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Vietnamese People's Willingness to Adopt Mobile Banking - A Case Study of Vulnerable Groups

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Abstract— In the context of significant digital transformation in finance and banking, mobile banking is becoming a popular transaction channel that promotes financial inclusion. However, disadvantaged groups eager to use mobile banking face many barriers. The study aims to identify and measure the factors influencing the willingness of vulnerable groups in Vietnam to use mobile banking. Primary data from 341 respondents were analyzed using SPSS 26 software. The results from the multivariate linear regression model show that five factors positively relate to the willingness to use mobile banking services among vulnerable people in Vietnam: perceived ease of use, trust, social influence, perceived usefulness, and innovation. Conversely, barriers to technology exposure have an inverse relationship. The findings offer recommendations for bank managers developing mobile banking services, helping vulnerable groups access and use these services more easily.

Keywords: mobile banking, vulnerable groups, digital transformation, financial services.

INTRODUCTION

In the digital age, rapid growth in information technology and telecommunications has profoundly affected all aspects of socio-economic life. In banking, digital transformation is not only an inevitable trend but also a key driver for promoting product innovation, enhancing service quality, and optimizing customer experience. One of the primary achievements of banking digital transformation is the introduction of mobile banking services, which enable users to perform a wide range of banking transactions, from transfers and bill payments to online savings deposits and financial investments, directly on their personal mobile devices. Mobile banking offers convenience by saving time and costs while increasing accessibility. It is a key solution for promoting financial inclusion and advancing toward a cashless society. The Government of Vietnam has issued numerous guidelines and policies to support the development of non-cash payments and digital finance, such as the national financial inclusion strategy for 2025, the orientation to 2030. and the project to develop non-cash payments from 2021 to 2025. Commercial banks have also made substantial investments in technology platforms, establishing mobile banking as a primary channel for transactions, with the growth rate of users and online transactions consistently increasing each year.

Nevertheless, this advancement has primarily been concentrated in major urban centers and among youthful, affluent, and educated clientele. Conversely, a substantial disparity persists for marginalized groups within society. Vulnerable populations, including low-income individuals, the elderly, persons with disabilities, migrant workers, ethnic minorities, and residents of remote regions, frequently encounter numerous obstacles when attempting to access digital financial services. These barriers stem not only from technical factors, such as limitations in equipment and network infrastructure, but also from psychological, cognitive, and habitual factors, including a lack of financial and technological knowledge, concerns about security risks, fears of incurring costs, long-standing cash usage habits, and a lack of trust in banking institutions. Consequently, although mobile banking offers numerous practical advantages, a substantial segment of the population, particularly those who are economically vulnerable, are consequently excluded from the process of digitalizing financial services.

This study contributes to augmenting the theoretical foundation for technology adoption within a specific context, bearing significant practical implications for commercial banks and policy-making agencies in the formulation of suitable digital financial services, ensuring equity, comprehensiveness, and sustainability.

LITERATURE REVIEW

Related concepts

In the context of rapid digital technological advancements, contemporary mobile phones extend beyond merely facilitating communication between users in disparate geographical locations. They have evolved into multifaceted devices equipped with

various utilities, including reading news, storing and processing information, connecting to the Internet, accessing personal accounts, monitoring health, conducting online transactions, and supporting numerous financial applications (Choi et al., 2020). The multiplicity of functions performed by mobile devices has established a foundation for the proliferation of digital banking services, including mobile banking. According to Lee and Shin (2018), mobile services are swiftly transforming business models within the payment sector, in close conjunction with contemporary financial innovations such as Fintech, thereby fostering a flexible and diverse payment ecosystem. Mobile banking constitutes a form of electronic banking service that enables clients to utilize smartphones or mobile devices equipped with an Internet connection in order to conduct financial transactions remotely. These transactions include verifying account balances, transferring funds, settling bills, depositing savings online, as well as obtaining loans, recharging mobile phones, and accessing numerous other supplementary services. The studies conducted by Kim et al. (2010) and Ozok and Wei (2010) indicate that mobile payments are capable of confirming electronic transactions rapidly and efficiently, without being constrained by spatial or temporal limitations. Consequently, they are regarded as a next-generation payment system. The prominence of mobile banking lies in its ability to offer services "anytime and anywhere," thereby enabling customers to actively manage their personal finances without the necessity of visiting a bank branch. Mobile banking has experienced substantial growth alongside the digital transformation trend in the Vietnamese banking sector. In recent years, the annual growth rate of financial transactions via mobile channels and QR code scanning has exceeded 100%, indicating a considerable shift in consumers' financial habits. This development not only represents an inevitable evolution of digital finance but also serves as a key driver in achieving financial inclusion objectives and decreasing cash payments, in alignment with the directives of the Vietnamese Government. Thus, mobile banking constitutes an electronic banking service grounded on a mobile device platform, enabling clients to execute financial and banking transactions swiftly, securely, and at any time and place, at an optimal cost. The advancement of mobile banking not only yields advantages for banks and customers but also facilitates the comprehensive transition of the national financial system towards modernity and sustainability.

Vulnerable individuals are those who are more susceptible to harm within social, economic, and political relationships (Nguyen et al., 2023). They constitute a vulnerable cohort at risk of marginalization in the development process if insufficient attention and support are provided by the State and the community. According to the 2013 Constitution of the Socialist Republic of Vietnam, the State bears the responsibility of safeguarding the legitimate rights and interests of vulnerable groups, including the impoverished, disabled individuals, the elderly, children, women, ethnic minorities, persons infected with HIV/AIDS, individuals affected by Agent Orange/dioxin, workers with special circumstances, and those recently released from detention facilities. The perspective unequivocally advocates for humanity, emphasizing the importance of social justice and equal access to public and social services. Vulnerable groups face significant obstacles in accessing financial services, often due to deficiencies in education, income, technological capacity, or social stigma. This situation renders them susceptible to exclusion from the digital transformation process, thereby exacerbating the digital inequality gap.

Underlying theory

The study employs theoretical frameworks to develop a research model incorporating TAM, UTAUT, DOI, IRT, and TPB. The Technology Acceptance Model (TAM), introduced by Davis (1989), elucidates an individual's acceptance of information technology primarily through two fundamental constructs: perceived usefulness and perceived ease of use. These constructs serve as the basis for forming attitudes, intentions, and behaviors concerning the utilization of technological systems. Numerous studies have expanded and refined TAM through various avenues of exploration, including factors such as risk (Safeena et al., 2011), cost and reputation (Luarn & Lin, 2005), social impact (Amin & Isa, 2008), and trust.

The Theory of Planned Behavior (TPB), developed by Ajzen (1991), elucidates the influence of attitudes, subjective norms, and perceived behavioral control on the intention to adopt Internet Banking. Additionally, Sripalawwat et al. (2011) highlighted that the intention to utilize mobile banking is impacted by factors such as usefulness, ease of use, and perceived effectiveness.

The Unified Theory of Acceptance and Use of Technology (UTAUT) was developed by Venkatesh et al. (2003) and emphasizes three factors that influence user intentions and behaviors, including:

(i) Performance expectancy pertains to the extent to which an individual believes that utilizing technology will assist in enhancing their productivity in professional or personal contexts.

(ii) Effort expectancy denotes the ease with which users can learn to operate the system.

(iii) Social influence pertains to the extent to which an individual perceives that significant others believe they should adopt new technology.

Furthermore, subsequent research also considers facilitating conditions as an additional variable, delineating the extent to which an individual perceives the availability of adequate resources and infrastructure to support system utilization.

The Diffusion of Innovations Theory (DOI), formulated in 1962 by Rogers, serves to provide a more

comprehensive explanation of how new technologies and other advancements disseminate throughout society and culture, from initial product introduction to widespread adoption. DOI pertains to various customer segments, including innovative customers (who are receptive to risks and willing to be the first to experiment with new products), customers who adapt swiftly (capable of adopting new technologies and establishing their utility within society), early adopters (pioneering the utilization of innovative products within social trends), late adopters (following the early adopters in acceptance), and lagging customers (those who are generally behind the community in adopting innovative products and new ideas). In this study, vulnerable groups are classified as lagging customers. They encounter numerous barriers in accessing new technologies, possess limited financial literacy, exhibitdistrust in digital banking, face restricted access to banking services, and experience language support challenges (not speaking the language of digital banking). Furthermore, their awareness of the availability and benefits of digital banking services is limited, which consequently hampers the dissemination of technology.

The Innovation Resistance Theory (IRT) was developed by Ram and Sheth (1989), and pertains to the consumer's response to any product, considering barriers such as usage, value, risk, tradition, and image. When an innovation differs from the existing system, habits, and reality, individuals are likely to reject it, thus creating a barrier to its adoption.

The proposed study model is illustrated in Figure 1:

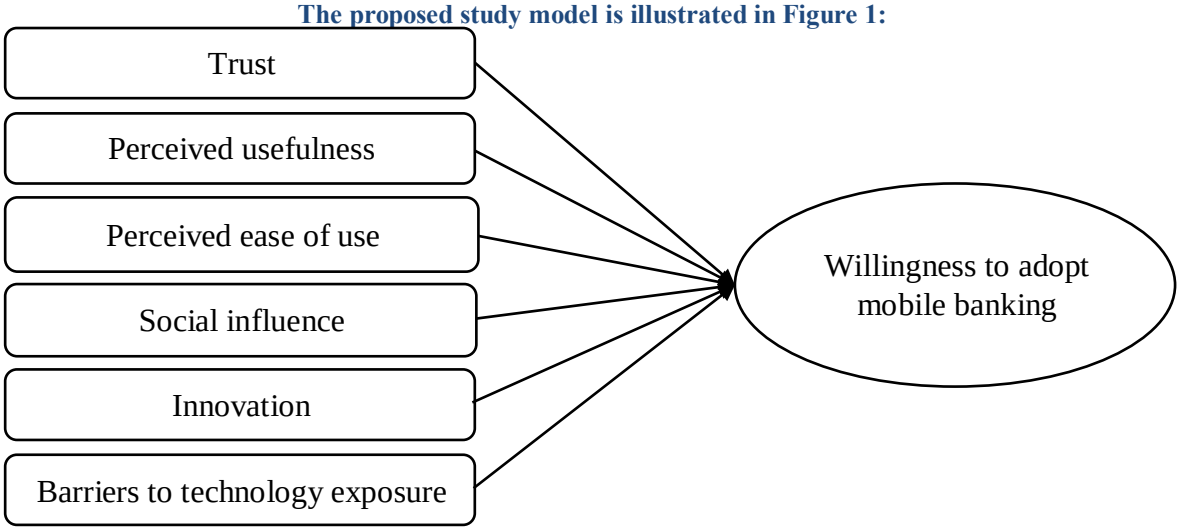

Figure 1: Research model

Source: Proposed by the authors

Hypothesis development

Trust indicates how much the client believes that the service provider will act reliably, ensuring safety and security during the transaction (Chaudhuri & Holbrook, 2001). In mobile banking, especially for disadvantaged groups, trust is vital in easing their concerns about adopting new financial technologies. Past research has shown a positive link between trust and the willingness to use e-banking services (Wang, 2003; Foon & Fah, 2011; Bakri, 2020). Based on the above arguments, the research hypothesis is proposed as follows:

H1: Trust will be positively related to willingness to adopt mobile banking.

Perceived usefulness is the degree to which users believe that using Mobile Banking will help them improve their efficiency in financial management and transactions (Davis, 1989). Studies based on TRA, TPB, and TAM models have confirmed that perceived usefulness has a positive impact on the intention to accept and use digital banking services (Wang, 2003; Luarn & Lin, 2005). For vulnerable groups, if they clearly feel the benefits that Mobile Banking brings such as saving time, costs and convenience in transactions, the readiness to use the service will increase. Based on the above arguments, the research hypothesis is proposed as follows:

H2: Perceived usefulness is likely to increase willingness to adopt mobile banking.

Perceived ease of use refers to how much users believe that using Mobile Banking requires little effort and is simple to operate (Davis, 1989). For vulnerable groups, this perception is even more crucial, especially as they often encounter limitations in technology and digital skills. Many studies have demonstrated that when users see a service as straightforward and easy, they are more likely to accept and use it (Wang, 2003; Luarn & Lin, 2005). Based on the above arguments, the research hypothesis is proposed as follows:

H3: Perceived ease of use is likely to increase willingness to adopt mobile banking.

Social influence refers to the extent to which individuals perceive that important people around them, such as family, friends, colleagues, and the community, think they should use a new product or service (Venkatesh et al., 2003). For

vulnerable groups, encouragement and guidance from relatives or social organizations play a crucial role in promoting the intention to use digital banking services. Numerous studies have demonstrated that social influence has a positive impact on the intention to adopt and use mobile banking (Amin & Isa, 2008; Foon & Fah, 2011). Based on the above arguments, the research hypothesis is proposed as follows:

H4: Social influence is likely to increase willingness to adopt mobile banking.

Innovation refers to an individual's willingness to experiment with new products or services, reflecting an appreciation for diversity and creativity (Verlegh & Steenkamp, 1999). According to Agarwal and Prasad (1998), innovation constitutes a critical factor influencing the intention to adopt emerging technologies. Prior research has also substantiated that innovation exerts a favorable influence on the intention to adopt and utilize technology-driven products and services (Im et al., 2003; Sentosa, 2012). Based on the above arguments, the research hypothesis is proposed as follows:

H5: Innovation is likely to increase willingness to adopt mobile banking.

According to IRT, consumers tend to exhibit resistance to technological innovations, particularly when these innovations necessitate alterations in previously established behaviors, habits, or usage skills (Thakur & Srivastava, 2013). The obstacle to technological adoption manifests as apprehension, embarrassment, or a lack of confidence among users when engaging with digital platforms. This phenomenon is notably prevalent among older individuals, those with limited technological proficiency, or residents of rural areas. Parasuraman (2000) asserts that numerous individuals continue to favor engaging in traditional transactions that involve face-to-face interactions, as this fosters a sense of trust and control. Although the introduction of new technology may occasionally induce discomfort or anxiety, even resulting in technophobia, Kuisma et al. (2007) further observe that the barrier to technology exposure is a prevalent factor examined in resistance to innovation. Based on the above arguments, the research hypothesis is proposed as follows:

H6: Barriers to technology exposure are likely to decrease willingness to adopt mobile banking.

METHODOLOGY

Measurement scales

The measurement scales are adopted from both domestic and international research studies. Additionally, the authors engaged in comprehensive discussions with experts in banking and finance, as well as representatives from disadvantaged groups, to evaluate and refine the observed variables. This process ensured their appropriateness relative to the characteristics of the survey participants and involved modifying the language to align with Vietnamese stylistic preferences, ensuring clarity and ease of understanding while minimizing respondent confusion. The formal scale is measured on a 5-point Likert scale, from 1 (strongly disagree) to 5 (strongly agree). The formal scale has 32 observed variables (see Table 1).

Sample size

The study collected data using a convenient non-probabilistic sampling method. The sample size was determined based on the recommended ratio of 10:1 for exploratory factor analysis (EFA), as suggested by Hair et al. (2010), to ensure reliability and statistical significance. Therefore, the required sample size is 320 questionnaires. The questionnaires were distributed to individuals within disadvantaged groups who utilize mobile banking services. A total of 350 questionnaires were distributed, with 341 valid responses collected during the period from February 2025 to March 2025. The data obtained was processed and analyzed using SPSS 26 software at a significance level of 5%, employing methods such as descriptive statistics, reliability testing, exploratory factor analysis (EFA), correlation analysis, and multivariate linear regression to test the hypotheses.

RESULTS

The descriptive statistical outcomes indicate that 149 respondents are male, representing 43.7%, while 192 respondents are female, comprising 56.3%. Regarding age distribution, 80 respondents are under 35 years of age, accounting for 23.5%; 163 respondents are aged between 36 and 55 years, constituting 47.8%; and 98 respondents are over 55 years old, accounting for 28.7%. Regarding education, 75 respondents have less than a high school diploma, making up 22.0%, 154 are high school graduates, representing 45.2%, and 112 hold a college or university degree, accounting for 32.8%. In terms of income, 176 respondents earn less than 7 million VND per month, which is 51.6%, 119 earn between 7 and 10 million VND monthly, or 34.9%, and 46 earn over 10 million VND per month, accounting for 13.5%. Regarding the time spent using mobile banking services, 129 respondents, or 37.9%, reported using it for less than 1 year, while 212 respondents, or 62.1%, reported using it for more than 1 year.

The analysis presented in Table 1 indicates that perceived ease of use possesses the highest mean score (Mean = 4.12, SD = 0.63), demonstrating that the majority of respondents value the convenience, simplicity of operation, and accessibility of mobile banking services. Additionally, trust exhibits a comparatively high mean (Mean = 3.98, SD = 0.68), suggesting that banks are effectively ensuring security and thereby fostering user trust. Social influence attained an average score of 3.87, illustrating the significance of relatives, friends, or the community in motivating disadvantaged groups to utilize mobile banking services. Conversely, the barriers to technology exposure recorded the lowest average score (Mean =

3.45; SD = 0.71), indicating the presence of challenges in accessing technological resources, particularly among older adults, individuals with low income, or those with limited devices. While perceived usefulness and innovation have average values of 3.74 and 3.69, respectively, reflecting a positive but not significant level of evaluation. Overall, the descriptive results indicate that vulnerable groups are gradually developing the willingness to utilize mobile banking; however, there remains support and an opportunity for improvement in access to technology to foster practical usage behaviors.

Table 1: Cronbach's Alpha and EFA of the independent variables

Items	Mean	Corrected item-total correlation	Cronbach's Alpha if item deleted	Loadings
Trust		Cronbach's Alpha = 0.819		
TR1	4.12	0.542	0.802	0.808
TR3		0.509	0.793	0.794
TR2		0.511	0.783	0.775
TR4		0.567	0.766	0.756
Perceived usefulness		Cronbach's Alpha = 0.801		
PU1	3.74	0.612	0.798	0.819
PU5		0.625	0.775	0.802
PU3		0.573	0.751	0.787
PU4		0.581	0.746	0.768
PU2		0.524	0.732	0.753
Perceived ease of use		Cronbach's Alpha = 0.793		
PE3	3.98	0.569	0.783	0.789
PE2		0.487	0.775	0.775
PE1		0.412	0.765	0.761
PE4		0.434	0.742	0.739
Social influence		Cronbach's Alpha = 0.827		
SI4	3.87	0.537	0.805	0.784
SI2		0.581	0.788	0.816
SI1		0.595	0.771	0.782
SI3		0.478	0.754	0.761
Innovation		Cronbach's Alpha = 0.799		
IN1	3.69	0.598	0.782	0.815
IN4		0.611	0.773	0.794
IN2		0.573	0.751	0.772
IN3		0.659	0.749	0.759
Barriers to technology exposure		Cronbach's Alpha = 0.817		
BTE1	3.45	0.564	0.806	0.835
BTE5		0.532	0.787	0.803
BTE3		0.531	0.765	0.791
BTE2		0.489	0.749	0.778
BTE4		0.467	0.738	0.760
BTE6		0.514	0.724	0.754
KMO = 0.818				
Bartlett's Test		Approx. Chi-Square		10672.394
		df		429
		Sig.		0.000
% of Variance				75.831
Eigenvalue				1.124

Source: Analysis results from SPSS 26

Table 1 also demonstrates that the Cronbach's Alpha of the scales attains values exceeding 0.7, indicating robust internal consistency. Furthermore, the total variable correlation coefficient of the observed variables surpasses 0.3, thereby confirming the close association between each variable and the overall scale. Additionally, when the Cronbach's Alpha coefficient for a variable is lower than the overall Cronbach's Alpha, it suggests that no observed variable compromises the reliability of the instrument, and consequently, no observed variable is removed from the scale (Hair et al., 2010).

The results of the exploratory factor analysis indicated that the KMO coefficient was 0.818, which exceeds 0.5 and is less than 1, thereby demonstrating that the data aligns entirely with the recommendations of Hair et al. (2010). Additionally, Bartlett's test yielded a Sig. value of 0.000, indicating a significant linear correlation among the observed variables. In the rotation matrix table, at an Eigenvalue greater than 1, six factors were extracted as initially predicted, accounting for a

total variance of 75.831%. This exceeds the minimum threshold of 50%, thereby demonstrating that the extracted factors are capable of explaining the majority of the data's variability. Additionally, the factor loadings of the observed variables exceeding 0.7 indicate a very high degree of convergent among variables within the same group.

Therefore, the outcomes of Cronbach's Alpha and Exploratory Factor Analysis (EFA) demonstrate that the independent scales possess high reliability and robust structural validity, rendering them suitable for use in subsequent analyses (Hair et al., 2010).

Table 2: Cronbach's Alpha and EFA of the dependent variable

Items	Mean	Corrected item-total correlation	Cronbach's Alpha if item deleted	Loadings
Willingness to adopt mobile banking		Cronbach's Alpha = 0.845		
WA1	4.18	0.679	0.826	0.819
WA2		0.652	0.814	0.807
WA3		0.581	0.796	0.785
WA4		0.546	0.775	0.763
KMO = 0.813				
Bartlett's Test		Approx. Chi-Square		251.964
		df		4
		Sig.		0.000
% of Variance			73.965	
Eigenvalue			1.902	

Source: Analysis results from SPSS 26

The results presented in Table 2 indicate that the Cronbach's Alpha coefficient of 0.821 exceeds the threshold of 0.5 (Hair et al., 2010), thereby demonstrating a highly reliable scale and a commendable level of intrinsic consistency. Additionally, the observed variables exhibit a total variable correlation coefficient surpassing 0.5, signifying a strong association between each observed variable and the overall scale. Moreover, the Cronbach's Alpha coefficient when each variable type is considered is less than the overall Cronbach's Alpha, indicating that no observed variable compromises the scale's reliability and should therefore be excluded from the model.

Table 2 indicates that the KMO coefficient is 0.813, demonstrating a substantially high level of correlation among the observed variables. Furthermore, Bartlett's test yields a significance value of 0.000, signifying that the correlations among the variables within the matrix are statistically significant, thereby satisfying the prerequisites for subsequent analysis. At the Eigenvalue level of 1,902, exceeding the threshold of 1, the factor analysis identified a single factor accounting for a total variance of 73,965%, which satisfactorily surpasses the minimum recommended threshold of 50% as outlined by Hair et al. (2010). Furthermore, the factor loadings for the observed variables, all greater than 0.7, indicate a very good convergence among these variables. The absence of cross-loading further confirms that the scale possesses a clear and consistent structure. Consequently, the scales are deemed appropriate for conducting the subsequent regression analysis.

Table 3: Correlation analysis

	WA	TR	PU	PE	SI	IN	BTE
WA	1						
TR	0.757**	1					
PU	0.693**	0.213**	1				
PE	0.619**	0.175*	0.251**	1			
SI	0.732**	0.258**	0.174**	0.194**	1		
IN	0.707**	0.241**	0.259*	0.212*	0.175**	1	
BTE	0.634**	0.186**	0.173**	0.187**	0.243**	0.282*	1
*significant at $p < 0.05$, **significant at $p < 0.01$ Notes: TR = Trust, PU = perceived usefulness, PE = perceived ease of use, SI = social influence, IN = Innovation, BTE = Barriers to technology exposure, WA = Willingness to adopt mobile banking							

Source: Analysis results from SPSS 26

The results presented in Table 3 indicate that the independent variables exhibit a positive and statistically significant correlation with the dependent variable, as evidenced by correlation coefficients all exceeding 0.4 and p-values less than 0.05. This demonstrates a relationship between the independent and dependent factors. Furthermore, there is no indication among the independent factors of multicollinearity that would violate the assumptions necessary for linear regression analysis (Hair et al., 2010).

Table 4: Model summary

Model	R	R2	Adjusted R2	Std. Error of the Estimate	Durbin-Watson
1	0.815	0.798	0.775	0.314	1.836

Source: Analysis results from SPSS 26

The findings presented in Table 4 indicate that the research model is highly pertinent and statistically significant, with a adjusted R^2 value of 0.775, demonstrating that the independent variables account for 77.5% of the variance observed in the dependent variable. Additionally, the analysis revealed that the Durbin-Watson statistic is 1.836, which falls within the acceptable range of 1.5 to 2.5, thereby indicating the absence of residual autocorrelation in the regression model.

Table 5: ANOVA

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	62.737	6	5.143	132.628	0.000
Residual	10.622	334	0.032		
Total	72.359	340			

Source: Analysis results from SPSS 26

The results presented in Table 5 indicate that the statistical significance (Sig value) is 0.000. Therefore, the linear regression model is deemed appropriate for the dataset and is effectively utilized.

Table 6: Multivariate linear regression model

Model		Unstandardized coefficients		Standardized coefficients	t	Sig.	Collinearity statistics	
		B	SD	Beta			Tolerance	VIF
1	(Constant)	1.487	0.018		5.592	0.000		
	TR	0.312	0.034	0.337	6.471	0.000	0.729	1.715
	PU	0.241	0.015	0.259	7.688	0.002	0.581	1.803
	PE	0.347	0.029	0.361	5.573	0.000	0.732	1.837
	SI	0.289	0.013	0.305	4.582	0.004	0.654	1.739
	IN	0.223	0.021	0.246	5.590	0.001	0.643	1.722
	BTE	-0.275	0.027	-0.284	7.655	0.000	0.757	1.854
Dependent variable: WA Notes: TR = Trust, PU = perceived usefulness, PE = perceived ease of use, SI = social influence, IN = Innovation, BTE = Barriers to technology exposure, WA = Willingness to adopt mobile banking								

Source: Analysis results from SPSS 26

The results presented in Table 6 demonstrate that the model possesses a significance level (Sig.) of less than 0.05, indicating its statistical significance. Furthermore, the Variance Inflation Factor (VIF) for the independent variables is less than 2, confirming the absence of multicollinearity. Furthermore, regression diagnostic tests including scatterplots, histograms, and P-P plot graphs indicate that the distribution of residuals is random, with standard approximations, and do not breach the assumptions of the multivariate linear regression model. Consequently, hypotheses H1 through H5 are accepted. The linear regression equation, utilizing standardized Beta coefficients, is articulated as follows:

$$WA = 0.361*PE + 0.337*TR + 0.305*SI – 0.284*BTE + 0.259*PU + 0.246*IN + \varepsilon$$

DISCUSSION

The analysis of the linear regression model reveals five factors that positively correlate with the willingness of vulnerable groups in Vietnam to adopt mobile banking services, listed in descending order: perceived ease of use, trust, social influence, perceived usefulness, and innovation. Conversely, barriers to technology exposure demonstrate an inverse relationship with the willingness to adopt such services.

Perceived ease of use reached a Beta coefficient of 0.361, the highest among all variables, indicating that the simplicity of operation and usability of mobile banking applications is the most significant determinant. For vulnerable groups that frequently possess limited technological skills, a user-friendly and easy-to-use application will directly enhance the intention to adopt the service. These results are consistent with the Technology Acceptance Model (TAM) (Davis, 1989).

Trust possesses a standardized Beta coefficient of 0.337, ranking as the second highest among the independent variables. This affirms that trust is instrumental in motivating individuals to adopt mobile banking, particularly among vulnerable populations apprehensive about financial risks. This finding aligns with prior research conducted by Bakri (2020), which demonstrated that trust in the system and service provider is essential in fostering usage behavior.

Regarding social influence, the regression results indicate a significant effect (Beta = 0.305). This suggests that the opinions of friends, family, or the community can markedly influence the decision to adopt mobile banking. These findings mirror the characteristics of Vietnamese culture, which values a strong sense of community, where individual behavior is frequently shaped by reference groups.

Perceived usefulness also demonstrated a positive influence (Beta = 0.259), indicating that when users perceive the practical benefits of mobile banking, such as saving time and reducing transaction costs, they exhibit a greater willingness to adopt the service. This consideration is particularly significant within the context of vulnerable groups who frequently face financial and mobility constraints.

Innovation also demonstrated a positive impact (Beta = 0.246), indicating that vulnerable groups remain receptive to technological innovations provided they recognize the value and novelty of the service. This finding highlights the potential for effective engagement within this segment, contingent upon banks' ability to communicate persuasively and foster a culture of experimentation.

Finally, barriers to technology exposure have an inverse effect (Beta = -0.284), and are statistically significant (Sig. = 0.000). This indicates that obstacles such as insufficient technical skills, infrastructural limitations, or security concerns substantially diminish the willingness to adopt mobile banking. These findings are in accordance with the research conducted by Kuisma et al. (2007), which highlights the importance of reducing barriers to foster acceptance behavior.

CONCLUSION AND IMPLICATIONS

This study demonstrated that the willingness to utilize mobile banking among vulnerable groups in Vietnam is substantially influenced by several factors, including trust, perceived usefulness, perceived ease of use, social influence, innovation, and barriers to technological exposure. Perceived ease of use and trust are the two most influential factors, emphasizing the critical importance of developing user-friendly applications and fostering user confidence. Conversely, Barriers to Technology Exposure exert a negative influence, indicating that both technological and psychological impediments constitute significant obstacles for vulnerable groups.

The study's findings have augmented empirical evidence supporting technology acceptance models (TAM, UTAUT) within the Vietnamese context. Additionally, they highlight socio-cultural characteristics that influence the behavior of vulnerable groups. This research significantly contributes to clarifying the theoretical gap concerning mobile banking acceptance among vulnerable populations, a topic infrequently examined in developing country contexts.

Practically, this research contributes to providing valuable information for bank managers in the development of digital financial services aimed at vulnerable groups. Based on the study's findings, several implications are proposed as follows:

Initially, financial institutions must develop a user-friendly, straightforward, and easily operable mobile banking application interface. Particular emphasis should be placed on accommodating the elderly, individuals with limited education, or those with restricted access to technological devices. The application should incorporate visual guidance through images, video demonstrations, or auditory support to facilitate user operation and foster confidence in usage. Concurrently, banks are encouraged to conduct periodic evaluations of the user experience to enhance the processes of login, transfer, and payment, ensuring they are both convenient and reliable.

Secondly, financial institutions must enhance and bolster customer confidence in mobile banking services. This objective can be achieved through the transparent disclosure of information security policies, user protection mechanisms, refund commitments in the event of risks, and clear communication regarding the complaint resolution procedures. Furthermore, banks are advised to implement community outreach campaigns that emphasize the security of electronic transactions and to collaborate with local authorities and social organizations to elevate credibility and foster a sense of security among vulnerable users.

Thirdly, financial institutions must harness the potential of social influence to broaden their customer base. Implementing practical guidance and training initiatives within communities, particularly in rural, underserved, and remote areas inhabited by vulnerable populations, can prove effective. Moreover, existing clients should be incentivized to recommend mobile banking services to relatives and friends through preferential policies, fee reductions, or reward points. The approach of "real people guiding real people" will serve to enhance trust and encourage the adoption of these services.

Fourth, financial institutions should strive to reduce obstacles to technological engagement by establishing direct or remote support mechanisms tailored for vulnerable populations. This can be achieved by implementing technical support stations at branches, transaction offices, or community centers, where staff are available to assist with installation, operation, and troubleshooting. Furthermore, collaboration with network providers and technology companies can enable the provision of preferential data plans or affordable smartphones, thereby facilitating access to mobile banking services.

Fifth, enhance communication regarding the perceived benefits of mobile banking. Financial institutions should explicitly articulate practical advantages such as time and cost savings, proactive financial management, and

the ability to conduct transactions at any time and place. Utilizing real-life stories or successful instances from disadvantaged individuals who have effectively utilized the service will aid in fostering trust and motivate others to adopt the service.

Finally, foster an innovative mindset in the technology usage behaviors of vulnerable groups. Financial institutions should facilitate practical experience initiatives, online tutorials, or technology experience competitions, providing individuals with opportunities to become familiar with and recognize the benefits of the services. Concurrently, the implementation of a "risk-free trial" program can be considered to ensure positive initial experiences for novices, thereby encouraging the development of sustainable usage habits.

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