

## Factors Affecting to Card Payment's Choice: An empirical study of HCM city, Vietnam

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**Abstract:** Cash transaction is still dominant in Vietnam market. Even the advances of information technology have allowed banks and financial institutions introducing new and more efficient products and services but the rate of non cash transaction is modest. Vietnamese are still preferred cash payment. Basing survey data of consumer's perception toward card payment in HCM city, the aims of this study would shed some light on how individuals choosing payment by card and explain why cash transactions still remain strongly. This paper identified the factors which are affecting the card payment and examining how these factors impact to consumer's decision. The primary data was collected from 184 respondents through structured questionnaires. The factor and logit regression analyses were used to investigate the factors impacting to card payment's choice among consumer in HCM, Vietnam. The results indicated that factors strongly influence to consumer's decision to choose card to pay are age, cost, security and ease of use. The findings suggest that the number of card payment transactions would be improved by banks and government's efforts in order to provide necessary guidance, safety's assurance, appropriate regulation to educate and strengthening trust of consumer.

**Index Terms:** Payment's Choice, Payment Instruments, Payment Behavior, Card Payment.

### I. INTRODUCTION

In Vietnam, the banking products and services have developed dramatically in last five years. Particularly the banking card industry continues to undergo significant changes. All banks are trying to provide more products and services to attract more and more customers. With the advances of information technology, the banking products and services are more convenient and easily to reach out to customers. The consumers can make almost their transactions over internet or point of sales with bank card which is expected to have profound effect to bank industry. But how much the card holders prefer, how their perceptions and behaviors towards these services have not fully explored yet. The usage rate of card payment is still under its potentiality, both one-time bills and recurring bills (Electronic, Phone, Internet, and TV Cable). Consumers still receive their recurring bills via mail and most of them are paid directly (Cash). There are various reasons may contribute to the limit number of e-transactions as following:

- The consumer perceive to electronic payment has higher risk than other traditional methods. (Simon S.M. Ho, Victor T.F. Ng., 1994)
- The competences of Information Technology Infrastructure (Onar, Aktas and Topcu, 2010)
- Limited information about product/service supports payment card (Pikkarainen, 2004)
- The quality service and application system of e-transaction (Celik and Yilmaz, 2011).

On the other hand, the Information Technology nowadays allows Card issuers and Billers to make all kinds of bills be presented via the Internet, mobile phone, or personal digital assistant and the payments can be made electronically over bank cards. Apparently, this kind of service is more

convenient to consumers, especially paying for home-bill services on-time (Electronic, TV Cables, Internet, Phone/Mobile will be suspend or cut if late payment). Nevertheless, how much the consumers are willing to pay for such a service systematically remains unclear.

To card issuers and Billers, they can gain over greater convenience, along with value-added services such as better customer service, account aggregation. Particularly, they can highly benefit for the level of available money in bank card with low interest 1%-3% annually (if the e-transactions are made by more and more consumers).

Moreover, to the economy in general the growth of e-transactions can substantially reduce the social cost of country payment's system. As noted by Humphrey et al in their research in Norway in 2003, "if a country replaces a wholly paper-based payment system by an all electronic system, it may save up to 1% or more of its GDP annually once the transaction costs are absorbed".

In addition the rising banking penetration will lead to higher number of saving and current accounts, and the successfully linked of local bank networks Smartlink, VNBC and Banknetvn in May of 2010 will help their card holders can perform their transaction from many ATMs which are in card network alliance in the country, rather than limited ATMs which belong to their own bank issuing cards only, thereby increase the usage of bank cards. Furthermore, as the government is focusing on payment of salaries of permanent employees through bank accounts, rise in employment will also lead to higher number of bank cards. These things make an ease and attractiveness to Banks to employ the e-payment services to bank cards.

In other hand, the significant number of young population, changing spending pattern, advancement in e-banking services, and emerging trend of online shopping create the high potentiality to expedite the non-cash transactions. Together with the Instruction No. 20/2007/CT-TTg of Prime Minister announced in August 24th 2007 on payment salary via bank accounts for cadres, workers, and officials who get paid from the government budget, and more recently the government launched a project to restrict the share of cash in the total money supply to below 11% by the end of 2015, bring a bright future for payment card in Vietnam.

Furthermore, the penetration of many large international retailers into Vietnam market also projected to propel the usage of non-cash payments in the country. In fact, the number of issued cards is dramatically increased in recent years, and the successfully linked of local bank networks Smartlink, VNBC and Banknetvn in May 2010, create great convenience to cardholders to expense by card.

However, the development of payment card in Vietnam is not equivalent to its potentiality and quite modest compare to other countries in Asia region. The total non-cash transactions is about 14% less than a haft of Indonesia and Philippines and roughly one third of level in China, India, Thailand and Malaysia.

So, understanding the reasons why low rate of spending by card become a primary concern both banking and monetary authorities. It is imperative to examine the consumer's perceptions, behaviors, experiences and opinions towards card payment.

Though many papers have studied about the card payment and its services in other countries but it is rarely in Vietnam, especially in term of influence of consumer's perceiving card payment to probability of consumer choosing card to spend instead of cash. Therefore, examining aspects of consumer's perceiving to card payment would elaborate a comprehensive understanding regard to payment choice's preferences. It is not only provide an update about the relation of people's characteristics to card payment's perceptions and how Vietnamese perceiving card payment but also would be helpful to card issuers to have appropriate strategies to create competitive advantages and improve the conveniences to bank card users. Furthermore, it would give some managerial implications to policy makers in formulating effective and targeted policies and programs to stimulate spending by bank card.

Hence, this study bases on discrete choice modeling of consumers to products by their characteristics and consumer preferences (Daniel Mcfadden, 1974; Greene, 1993) to identify and determine the factors affecting to consumer's choices of payment in Vietnam and then evaluate the finding factors at following places: restaurant, shopping mall, modern-shop, super market, hi-tech shop and online purchase.

## II. LITERATURE REVIEW

There have been many research papers regarding to consumer payment choice since the late nineteenth decades. The previous studies indicated that consumer payment choice is influenced by three important sets of factors: consumer characteristics, payment method characteristics and transaction characteristics. Consumer characteristics, such as demographic and financial characteristics have shown to be correlated with use of payment methods (Kennickell and Kwast 1997, Hayashi and Klee 2003, Borzekowski et al 2008, and Schuh and Stavins 2011). Adoption of other technologies also influences consumer payment choice (Hayashi and Klee 2003). These factors could proxy for preferences, for availability of payment methods, and for familiarity with new payment technologies (people who use new technologies e-payment).

Payment method characteristics are also important determinants when consumers choose a payment method (Borzekowski et al 2008, and Schuh and Stavins 2011). For example, pricing or reward programs offered on payment methods are also highly correlated with the use of payment cards (Borzekowski et al. 2008, Ching and Hayashi 2010, Simon et al. 2010).

Moreover payment instruments can carry exclusive attributes such as cash advances to consumer's anonymity, and credit cards supports liquidity, while others do not. Other attributes, such as transaction speed, safety, and ease of use, are different perceived by payment method. Ching & Hayashi (2006) and Bounie & François (2006) identified the characteristics of transaction which including transaction value and physical situation influence consumer's choice of payment instrument. The effects of physical environment on the use of payment may partly be supply side effects. Some types of retail stores may not accept all or some types of payment cards. Only cash may be accepted. Even when merchants accept all payment methods, some payments may be less convenient to use than the others (transaction cost may be incurred, signature).

In other aspect, consumers are found be favor to use credit cards to purchase durable products rather than short-lived products which suggests that merchant activities are significantly impact the consumer's preferences to payment instruments (Soman 2001). He also gives evidence of the considerations such as convenience, acceptability, accessibility and habit are strongly driven consumer's choice of a payment. Gross and Souleles (2002) affirmed consumer's preferences towards cards are not linear and they may vary considerably when contractual conditions (such interest rates, repayment schemes or rewards programs) change.

Similarly, Calem and Mester (1995) found that these changes in contractual conditions are well explained the stickiness of the use of credit cards. Brito and Hartley (1995) also found these contractual conditions strongly affecting the rational of cards usage. Other empirical papers have identified consumer

preferences to payment instruments (Hayashi and Klee, 2003; Klee, 2006; Zinman, 2008). These studies explored that information about household finances and demographics are good predictors of the preferences for different payment instruments.

Furthermore, demographic and economic characteristics are showed relating to estimate the probability of using debit cards, credit cards, and cash for gasoline purchases in study of Carow and Staten (1999). They found the consumers who are in middle age and lower level of education are tend to use cash, and lower income hold less credit cards. In the research of Kennickell and Kwast (1997) regard to factors affecting to the likelihood of electronic payment instrument usage. The results show that demographic characteristics and consumer level variables such as years of schooling or financial wealth

are positively influenced to the likelihood of electronic payment instrument usage.

In regarding to incentive program studies, Arango and Taylor (2006) indicated the aggressive competition of card industry Canada better off consumers which actual transaction fees are closed to zero even negative through rewards, discounts and other incentive programs. These authors recommend that the purpose of reward programs is to contribute to the growth of consumer expenditure by card and leverage card issuer's revenue in the form of finance charges and interchange fees. In a study of Ching and Hayashi (2006) also gave evidence of some general effects of rewards on consumer's choice of payment mechanism. They found that consumers with credit card rewards use credit cards more intensively than those without rewards.

### A. Conceptual Framework

Factors influencing on payment card choice are grouped into the following grouped factors: (i) a grouped factor representing for consumer's characteristics includes age, education, gender, marital status, education, income, and travel frequency (ii) a grouped factor representing for consumer's perceptions toward payment consists of ease of use, convenience, security, acceptance, speed, control of expense, records keeping, cost and (iii) and factors regard to consumer's perceptions to transaction characteristics are incentive programs (gifts, points, discount) and payment size. The figure 1 illustrates the relationship of these 3 groups to the payment choice.

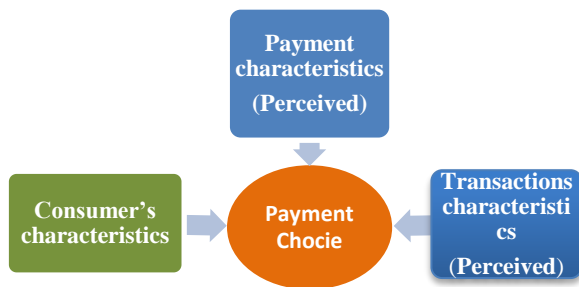


Fig. 1. Consumer's perceptions to Card Payment Model

This paper proposes behavioral model of consumers' choice incorporates standard consumer characteristics, consumer perceptions to payment instrument characteristics and transaction characteristics.

The explanatory variable is considered as probabilities of consumer's choice the payment instrument at POS. By considering three groups of factors consumer characteristics, payment characteristics and transaction characteristics, this study rests on random utility theory of McFadden (1974) and binary choice model of Greene (1993) to form the specification of determinants function of probability of cardholders choose card to pay at the point of sales as following:

$$D_{ij} = \alpha \text{CHAR}_i + \beta \text{PAYMENT\_ATT}_{ij} + \gamma \text{TRANS}_{ij} + \epsilon_{ij} \quad (1)$$

Where  $D_{ij}$  is the utility function of consumer  $i$  using the payment instrument  $j$  which taking account a set of variables showing consumer's perceptions (consumer's perceptions attributes toward payment and transactions are subjective measures reported by individual consumers).

The vector  $\text{CHAR}_i$  is a set of characteristics of consumer  $i$ .  $\text{PAYMENT\_ATT}_{ij}$  is a vector of attributes of the payment instrument  $j$  that can be observed by consumer  $i$ . The vector  $\text{TRANS}_{ij}$  controls consumer  $i$  perceived toward transactions characteristics of payment instrument  $j$ . And  $\epsilon_{ij}$  is the error term and non-observable attributes of consumer's decisions, and is assumed to be jointly distributed according to the extreme value distribution.

The  $D_{ij}$  takes the value "1" if the cardholder  $i$  uses the payment instrument  $j$  given a set of variables showing consumer's perceptions, and zero otherwise.

This study applies this model to analyze how selected factors affect to consumer's choice of cash and card payment.

### III. RESEARCH METHODOLOGY

#### A. Research Approach

##### 1) Qualitative approach

Qualitative approach is one in which researchers can get a lot of information from a small number of inquirers. Inquirers often give knowledge claims based on constructivist perspectives such as the multiple meaning of individual experiences, or advocacy/participatory perspectives such as political, issue – oriented or both (Yanni & Parmita 2005).

In this study, a qualitative research is conducted in order to gain a better understanding of relationship between consumer perceptions toward card payment and customer's choice. Qualitative survey is conducted by individual in HCMC September of 2013 with a focus group of 07 participants who have used card to pay.

The purpose of this focus group is to find out what each individual thinks, experience, concern towards spending by card. The interviewer personally interview to each individual to discuss the issues that had been prepared before for discussion (attached appendix 1).

##### 2) Quantitative approach

Quantitative approach is one in which researchers obtain a small information from a large number of respondents. As (Creswell 2003) : « investigators use post positivist claims for developing knowledge such as : cause and effect thinking, reduction to specific variables and hypotheses and questions, use of instrument and observation, and the test of theories employs strategies of inquiry such as experiments and surveys and collects data on predetermined instruments that yield statistical data ».

In many different academic disciplines, traditionally in social sciences, but also in market research and further contexts, both of quantitative methods and qualitative methods are used. Qualitative methods produce information only on the particular case studies, and general conclusions given are only propositions. Quantitative methods can then be used to seek empirical support for research hypotheses which are raised in qualitative methods. In this study, quantitative research is a main survey which establishes reliable measurement of customer perception to card payment.

#### B. Econometric Model

In order to analyze consumers' preferences for payment instruments, equation (2) is estimated by a binary logit model, which includes characteristics of the cardholders and characteristics of the preferences for the payment instrument.

According to the logit model the probability that a consumer prefers card to cash is given by the following non-linear function:

$$\Pr(Y_i = 1 | X_i) = p = \frac{\exp(\beta X_i)}{1 + \exp(\beta X_i)} \quad (3)$$

Which  $X_i$  is the attributes of consumer's characteristics, payment perception to payment instrument. In order to interpret the results appropriately, the logit results are presented in terms of marginal effects, which are computed as:

$$\frac{\partial \Pr(Y = 1 | x_i)}{\partial x_i} = \frac{\partial p}{\partial x_i} = p(1 - p) \times \beta_i$$

This is probability of choosing card payment given the changes of variable  $x_i$  in unit. The specification includes two main sets of explanatory variables. The first set corresponds to consumer characteristics: age, gender, marital status, education, income, and travel frequency. The second set includes consumer's perceptions to card payment and transactions characteristics: records, security, speed, payment size, acceptance, ease of use, control of expense, cost, and rewards.

**IV. RESULTS ANALYSIS**

1) How do consumer use to pay at different POS places

Respondents were asked which payment instrument they tend to use in six different POSes and the results demonstrated as the Figure 3

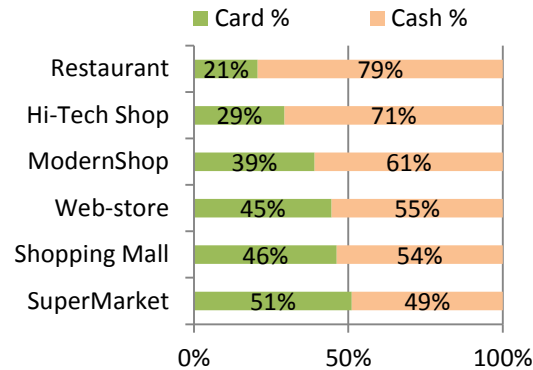


Fig. 3. Consumers use to pay at different POS places

The chart shows percentage of consumer used particular payment instrument at each place. Payment by card is peak highest percentage at supper-market (51%), following by Shopping Mall (46%), Web-store (45%), Modern Shop (39%), Hi-Tech Shop (29%) and the lowest one is Restaurant (21%).

**A. Factor Analysis**

The factor analysis (using principal component analysis) is applied to assess unidimensionality of individual constructs. As regards to Garver and Mentzer (1999) the unidimensionality is defined as the existence of one construct underlying a set of items.

The Table 3 showed results of factor analysis for five factors, Kaiser-Meyer-Olkin (KMO) of all the scales was greater than 0.5; Additionally, Barlett’s test showed that all significances was  $0.000 < 0.05$ .

Table 2: Results of KMO and Barlett’s test of the measurement scales

Variables	Kaiser-Meyer-Olkin test	Barlett’s test sig.
Ease of Use	0.787	0.000
Security	0.817	0.000
Control expense	.510	0.000
Cost	.506	0.000
Rewards	.520	0.000

All of 05 scales in Table 7 had eigenvalues which are greater than 1 and each scale’s items had significant factor loadings on one factor. All of them explained more than 50% of the variance in the data. Factor loadings were in the interval of 0.838 – 0.980 that was greater than selected factor loadings of 0.5. Cronbach’s Alpha reliability of items in 05 extracted factors satisfied  $>0.6$ . All elements on the diagonal of anti – image matrices were greater than 0.5. Thus, all of 05 scales reached the scale’s uni-dimensionality.

**B. The relationship between probability of choosing card to pay and identified factors**

To examine the probability of consumer choosing payment card the binary logit regression analysis was conducted with characteristics variables incorporating payment and transaction attribute variables. Independent variables were coded as: EOU (ease of use), Convenience, SEC (Security), CONTROL (Control of Expense), COST (Cost when using card), REWARDS, REC (records keeping), Speed, Acceptance, SIZE (Payment size) and characteristics factors are Gender, Age, Marital Status, Education, Income, Travel (Frequency). The dependent variable was coded as Payment (1: card payers, 0: cash payers). Six binary logit regressions were estimated, each focusing on one place of POS (Restaurant, Supermarket, Shopping Mall, Modern Shop, Hi-tech Shop, Web-store). The results of regressions are presented as following

Table 3: Results logit regression at Restaurant

Variable	Coefficient	Marginal Effect	z-statistics
Outcome Equation = Dependent variable – probability of choosing card payment			
<b>Gender</b>	<b>-0.969**</b>	<b>-0.094**</b>	<b>-2.04</b>
<b>Age</b>	<b>1.932***</b>	<b>0.181***</b>	<b>3.24</b>
<b>Education</b>	0.351	0.033	0.99
<b>Marital Status</b>	-0.102	-0.009	-0.21
<b>Income</b>	-0.193	-0.018	-0.78
<b>Travel</b>	-0.282	-0.026	-1.22
<b>Convenience</b>	0.085	0.008	0.35
<b>Record</b>			
<b>Keeping</b>	0.057	0.005	0.28
<b>Speed</b>	-0.0666	-0.006	-0.31
<b>Acceptance</b>	0.0707	0.007	0.37
<b>Payment Size</b>	-0.0219	-0.002	-0.13
<b>EOU</b>	0.361	0.034	1.42
<b>SEC</b>	0.327	0.031	1.38
<b>Control</b>			
<b>expense</b>	-0.115	-0.011	-0.62
<b>Cost</b>	-		
	<b>0.542***</b>	<b>-0.051***</b>	<b>-2.92</b>
<b>Rewards</b>	0.0661	0.006	0.39
<b>Constant</b>	-2.884*		

Notes: \*, \*\*, \*\*\* denote 10%, 5%, and 1% level of significance, respectively

Table 4: Results logit regression at Supermarket

Variable	Coefficient	Marginal Effect	z-statistics
Outcome Equation = Dependent variable – probability of choosing card payment			
Gender	-0.366	-0.091	-0.99
Age	<b>1.012**</b>	<b>0.253**</b>	<b>2.14</b>
Education	0.00575	0.001	0.03
Marital Status	-0.0521	-0.013	-0.12
Income	0.228	0.057	1.13
Travel	-0.0845	-0.021	-0.46
Convenience	-0.0546	-0.014	-0.31
Record Keeping	0.196	0.049	1.14
Speed	-0.0152	-0.004	-0.1
Acceptance	0.0515	0.013	0.34
Payment Size	-0.00982	-0.002	-0.07
EOU	0.0495	0.012	0.26
SEC	0.0561	0.014	0.28
Control expense	0.0112	0.003	0.07
Cost	-0.147	-0.037	-1.01
Rewards	0.0473	0.012	0.33
Constant	<b>-2.265*</b>		

Notes: \*, \*\*, \*\*\* denote 10%, 5%, and 1% level of significance, respectively

Table 5: Results logit regression at Shopping Mall

Variable	Coefficient	Marginal Effect	z-statistics
Outcome Equation = Dependent variable – probability of choosing card payment			
Gender	-0.595	-0.136	-1.27
Age	<b>1.583***</b>	<b>0.363***</b>	<b>2.8</b>
Education	<b>0.777**</b>	<b>0.178**</b>	<b>2.19</b>
Marital Status	0.0965	0.022	0.19
Income	0.242	0.055	1
Travel	0.264	0.061	1.18
Convenience	-0.325	-0.074	-1.39
Record Keeping	0.142	0.033	0.73
Speed	-0.167	-0.038	-0.72
Acceptance	0.0592	0.014	0.31
Payment Size	0.196	0.045	1.2
EOU	0.36	0.082	1.55
SEC	0.179	0.041	0.78
Control expense	0.17	0.039	0.94
Cost	-		
	<b>0.560***</b>	<b>-0.128***</b>	<b>-3.16</b>
Rewards	0.196	0.045	1.14
Constant	-		
	<b>5.059***</b>		

Notes: \*, \*\*, \*\*\* denote 10%, 5%, and 1% level of significance, respectively

Table 6: Results logit regression at Modern Shop

Variable	Coefficient	Marginal Effect	z-statistics
Outcome Equation = Dependent variable – probability of choosing card payment			
<b>Gender</b>	<b>-1.223**</b>	<b>-0.252**</b>	<b>-2.55</b>
<b>Age</b>	<b>1.258**</b>	<b>0.260**</b>	<b>2.33</b>
<b>Education</b>	0.0594	0.012	0.18
<b>Marital Status</b>	-0.768	-0.150	-1.52
<b>Income</b>	<b>0.560**</b>	<b>0.116**</b>	<b>2.29</b>
<b>Travel</b>	-0.071	-0.015	-0.33
<b>Convenience</b>	0.00775	0.002	0.03
<b>Record Keeping</b>	-0.287	-0.059	-1.43
<b>Speed</b>	-0.275	-0.057	-1.21
<b>Acceptance</b>	-0.0581	-0.012	-0.31
<b>Payment Size</b>	-0.0878	-0.018	-0.53
<b>EOU</b>	<b>0.914***</b>	<b>0.189***</b>	<b>3.52</b>
<b>SEC</b>	0.083	0.017	0.37
<b>Control expense</b>	<b>0.350*</b>	<b>0.072*</b>	1.91
<b>Cost</b>	-		
	<b>0.491***</b>	<b>-0.102***</b>	<b>-2.74</b>
<b>Rewards</b>	-0.238	-0.049	-1.43
<b>Constant</b>	-2.271		

Notes: \*, \*\*, \*\*\* denote 10%, 5%, and 1% level of significance, respectively

Table 7: Results logit regression at Hi-tech Shop

Variable	Coefficient	Marginal Effect	z-statistics
Outcome Equation = Dependent variable – probability of choosing card payment			
<b>Gender</b>	0.129	0.023	0.32
<b>Age</b>	<b>1.341***</b>	<b>0.239***</b>	<b>2.63</b>
<b>Education</b>	<b>0.518*</b>	<b>0.092*</b>	<b>1.82</b>
<b>Marital Status</b>	-0.459	-0.078	-1.01
<b>Income</b>	-0.090	-0.016	-0.41
<b>Travel</b>	<b>-0.359*</b>	<b>-0.064*</b>	<b>-1.75</b>
<b>Convenience</b>	-0.237	-0.042	-1.12
<b>Record Keeping</b>	0.101	0.018	0.56
<b>Speed</b>	-0.095	-0.017	-0.52
<b>Acceptance</b>	0.172	0.031	1
<b>Payment Size</b>	-0.063	-0.011	-0.42
<b>EOU</b>	<b>0.418*</b>	<b>0.075*</b>	<b>1.95</b>
<b>SEC</b>	<b>0.472**</b>	<b>0.084**</b>	<b>2.15</b>
<b>Control expense</b>	0.176	0.031	1.02
<b>Cost</b>	-0.045	-0.008	-0.3
<b>Rewards</b>	0.093	0.017	0.63
<b>Constant</b>	-		
	<b>4.208***</b>		

Notes: \*, \*\*, \*\*\* denote 10%, 5%, and 1% level of significance, respectively



Table 8: Results logit regression at Web-stores

Variable	Coefficient	Marginal Effect	z-statistics
Outcome Equation = Dependent variable – probability of choosing card payment			
Gender		-0.145	-0.34
Age		0.768	1.53
Education	<b>0.510*</b>	<b>0.123*</b>	<b>1.87</b>
Marital Status		-0.604	-1.26
Income		-0.0865	-0.39
Travel	<b>0.350*</b>	<b>0.084*</b>	<b>1.7</b>
Convenience		0.318	1.53
Record Keeping		-0.0942	-0.48
Speed		-0.13	-0.67
Acceptance	<b>0.300*</b>	<b>0.072*</b>	<b>1.66</b>
Payment Size		0.186	1.16
EOU		0.214	1.02
SEC	<b>0.202**</b>	<b>0.049**</b>	<b>2.16</b>
Control expense		-0.297	-1.64
Cost	<b>-0.716***</b>	<b>-0.173***</b>	<b>-3.98</b>
Rewards		0.0428	0.27
Constant		-0.143	

Notes: \*, \*\*, \*\*\* denote 10%, 5%, and 1% level of significance, respectively

The findings of this study clearly showed that age (most of POS situations except web-stores), education (shopping mall) and EOU (modern-shop) are statistically significant to probability of consumer card choosing. These results are consistent with reality of Vietnam market where most of respondents are in workforce and tend to be very busy with daily life particular in HCM city. The older people and higher education are presumable to have more social relationship, more social activities and especially more knowledges and experiences in technology information and early adapt to card transaction therefore they have higher frequency of expense and probability to use card. This implies that card providers should pay more intension to younger people by marketing program to educate and raise their awareness of spending by card, by this measure it should leverage the rate the non-cash expenditure of younger people significantly.

It is interesting that the result showed the gender is negative impact to the probability of card usage in situation of restaurant and modern-shop. In context of Vietnam, to situation of modern-shop, the higher probability of female of card payment could be understood by the relative higher frequency shopping of female to male at this shop. For the situation of restaurant, it is necessary to collect more data to reassure it is the true trend or there might have some other unobservable variables need to examine to explain it more properly.

As expectedly, the result also confirmed that cost factor is negative and strongly impact to the probability of choosing card to pay in most of situations (restaurants, shopping-mall, modern shop and web-stores). It implies that cost is a hurdle

to spending by card whether it is annual fee or additional charge per transactions. It is quite true to current context of Vietnam as some retailers do not want to disclose their sales so they used to impose additional fee to card payers even the banks of card holders offer for free, which thus deterred consumers from engaging in card transactions. In other hand, the missing of full integrated infrastructure of national payment gateway to banks and merchants which limiting the acceptance of card types at POS and integration process of merchants is not efficient. Hence, it will raise cost of operation system and integration of banks and merchants which prevent banks to lower the annual fee to cardholder.

Furthermore, while security is insignificant in most of situations of POS, it is played substantial role to the card usage in web-stores situation. This is closely reflecting the current situation of Vietnam where most of consumers are still concerned regarding to security of card payment processing at gateway and web-store's credential authorization. Providing that the inadequate development of infrastructure of information and technology and its capacity amongst banks, service providers it hurdles the process of payment card integration which limit the offering card payment options in web-stores (Most of web-stores owners do not accept local bank cards). And though many local payment gateways are introduced there is no any payment gateway officially is under government umbrella where the benefits, cardholder's protection legislation and service provider's responsibilities are assured. Therefore, it is still far to build trust from buyer which is crucial condition to increase the safety perceiving of consumer to card payment. That is why cash on delivery is still common way of buyer when purchasing over web-stores.

This finding is particularly important indication as the e-commerce of Vietnam is in fast growth and strongly competitive period. So it is required the necessary efforts of banks and merchants in collaboration and co-operation together with government's support to address these outstanding obstacles to foster the development of non-cash payment in Vietnam especially to the e-commerce.

## V. CONCLUSIONS AND RECOMMENDATIONS

This paper is pretty new regard to studying payment card choice's decision in Vietnam. It is potential to be generalized to nation-wide general organizational study. The analysis result suggests that card payment is most likely to grow rapidly where consumers find it more Ease of use, more security and less costly. In addition, the result is an indication of the good explanatory power of model for payment card instrument. It would provide some implication information for further research toward substitution of cash by card payments in Vietnam.

This study suggests some of implications. Firstly, the regression results clearly shown that the cost has negative effect on card payment. It means that respondents perceive paying by card overall relatively expensive as opposed to cash, which including annual fee and transaction fee. In the Vietnam's context, some retailers do not want to disclose their sales so they used to impose additional fee to card payers even the banks of card holders offer for free, which thus deterred consumers from engaging in card transactions. In order to eliminate this hurdle the government should have appropriate regulation and legislation framework to better management and distributors and retailers to ensure there is no additional cost incurred when customer choosing card to pay at POS.

In other hand, the state bank and card providers should standardize the payment systems to enables widespread services and products linkage, and simply the entry process of new service providers. This will help to take advantage of economic of scales and also enhance efficiency of payment card system which in turn allows banks and card providers having room to lower the card's annual fee.

Secondly, EOU (Ease of use) is found statistically influenced the probability of choosing card and had positive sign. This implies that banks and card providers should educate consumers all about payment card system, its advantages and their liability for use of card to improve the card holder's perceptions toward card payment usage. It can be done by marketing programs and an educational multimedia tool on websites of banks and card issuers. By these efforts, the likelihood of the consumers spending by card would be considerably increased.

Thirdly, security is another important factor impacting to the probability of choosing card. It reflects the truth of Vietnam in recent years particularly the booming of e-commerce sites and security is the central consideration of card payer when

purchasing on-line. This implies that the government should set-up the national payment gateway, standardizing process of payment through this gateway, simplifying integration procedure of financial institutions and merchants. Once, the nationwide card gateway system is well implemented it would spread quickly (the number of card providers and merchants integration would increase significantly) as its legislative assurance by government. Together with appropriate regulation regarding to consumer rights, consumer protections, it would improve consumer's perceiving of security toward card payment.

Finally, hypothesis results also indicated that the education and age are statistically impacted to probability of card usage. It suggests that the knowledges relating to the card payment usage such as: e-commerce, e-payment, POS conceptions should convey widely and repeatedly to the public by marketing programs of banks or government's programs to raise up their understanding about its advantages to personality and how its benefit to economy of country. Besides, these knowledges should be also taught in high school to increase the awareness of card payment and younger adoption card payment.

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