

Barriers toward the adoption of mobile payment for Vietnamese consumers in rural areas



Nguyen Van Phuong^{ae}  | Le Thi Bich Ngoc^b  | Tran Van Hiep^c  | Ly Thu Cuc^d  

^aVNU University of Economics and Business, Vietnam National University, Hanoi, Vietnam.

^bFaculty of Business Administration, Academy of Finance, Hanoi, Vietnam.

^cFaculty of Economics and Business Administration, Ha Noi University of Mining and Geology, Vietnam.

^dSchool of Economics, Hanoi University of Industry, Hanoi, Vietnam.

^eJindal Global Business School, O.P. Jindal Global University, Sonipat, Haryana, India.

Abstract The study aimed to assess the impact of barriers on the intention to use mobile payment services among rural residents in various provinces of Vietnam. Barriers were categorized into two groups: "Functional barriers" and "Psychological barriers," which play crucial roles in shaping decisions regarding behavioral innovation. The research was conducted through an online survey of 484 rural residents in three provinces: Son La, Da Nang, and An Giang, representing the Northern, Central, and Southern regions of Vietnam. These provinces also represent the mountainous, coastal, and delta regions of the country. Data were processed using Smart PLS 4.1 software, applying the Partial Least Squares Structural Equation Modeling (PLS-SEM) method to test the proposed hypotheses in the study. The research findings indicate that factors, including barriers such as usage, value, risk, and tradition, exert counteractive effects on the intention to use mobile payment services. Specifically, functional barriers like perceived usage complexity and value concerns were found to significantly reduce the likelihood of adopting mobile payments. Psychological barriers related to traditional practices also hindered adoption, highlighting the deep-rooted cultural influences in rural areas. However, there is no evidence to support the impact of image barriers on the intention to use mobile payment services among rural residents. This suggests that concerns about social perception and status may be less relevant in rural contexts compared to functional and psychological considerations. Based on the research results, the authors propose managerial implications aimed at fostering the intention to use mobile payment services. These recommendations include enhancing user education and training to reduce functional barriers, as well as culturally sensitive marketing strategies to address psychological barriers. By addressing these barriers effectively, it is possible to increase the adoption of mobile payment services, thereby contributing to the attraction and development of new technology-driven service applications in commercial transactions.

Keywords: consumer behavior, intention to use, mobile payment, rural consumer

1. Introduction

The growth of mobile devices and e-commerce has caused the development of the mobile payment market globally. The number of mobile transactions is predicted to increase by 400% in Vietnam by 2025 due to the sharp growth of technology (Duy & Giang, 2022). Moreover, more than 70% of Vietnam's population owns mobile phones, and 40% of Vietnam's population uses mobile phones for daily e-commerce purposes, which indicates that Vietnam has a positive mobile payment trend at an impressive growth rate (Changchit et al., 2023). With the development of information technology, noncash payments are becoming an inevitable trend in Vietnam (Huyền & Hà, 2022). Moreover, mobile payments in Vietnam will explode dramatically, with an average annual growth rate of 75.4%, increasing the market size to US\$170 million in 2021 (Changchit et al., 2023). It is essential to identify the factors affecting the adoption of mobile payments by Vietnamese customers to increase the use of mobile payments in Vietnam.

In some remote and rural areas, payment via mobile devices is limited compared to that in large cities due to limited access to banking services. Moreover, low access to the internet in remote and rural areas leads to difficulties in adapting mobile payments in those areas (Nguyen & Le, 2021). Since many Vietnamese consumers are not adapted to the technical e-payment method, especially in remote and rural areas, this leads to their perceived security and trust based on their experiences. With the limited cashless payment infrastructure system in rural and mountainous areas, people do not have access to modern payment services and facilities. Currently, on average, in rural and mountainous areas, there are only approximately 2.2 transaction points/per administrative area (the northern region has only 0.7 transaction points/per district), while this number in districts, towns, and cities is approximately 40 transaction points (Liên, 2021). The application of mobile payments in e-commerce is limited due to the popularity of cash payments in civil transactions, especially in rural, remote, and isolated areas. Moreover, the habit of consuming cash has been ingrained in people's subconscious, the fear of accessing new



payment technology, and concerns about security, safety, and costs of electronic payment methods, so the implementation of mobile payment is difficult (Thanh, 2020). People who live in remote areas still need easily accessible financial services. Notably, mobile money has become an important driving force in the development of cashless payments in these regions.

Studies on mobile payments in Vietnam merely focus on the intention to use mobile payments in urban areas, which indicates limited research in remote and rural areas. Although many scholars have recently focused on the topic of mobile communication services, the number of studies focusing on barriers is still very limited. In particular, there are almost no studies analyzing the barrier factors in the intention to use mobile payments by Vietnamese consumers in remote and rural areas. For these reasons, this study needs to focus on identifying barriers to mobile payment adoption in rural areas of Vietnam.

2. Literature Review and Research Model

2.1. Literature review

Currently, mobile payment has increasingly become an alternative means of payment to cash, credit, and debit card payments. In addition, mobile payment applications have become increasingly popular in several countries. In addition, mobile payment solutions are developing globally due to their convenience (Kaur et al., 2020). However, mobile payment adoption and usage are still challenging because of the presence of consumer resistance toward their use. Many researchers have studied mobile adoption to investigate its application and usage. Mobile payment is defined as payment through a mobile device by taking advantage of wireless and other communication technologies (León, 2021). In addition, transferring mobile payments is a valuable feature of mobile devices for customers. According to Li et al. (2023), mobile payments are classified as remote or proximate. Remote mobile payments are considered online purchases in terms of digital content with the application of an internet connection. In addition, proximity mobile payments make payments for point-of-sale products, which can replace traditional in-store payment methods (cash, debit, or credit cards) (Ahn & Nam, 2022). On the other hand, remote mobile payments are more popular than proximity m-payments (Barnard & Humbani, 2022).

Research on mobile payments is increasingly important due to technological innovation globally. According to de Luna et al. (2019), there are many studies in the field of mobile payments related to consumer adoption of m-payments for understanding consumers' preferences as well as promoting values for businesses. However, there is a need for new research on m-payment to enrich the research field (Pramana, 2021). Furthermore, relatively few studies have been conducted on Vietnamese consumers in rural areas. In addition, Yen & Duong (2023) conducted research on the factors affecting the use behavior of Vietnamese m-payment consumers by analyzing the impact of variables extracted from system quality, service quality, security, social influence on behavioral intention to use and behavioral intention on m-payment user behavior. Additionally, Nguyen & Nguyen (2020) explored the factors that influence consumers' online payment method decision behavior in Vietnam and found that awareness of usefulness, awareness of risk, awareness of trust, awareness of ease of use, product uncertainty perception, and perceived behavioral control affect the behavior of deciding on online payment methods. In addition, Nguyen et al. (2021) investigate different types of trust in m-payment adoption in Vietnam to better understand the characteristics of trust in m-payment adoption as well as in technology adoption in general. Hence, to date, barriers to the adoption of mobile payments for Vietnamese consumers in rural areas have not been the focus of research.

Several prior studies have examined consumer resistance behavior in terms of mobile payments. According to the study of Wang et al. (2023), there is a distinction between active and passive innovation resistance. Active innovation resistance is created by customers by specific product or service attributes. In contrast, passive innovation resistance describes a general resistance toward innovations that are not directly related to the product or service.

2.2. Model and hypothesis development

Ram and Sheth (1989) focused on barriers to adoption that create consumer resistance by indicating a theoretical framework for identifying innovation resistance. Currently, this model is popular in innovation resistance research and is still relevant for technological innovations. In addition, there is a lack of studies in the context of mobile payments focused on barriers to adoption. Therefore, this study will systematically identify the barriers to adopting mobile payments among Vietnamese people in rural areas through the application of the theory of innovation resistance. This study identified barriers to adoption, which are classified as functional barriers directly related to innovation and psychological barriers resulting from customers' conflicts with prior beliefs. The functional barriers include aspects such as usage patterns, the value of products or services and the risk associated with usage. On the other hand, psychological barriers are based on the traditions of consumers and the perceived image of innovation.

2.2.1. Usage barrier

According to the research of Ram and Sheth (1989), innovations require some effort from consumers to learn new skills and change existing habits to adapt to new products and services. In addition, the requirement to change habits can result in innovation resistance if people are not satisfied with changing at the beginning (Talwar et al., 2020). The usage barrier is indicated as the functional application of an innovation, which consists of two aspects: the efficiency of a new product or

service and the degree of adaptation from consumers while using the innovation (Kaur et al., 2020). Several studies have shown that the usage barrier has a strong negative relationship with the adoption of innovation, especially in contexts related to mobile payments (Chen et al., 2022; Kaur et al., 2020; Lau et al., 2022). Some studies indicate that the factors involved in implementing the usage barrier include the complexity of services and inconvenience preventing consumers from using the innovation (Dotzauer & Haiss, 2017). Thus, the following hypothesis is developed:

H1: Usage barriers negatively affect mobile payment adoption intentions among Vietnamese consumers in rural areas.

2.2.2. Value barrier

According to Ram and Sheth (1989), an innovation's monetary value needs to provide a convincing "performance-to-price value" compared to alternatives. Consumers face resistance if new products or services require greater effort, which indicates that consumers perceive that m-payment has greater benefits than traditional payment. In addition, the value barrier is considered the general or added value of applying innovation compared to alternatives (Migliore et al., 2022). In addition, several studies have indicated a negative relationship between usage barriers and consumers' intentions toward digitization related to innovations in terms of online shopping (Gupta & Arora, 2017), mobile services (Joachim et al., 2018) and mobile banking (Borraz-Mora et al., 2017). A value barrier occurs when consumers do not perceive m-payment to be superior to existing payment methods. The importance of the value aspect has been researched in terms of perceived usefulness and advantage in many studies (Dutot et al., 2019; Hong et al., 2015; Park et al., 2022). In addition, many studies indicate a negative relationship between value barriers and mobile payment adoption intentions (Agwu, 2013; Himel et al., 2021; Memon et al., 2022). Therefore, it can be hypothesized that:

H2: The value barrier negatively affects the mobile payment adoption intentions of Vietnamese consumers in rural areas.

2.2.3. Risk barrier

Certain risks are associated with new products and services through innovation (Ram & Sheth, 1989). Risk barriers can be classified into four main types: physical risk, economic risk, functional risk, and social risk. Mobile payment adoption with technological innovations is perceived to involve risks. There are several studies in the literature indicating the negative influence of risk barriers on users' intentions and behavior in terms of mobile commerce (M. Moorthy et al., 2017) and mobile shopping adoption (Gupta & Arora, 2017). Furthermore, the risk barrier is associated with concerns about technical problems with payment transactions, hacker attacks, and abuse of information. Several studies indicate a significant negative relationship between the adoption intention of m-payment and risk barriers (Kaur et al., 2020; Talwar et al., 2020). Thus, the following hypothesis is developed:

H3: Risk barriers negatively affect the mobile payment adoption intentions of Vietnamese consumers in rural areas.

2.2.4. Tradition barrier

According to Ram and Sheth (1989), the tradition barrier is classified based on psychological innovation resistance as an interference with valued routines. However, the tradition barrier indicates how tradition influences resistance varies. Traditional barriers also have a negative association with the adoption intentions of any innovation (Kaur et al., 2020). In addition, tradition barriers have a negative association with adoption intentions toward online shopping, mobile shopping, mobile commerce, and m-banking. Few studies have shown a negative relationship between traditional barriers and mobile payment intentions (Ahmed Memon et al., 2022; Lee & Kim, 2022; K. Moorthy et al., 2017). These findings from prior research thus guide us to develop our fourth hypothesis:

H4: Traditional barriers negatively affect the mobile payment adoption intentions of Vietnamese consumers in rural areas.

2.2.5. Image barrier

According to Ram and Sheth (1989), image barriers are formed by stereotypes of innovation, which are based on the country of origin or the industry and are likely to result in resistance. The image barrier is established based on prejudices, which are perceived individually. In addition, the image barrier has a negative influence on users' behavior regarding different digitization initiatives in terms of users' adoption-related intentions toward mobile banking, mobile gaming, mobile commerce, and mobile services (Kaur et al., 2020). On the other hand, other studies have shown a negative correlation between image barriers and use intention toward mobile payments (Joachim et al., 2018; Kaur et al., 2020; M. Moorthy et al., 2017). Therefore, the following hypothesis was developed:

H5: The image barrier negatively affects the mobile payment adoption intentions of Vietnamese consumers in rural areas.

Based on the above hypotheses, a theoretical model (Figure 1) was developed:

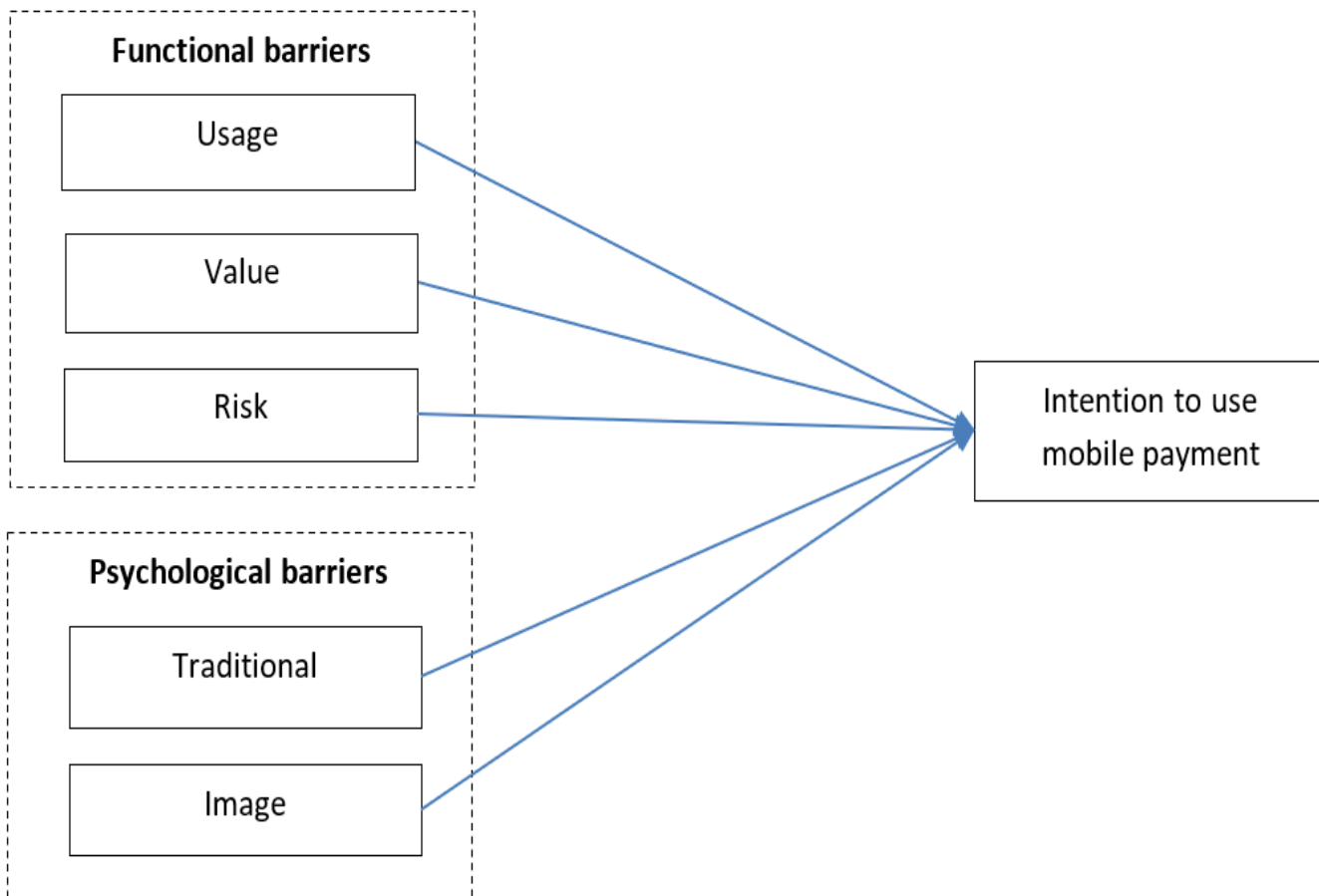


Figure 1 Conceptual model.

3. Materials and Methods

3.1. Construct Measurement

The survey instrument for this study was developed using a mixed methodology approach recommended in the literature (Echtner & Ritchie, 1991). Initially, measurements were taken from previous related research (Table 1). These scales are then applied to two groups of people. The expert group included researchers and lecturers from Vietnam National University to discuss the scales suitable for the context of rural Vietnam and translated them into Vietnamese. The second group included 7 people who lived in Moc Chau district, Son La Province, Vietnam. The draft of the questionnaire has been discussed and revised to ensure that everybody understands the questions. These attributes were measured on a 5-point Likert scale (1 Very Disagree and 5 Very Agree).

3.2. Data collection

Three provinces were chosen for surveying, namely, Son La, Da Nang, and An Giang, which represent regions and areas of Vietnam as coastal–plains - mountain areas and the North–South - Middle of Vietnam (Table 2). The sample of 484 respondents was chosen randomly from available resources in provinces and districts to be interviewed “face to face” to collect data. The 7 interviewers were trained in the questionnaire and interview technology. The survey was conducted over nearly 4 months from September 2023 to March 2024. The respondents were invited to the community house of the community to participate in the survey. On average, the interviews lasted 20-30 minutes.

3.3. Data analysis

The collected data were inputted and cleaned on Microsoft Excel software and then analyzed on Smart PLS 4.1 software. Smart PLS software was used with the PLS-SEM analysis method to test the hypotheses proposed in the study. In recent years, the number of published studies using PLS-SEM has increased rapidly in marketing research because PLS-SEM has many advantages over other methods, such as CB-SEM (Hair et al., 2019).

The research model is evaluated through two steps: evaluating the scale through Cronbach's alpha coefficient, outer loading, composite reliability (CR), and total variance extracted (AVE), followed by evaluating the discrimination of the scales



used in the model. Next, bootstrap analysis was used to evaluate the structural model on SmartPLS to test the hypotheses and relationships in the model.

Table 1 The items used in this study and their sources.

Items/Variables	Explanation	Reference
	USAGE BARRIER	
USAGE1	<i>difficult to use Mobile payment services</i>	(Chen et al., 2022; Khanra et al., 2020; Lau et al., 2022)
USAGE2	<i>Using mobile payment services is not convenient for me</i>	
USAGE3	<i>The steps to use the mobile payment service are not clear</i>	
USAGE4	<i>The registration procedures to use mobile payment services are quite complicated</i>	
	VALUE BARRIER	
VALU1	<i>Compared to other traditional methods, mobile payment services do not benefit me</i>	(Khanra et al., 2020; Lau et al., 2022; Memon et al., 2022)
VALU2	<i>I doubt a mobile payment service will bring benefits commensurate with the cost</i>	
VALU3	<i>I'm skeptical about using a mobile payment service that provides the quality I expect</i>	
VALU4	<i>I doubt using a mobile payment service is worth it to me</i>	
VALU5	<i>I cannot guarantee that the mobile payment service will provide a good overall experience for me</i>	
	RISK BARRIER	
RISK1	<i>If I use a mobile payment service, I may have entered incorrect payment information</i>	(Kaur et al., 2020; Lau et al., 2022; Rombe et al., 2021)
RISK2	<i>Using a mobile payment service may incur additional costs for me</i>	
RISK3	<i>I may lose my internet connection while using mobile payments</i>	
RISK4	<i>My personal account information may be stolen while using mobile payment services</i>	
RISK5	<i>Personal information may be disclosed during the use of mobile payment services</i>	
	TRADITIONAL BARRIER	
TRADI1	<i>I am more confident when using traditional payment services</i>	(Kaur et al., 2020; Lee & Kim, 2022; Migliore et al., 2022)
TRADI2	<i>The customer service of the mobile payment service provider is not as good as the traditional one</i>	
TRADI3	<i>It is hard to find information about how to use mobile payment services</i>	
TRADI4	<i>I am having difficulty resolving my issues with my mobile payment service provider</i>	
	IMAGE BARRIER	
IMAGE1	<i>Using a mobile payment service is too complicated for me</i>	(Kaur et al., 2020; Lau et al., 2022; Wei et al., 2021)
IMAGE2	<i>I think implementing a mobile payment service is quite complicated</i>	
IMAGE3	<i>I feel insecure if I use mobile payment services</i>	
IMAGE4	<i>I do not feel safe providing information to providers to use mobile payment services</i>	
	INTENTION TO USE MOBILE PAYMENT	
INTE1	<i>I plan to use mobile payment services shortly</i>	(Kaur et al., 2020; Lee & Kim, 2022; K. Moorthy et al., 2017)
INTE2	<i>I will use mobile payment services, whenever I have the chance</i>	
INTE3	<i>I will try to use the mobile payment service</i>	
INTE4	<i>I plan to use the mobile payment service regularly</i>	

Table 2 Distribution of the sample.

Provinces	Region	Frequency	Percent (%)
Son La	The North, mountain areas	155	32.0
Da Nang	The South, coastal areas	167	34.5
An Giang	The Middle, plains areas	162	33.5

3.4. Sample description

In this study, a total of 484 questionnaires were collected from rural people. The demographic characteristics of the respondents are shown in detail in Table 3.



Table 3 Demographic characteristics of the respondents (N=484).

Variable	Category	Frequency	Percent (%)
Age (years)	< 24	128	26.4
	25 to 39	136	28.1
	40 to 60	127	26.2
	> 60	93	19.2
Gender	Male	210	43.4
	Female	274	56.6
Education	Under high school	126	26.0
	High school	160	33.1
	College and vocational	123	25.4
	University and higher	75	15.5
Occupation	Worker	131	27.1
	Farmer	141	29.1
	Officer and staff	85	17.6
	Businessman/woman	96	19.8
	Others	31	6.4
Family income (million Dong)	< 100	125	25.8
	100 to 199	132	27.3
	200 to 299	110	22.7
	300 to 399	90	18.6
	≥400	27	5.6
Total		484	100.0

4. Results and discussion

The utilization of indices such as the outer loading coefficient, Cronbach's alpha, composite reliability (CR), and average variance extracted (AVE) in scale assessment indicates the reliability of the scales. Specifically, after two calculations on the Smart PLS software and the exclusion of underperforming factors, the evaluation of variable reliability, as depicted in Tables 4 and 5, necessitates the removal of two variables, namely, VALU3 and VALU5, because their factor loading coefficients fall below the threshold of 0.7. Although one item (RISK1) had a value lower than 0.7 but greater than 0.6, it could still be used for subsequent analyses (Hair et al., 2019; Sarstedt & Cheah, 2019). The results revealed that the Cronbach's alpha coefficients of the variables exceeded 0.7, indicating the acceptability of the measurement variables for model utilization. The AVE and CR coefficients gauge the scale quality, with the AVE serving as a metric for assessing convergent validity. Both the AVE and CR values range between 0 and 1, where higher values signify greater reliability. An AVE exceeding or equal to 0.5 confirms convergent validity (Hair et al., 2019).

Table 4 Construct reliability and validity.

	Cronbach's alpha	Composite reliability (rho_a)	Composite reliability (rho_c)	Average variance extracted (AVE)
Image barrier	0.797	0.798	0.868	0.622
Risk barrier	0.773	0.774	0.847	0.527
Tradi barrier	0.812	0.819	0.869	0.571
Usage barrier	0.81	0.824	0.875	0.637
Value barrier	0.877	0.885	0.924	0.802
Intention to use mobile payment	0.884	0.888	0.92	0.743

To determine and evaluate the discrimination of the scales used in the model, the authors evaluated the scales according to the method of Fornell and Larcker (1981). The results of the data analysis using SmartPLS software in Table 6 show that the coefficient of the square root of the total variance extracted from all factors is greater than the remaining correlation coefficient. Therefore, the factors achieve discrimination according to the criteria proposed by Fornell and Larcker (1981).

The results of testing the research model are shown in Table 7 and Figure 2. The results show that variables such as VALUE, RISK, USAGE, and TRADITIONAL BARRIERS all directly impact the intention to use mobile payments at a high level. The significance is less than 0.01, except for the factor IMAGE BARRIER, which is not statistically significant in the model, with $P_value=0.176>0.05$.

Table 5 Outer weights.

	Image barrier	Risk barrier	Tradi barrier	Usage barrier	Value barrier	Intention to use mobile payment
IMAGE1	0.797					
IMAGE2	0.813					
IMAGE3	0.787					
IMAGE4	0.757					
RISK1		0.627				
RISK2		0.754				
RISK3		0.774				
RISK4		0.726				
RISK5		0.738				
TRADI1			0.714			
TRADI2			0.789			
TRADI3			0.784			
TRADI4			0.794			
USAGE1				0.806		
USAGE2				0.760		
USAGE3				0.764		
USAGE4				0.857		
VALU1					0.927	
VALU2					0.889	
VALU4					0.870	
INTE1						0.779
INTE2						0.877
INTE3						0.900
INTE4						0.887

Table 6 Discriminant validity – Fornell–Larcker criterion.

	Image barrier	Intention to use mobile payment	Risk barrier	Tradi barrier	Usage barrier	Value barrier
Image barrier	0.789					
Intention to use mobile payment	-0.416	0.862				
Risk barrier	0.502	-0.548	0.726			
Tradi barrier	0.474	-0.525	0.491	0.771		
Usage barrier	0.496	-0.695	0.534	0.564	0.798	
Value barrier	0.474	-0.465	0.347	0.378	0.436	0.895

Table 7 Path coefficients – Mean, STDEV, T values, and P values.

	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (O/STDEV)	P_values
Image barrier -> intention to use mobile payment	0.06	0.059	0.044	1.354	0.176
Risk barrier -> intention to use mobile payment	-0.208	-0.21	0.054	3.887	0
Trade barrier -> intention to use mobile payment	-0.121	-0.124	0.041	2.994	0.003
Usage barrier -> intention to use mobile payment	-0.472	-0.47	0.049	9.59	0
Value barrier -> intention to use mobile payment	-0.169	-0.167	0.036	4.686	0
R-square			0.559		
R-square adjusted			0.555		

The research findings indicate that hypothesis H5 is rejected, signifying a lack of empirical evidence for the influence of the image barrier on the intention to use mobile payments among rural consumers in Vietnam. While the image barrier is purportedly rooted in the perceived complexity that users associate with changes in mobile payment behavior, often viewed as insecure by consumers, this factor has been substantiated, but its negative image impact on mobile payment intention has not been confirmed (Lau et al., 2022; K. Moorthy et al., 2017; Wei et al., 2021). The data analysis results lack sufficient reliability to assert this influence on the intention to use mobile payments. This might be attributed to people being in rural areas and adept at more slowly assimilating information about such services compared to other demographics.



The Usage Barrier emerges as the most influential factor affecting the intention to use mobile payment services, with a beta coefficient of -0.477 and a significance level of 1%. The research findings underscore that the perceived difficulty and convenience of service usage constitute the foremost determinants of the choice of mobile payment services of Vietnamese rural consumers. This finding aligns with prior research (Chen et al., 2022; Khanra et al., 2020; K. Moorthy et al., 2017). These results advocate that service providers pay particular attention to the user experience, convenience, and ease of use, emphasizing the need for enhanced customer care systems to guide service utilization.

Next, the risk barrier emerges as the second most influential factor affecting the intention to use mobile payment services, with a beta coefficient of -0.208 and a significance level of <0.01. This result underscores the significance of the risk barrier to the intention to use mobile payments as a novel digital consumption enhancement tool in the era of burgeoning digital technology. This finding aligns with prior research (Kaur et al., 2020; Lau et al., 2022; K. Moorthy et al., 2017; Rombe et al., 2021). If service providers can offer solutions to mitigate the risks associated with mobile payment usage, this may increase the adoption rate and foster service development in the future.

With a beta coefficient of -0.169 and a significance level of <0.001, the value barrier has an inverse impact on the intention to use mobile payments. This finding is consistent with previous research outcomes (Lau et al., 2022; Lin et al., 2019; K. Moorthy et al., 2017). Despite the advantages of mobile payment methods, the value barrier has remained a significant factor influencing rural people’s intentions to use mobile services in recent years. However, there are still deficiencies in service provision by providers, as consumers tend to doubt the values promised by the services compared to the payment methods they are currently using. Special with a group of rural people who encounter many difficulties accessing information and technology.

Finally, with a beta coefficient of -0.135 and a significance level <0.01, the traditional barrier has a negative impact on the intention to use mobile payments among rural consumers in Vietnam. Traditional barriers have also been shown to negatively influence the intention to use technological innovations in consumer purchasing behavior in recent years (Ahmed Memon et al., 2022; Lee & Kim, 2022; K. Moorthy et al., 2017). Traditional consumption habits and customer services provided by service providers will be crucial factors in eliminating traditional barriers and contributing to the development of mobile payment services in Vietnam, especially in rural areas.

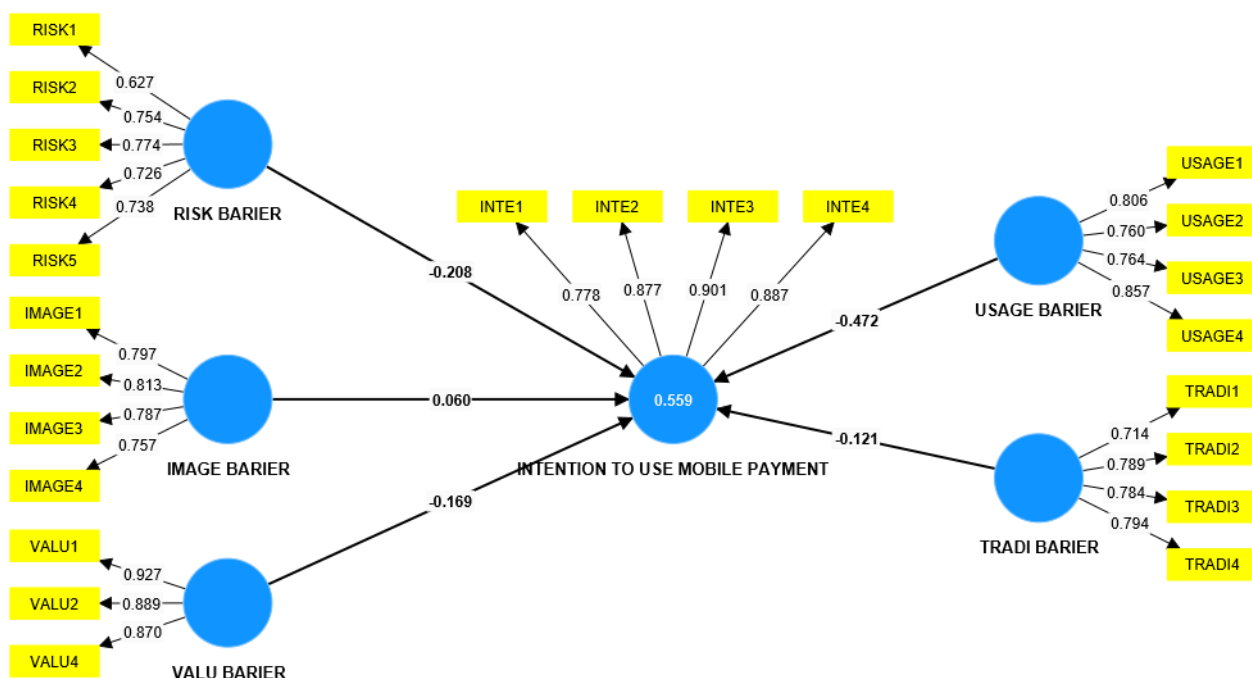


Figure 2 Structural Model.

5. Conclusion

This study was conducted to survey rural residents in Vietnam, a demographic population that is typically slower in adopting and utilizing new technologies than are urban dwellers. Drawing upon customer resistance theory (IRT), this research delineates functional and psychological barriers that may play pivotal roles in shaping decision-making regarding behavioral innovation among rural inhabitants. The research findings indicate that usage barriers, value, risk, and tradition exert counteractive influences on the intention to use mobile payments. However, there is insufficient evidence to substantiate the impact of the image barrier on the intention to use mobile payments among rural Vietnamese residents.



Based on the research findings, the authors propose managerial implications aimed at fostering the intention to use mobile payments, thereby contributing to the attraction and development of new technology-driven service applications in commercial transactions. First, managers should focus on minimizing usage barriers by enhancing the user experience, convenience, and ease of use for customers. Second, efforts should be made to reduce the risks associated with mobile payments while increasing the value of the customer experience, trust, and benefits. Finally, there is a need for the promotion and dissemination of the advantages of mobile payment adoption, gradually altering perceptions and habits to eliminate traditional barriers and contribute to the development of mobile payment services in Vietnam.

Although the study identified several influential factor groups on the intention to use mobile payments among rural residents, it still possesses several limitations, such as various factor groups related to the characteristics of the surveyed population not being fully analyzed. These limitations could serve as avenues for further research in the future.

Acknowledgments

The authors would like to thank the VNU University of Economics and Business, Vietnam National University, Hanoi, Vietnam; Vietnam Academy of Finance; Hanoi University of Mining and Geology; Jindal Global Business School, O.P. Jindal Global University, Sonapat, Haryana, India; and Hanoi University of Industry, Vietnam, for supporting us and sharing their experiences and information during the conduct of this research.

Ethical considerations

The researchers confirm that all the questionnaire respondents were aware of this study, and this research was conducted in accordance with the standard research protocol.

Declaration of interest

The authors declare no conflicts of interest.

Funding

This research did not receive any financial support

References

- Agwu, E. (2013). From Reluctance to Resistance-Study of Internet Banking Services Adoption in the United Kingdom. *Journal of Internet Banking and Commerce*, 18. <https://doi.org/10.4018/ijcmm.2013100103>
- Ahmed Memon, N., Murtaza Shah, G., & Tunio, G. (2022). Barriers toward Adoption of Mobile Payment in Pakistan. *Annals of Human and Social Sciences*, 3(2), 180-190. [https://doi.org/10.35484/ahss.2022\(3-II\)17](https://doi.org/10.35484/ahss.2022(3-II)17)
- Ahn, S. Y., & Nam, Y. (2022). Does mobile payment use lead to overspending? The moderating role of financial knowledge. *Computers in Human Behavior*, 134, 107319. <https://doi.org/https://doi.org/10.1016/j.chb.2022.107319>
- Barnard, Z., & Humbani, M. (2022). The Effect of Perceived Risk on Value and Adoption of Proximity Mobile Payments. *Southern African Business Review*, 25. <https://doi.org/10.25159/1998-8125/9989>
- Borraz-Mora, J., Bordonaba-Juste, V., & Redondo, Y. (2017). Functional barriers to the adoption of electronic banking: The moderating effect of gender. *Revista de Economía Aplicada*, 25, 87-107.
- Changchit, C., Changchit, C., Cutshall, R., Pham, L., & Rao, M. (2023). Understanding the Determinants of Customer Intention to Use Mobile Payment: The Vietnamese Perspective. *Journal of Global Information Management*, 31, 1-27. <https://doi.org/10.4018/JGIM.319740>
- Chen, C.-C., Chang, C.-H., & Hsiao, K.-L. (2022). Exploring the factors of using mobile ticketing applications: Perspectives from innovation resistance theory. *Journal of Retailing and Consumer Services*, 67, 102974. <https://doi.org/https://doi.org/10.1016/j.jretconser.2022.102974>
- de Luna, I. R., Liébana-Cabanillas, F., Sánchez-Fernández, J., & Muñoz-Leiva, F. (2019). Mobile payment is not all the same: The adoption of mobile payment systems depending on the technology applied. *Technological Forecasting and Social Change*, 146, 931-944. <https://doi.org/https://doi.org/10.1016/j.techfore.2018.09.018>
- Dotzauer, K., & Haiss, F. (2017). Barriers towards the adoption of mobile payment services : An empirical investigation of consumer resistance in the context of Germany.
- Dutot, V., Bhatiasevi, V., & Bellallahom, N. (2019). Applying the technology acceptance model in a three-countries study of smartwatch adoption. *The Journal of High Technology Management Research*, 30. <https://doi.org/10.1016/j.hitech.2019.02.001>
- Duy, N., & Giang, N. T. P. (2022). *Contactless Payments through E-wallets on Mobile Devices in the Context of Covid 19 at VietNam*. <https://doi.org/10.1109/CCWC54503.2022.9720868>
- Echtner, C. M., & Ritchie, J. R. B. (1991). The Meaning and Measurement of Destination Image. *The Journal of Tourism Studies*, 14, 37-48.
- Fornell, C., & Larcker, D. F. (1981). Structural Equation Models with Unobservable Variables and Measurement Error: Algebra and Statistics. *Journal of Marketing Research*, 18, 382-388. <https://doi.org/http://dx.doi.org/10.2307/3150980>
- Gupta, A., & Arora, N. (2017). Understanding determinants and barriers of mobile shopping adoption using behavioral reasoning theory. *Journal of Retailing and Consumer Services*, 36, 1-7. <https://doi.org/10.1016/j.jretconser.2016.12.012>
- Hair, J. F., Risher, J. J., Sarstedt, M., & Ringle, C. M. (2019). When to Use and How to Report the Results of PLS-SEM. *European Business Review*, 31, 2-24. <https://doi.org/https://doi.org/10.1108/EBR-11-2018-0203>

- Himel, M. T. A., Ashraf, S., Bappy, T. A., Abir, M. T., Morshed, M. K., & Hossain, M. N. (2021). Users' attitude and intention to use mobile financial services in Bangladesh: an empirical study. *South Asian Journal of Marketing*, 2(1), 72-96. <https://doi.org/10.1108/SAJM-02-2021-0015>
- Hong, Y.-H., Lin, T. T., & Ang, P. H. (2015). Innovation resistance of political websites and blogs among Internet users in Singapore. *Journal of Comparative Asian Development*, 14(1), 110-136.
- Huyền, N. T. P., & Hà, N. V. (2022). Những nhân tố rào cản trong ý định sử dụng và giới thiệu dịch vụ thanh toán di động của người tiêu dùng tại Việt Nam. *Khoa học thương mại*, 168, 59-71.
- Joachim, V., Spieth, P., & Heidenreich, S. (2018). Active innovation resistance: An empirical study on functional and psychological barriers to innovation adoption in different contexts. *Industrial Marketing Management*, 71. <https://doi.org/10.1016/j.indmarman.2017.12.011>
- Kaur, P., Dhir, A., Singh, N., Sahu, G., & Almotairi, M. (2020). An innovation resistance theory perspective on mobile payment solutions. *Journal of Retailing and Consumer Services*, 55, 102059. <https://doi.org/https://doi.org/10.1016/j.jretconser.2020.102059>
- Khanra, S., Joseph, R. P., Dhir, A., & Kaur, P. (2020). Antecedents of the barriers toward the adoption of Unified Payment Interface. International working conference on transfer and diffusion of IT,
- Lau, U., Lee, L., Lew, D., Loo, L., Ooi, S., Lee, V., Loh, X., & Tan, G. (2022). Mobile Payment Adoption: Barriers for Baby Boomers in Malaysia. In (pp. 568-579). https://doi.org/10.1007/978-3-030-82616-1_47
- Lee, G., & Kim, Y. (2022). Effects of Resistance Barriers to Service Robots on Alternative Attractiveness and Intention to Use. *SAGE Open*, 12(2), 21582440221099293. <https://doi.org/10.1177/21582440221099293>
- León, C. (2021). The adoption of a mobile payment system: the user perspective. *Latin American Journal of Central Banking*, 2(4), 100042. <https://doi.org/https://doi.org/10.1016/j.latcb.2021.100042>
- Li, X., Zhu, X., Lu, Y., Shi, D., & Deng, W. (2023). Understanding the continuous usage of mobile payment integrated into social media platform: The case of WeChat Pay. *Electronic Commerce Research and Applications*, 60, 101275. <https://doi.org/https://doi.org/10.1016/j.elerap.2023.101275>
- Liên, N. T. P. (2021). Giải pháp phát triển thanh toán không dùng tiền mặt tại Việt Nam. *Khoa học thương mại*, 152, 2-8.
- Lin, C.-W., Lee, S.-S., Tang, K.-Y., Kang, Y.-X., Lin, C.-C., & Lin, Y.-S. (2019). Exploring the users behavior intention on mobile payment by using TAM and IRT. Proceedings of the 2019 3rd International Conference on E-Society, E-Education and E-Technology,
- Memon, N. A., Shah, G. M., & Tunio, G. (2022). Barriers toward Adoption of Mobile Payment in Pakistan. *Annals of Human and Social Sciences*, 3(2), 180-190.
- Migliore, G., Wagner, R., Cechella, F. S., & Liébana-Cabanillas, F. (2022). Antecedents to the Adoption of Mobile Payment in China and Italy: an Integration of UTAUT2 and Innovation Resistance Theory. *Information Systems Frontiers*, 24(6), 2099-2122. <https://doi.org/10.1007/s10796-021-10237-2>
- Moorthy, K., Ling, C. S., Fatt, Y. W., Yee, C. M., Yin, E. C. K., Yee, K. S., & Wei, L. K. (2017). Barriers of Mobile Commerce Adoption Intention: Perceptions of Generation X in Malaysia. *J. Theor. Appl. Electron. Commer. Res.*, 12, 37-53.
- Moorthy, M., Ling, C., Fatt, Y., Yee, C., Yin, E., Yee, K., & Wei, L. (2017). Barriers of Mobile Commerce Adoption Intention: Perceptions of Generation X in Malaysia. *Journal of theoretical and applied electronic commerce research*, 12, 37-53. <https://doi.org/10.4067/S0718-18762017000200004>
- Nguyen, T.-D., & Le, K.-D. (2021). PLS-SEM approach in measuring the impact of influencing factors on user's perceived security and trust in e-payment -The case of rural areas in Vietnam. *International Journal of Scientific and Research Publications (IJSRP)*, 11, 357-364. <https://doi.org/10.29322/IJSRP.11.04.2021.p11249>
- Nguyen, T. A., Pham, H. C., Dick, M., & Richardson, J. (2021). Trust types and mediating effect of consumer trust in m-payment adoption: an empirical examination of vietnamese consumers. *Australasian Journal of Information Systems*, 25.
- Nguyen, T. P. L., & Nguyen, V. H. (2020). Factors affecting online payment method decision behavior of consumers in Vietnam. *The Journal of Asian Finance, Economics and Business*, 7(10), 231-240.
- Park, I., Kim, D., Moon, J., Kim, S., Kang, Y., & Bae, S. (2022). Searching for New Technology Acceptance Model under Social Context: Analyzing the Determinants of Acceptance of Intelligent Information Technology in Digital Transformation and Implications for the Requisites of Digital Sustainability. *Sustainability*, 14(1), 579. <https://www.mdpi.com/2071-1050/14/1/579>
- Pramana, E. (2021). *The Mobile Payment Adoption: A Systematic Literature Review*. <https://doi.org/10.1109/EIconCIT50028.2021.9431846>
- Ram, S., & Sheth, J. (1989). Consumer Resistance to Innovations: The Marketing Problem and Its Solutions. *Journal of Consumer Marketing*, 6, 5+. <https://doi.org/10.1108/EUM000000002542>
- Rombe, E., Zahara, Z., Santi, I., & Rahadhini, M. (2021). Exploring e-mobile banking implementation barriers on Indonesian millennial generation consumers. *International Journal of Data and Network Science*, 5(4), 579-586.
- Sarstedt, M., & Cheah, J.-H. (2019). Partial least squares structural equation modeling using SmartPLS: A software review. *Journal of Marketing Analytics*, 7(3), 196-202
- Talwar, S., Talwar, M., Kaur, P., & Dhir, A. (2020). Consumers' resistance to digital innovations: A systematic review and framework development. *Australasian Marketing Journal (AMJ)*, 28(4), 286-299. <https://doi.org/https://doi.org/10.1016/j.ausmj.2020.06.014>
- Thanh, L. T. (2020). Thanh toán không dùng tiền mặt tại Việt Nam: thực trạng và giải pháp. *Tài chính-kinh doanh*, 47-50.
- Wang, Y., Han, M., Wang, Y., & Shafiee, S. (2023). An empirical study on customers' behavior of passive and active resistance to innovation. *Economic Research-Ekonomska Istraživanja*, 36(1), 2179515. <https://doi.org/10.1080/1331677X.2023.2179515>
- Wei, M.-F., Luh, Y.-H., Huang, Y.-H., & Chang, Y.-C. (2021). Young Generation's Mobile Payment Adoption Behavior: Analysis Based on an Extended UTAUT Model. *Journal of Theoretical and Applied Electronic Commerce Research*, 16, 1-20. <https://doi.org/10.3390/jtaer16010001>
- Yen, V. T. H., & Duong, N. D. (2023). The Factors of Consumer Intension of Using Mobile Payment in Vietnam. *International Journal of Professional Business Review: Int. J. Prof. Bus. Rev.*, 8(8), 56.