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THE INFLUENCE OF ATM LOCATION CHARACTERISTICS ON ATM USAGE IN VIETNAM

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Abstract
The study purpose is to examine the relationship between Automated Teller Machine (ATM) location characteristics and ATM usage in Vietnam through the theory of planned behavior. The results of investigation of 398 ATM users reveal that ATM location characteristics positively relate to ATM usage. We also confirmed the relationship among consumers' attitude, intention and usage towards ATMs through TPB model. The discussion and limitations are provided.

Keywords: Automated Teller Machine (ATM), ATM location characteristics, ATM usage, The Theory of Planned Behavior, Vietnam

Introduction

With the help of technology, consumers now have more opportunities to access their bank accounts and perform transactions regardless of time and geographic location. In modern banking, ATM is one of the most popular and important delivery channels as it allows customers to do banking at anywhere and whenever they want (Genevois, Celik, & Ulukan, 2015; Islam, Kumar, & Biswas, 2007; Sadeghi & Farokhian, 2011; Wijesekara & Kandambi, 2015). This has led to an widespread opening of ATMs as a convenient mode of transactions thus helping banks improve their services variety and quality and increase their customer base (Sadeghi & Farokhian, 2011; Wijesekara & Kandambi, 2015).

In Vietnam there are many banks and financial institutions which provide ATM banking facilities at the moment. Online banking was first introduced in Vietnam around 2000s, while the first ATM and ATM card were featured in 2002 by Vietcombank. They started by connecting all their branches enabling their customers to access to their accounts at any branch throughout the day. This has made the banking industry in Vietnam booming and flourishing, as more and more banking institutions import ATMs and fully utilize their benefits.

Since ATM and other means of online banking may help banks to reduce costs (Shih & Fang, 2004; Wambugu, 2001; Wijesekara & Kandambi, 2015), increase customer retention and attraction and competitive advantage (Abdel Aziz, Beeson, & Elragal, 2007; Pyun, Scruggs, & Nam, 2002; Sadeghi & Farokhian, 2011), it is very important to consider factors that influence people to fully adopt ATM. Pavlou & Fygenson (2006) have used an extended model of the Theory of Planned Behavior (TPB) to explain and predict the process of e-commerce adoption by consumers. Their findings stress the importance of trust and perceived usefulness and ease of use for predicting e-commerce adoption. Abdel Aziz et al. (2007) pointed out the main factors that prevent ATM usage in Egypt is unawareness of ATM's advantages. Islam et al. (2007), by

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sampling a large number of HSBC employees, found different recommendations for the advancement of HSBC ATM's service quality, which include new location, better quality currency, increase in number of ATMs, more user friendly machine, increase of safety security and prompt card delivery. The location of ATMs can also determine how easy or difficult it is to access our bank accounts (Wambugu, 2001), thus the question of where they should be placed is a major concern for both the customer and the bank.

Our study will contribute to the existing knowledge of ATM usage in several aspects. First, we introduce a new component that have a significant impact on the attitude of consumers regarding ATM, which is the geographical location of ATMs, and ultimately has an effect on ATM usage. Moreover, most of the studies on factors influencing ATM usage are concentrated only in developed countries, such as the United States; there are still only few researches in developing countries in Asia, and none in Vietnam, whose culture is complex and different from the West. This cultural difference may lead to differences in the consumers' behavior towards utilizing ATMs. The result will help any banks which are employing ATMs to work out a more efficient ATM infrastructure and network.

Literature review

Automated Teller Machine (ATM) and ATM location

Electronic banking or online banking is the means by which services and products of banks are made available to their customers through the use of internet and electronic digital devices irrespective of the physical location of the customer (Molla Fantaye, 2017; Sadeghi & Farokhian, 2011). E-banking exists in the form of various electronic delivery channels like Automated Tellers Machines (ATMs), telephone banking and home banking (Molla Fantaye, 2017; Siraye, 2014). Automated (Automatic) teller machine (ATM) is an electronic device which allows a bank's customers to make cash withdrawals and check their account balances at any time without the need for a human teller (Islam et al., 2007). Many ATMs also allow people to deposit cash or cheques, transfer money between their bank accounts or even buy postage stamps. Consumers are required to have an ATM card if they want to use ATM services (Wijesekara & Kandambi, 2015). An ATM card is a plastic card that looks like a credit card that allows the bank account holder to do the same things at a bank machine or Automatic Teller Machine (ATM) as they would at a bank, such as getting cash, depositing money, checking account balances, and receiving a copy of your statement (Islam et al., 2007).

ATM is one of the most important banking facilities as it enable customers to access their bank accounts 24 hours a day, even in the weekends (Islam et al., 2007; Sadeghi & Farokhian, 2011; Wambugu, 2001; Wijesekara & Kandambi, 2015). However, if the nearest ATM is many kilometres from a customer's residential place, it would be undesirable for them to travel there, since one of the key benefits of ATM is accessibility or convenience.

Wambugu (2001) pointed out that consumers always want to conduct their financial business at their favorite location. Banks also benefits from positioning ATMs as consumers' desired places, as transactions at an ATM only cost about half as much as these transactions conducted in a bank

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(Awaghade, Dandekar, & Ranade, 2014; Genevois et al., 2015; Wambugu, 2001). These automated machines may also attract more young people if placed at the right location as they are more familiar with modern technology. ATM also bears a great opportunity to promote banking services through advertisements that may appear on screen or attached around the booth. To take advantages of these benefits, ATMs should be located in places that are visible and inviting, while also convenient, accessible and secure, such as a central business district with high number of commercial establishments (Awaghade et al., 2014; Wambugu, 2001).

The location of ATMs has an influence on consumers' attitude towards them (Mansour, Eljelly, & Abdullah, 2016; Robbins, 2006; Wambugu, 2001). Wambugu (2001) pointed out the reasons for customers' satisfaction with current ATMs location include their closeness to customers' shopping sites or workplaces, while the main reason for dissatisfaction is their farness from customers' living places. Robbins (2006) identified bank location still remains one of the most important factors that consumers consider when choosing a bank, hence the location of banking structures such as brick-and-mortar branches and ATMs would also play a significant role on that matter. The convenience of location is also listed as a factor that influence customers' acceptance of technology-based baking (Curran & Meuter, 2005; Mansour et al., 2016).

With a convenient location, a small branch or store can attract more customers and increase its sales, especially for bank branches or ATMs (Al-Zyood, 2018). When choosing a location for a branch, each bank should take into account different factors, such as income levels, branch functions, competition, land value, growth potential and number of nearby financial institutions (Al-Zyood, 2018; Awaghade et al., 2014). Different criteria need to be taken into account when deciding on the location for ATMs, including the number of businesses and local people, the level of spending, the labor force and living habits, income level, purpose of ATMs, competitors' activities and number and location of ATMs in the same range (Rachmawati, Farda, Rijanta, & Kurniarto, 2009).

Hypothesis 1: There is a positive relationship between ATMs location and consumers' attitude to use ATMs.

Theory of Planned Behavior (TPB)

The Theory of Planned Behavior (TPB), originally derived from the Theory of Reasoned Action, states that individuals make decisions rationally and systematically through information available to them (Ajzen, 1991). TPB is one of the most popular general models to predict consumers' intentions and behaviors (Ajzen, 1991; Cannière, Pelsmacker, & Geuens, 2008; Sadeghi & Farokhian, 2011). In the TPB, behavioral intentions (the indication of an individual's willingness to perform a given behavior), in combination with perceived behavioral control are defined as the immediate antecedent of behavior (Ajzen, 1991). Attitudes toward the behavior (the overall evaluation, either positive or negative, of performing the behavior in question), subjective norms with respect to the behavior (individual's perception of the moral correctness or incorrectness of performing a behavior), and perceived control over the behavior (reflects the extent to which the behavior is perceived to be under volitional control) are found to be factors predicting behavioral

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intentions (Ajzen, 1991; Conner & Armitage, 1998; Jimmieson, Peach, & White, 2008; Reinecke, 1997).

TPB model and its derivatives has been used in several studies on E-banking and ATM usage. Olatokun & Owoeye (2015) have found a significant relationship between users' attitude towards intention to use online banking. In a study of consumer adoption of Internet banking in Malaysia, a strong relationship between attitude and intention to use Internet banking was confirmed (Arunkumar, 2012). Siraye (2014) studied factors that have effects on consumers' adoption of e-banking in Ethiopia, and also confirmed a significant relation between the variables in the models including attitude, subjective norm and perceived behavioral control and users' behavioral intention to use e-banking. The relationship was supported by several other studies (Jaruwachirathanakul & Fink, 2005; Lee, 2009; Molla Fantaye, 2017; Rogers, 2010; Takele & Sira, 2013). Venkatesh et al. (2003) did various tests based on many models (Theory of Reasoned Action, Technology Acceptance Model, Theory of Planned Behavior). The study confirmed the connection between intention and technology usage behavior and technology adoption. Using TAM model, Mansour et al. (2016) identified supports for the significant positive effect of consumers' attitude towards e-banking on users' intention to use e-banking services.

Hypothesis 2: There is a positive relationship between consumers' attitude to use ATMs and consumers' intention to use ATMs.

Hypothesis 3: There is a positive relationship between consumers' intention to use ATMs and consumers ATMs usage behavior.

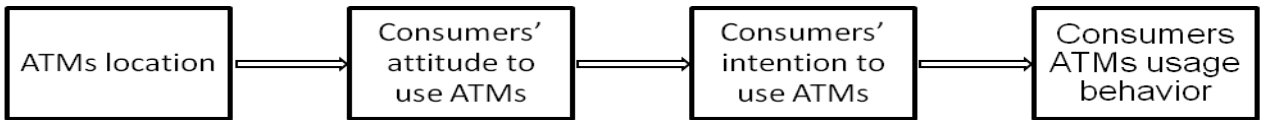

Figure 1: Research model

Methodology

Sample

Our data was collected from 402 ATM users of 5 Vietnamese commercial banks, of which 398 were valid and were processed and analyzed. As is displayed in the table 1, the number of men and women is 150 (37.69%) and 248 (62.31%) respectively. Nearly 90% (373) of our respondents are from the Northern parts of Vietnam, while 6.78% (33) are in the central part of Vietnam and approximately 3% (13) from the South. Most of the respondents are in their 20s (55.53%) or 30s (20.85%). 53 respondents (13.32%) are in the 40-49 age range, 26 (6.5%) are under 20 and only 15 (3.77%) are in the 50-59 group. None are over 60 years old

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Questionnaires were sent by email or personal message. We also printed and sent questionnaires and guided respondents carefully when they answered all the questions. All respondents knew that answering was not required, but they volunteered to participate. Data collection time was from December 2017 until May 2018. Anonymity for everybody is guaranteed. Specific names and other personal information questions are not included in our questionnaire.

Table 1: Characteristic of Sample (N = 398)

		Frequency	Percentage
Sex	Male	150	37.69%
	Female	248	62.31%
Area	The North of Vietnam	373	89.94%
	The middle of Vietnam	33	6.78%
	The South of Vietnam	13	3.28%
Age	< 20	26	6.53%
	20 - 29	221	55.53%
	30 - 39	83	20.85%
	40 - 49	53	13.32%
	50 - 59	15	3.77%

Note: Sample size = 398

Measures

ATMs location. ATMs location was measured using the scale adapted from (Kamal & Pramanik, 2015). The scale consists of 4 items measured on a 7-point Likert-type scale (1 = totally disagree; 7 = totally agree). An example is "*I would use ATMs if they are located in my residential living environment*".

Consumers'attitude to use ATMs. Consumer's attitude was measured using the scale developed by (Taylor & Todd, 1995). The scale consists of 3 items measured on a 7-point Likert-type scale (1 = totally disagree; 7 = totally agree). An example is "*Using this ATM would be a wise idea*".

Consumers' intention to use ATMs. Consumers' intention to use ATMs was measured using the scale developed by (Taylor & Todd, 1995). The scale consists of 3 items measured on a 7-point Likert-type scale (1 = totally disagree; 7 = totally agree). An example is "*I intend to use the ATM within the next three months*".

Consumers ATMs usage behavior. Consumers ATMs usage behavior was measured using the scale developed by (Taylor & Todd, 1995) measured on a 7-point Likert-type scale (1 = strongly disagree; 5 = strongly agree). An example is *"I use this ATM every month"*.

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Results

Scale reliability

The scale reliability of scales used in this research is revealed in table 2

Table 2: Scale reliability

Variables	**α - value**	**Accepted level**
ATMs location.	0.860	≥ 0.60
Consumers 'attitude to use ATMs	0.816	≥ 0.60
Consumers' intention to use ATMs	0.655	≥ 0.60

As depicted in the table 2, the scale of ATM location, consumers' attitude to use ATMs and consumers' intention to use ATMs are at accepted level according to (Nunnally, 1978).

Regressions

After analyzing the reliability of the scales, the variables are included in the regression analysis. The model fit indexes including χ^2 / df = 2.905 (accepted value is under 3); the GFI (goodness of fit index) is 0.940 (accepted value is above 0.9); CFI (comparative fit index) is 0.935 (accepted value is above 0.9); RMSEA (root mean square error of approximation) is 0.08 (accepted level is under 0.08) reveal that the model is fit with data.

The results of regression are depicted in Figure 2.

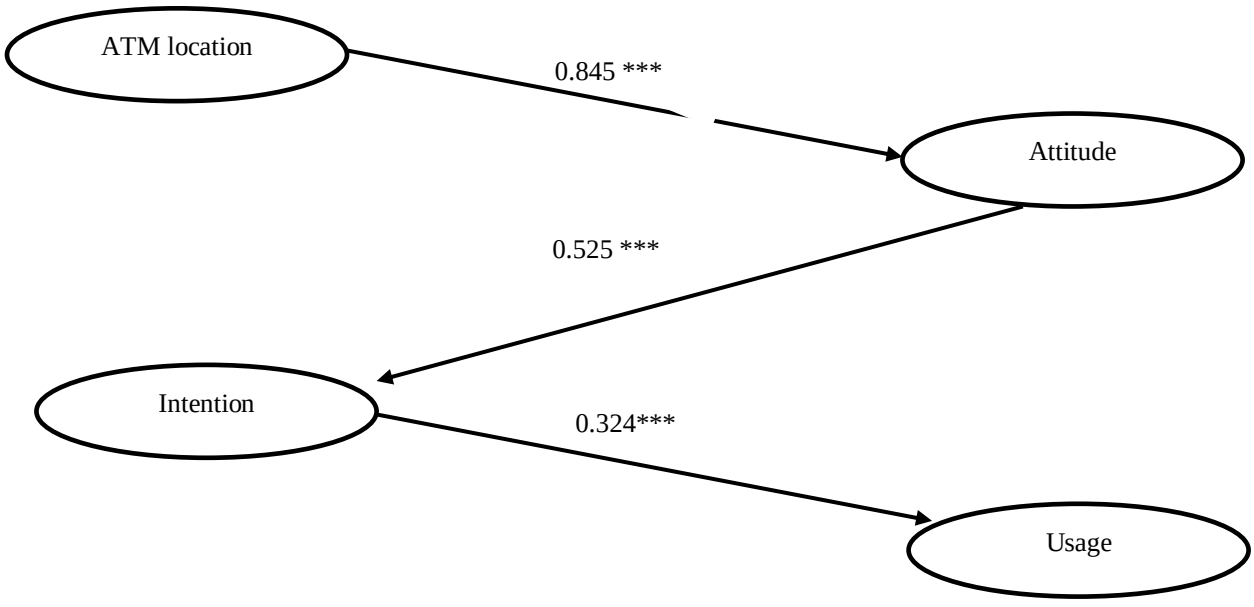

Figure 2: Results

***** p < 0.001*

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From the figure, we can see that ATMs location have a positive relationship with Consumers'attitude to use ATMs (estimate value = 0.845, se = 0.070, p < 0.001), Consumers'attitude to use ATMs have a positive relationship with Consumers' intention to use ATMs (estimate value = 0.525, se = 0.051, p < 0.001), Consumers' intention to use ATMs have a positive relationship with Consumers ATMs usage behavior (estimate value = 0.324, se = 0.091, p < 0.001).

Discussion and limitations

Discussion

The above results show that the location of ATMs positively affects the attitude of using ATMs, which requires banks to determine appropriate locations for their ATMs.

Consumers always want to do financial jobs conveniently at their favorite places. Banks will also benefit from ATMs located in convenient locations. The cost of performing transactions of both customers and banks at an ATM is only half that at a branch (Awaghade et al., 2014; Genevois et al., 2015; Wambugu, 2001). Moving ATMs after placing them may cause customers to think that the bank has problems; leading to bad corporate's appearance. In addition, ATMs offer many opportunities to promote products and services. Advertisements placed in ATMs may appear on the screen when a transaction is being processed. To take advantage of these benefits, ATM must be located in a visible, safe and attractive location. However, ATMs positioning also needs to focus on security. Although ATMs should be located in areas that can reach as many customers as possible, they also need to ensure customers' safety. ATMs, for example, should be located in large urban areas with high intellectual standards and state-of-the-art security systems.

To increase the convenience for users, banks need to strengthen the card payment system together, further expanding card acceptance points such as ATMs. It is also necessary to check ATMs periodically, taking into account the high demand for cash withdrawal of customers; monitor closely and regularly the amount of cash remaining in each ATM including weekends and holidays. Banks should also closely monitor the operating status of ATMs, promptly repair and remedy abnormal incidents occurring to ATMs.

Limitations

As with other empirical studies, this research should be interpreted carefully due to some caveats. Firstly, there is only one variable in the ATMs usage behavior scale. Secondly, the results are collected at a time, which leads to common variance method, meaning the correlation between the variables can be counterfeited and is not true to reality. Thirdly, this study uses convenient samples. Studies using random samples will have a better generalized level of overall results. Fourthly, this study has an unreasonable sample group structure with the majority of respondents from the North, later studies on the central and southern sample groups will complement the results of this study.

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Despite the aforementioned limitations, the authors believe that this study really contributes to the knowledge by confirming the relationship between ATMs location and the use of ATMs in Vietnam.

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