Variable	VIF
PE	1.18
SI	1.18
PR	1.00

4.4 Hypothesis testing and discussions

Multivariate regression analysis was conducted to evaluate impact of performance expectancy, social influence, and perceived risk on actual use of investment apps, followed by testing moderating effects of PR on relationships between PE and actual use of investment apps, and between SI and actual use of investment apps

4.4.1 Impacts of performance expectancy, social influence, and perceived risk on actual use of investment apps

Table 9 presents multivariate regression on impacts of PE, SI, and PR on actual use of investment apps.

Table 9: Multivariate regression

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.532	0.283	0.278	0.741

a. Predictors: (Constant), PR, PE, SI

b. Dependent Variable: AU

Model	Unstandardized Coefficients		Standardized Coefficients	[95% conf.interval]	
	B	Std. Error	Beta		
(Constant)	1.424	0.301		0.833	2.015

PE	0.313	0.065	0.221*	0.185	0.441
SI	0.422	0.052	0.375*	0.320	0.524
PR	-0.135	0.032	-0.176*	-0.199	-0.071

*p-values< 0.000

The models provide relative values of R-squared or the coefficient of determination (equal to 0.278). It can be seen that performance expectancy shows a significant relationship between actual use (β=0.313, ρ = 0.00) thus, the finding is coherent with the results of (Attuquayefio & Addo, 2014) and (Sung et al., 2016).

Similarly, the data also showed that the social influence (β=0.422, ρ=0.00) showed a significant influence on personal intentions for using online trading apps. This research complements the findings of (Wu et al., 2018), researchers concluded that social connection had a significant contribution to stock market investing actual use of online trading apps. Meanwhile, those subjective norms demonstrate a positive and significant impact on perceived ease of use is aligned with the findings of (Yang et al., 2012) and (Ramos-de-Luna et al., 2016). Still, considering this mixed result, it would require more in-depth research on the Vietnamese investment market to confirm the impact of subjective norms on others.

In addition, the results of perceived risk (β=-0.135, ρ=0.00) were observed on the results. Thus, this result contradicts the outcome of (Gong et al., 2019). Perceived risk was found to have an insignificant influence on behavioral intentions preeminent account for two reasons. Firstly, investors think that there will still be technical errors coming from the application that will occur during the transaction and affect investment performance. Second, they believe that others can access e-trading transaction behavior on the mobile apps provided by the broking houses. These two aspects were the main cause of concern for retail investors due to which the intentions to adopt these mobile apps were less. Although information regarding securities trading on the Internet is available, it is insufficient because it does not address security, privacy, and a variety of other factors. The influence of those involved will have an impact on the usage of securities trading on the Internet.

The use of investing applications by Vietnamese traders, as demonstrated by the direct effects hypotheses observed above, was significantly influenced by performance expectancy, social influence, and perceived risk.

4.4.2. Testing moderating effect of Perceived Risk on the relationship between performance expectancy and actual use of investment apps.

Table 10 and figure 2 presents the result of testing perceived risk as a moderator of the relationship between performance expectation and actual use; the greater the degree of the perceived risk, the more moderating effects that will have on the relationship.

Table 10: Performance Expectation on Actual Use with Moderators - Perceived Risk

Model Summary

R	R-sq	MSE	F	df1	df2	p
0.4297	0.1847	0.6254	30.3478	3.0000	402.0000	0.0000

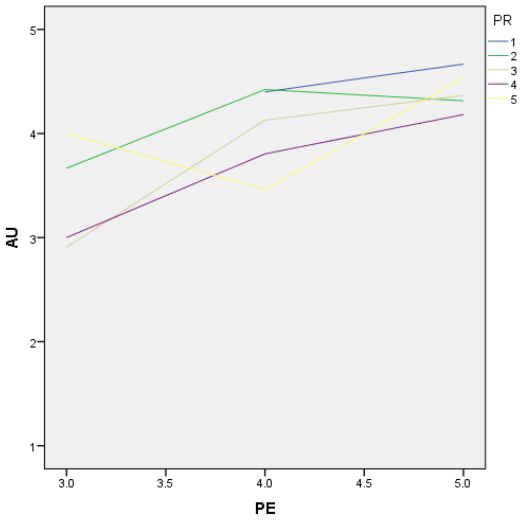
	coeff	se	t	p	LLCI	ULCI
constant	5.2361	0.9884	5.2974	0.0000	3.2930	7.1793
PE	-0.1474	0.2217	-0.6647	0.5066	-0.5832	0.2885
PR	-0.9823	0.2716	-3.6164	0.0003	-1.5163	-0.4483
Int_1	0.1913	0.0607	3.1520	0.0017	0.0720	0.3107

Conditional effects of the focal predictor at values of the moderator(s):

PR	Effect	se	t	p
2.0000	0.2353	0.1111	2.1185	0.0347
4.0000	0.6179	0.0707	8.7390	0.0000

5.0000	0.8093	0.1113	7.2717	0.0000

Figure2: Performance Expectation on Actual Use with Moderators - Perceived Risk



When compared to the model that depicts the direct impact of perceived risk on actual use, we can see that PR in this model has an extremely high coefficient that is significant at the 5% level, β= -0.9823. Although the effect of PE interactions on AU is not statistically significant at the 5% level (β= -0.1474 at that level), it does suggest that if PR continues to rise, the relationship may change. Indeed, the different level of risk plotted on the graph shows that the relationship of performance to actual use has shifted inversely. As a result, the hypothesis regarding the moderating effect on the relationship between PE and AU was strongly supported.

4.4.2. Testing moderating effect of perceived risk on the relationship between social influence and actual use of investment apps.

Table 10 and figure 2 presents the result of testing perceived risk as a moderator of the relationship between social influence and actual use; the greater the degree of the perceived risk, the more moderating effects that will have on the relationship.

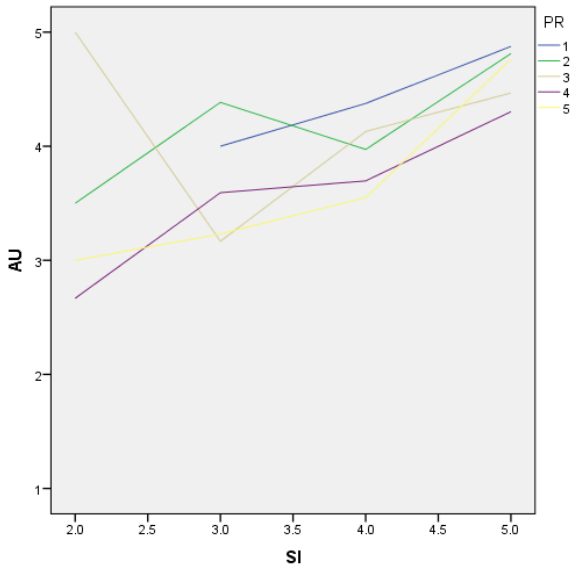
Table 11: Social Influence on Actual Use with Moderators - Perceived Risk

Model Summary						
R	R-sq	MSE	F	df1	df2	p
0.5034	0.2534	0.5726	45.4895	3.0000	402.0000	0.0000

	coeff	se	t	p	LLCI	ULCI
constant	3.8997	0.6643	5.8702	0.0000	2.5937	5.2057
PE	0.1568	0.1549	1.0123	0.3120	-0.1477	0.4612
PR	-0.5788	0.1830	-3.1619	0.0017	-0.9386	-0.2189
Int_1	0.1051	0.0425	2.4700	0.0139	0.0214	0.1887

Conditional effects of the focal predictor at values of the moderator(s):				
PR	Effect	se	t	p
2.0000	0.3669	0.0787	4.6602	0.0000
4.0000	0.5770	0.0537	10.7391	0.0000
5.0000	0.6821	0.0816	8.3586	0.0000

Figure 3: Social Influence on Actual Use with Moderators - Perceived Risk



Perceived risk exerts a moderation effect on the effect of social influence on actual use. Similar to the previous model, the higher the perceived risk, the greater its influence on the relationship. The graph, however, demonstrates that, unlike performance expectancy, which shows the opposite relationship between SI and AU, SI and AU gradually increase back after decreasing. In particular, the social norm's beta coefficient is still positive (0.1568) and significant at the 5% level. Yet, the assumption that association with perceived risk acts as a moderator is much weaker when compared with the previous hypothesis regarding the direct effect of social influence on actual use (β=0.422, significant at 5% level). On the whole, we gained moderate support for the hypothesis.

The result of testing hypothesis is presented in Table 12:

Table 12: Results of regression test

Hypotheses	**Results**
H1: Expected performance is positively associated with actual use of investment apps.	Supported
H2: Social influence is positively associated with actual use of investment apps.	Supported
H3: Perceived risk is negatively associated with actual use of investment apps.	Supported
H4: Perceived risk moderates the relationship between performance expectancy and actual use of investment apps.	Supported
H5: Perceived risk moderates the relationship between social influence and actual use of investment apps	Supported

5. CONCLUSION

5.1 Conclusion

The findings of this study are consistent with existing research on investment platforms in the setting of the consumer behaviour literature, indicating that Vietnamese consumers' recent perception of the use of technology in the field of financial investment is favourable. Although the usage of online trading in Vietnam is still in its early stages, it is clear that consumers still tend to adopt it for financial investing activities. In other words, users of various genders, ages, and occupations have positive inclination to employ this investment-supporting technology.

Performance expectancy, social influences, perceived risk are the observed influencing variables of technology adoption. This study additionally offers a separate hypothesis regarding the moderation effect of perceived risk to online trading programs. Further, numerical approaches such as Cronbach's alpha, average variance extracted, composite reliability, covariance matrix, and other test models proved the data's reliability and validity in this study.

Regarding the effects of performance expectancy and social influence has been shown to be one of the key factors for technology adoption as in previous studies. However, when defining the pattern of adoption of investment technology applications, the level of perceived risk not only directly decreases but also poorly moderates the effect. Whether it has a significant effect or not, being aware of higher risks will reduce the possibility to use or even stop using or oppose the use of electronic investment applications in Vietnam.

5.2 Implications

The study sought to ascertain Vietnamese investors' attitudes regarding mobile applications in online transactions, performance expectancy, social norm as well as perceived risks to the using mobile applications for electronic transactions in emerging financial markets.

The primary drawback of this study is the small sample size due to time and budget constraints. Future research should employ a broader technique (i.e., mixed methods) in many sectors of the Vietnamese investment finance business. Secondly, the study into Internet securities trading is still in its early stages in technology management research, particularly in Vietnam. Generalizing implications, conclusions, and debates with other studies of technology and systems should be done with caution.

A simple and efficient method might boost favourability toward the practice of performing stock trading via the Internet. These investors also need to be encouraged to interact and share their experiences and insights on using investment platforms through social media channels, so that app founders can exploit the trade and take advantage of network effects. Some suggestions that can be applied for investment application-based companies to develop and motivate individuals to engage and contribute to investment activities in Vietnam are to develop and build control mechanisms, monitor to maintain risks within permissible limits, issue regulatory documents following legal frameworks of national law to define, measure, control and ensure financial investment activities of customers.

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