DEBIT CARD USAGE AS A RATIONAL CHOICE:
THE MODERATING EFFECT OF CASH HABIT

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This research takes a new perspective in explaining the willingness to use debit cards in which the use of debit cards is treated as a rational choice over cash, its alternative means of payment. Upon the adaption of rational choice theory, this study comprehensively identifies the costs and benefits associated with debit card usage and tests the effects of these forces on debit cardholders' willingness to use the card. Moreover, this study also investigates the influence of cash habit on the willingness to use debit cards. This research employed both the qualitative method with in-depth interview to develop hypotheses and measurement scales and quantitative survey on 376 Vietnamese debit cardholders to test the conceptual model. The findings indicate that the willingness to use debit cards can be significantly encouraged by enhancing perceived benefits and reducing perceived adaptation costs associated with debit card usage. Moreover, although the habit of using cash does not directly affect willingness to use debit cards, it significantly weakens the positive impacts of perceived benefits and strengthens the negative impacts of perceived adaption costs on willingness to use debit cards.

1. INTRODUCTION

The development of cashless economies where transaction participants do not need to carry physical cash as a means of exchange has been long advocated in many countries (Marco and Bandiera, 2004; Muyiwa et al., 2013; Rooplata and Sathya, 2016;

Sultana and Hasan, 2016). For years, banks have made great efforts in innovating a cashless system that enables money to be stored in an electronic purse on a card (Woodford, 2003). Accordingly, debit card, a form of plastic money, was born as a substitute of cash with the primary aim of reducing the use of cash in the payment-making process (Foscht et al., 2010). Empirical studies have revealed that the use of debit cards helps reduce transaction costs associated with the settlement for goods and services. As a result, economic activities are fostered and more jobs are created that, in turn, significantly contribute to the improvement of both economic and social conditions (Garcia-Swartz et al., 2006).

In recognition of the benefits of cashless economies, modernizing the payment system has become one of the top priorities in Vietnam government's policies. In recent years, Vietnamese commercial banks have implemented many strategies to increase the debit card penetration in the society such as cooperating with universities, governmental offices and companies to open debit card accounts for students and employees or associating debit card services with attractive benefits for the cardholders (World Bank, 2018). However, while the real number of debit cards has been truly increased, the usage rate of debit cards in Vietnam is relatively low. Statistics by World Bank (2018) indicated that about more than three-quarters of Vietnamese debit cardholders did not use their debit cards for payment-making transactions in the previous 12 months. In fact, cash is used in 99% of financial transactions in Vietnam (PwC, 2018) while since 2017, each bank account owner in this country has been holding, on average, 1.54 debit cards (Fiin Group, 2017). Instead of acting as a substitute of cash, debit cards are being used mostly for cash withdrawal (Euromonitor International, 2018) that leaves Vietnam to remain as one of the most heavily cash-based in the world (PwC, 2018). How to enhance the usage rate of debit cards among debit cardholders, is, therefore, a critical question that the Vietnam government and commercial banks should concern in order to develop a cashless economy.

The context of Vietnam banking and finance is an interesting example to explore. Vietnam is an example of successful transitional economy with significant development and critical challenges (Nguyen et al., 2018, Vo and Nguyen, 2018). This country has been gradually integrated into the global markets in the globalization era (Batten and Vo, 2010, 2015; Vo, 2009, 2015, 2016b, 2016c, 2016d; Vo et al., 2017). Vietnam finance and banking system has been transformed critically in the last three decades (Vo, 2016a). Even though Vietnam is a based economy (Vo et al., 2016), a large number of studies seem to focus on various aspects of stock markets (Vo, 2018c, 2018d, 2019a, 2019b; Vo and Bui, 2016; Vo and Phan, 2016; Vo and Phan, 2019; Vo and Truong, 2018). Even though there are some papers examining Vietnam banking system (Batten and Vo, 2016, 2019; Vo, 2017, 2018a, 2018b, 2018c, 2019; Vo and Nguyen, 2018), the topic seems to be under-explored from the bank product perspectives.

Previous studies have attempted to explain the intention to use either debit cards or plastic money in general in many ways. Since plastic cards and their associated services represent a modern and technical method of payment, the use of plastic cards is treated

as technology adoption in several studies (Kissi et al., 2017; Makanyeza and Mutambayashata, 2018; Oanh and Cassidy, 2018). Specifically, based on the unified theory of acceptance and use of technology and theory of adoption model, the intention to use plastic cards is influenced by customer perception about the usefulness or performance of the cards, financial costs associated with the plastic card usage, whether the use of plastic cards helps the holders meet the expectation of their reference groups in the society as well as the ability of the cardholders in accessing such benefits. On the other hand, the use of plastic money was also examined as a reasoned action motivated by attitudes towards the benefits of using the cards and how the use of plastic money helps them to meet social norms (Ali et al., 2017; Amin, 2013; Worthington et al., 2007). In general, previous studies in this research stream have investigated thoroughly the impacts of perceived benefits of plastic cards on the intention to use the cards while the cost analysis side was mostly neglected. Although financial cost was included as a factor influencing the intention to use plastic cards in some studies (Makanyeza and Mutambayashata, 2018; Oanh and Cassidy, 2018), given a fact that using plastic card services provided a bank is a transaction between a cardholder and his or her bank (Klee, 2004), there may be many other costs associated with the use of plastic cards, as a transaction rather than financial costs (Walker and Weber, 1984; Williamson, 1998).

This study will fill this knowledge gap by explaining the use of debit cards based on comprehensive cost-benefit analysis under the rational choice theory. Specifically, this study treats the use of debit cards as a rational choice of the cardholder over cash, the alternative choice. Accordingly, their willingness to select debit cards in making payment depends on their analysis of costs and benefits associated with debit card usage in a way that rationally maximizes benefits and minimizes costs.

Moreover, as criticized by Brette et al. (2017), individuals do not always behave in rational ways with a conscious thought in which they are very aware of what they are thinking and why they make such decisions based on cost-benefit analysis. Instead, individual behaviour may be driven by habit or "an acquired propensity to behave in a particular way" (Hodgson, 2004; Veblen, 1914). In this research context, Vietnam has a strong culture of cash and even in urban areas where debit cards have the most advantage in access to citizens, about half of them had used only cash for all payment transactions in the past three months (FT Confidential Research, 2019). Given the dominance of cash culture in Vietnam, it is crucial to examine the impact of cash habit on the intention to use debit cards as both a direct influencing factor and a moderator.

Specifically, this research investigates: (1) What are the particular costs and benefits associated with using debit cards, and to what extent do they affect debit cardholders' willingness to use the cards; (2) Does the habit of using cash affect willingness to use debit cards over cash in payment making transactions? (3) Does the habit of using cash moderate the effect of perceived costs and benefits on willingness to use debit cards?

Since there is hardly any previous research which neither employs applies the rational choice theory in explaining the use of debit cards based on comprehensive cost-benefit analysis, this study firstly used in-depth interviews to explore the costs and

benefits associated with debit card usage as well as to develop hypotheses and measurement scales. A survey method was followed to test the proposed conceptual model with a sample of Vietnamese debit cardholders.

While the research stream regarding the intention to use debit-cards treated the use of debit cards as either a technology adoption or a reasoned action, there is limited attention given to willingness to use debit cards among those who have already adopted and had the card. A comprehensive cost-benefit analysis is, therefore, appropriate for investigating the use of debit cards as the choice over two available alternatives for debit cardholders whenever they want to make payment including cash or debit card. Accordingly, this paper contributes to the literature and practices in banking management and public policy-making in several ways. Firstly, this study provides a new perspective in explaining customer willingness to use debit cards in which this variable is examined as a rational choice using the rational choice theory. Secondly, given the research context of the strong cash culture in Vietnam, this research expands the rational choice theory by including cash habit as both direct influencing factors and moderators in the conceptual model. Thirdly, the study gives insights into the reasons underlying heavily cash-based situation in countries like Vietnam.

This paper is organized as follows. Section 2 presents the theoretical framework and proposes the conceptual model. Section 3 illustrates the research method for data collection and analysis. Section 4 reports empirical results on the hypothesized relationships. Section 5 discusses and concludes

2.   THEORETICAL FRAMEWORK AND HYPOTHESIS DEVELOPMENT

2.1.   Rational Choice Theory

Rooted in law and economics, rational choice theory has been widely adopted to explain social and economic behaviour which is construed as "rational" (Allingham, 2002). The theory is an umbrella of various models but the most important of which focuses on predicting the outcome and pattern of choices. Specifically, individuals' rational choice is explained upon three key elements including individual preferences, beliefs, and constraints (Acheson, 2002). Preferences refer to the individuals' positive or negative evaluations of the possible outcomes of their behavior or alternative choice. Beliefs denote the individual's perception of cause-effect relations between their actions and different possible outcomes with likelihood associated. Constraints represent the limits in terms of money, time, efforts and other personal abilities to the set of actions, thereby, help assess the feasibility of actions. The rational choice theory proposes that the rational individual will take account of available information to evaluate possible costs and benefits of an action while anticipating probabilities of those possible outcomes and constraints so as to determine preferences (McGee and Warms, 2013). According to the self-determined preference, they will act consistently in selecting the

best choice of action. The basic assumption of the rational choice theory is drawn from law and economics that people will try to get the most out of what they have by rational maximization. In other words, individuals always seek to maximize benefits and minimize costs (Coleman, 1990). Another crucial assumption of this theory is that individual preferences are self-interested in which an individual acts in a way that balances costs against benefits to form an action that maximizes personal advantage. In addition, early versions of the rational choice theory assume "full rationality" in which individuals have full information about all alternative choices, the probabilities of their outcomes, and their costs and benefits while having full capacity in perceiving and processing this information (Acheson, 2002). As a result, their decisions are based solely on cost-benefit analysis in which the best alternative that generates the highest utility given all constraints and probabilities are selected. This assumption was then criticized by many economists that resulted in the development of new model streams (McGee and Warms, 2013; Lindenberg, 2001) with a new assumption of "bounded rationality" instead of "full rationality". Specifically, new versions of the rational choice theory assert that individuals' selective attention and limited information-processing capacities result in the imperfection of the amount and type of information that they are aware of. As a result, individuals tend to choose the actions which are "good enough" and bring them the most satisfaction rather than utility maximization.

Since all assumptions of rational choice theory are about human behaviour, the theory has become popularly employed in social sciences other than economics (Browning et al., 2000). In this research context, after an individual received a debit card, they need to make choice between two primary alternatives whenever they want to make payment that are (1) using cash or (2) using their own debit cards with associated services provided by the issuing banks. The action of using either cash or debit cards may result in specific costs and benefits. Since this study focuses on the action of debit cardholders who have already had experience regarding debit card usage, they may have enough information to evaluate the costs and benefits associated with the use of debit cards as well as the probabilities of these outcomes. Based on the cost-benefit analysis, they may form their self-determined preference toward one of the two means of payment. Consistently, their willingness to use debit cards is deemed to be a good proxy of this preference. This makes the rational choice theory a viable theoretical framework to explain debit cardholders' willingness to use the card in this research.

Since there is hardly research which comprehensively investigates the perceived costs and benefits resulted from the use of debit cards, we conducted in-depth interviews with 30 Vietnamese debit cardholders to explore the possible costs and benefits associated with debit card usage. The data collected from the interview research were merged and conceptualized so as to formulate develop hypotheses and design measurement scales for variables used in the conceptual model. The attributes indicated to be the most important factors which directly affect willingness to use debit cards including perceived benefits, perceived financial costs and perceived transaction costs (i.e. including perceived monitoring costs and perceived adaptation costs) associated

with debit card usage. In addition, the results from the in-depth interview also revealed that those who are addicted to using cash in making payment are more reluctant to use debit cards. Cash habit is, therefore, included in the conceptual model as either a direct influencing factor or a moderator. The conceptual model is proposed as in Figure 1 below.
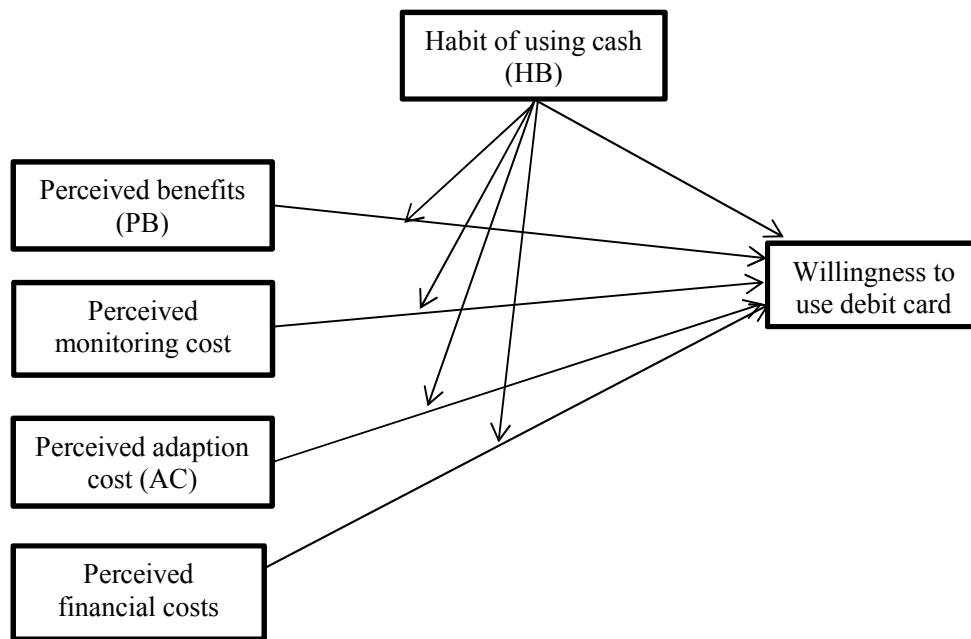

Figure 1.   Conceptual Model (Model 1)

The following section regarding hypothesis development will incorporate the propositions of the rational choice theory, the literature regarding intention to use plastic cards and findings from the interview research in proposing hypotheses for this study.

2.2.   Hypothesis Development

2.2.1.   *Perceived Benefits*

Individuals' perceptions about benefits or positive possible outcomes of a set of feasible actions will directly form their preferences, thereby, influence their choice behaviour (Soane et al., 2010). In this research context, the action of using debit cards for making payment may imply many benefits for the cardholders. As a technology or a modern payment system with innovative features, debit cards are believed to help the cardholders save them time and enhance their productivity of the payment process

(Ozturk, 2016; Padaruth et al., 2013). In other words, usefulness is an important proxy of debit cards' benefit. Moreover, the positive impact of debit cards' perceived usefulness on the intention to use the card, as a technology adoption, has been either theoretically proposed in both the unified theory of acceptance and use of technology and theory of adoption model or empirically affirmed in previous studies (Kissi et al., 2017; Makanyeza and Mutambayashata, 2018; Oanh and Cassidy, 2018). Findings from the interview research further support this argument. During the in-depth interview, when being asked "Are you willing to use debit cards for your payment making? And why?", some respondents showed their willingness and pointed out how debit cards were useful in helping them save time and accomplish payment tasks efficiently. In addition, some respondents shared that without debit card services, they could not send money to people who were living far away. The distinct usefulness of debit cards provides them many benefits that motivate them to use the card.

In the context of Vietnam debit card markets, commercial banks have offered various schemes to enhance the use of debit cards, such as discount deals on shopping and dining at restaurants that provide add-on benefits to the cardholders. Results from the interview research also revealed that these benefits also encouraged debit cardholders to use the card for making payment. In line with the above discussion, the following hypotheses are proposed:

H1: Perceived benefits of using debit cards positively affect willingness to use debit cards.

2.2.2. Perceived Financial Cost

In economics theories, financial cost or price has a crucial role in influencing choice behaviour. Specifically, according to the consumer choice theory, when the price of a specific good or service increases, an individual tends to reduce the consumption of that product or service while increasing the consumption of its alternative as a way to maximize utility given their constraints. Similarly, the rational choice theory suggests that an individual always strives to minimize costs. As a result, an action with higher costs or negative outcomes will obtain less preference and less likely to be chosen. In marketing, perceived financial cost represents "what is given" which is often compared with "what is received" to derive the perceived value of a good or service. In turn, perceived value which is defined as customers' perceptions of value reflected by the trade-off between the benefits they get and what they sacrifice (i.e. price or costs) directly affect consumers' purchase intention (Dodds et al., 1991).

In the context of debit card usage, perceived financial cost refers to fees charged for using debit card services. This concept is similar to the perceived financial cost featured in both the unified theory of acceptance and use of technology (Makanyeza and Mutambayashata, 2018). Given that the use of debit card is the adoption of a technology, perceived financial cost acts as a barrier to such adoption and negatively influences the intention to use services associated with debit cards (Hanafizadeh et al., 2014;

Koenig-Lewis et al., 2010; Koksal, 2016).

During the in-depth interview, when facing the question "Are you willing to use debit cards for 100% payment making transactions? and why?", some respondents showed   their hesitance due to transaction fees being charged every money transferring while no charge is required for cash payment. According to the rational choice theory, those transaction fees are costs associated with the choice of using debit cards while the alternative choice of payment, cash, incurs no costs. It is, therefore, reasonable to hypothesize that the higher perceived financial costs of using debit cards for making payment, the lower the probability that debit cards are chosen.

H2: Perceived financial costs negatively affect willingness to use debit cards.

2.2.3.   Perceived Transaction Costs

Most of the marketing disciplines focus on the exchange process between "the buyer" and "the seller" in which the transaction between them is the fundamental outcome of this process (Bagozzi, 1975). Executing transactions is costly for both parties and the financial costs or the prices do not comprehensively reflect the costs incurred in a transaction. Specifically, based on the similar assumption about "bounded rationality" of humans, the transaction cost economics theory proposes that each transaction is characterized by a contract in which "the seller" and "the buyer" are bounded by their agreement about the object to be transacted as well as rights and obligations involved (Salancik and Leblebici, 1985). Since the transaction participants are subject to "opportunistic behaviour" from the counter-party while the contracts could not cover all the disturbances that may happen during the contract time, monitoring costs and adaption costs incur to make sure of the smooth and proper execution of the contract (Klein, 1980). Specifically, the monitoring costs indicate time and efforts spent on monitoring and evaluating the counter-party's performance while the adaptation costs refer to time and efforts spent on planning, facilitating, and implementing adaptation measures when disturbances arise (Geyskens et al., 2006; Walker and Weber, 1984; Williamson, 1998).

In this research context, debit cardholders have two choices whenever they want to make payment: using cash or being involved in a transaction in which they are the "buyer" of debit card services (i.e. including money-transferring services) provided by their banks - the "seller". Regarding the later choice, despite undeniable usefulness of debit cards in facilitating payment making, the cardholders face difficulties in keeping track of the banks' performance while their money is held in the debit card account and managed by the banks. In addition, since there are some disturbances that may happen during the time using debit cards, the cardholders may bear additional adaptation costs and monitoring costs if they chose card payment.

In fact, during the in-depth interviews, when being asked about willingness to use debit cards for 100% payment transaction, most respondents showed their hesitance. The reason was that the use of debit cards costs them time and effort spent on not only

checking the accuracy and security of debit card transactions (monitoring costs) but also resolving problems arising from relying on debit card services such as the card is lost or the card does not work or not accepted at time of payment (adaptation costs). These costs further add to the possible negative outcomes of debit card usage, thereby, make debit cards less favoured. According to the rational choice theory, the higher those costs are, the less likely that debit cards are chosen for making payment. Thus, we hypothesize that:

H3: Perceived monitoring costs negatively affects willingness to use debit cards.

H4: Perceived adaptation costs negatively affects willingness to use debit cards.

2.2.4. Cash Habit

In psychology, habit is regarded as an important factor governing human behaviour (Veblen, 1914). Habit is defined as either "a repeated form of conduct" (Lawson, 2015) or"a propensity to behave in a particular way in a particular class of situations" (Hodgson, 2010). Venkatesh et al. (2012) argues that habit is shaped in an individual's learning process and it refers to the degree to which the individual behaves in a certain manner automatically. In fact, habit is not considered as a behaviour, instead, it affects human behaviour and choice through its influence on individuals' preferences (Acheson, 2002). The linkage between habit and behavioral intention was also affirmed in recent marketing researches (Harsono and Suryana, 2014; Makanyeza and Mutambayashata, 2018).

In this research context, Vietnam is featured by a strong cash culture. The habit of using cash in payment making, therefore, may form individuals' preference towards using cash that, in turn, discourage the use of a new modern alternative mean of payment - debit cards. As a result, bank customers, even those who have already had debit cards, still favour cash rather than card in making payment.

In line with the above discussion, this research investigates three paths that cash habit may negatively affect the willingness to use debit cards, as either a direct influencing factor or a moderator. Firstly, cash habit may directly and negatively affect the willingness to use debit cards. Secondly, cash habit may strengthen the negative effects of perceived costs associated with debit card usage on willingness to use the card. Thirdly, cash habit may weaken the positive effect of perceived benefits of debit cards and willingness to use the card. Specifically, we hypothesize that:

H5: Cash habit negatively affects willingness to use debit cards.

H6: Cash habit negatively moderates the effect of perceived benefits on willingness to use debit cards.

H7: Cash habit positively moderates the effect of perceived financial costs on willingness to use debit cards.

H8: Cash habit positively moderates the effect of perceived monitoring costs on willingness to use debit cards.

H9: Cash habit positively moderates the effect of perceived adaptation costs on willingness to use debit cards.

3.   RESEARCH METHODOLOGY

Since there is hardly a previous study which neither comprehensively investigates cots and benefits associated with the use of debit cards nor tests the interrelationships between possible outcomes of debit card usage, cash habit and willingness to use debit cards, all in one model, this research employed both qualitative and quantitative research methods to answer the research questions. First, in-depth interviews with Vietnamese debit cardholders were conducted to explore the costs and benefits of using debit cards and identify the detailed dimensions of each construct serving the development of hypotheses and measurement scales. Next, a quantitative survey was employed to test the proposed conceptual model. Specifically, this study was conducted with 2 phases as below:

Phase 1

A qualitative research was implemented with 30 Vietnamese bank customers who currently have valid debit cards during the first two weeks of April, 2019. In-depth interview method was employed to comprehensively explore possible outcomes of using debit cards based on the debit card users' perception. Since financial management is a sensitive and confidential topic for most Vietnamese people, the in-depth interview method which allows face to face and personal conversation with each respondent, is deemed to be suitable to get more insightful and reliable information. The sample for the interview was selected to demonstrate a variety of age, sex, education and income. During the interview, the researcher encouraged a relaxed and informal atmosphere as well as guide the interviews to the qualitative research's objectives upon the sets of open-ended questions. Each question only plays the role of a probe to allow the respondents to further share their experiences and opinions while ensuring a logical flow of conversation around the research topic. Each interview lasted about 30 minutes. All the answers were hand-noted by the researcher upon the prior consent from the participants. Findings from the interview research were conceptualized with the rational choice theory and the literature so as to serve the development of hypotheses and measurement scales for each construct used in the proposed model.

Phase 2

A quantitative survey was implemented to test the conceptual model using a questionnaire. Measurement scales were either adapted from previous research or originally developed from the findings of the interview research. Specifically, perceived benefit of using debit cards was measured with four items adapted from Makanyeza and Mutambayashata (2018), Venkatesh et al. (2012) and Zhou (2011). Consistent with the conceptualization presented earlier, perceived financial cost was scored with four items adopted from Hanafizadeh et al. (2014). Based on Lawson (2015)'s definition of habit in which habit is regarded as "a repeated form of conduct", the measurement of cash habit was adapted from Venkatesh et al. (2012) with four items. Since there is hardly a research which investigates the dimensions of adaptation costs and monitoring costs involved with the use of debit cards, the authors developed the measurement scales of

these two constructs based on their concepts featured in the transaction cost economics theory and findings from the in-depth interview research following the scale development procedure proposed by Robert (1991). Specifically, respondents' answers for the question "Do you encounter any difficulties, annoyance or troubles during your usage of debit card? Please share your own experience" were conceptualized to formulate the detailed measurement items of perceived adaption costs and perceived monitoring costs. Finally, the willingness to use debit cards which demonstrated individuals' choice toward card payment was measured with three items adapted from Teo and Yu (2005). All measurement items were scored based on a 5-point Likert scale anchored by "Strongly Disagree"/"Strongly Agree", except that for the willingness which was scored from 1 (very low) to 5 (very high).

Data collection was implemented during the first two weeks of May 2019 with a paper-based questionnaire. The questionnaire was developed upon the measurement scales and written in Vietnamese. In order to test the questionnaire quality such as comprehension; easy-to-understand language and phraseology; ease of answering and practicality, the questionnaire was firstly pretested with 20 Vietnamese debit cardholders (Hague et.al, 2004). The survey was implemented in Hanoi city which spreads over both urban and rural areas and home to most major commercial banks in Vietnam. The city was selected as the venue for data collection so as to ensure the diversity of the sample in terms of demographic characteristics. The paper-based questionnaire was distributed randomly and directly to debit cardholders at 36 ATM points, both in the city center and surrounding suburbs. ATM points were selected for the intercept sampling since debit cardholders may visit ATM points for either cash withdrawal or access to other debit card services. The sample randomly drawn at ATM points is deemed to ensure a variety of debit card usage rate.

The quantitative survey yielded 376 usable responses in which 36.2% were done by male and the remaining were filled by female respondents. The dominance of female in the sample also reflects Vietnamese culture that most women are in charge of doing daily payment transactions for their households. As shown in Table 2, the majority of respondents were aged from 23 to 40 (78.4%). Regarding individual income, the bulk of the respondents were earning more than VND 10 million per month (i.e. 63.9%). Education-wise, the majority of the respondents have achieved either a Bachelor degree and above (i.e. 85.3%).

Structural equation modelling (SEM) was adopted to test the hypothesized model. Before testing the hypotheses, the measurement scales of each construct were evaluated following the guidelines proposed by Anderson and Gerbing (1988). AMOS 22 and SPSS 20 were used to evaluate to reliability and validity of the measurement scales as well as test the significance and estimate the path coefficients for hypothesized relationships in the model.

Table 1.   Measurement Items

Construct		Variable items and codes	Sources
Perceived benefits (PB)	PB1	Using plastic money increases my chances of achieving things that are important to me	Makanyeza and Mutambayashata (2018), Venkatesh et al. (2012), Zhou (2011)
	PB2	Using plastic money helps me accomplish things more quickly	
	PB3	Using plastic money increases my productivity	
	PB4	Using debit cards bring additional benefits to me	
Perceived monitoring costs (MC)	MC1	I spend a lot of effort to check to make sure about the security during banking transactions via debit cards	Developed by the authors
	MC2	I spend a lot of time and effort to check whether banking transactions are processed correctly	
	MC3	I spend a lot of time and effort to check whether banking transactions are recorded correctly	
Perceived adaption costs (AC)	AC1	I spend a lot of time and effort to deal with problems arising when my debit card is lost	Developed by the authors
	AC2	I spend a lot of time and effort to deal with problems arising when banking transactions are mistaken	
	AC3	I spend a lot of time and effort to deal with problems arising when banking transactions cannot be processed when I need it	
	AC4	I spend a lot of time and effort to deal with problems arising when my banking transactions are recorded wrongly	
	AC5	I spend a lot of time and effort to deal with problems arising when my debit card information is stolen	
Perceived financial costs (FC)	FC1	Using debit card services is expensive	Hanafizadeh et al. (2014)
	FC2	Transaction charges for using debit card are high	
	FC3	Using debit cards attracts high transaction fees	
	FC4	My bank charges on the use of debit cards are high	
Habit of using cash (HB)	HB1	The use of cash has become a habit for me	Venkatesh et al. (2012)
	HB2	I am addicted to using cash	
	HB3	I must use cash	
	HB4	Using cash has become natural to me	
Willingness to use debit card (WIL)	WI1	The probability that I would only use debit card for the coming transactions is	Teo & Yu (2005)
	WI2	The likelihood that I would consider use debit card for the coming transactions is	
	WI3	My willingness to use debit card instead of cash is	

Table 2.   Sample Description

Indicator	Segment	Frequency	Percentage
Gender	Male	136	36.2
	Female	240	63.8
Age range	18 – 22	17	4.5
	23 – 30	126	33.5
	31 – 40	169	44.9
	41 – 50	51	13.6
	>50	13	3.5
Education	Primary	7	1.9
	Secondary	48	12.8
	Tertiary	164	43.6
	Master	134	35.6
	Doctoral	23	6.1
Monthly disposal income	Less than 5 million VND	11	2.9
	From 5-less than 10 million VND	119	31.6
	From 10-less than 15 million VND	198	52.7
	From 15-less than 20 million VND	42	11.2
	From 20 million VND and above	6	1.6

4.   EMPIRICAL RESULTS

4.1.   Assessment of the Measurement Scales

The guidance on the use of structural equation modeling in practice suggested by Anderson and Gerbing (1988) and Churchill (1979) was first adopted to check the convergent and discriminant validity and reliability of the measurement scales of constructs used in the conceptual model. Specifically, confirmatory factor analysis (CFA) was conducted on AMOS 22 to test the convergent validity of measurement items used for each latent variable. Factor loadings and t -values resulted from the CFA were shown in Table 3. According to CFA results for measurement items perceived benefits, perceived monitoring costs, perceived adaption costs, perceived financial costs, cash habit and willingness to use debit cards, all factor loadings were statistically significant and higher than the cut-off value of 0.4 suggested by Nunnally and Bernstein (1994). Next, all measurement scale items of the six variables were subject to exploratory factor analysis (EFA) on SPSS with principal factor as extraction method followed by a varimax rotation. The EFA results showed six factors emerged subjected to how these constructs were initially measured. We, therefore, confirmed the construct validity and the unidimensionality of the measurement scales of the six variables (Straub, 1989).

In addition, the CFA result on the six-factor model further revealed that the model demonstrated a reasonably good fit with the data (CMIN/df = 2.271; p=.000; RMR=0.032; GFI=0.904; CFI = 0.930; AGFI= 0.876; RMSEA=0.058; PCLOSE=0.024) (See Table 3).

Table 3.   Confirmatory Factor Analysis Results

Construct scale items	Mean	Standard deviation	Factor loading	t-value
PB1	3.22	0.799	0.642	13.004
PB2	3.13	0.843	0.612	12.267
PB3	3.43	0.794	0.740	15.342
PB4	3.28	0.794	0.910	-
MC1	3.60	0.705	0.669	9.599
MC2	3.27	0.709	0.605	9.038
MC3	3.68	0.722	0.693	-
AC1	3.30	0.780	0.725	15.044
AC2	3.31	0.794	0.790	16.780
AC3	3.16	0.834	0.780	16.504
AC4	3.24	0.820	0.877	19.122
AC5	3.21	0.813	0.804	-
FC1	3.78	0.741	0.509	9.488
FC2	3.29	0.829	0.711	13.714
FC3	3.16	0.845	0.805	15.292
FC4	3.15	0.907	0.828	-
HB1	2.82	0.783	0.923	12.747
HB2	1.82	0.696	0.936	12.792
HB3	2.73	1.069	0.703	10.859
HB4	3.60	0.892	0.584	___
WI1	2.82	0.691	0.496	-
WI2	2.89	0.779	0.890	7.167
WI3	3.14	0.818	0.602	7.890

Notes: Measurement model fit details: CMIN/df = 2.271; p=.000; RMR=0.032; GFI=0.904; CFI = 0.930; AGFI= 0.876; RMSEA=0.058; PCLOSE=0.024; "-" denotes loading fixed to 1.

Reliability, also known as the internal consistency of the constructs, of the measurement scales were evaluated through Cronbach's alpha calculated in SPSS. Results shown in Table 4 indicated that the Cronbach's alpha coefficients for all six constructs were either higher than 0.7 or just below this benchmark, therefore, their reliability were deemed to be satisfactory. In addition, as shown in Table 5, Average Variance Extracted (AVE) value for each construct exceeded the recommended level of 0.5 while all of AVE values are greater than the square of correlations between each two constructs. We, therefore, confirmed the convergent validity and discriminant validity of the constructs (Anderson and Gerbing, 1988; Fornell and Larcker, 1981).

Table 4.   Reliability and Correlation of Constructs

	PB	MC	AC	FC	HB	WI	Reliability
PB	1						0.808
MC	0.537	1					0.693
AC	0.258	0.408	1				0.895
FC	0.355	0.507	0.218	1			0.807
HB	0.076	0.166	0.259	0.14	1		0.833
WI	0.004	-0.193	-0.318	-0.126	-0.109	1	0.689

Table 5.   Average Variance Extracted and Discriminant Validity Test

	PB	MC	AC	FC	HB	WI
PB	AVE= 0.589					
MC	0.288369	AVE=0.510				
AC	0.066564	0.166464	AVE=0.668			
FC	0.126025	0.257049	0.047524	AVE=0.592		
HB	0.005776	0.027556	0.067081	0.0196	AVE=0.693	
WI	0.000016	0.037249	0.101124	0.015876	0.011881	AVE=0.594

Based on the above analysis, all measurement items for each construct as shown in Table 1 were retained for further the hypothesis testing.

4.2.   Hypothesis Testing

The structural equation model demonstrated the hypothesized relationships as proposed in the conceptual model (See Figure 1.) was tested in AMOS 22. Specifically, path analysis as recommended by Oh (1999) was employed to test the significance and magnitude of each hypothesized relationship. The model fit indicators resulted from the SEM analysis indicate that the proposed model demonstrates a reasonably good fit to the data.

Table 6 shows the path coefficients of hypothesized relationships in the proposed model. Among the paths to willingness to use debit cards, perceived benefits of debit cards significantly and positively affect willingness to use the cards while a significant negative relationship between perceived adaptation costs associated with debit card usage and willingness to use the card was found (supporting H1 and H4). However, neither perceived monitoring costs nor perceived financial costs and cash habit have significant impacts on willingness to use the card (rejecting H2, H3 and H5).

Table 6.   Path Coefficients

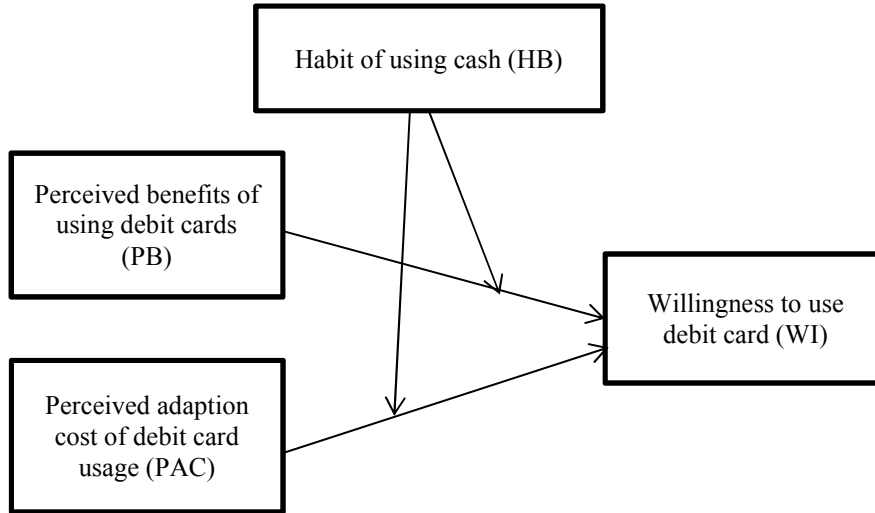| Construct Path	Proposed Model (Model 1)
PB to WI	0.082*
MC to WI	-0.095
AC to WI	-0.153**
FC to WI	-0.024
HB to WI	-0.011
Fit Indices	
CMIN/df	2.271
CFI	0.930
GFI	0.904
AGFI	0.876
RMR	0.032
RMSEA	0.058
PCLOSE	0.024

Notes: *p<0.05; **p<0.001.

Figure 2.   Model 2

In the original proposed model, habit of using card is hypothesized as the moderator on the impacts of perceived benefits and perceived costs associated with the use of debit cards on the willingness to use the card. Nevertheless, since there is no significant relationship between neither perceived monitoring costs nor perceived financial costs and willingness to use debit card found, H7 and H8 are rejected.

In order to test the moderating effect of habit of using card on the impacts of perceived benefits and perceived adaptation costs on the willingness to use the card, we test the Model 2 in WarpPLS 6.0 (See Figure 2).

Table 7.   Moderating Effect of Cash Habit

Model 2	Estimate	Average Adjusted R-squared	Average Block VIF	Average Full Collinearity VIF
PB → WI	0.09*			
AC → WI	-0.312**	0.168**	1.076	1.106
HB*PB → WI	-0.09*			
HB*AC → WI	-0.202**			

Notes: *p<0.05; **p<0.001.

Results from the moderation test is shown in Table 7. The figures show that Average Full Collineariry VIF values resulting from the Model 2 is smaller than 3.3; thus, the collinearity problem in this are discarded. Moreover, while perceived benefits have significant positive effect on willingness to use debit cards, the interaction term between perceived benefits and cash habit (HB*PB) has a significant negative impact on willingness to use debit cards. Therefore, as the habit of using cash becomes stronger,

this reduces the positive effect that perceived benefits have on willingness to use debit cards (supporting H6). On the other hand, both perceived adaptation costs and the interaction term between perceived adaptation costs and cash habit (HB*AC) have significant negative impacts on the willingness to use debit cards. Thus, as the habit of using cash becomes stronger, this strengthens the negative effect that perceived adaptation costs have on willingness to use debit cards (supporting H9).

5. CONCLUSION

5.1. Discussion

The research proposes a new perspective in explaining the choice of card payment instead of cash among Vietnamese cardholders upon the rational choice theory. Based on the propositions of the rational choice theory, the literature about the nature of habit and the findings from the qualitative research, the research suggests two sets of hypotheses. The first set was about the direct relationships between perceived benefits and perceived costs associated with debit card usage and the willingness to use the card. In consistence with the propositions of rational choice theory, both perceived benefits and costs which reflect the possible outcomes of using debit cards have significant impacts on the choice between cash and debit cards for making payment. Specifically, the findings showed that perceived benefits of debit card usage have significant positive impacts on willingness to use the card. In which, perceived usefulness of the cards is a crucial proxy of perceived benefits. This finding is consistent with previous studies which treated the use of debit cards as a technology adoption upon the unified theory of acceptance and use of technology and theory of adoption model (Kissi et al., 2017; Makanyeza and Mutambayashata, 2018; Oanh and Cassidy, 2018). Moreover, as another proxy of perceived benefits, additional benefits that banks offer to the cardholders to encourage the use of debit cards in making payment such as discounts are proven to positively affect willingness to use the card. Among perceived costs of using debit cards, only perceived adaptation costs significantly and negatively influence willingness to use the card. This finding is consistent with the propositions of the transaction costs theory (William, 1998). However, the relationship between neither perceived monitoring costs nor perceived financial costs and willingness to use debit cards was found insignificant. These results imply that Vietnamese debit cardholders are reluctant to use the cards for making payment mostly because of their perception about time and efforts required to resolve disturbances arising during debit card usage rather than either the transaction fees of time and efforts for checking the performance of banks or the accuracy of banking transactions. This might be due to the fact that they trust in their banks' capacity and integrity, therefore, become less concerned about the potential "opportunistic behaviour" from the banks. Moreover, the emergence and adoption of Internet banking and mobile banking among cardholders have simplified the money transaction process

while making it more accurate and controllable to the debit card users. In addition, transaction fees are just minimal compared to the benefits that using debit cards may offer them.

The second set of hypotheses was relating to the negative impact of cash habit on the willingness to use debit cards through two paths, as a direct influencing factor and a moderator. It is interesting to find that cash habit or a propensity to use cash in making payment does not directly discourage the willingness to use debit cards. Instead, the cash habit reduces the positive effect of perceived benefits of debit cards on the willingness to use the cards while strengthening the negative relationship between perceived adaptation costs associated with debit card usage and the willingness of the cards. This finding supports the argument of Acheson (2002) that habit does affect human behaviour and choice. However, instead of directly affect individuals' preferences, this research revealed another mechanism that habit influences choice that is moderation effect. This finding implies a good sign for popularizing the debit cards among Vietnamese citizens. Specifically, in a country with strong cash culture, the habit of using cash in money transactions do not directly make people hesitant to use debit cards, a new modern mean of payment as long as they find it useful and beneficial for them. However, the adoption of debit cards even among those who have already had debit cards in hands is slow since their cash habit weaken the positive effect of perceived benefits while strengthening the negative effect of perceived adaptation on willingness to use the card. For those, who have stronger cash habit, persuading them to use the debit cards, is, therefore, more difficult since they need more benefits and better adaptation measures to overcome barriers of adopting a new mean of payment.

5.2. Academic and Practical Implications

This research contributes to the academic literature in several ways. First, while the existing research stream on the determinants of intention to use plastic cards treated plastic card usage as a technology adoption (Kissi et al., 2017; Makanyeza and Mutambayashata, 2018; Oanh and Cassidy, 2018) or a reasoned action (Ali et al., 2017; Hanudin, 2012), this study takes a new perspective to treat the use of debit card as a rational choice over cash, the alternative mean of payment based on the rational choice theory. Accordingly, this research explains debit cardholders' willingness to use the card upon the comprehensive cost-benefit analysis with the employment of both qualitative and quantitative method. The findings of this research, therefore, further explore and expand existing knowledge about possible outcomes of using debit cards. Specifically, besides perceived usefulness as a technology, add-on benefits that banks offer to debit cardholders is also a proxy of perceived benefits of debit cards. On the other hand, perceived financial cost is not the only cost that debit cardholders must bear in their access to debit card services. Instead, using debit cards is also a transaction between the cardholder, as the buyer, and the bank, as the service provider. Therefore, perceived transaction costs including adaptation costs and monitoring costs also count. Second, the

insignificant impacts of perceived monitoring costs and perceived financial costs on willingness to use debit card further indicate that the role of different costs may vary in influencing individuals' preferences and choices. Third, this study affirmed the influence of habit on individuals' choice behaviour, however, revealed an interesting path of this impact. Specifically, instead of directly affecting choices, habit may moderate the impact of perceived costs and benefits on the choices.

Based on the notable findings, this study provides insightful practical implications for policy makers and bank managers to enhance the usage rate of debit cards among debit cardholders. Firstly, the willingness to use debit cards can be encouraged by increasing the benefits of using debit cardholders. Besides the usefulness of debit cards and existing add-on benefits such as discounts when doing card payment transactions, commercial banks may offer some interest rates for debit card accounts as a way to discourage cash withdrawal and increase deposits in the account. In addition, although debit cards are referred as "pay now" cards since the holders cannot make payment if they do not have enough money in the account, commercial banks may allow a specific amount of credit for the debit cardholders in case of overdraft if the customers meet some requirements. Secondly, perceived adaptation costs or time and effort needed to resolve disturbances during the time of using debit cards (debit cards are lost, do not work or not accepted at the point of purchase, banking transactions are mistaken or recorded wrongly or debit card information is stolen) significantly cause hesitance to use the debit cards. Therefore, commercial banks should mitigate these worries and confusion of debit cardholders by providing efficient adaptation measures in case of card loss, information stolen or mistaken banking transactions and records with clear instructions, rapid actions and high security. Those measures should be communicated effectively to each debit cardholders so as to neutralize their perception about adaptation costs. In addition, the issue of unusable or unaccepted cards at the points of purchase can be mitigated by modernizing the retail sector with a wider coverage of POS or other means of payments such as using QR code and other contactless payment solutions. In a country with strong cash culture like Vietnam, increasing the usage rate of debit cards even among debit cardholders need a long-term strategy due to the negative influence of cash habit. Given that habit is "a repeated form of conduct" (Lawson, 2015), the habit of using cash can be weakened by many ways. Specifically, since many Vietnamese commercial banks make great efforts to widen the network of ATM points in both urban and rural areas, cash withdrawal more convenient and easier. In such a country with strong cash culture where debit cards are currently used mostly for cash withdrawal, this strategy further supports the habit of using cash and indirectly reduce the usage rate of debit cards. Therefore, in order to weaken the cash habit, the number of ATM points should be reduced, instead, more POS system and other contactless payment methods associated with debit card accounts should be further developed. In some modern shopping areas, the government should encourage retailers to only accept card payment so that the habit of using cash is interrupted and gradually becomes weaker.

5.3.   Limitation and Future Research Direction

This research faces a few limitations which may be resolved in future research. First, although we have used a suitable random sampling method with adequate sample representation, a larger sample size with more diversified sampling units may help draw more insightful findings and implication. Secondly, the data for this study were cross-sectional while the penetration of e-banking services and other banking technology associated with the debit cards may change rapidly that likely to change individuals' perception of costs and benefits associated with debit card usage overtime. The employment of the longitudinal data for this research, therefore, could result in more interesting findings. Finally, given that habit can affect individuals' preferences and choice behaviour, future researches should expand the existing research models related to choice behaviour by incorporating habit as either a direct influencing factor or a moderator.

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