

Perceived Risk and the Intention to use Credit Cards

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Abstract

Although credit cards are widely used in the world, researches on intention to use credit cards and related issues are limited. Most studies in this field considered customers' adoption of credit cards in relationship with their subjective norms, perceived usefulness and perceived behavioral control as an application of Technology Acceptance Model and Theory of Planned Behavior. However, perceived risk has not been mentioned as a determinant of intention to use credit cards in these studies, while it plays important role on the acceptance of electronic services, such as electronic commerce, electronic payment or electronic banking services. Thereby, this study clarifies the impact of perceived risk as well as subjective norms, perceived usefulness and perceived behavioral control on customers' decision to use credit cards. Regression model is used to meet this objective. Based on a sample of 290 customers paid via bank account in Ho Chi Minh City, this study shows that perceived risk, subjective norms, perceived usefulness and perceived behavioral control are important determinants on the intention to use credit cards among Vietnamese customers. This study also provides banks a better understanding of their customers as well as the effects of their policies on credit card application and use.

Keyword: Credit Card, Intention to Use, Perceived Risk, TAM, TPB.

1. Introduction

Credit cards, a combination of payment cards and consumer lending instruments, are based on the application of information technology. Nowadays, credit cards are widely used around the world with the six international brand including American Express (1958), Diners Club (1961), JCB (1961), Visa (1977), MasterCard (1979), and CUP (2002). Banks issue credit card to customers with certain credit limit. Meanwhile, liabilities have not been incurred until customers use credit card to pay bills or do cash advances. Cardholders are entitled to 0% interest rate in maximum to 45 days, if they repay full of debt on time. However, they may pay a part of debt and interest rate is counted from transaction time. A rest of debt becomes outstanding balance.

In recent years, Vietnamese banks have achieved some results in the business of credit cards. However, these achievements are not adequate with the potential of the market when only more 3 million credit cards were issued with total sales of about 2 billion dollars, respectively to more than 80 million issued bankcards with total sales of about 65 billion dollars in 2014. Therefore, Vietnamese banks are constantly deploying new products, new services involving to credit cards to improve the performance of business in both operations of issuing and acquiring. However, banks do not pay proper attention to the customers' perception of the credit cards as a combination of payment instrument and individual consumer credit.

Although credit cards are widely used in the world, researches on intention to use credit cards and related issues are limited. Most studies in this field considered the effect of credit cardholders' characteristics, attitudes and perceptions of debt, debt acts via credit card, etc. ... on the intention to use and actual use of credit cards. Some other authors applied the Theory of Planned Behavior, TPB (Ajzen, 1991, 2002) and the Technology Acceptance Model, TAM (Davis et al., 1989; Venkatesh and Davis, 2000) to determine a relationship between customers' perceived usefulness, perceived behavioral control, subjective norms and their intention to use credit cards (Amin, 2007; Erdem, 2008; Yahaya and Othman, 2014). However, consumer's planned behavior is not only affected by these perceptions, but also by perceived risk (Mitchell, 1999), which is defined in Theory of Perceived Risk (TPR) as uncertainty regarding to actual behavior (Bauer, 1960). Actually, perceived risk was considered as an indispensable factor on the acceptance of e-payment, e-banking and e-commerce (Featherman and Pavlou, 2003; Hassan et al., 2006, Zhao et al., 2008; Lee, 2009). Meanwhile, lack of studies used perceived risk as a determinant on the intention to use credit cards, even though credit card is a part of e-banking, is one of the most popular instruments using to pay for e-commerce transactions (Meier and Stormer, 2009; Laudon and Traver, 2014).

In the context that Vietnamese credit card market has developed unsustainably, research on consumer's behavior becomes imperative for banks. However, differs from prior researches, this study clarifies the role of perceived risk on the intention to use credit cards. The study starts from the premise that perceived risk significantly guides consumers' behavior because they wish to avoid making mistakes (Mitchell, 1999). Based on the literature review of TPR and its applications in various areas, perceived risk on credit cards and its measurements are identified and discussed. Finally, the study supposes a theoretical model for the intention to use credit cards with four explanatory factors, including perceived risk, perceived usefulness, perceived behavioral control and subjective norms, in which the last three factors are driven from TAM and its versions (Davis et al., 1989; Venkatesh and Davis, 2000; Ajzen, 1991, 2002).

2. Theoretical Background and Prior Research

Based on Theory of Reasoned Action, TRA (Ajzen and Fishbein, 1980), Davis et al. (1989) firstly proposed the Technology Acceptance Model (TAM) to focus specifically on customers' adoption of computer innovation. In this extension of TRA, Davis et al. (1989) hypothesized that consumers' beliefs toward a computer innovation will impact their intention to adopt a new technology and then their actual use new technology. These beliefs include the perceived ease of use of computer innovation as well as the perceived usefulness of the technology (Davis et al., 1989).

Ajzen (1991), in proposal of Theory of Planned Behavior (TPB), proved that sometimes customers are uncontrolled in their behaviors or their intended behavior is affected by perceived behavioral control. Ajzen (1991) also stated that attitude is the perfect alternative of perceived ease of use and perceived usefulness, which are proposed in TAM (Davis et al., 1989). Thereby, customers' acceptance of technology is interpreted by TPB through the factors of attitude, subjective norms and perceived behavioral control (Ajzen, 1991).

Although agreed with Ajzen (1991) on the impact of subjective norms on the adoption of technology, Venkatesh and Davis (2000) considered that perceived usefulness cannot be replaced by attitude and perceived usefulness as well as perceived ease of use affect directly on intended behavior. Whereby, Venkatesh and Davis (2000) proposed new version of TAM, in which the adoption of technology is affected by subjective norms, perceived usefulness and perceived ease of use. Related to perceived ease of use, Ajzen (2002) proved that it is a part of perceived behavioral control and can be replaced by perceived behavioral control. Then, consumer subjective norms, perceived usefulness and perceived behavioral control impact their intention to adopt a new technology (Davis et al., 1989; Venkatesh and Davis, 2000; Ajzen, 1991, 2002).

Credit cards are known as noncash or electronic payment instruments, which are issued and managed by banks and used by customers in automatic teller machines, point of sales, or in the forms

of e-commerce business (Meier and Stormer, 2009). In the context that e-commerce is developing increasingly, credit cards play an important role in e-commerce business as a favorite and favorable tool for e-payment (Lee and Cata, 2005). Meanwhile, TAM and its versions (Davis et al., 1989; Venkatesh and Davis, 2000; Ajzen, 1991, 2002) have been applied widely in studies of customers' intention to use e-commerce (Park et al., 2004), e-payment (Lin and Nguyen, 2011; Teoh et al., 2013) as well as e-banking (Zhao et al., 2008; Payam and Hamid, 2012). Thus, TAM and its versions are suitable for studies on intention to use credit cards with three explanatory factors, including subjective norms, perceived usefulness and perceived behavioral control (Davis et al., 1989; Venkatesh and Davis, 2000; Ajzen, 1991, 2002).

Ajzen (1991) considered subjective norms as the perceived social pressure to perform or not to perform the behavior. In the context of intensive competition, banks are constantly implementing new products and services to the market. Consumers can easily own a couple of credit cards (Hayhoe et al., 1999). Consumers are irresistible to observe and evaluate the benefits of credit cards and feel uncomfortable without them when their familiars use them every time and talk about them everywhere. As the result, those, who do not own any credit cards, quickly find one to get on well with the community (Hayhoe et al, 1999). Parents, schools, peers and the media are all part of a young person's learning and socialization from birth to adulthood (Hilgert et al., 2003). Ismail et al. (2011) mentioned that family influence has a significant impact on customers' decision to use credit cards. Moreover, media which is designed specifically to reach a large audience or viewers has contributed to improve the consumers' awareness toward credit cards (Ismail et al., 2014). Therefore, based on these findings, the following hypothesis was developed:

H1: Subjective norm has positive impact on intention to use credit cards.

The perceived usefulness was proposed by Davis et al. (1989) as the degree to which a person believes that using a particular system would enhance his or her job performance. Chan (1997), Alhassan and Yakubu (2007) supposed that convenience of use is the main driver in the decision to use credit cards. Consumers are very interested in grace period and low interest as the two most advantages of credit cards (Chan, 1997). Consumers used credit cards not just as a substitute for cash and checks, but also as a source of revolving credit (Sudhagar, 2012). Consumers used credit cards because of the risk of carrying cash (Barker and Sekerkaya, 1992; Sudhagar, 2012). Kaynak and Harcar (2001) posited that ease access to cash was the key factor for the use of credit cards. Thus, the hypothesis below was developed and tested in this study:

H2: Perceived usefulness has positive impact on intention to use credit cards.

Ajzen (2002) defined perceived behavioral control as an individual's perceived ease or difficulty of performing the particular behavior. It is assumed that perceived behavioral control is determined by the total set of accessible control beliefs. Barker and Sekerkaya (1992) stated that the ease of payment was major reason for using credit cards. Customers choose credit cards because of the facilitating service of easy acceptability procedure of credit cards at retail outlets (Alhassan and Yakubu, 2007; Sudhagar, 2012). Mohammed (2001) posited that the acceptance by a large number of different types of establishment effects on the intention to use credit cards. Arbote and Busacca (2009) noted that the availability of the 24/7 services is a vital of credit card business. Social acceptance of payments via credit cards plays an important role in decision to use credit cards instead of buying by cash (Kaynak and Harcar, 2001). Lydia et al. (2008) also mentioned that lack of understanding or minimum information might reduce the adoption of credit cards. As the result, this research proposes the following hypothesis:

H3: Perceived behavioral control has positive impact on intention to use credit cards.

The concept of perceived risk was first introduced in the consumer behavior literature by Bauer (1960). Bauer (1960), cited from Ross (1975), considered perceived risk as a combination of uncertainty with the possibility of serious outcomes. Perceived risk is a compensation of two factors, uncertainty with the possibility of loss as a consequence of certain behavior and the importance attributed to that loss (Cox, 1967, cited from Ross, 1975). Agreed with Cox (1967), Cunningham

(1967) considered that perceived risk includes the probability of risk and consumers' subjective feelings toward such risk. Derbaix (1983) stated that in the process of purchasing, customers may confuse about product's features as well as the consequences arising from the sense of that uncertainty. Murray (1991) suggested that perceived risk is perceived uncertainty about the potential outcomes after actual behavior performed by customers and they may not be satisfied because of the ambiguity of incurred gains or losses. Stone and Grønhaug (1993) defined perceived risk is simply the expected loss associated with the buying behavior. In consumer behavior's perspective, perceived risk refers primarily to the customers' subjective expectations for incident losses (Forsythe and Shi, 2003). Chan (2004) argued that perceived risk is the uncertainty of the occurred losses and customers are affected by the risks which they are aware, whether these risks exist or not.

Since the introduction of perceived risk, several studies have been conducted to explain this concept and its impact on consumer behavior. Cox and Rich (1964), cited from Ross (1975), supposed that perceived risk is not a single component, it is overall perception about consumer's uncertainty of a specific buying's situation. Perceived risk is considered as a combination of performance risk, physical risk, and financial risk (Cunningham, 1967, cited from Ross, 1975); performance risk, physical risk, social risk, psychological risk and time risk (Roselius, 1971, cited from Ross, 1975); financial risk, operational risk, psychological risk, physical risk, social risk and time risk (Jacoby and Kaplan, 1972, cited from Ross, 1975). Bansal and Voyer (2000) defined perceived risk is an overall perception of financial risk, physical risk, psychological risk, social risk and convenient risk. With the introduction of residential Internet in early 1990s, privacy risk and security risk were used as two new components of perceived risk (Stone and Grønhaug, 1993; Featherman and Pavlou, 2003; Litter and Melanthiou, 2006; Lee, 2009).

Internet, with the appearance of the World Wide Web in the early 1990s, has grown with rapid speed and formed a new business model, named by e-commerce or electronic commerce, with the aid of electronic media such as computers, tablets and smartphones (Laudon et al., 2015). Pavlou (2003), Park et al. (2004), Li and Huang (2009), Almousa (2011) agreed that when customers accept to use electronic commerce, they also accept facing some unexpected risks, including security perceived risk, privacy perceived risk, performance perceived risk, time perceived risk, financial perceived risk.

Along with the rapid development of e-commerce, electronic payment systems (or e-payment) are used widely for contactless trading (Lee and Cata, 2005); they help saving time, expenses for both sellers and buyers (Sorkin, 2001; Jaw et al., 2011). However, using e-payment for goods and services, customers may be anxious about whether their payment is completed successfully or not (Hamid and Cheng, 2013). It also takes time and cost to complete or to solve problems arising in the process of payment (Fang and Peter, 2007; Hamid and Cheng, 2013). Customers are afraid that personal information is collected, used, disclosed or sold without any permission (Pavlou, 2003; Fang and Peter, 2007; Safeena et al., 2011a).

E-commerce's development creates favorable conditions for banks to deploy products and services based on electronic media (Meier and Stormer, 2009). Customers can perform transactions without presence at the bank (Lichtenstein and Williamson, 2006; Safeena et al., 2011b). Electronic banking services bring a lot of benefits for customers (Cheng et al., 2006; Pham et al., 2013; Martins et al., 2014). However, many researches on e-banking's adoption found that customers are always concerned about the accessibility of e-banking services (Grewal et al., 1994; Littler and Melanthiou, 2006; Payam and Hamid, 2012; Nicolaou et al., 2013). Customers also pay special attention to the problems of privacy and security in using e-banking services due to cyber criminals are more and more popular and sophisticated, in which all losses, if any, are charged firstly to customers (Cheng et al., 2006; Zhao et al., 2008, 2010; Huang et al., 2011; Payam and Hamid, 2012; Farzianpour et al., 2014). Time and expenses are required to solve the incurred issues related to e-banking services (Featherman and Pavlou, 2003; Zhao et al., 2008; Lee, 2009; Payam and Hamid, 2012).

E-commerce is developing increasingly, e-payment becomes indispensable (Lee and Cata, 2005). As an e-payment instruments, credit cards are issued and managed by banks and used by customers in automatic teller machines, point of sales, or in the forms of e-commerce business (Meier

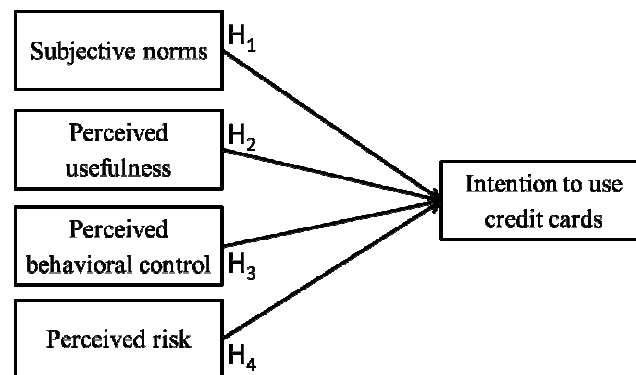
and Stormer, 2009). Then, credit cards, a product of e-banking, play an important role in e-commerce business as a favorite and favorable tool for e-payment. Thereby, credit cards were mentioned in studies on consumer's adoption of electronic services as a measurement of theoretical models (Featherman and Pavlou, 2003; Zhao et al., 2006; Lee, 2009; Payam et al., 2012).

While using credit cards, customers may encounter unexpected situations, i.e. they cannot pay bills or they are debited for transactions they did not perform before. These issues are considered as credit cards' risk (ARPA, 2003; Timo et al., 2003). Customers' perception of these risks may affect negatively on their decision to use or not to use credit cards (Mitchell, 1999). However, perceived risk was not mentioned in prior studies related to the adoption of credit cards, even though it is one of determinants of the intention to use e-services (Mitchell, 1999; Park et al., 2004; Littler and Melanthiou, 2006; Fang and Peter, 2007), in which the role of credit cards is undeniable. Thus, perceived risk may be firstly proposed as an explanatory factor for the intention to use credit cards with following hypothesis:

H4: Consumers' perceived risk decreases their intention to use credit cards.

Based upon the discussion in the previous section, the following theoretical model is developed (Figure 1).

Figure 1: Theoretical research model



3. Methodology and Data

This research conducted an online survey for customers paid via bank account in Ho Chi Minh City. The questions focus on 5 components corresponding to the proposed research model (Table I), including intention to use credit cards (Davis et al., 1989), subjective norms (Ajzen, 1991), perceived usefulness (Davis et al., 1989), perceived behavioral control (Davis et al., 1989; Ajzen, 1991) and perceived risk (Bauer, 1960). In the questionnaire, the respondents are required to rate their level of agreement with statements on a five-point scale, ranging from "1" representing "strongly disagree" to "5" representing "strongly agree". Cronbach Alpha's Analysis, Exploratory Factor Analysis are used to assess scale's reliability (Cronbach, 1951; Bland and Altman, 1997) and identify latent factors underlying a set of measured variables (Kaiser, 1960; Fabrigar et al., 1999). The proposed research model's hypotheses are tested by multivariate linear regression (Koteswara, 1970).

Table I: Research measures

Factor	Code	Measurement	Reference
Subjective norms (SN)	SN1	Family	Hayhoe et al. (1999), Palmer et al. (2001), Mansfield et al. (2003), Okan (2007), Erdem (2008), Ismail et al. (2011)
	SN2	Friends	
	SN3	Co-workers	
	SN4	Bankers	
	SN5	Multimedia	

Factor	Code	Measurement	Reference
Perceived usefulness (PU)	PU1	Purchase without carrying cash	Gefen et al. (2003), Okan (2007), Lydia et al. (2008), Ahmed (2009), Thomas et al. (2010), Sudhagar (2012), Omar (2013), Kobaral (2014)
	PU2	Buy first and repay later	
	PU3	Pay the bill	
	PU4	Access to cash easily if needed	
	PU5	Modern banking services	
	PU6	Promotions from popular branches	
	PU7	Signal of identification	
	PU8	Installment purchases in free of interest	
	PU9	Free of interest for up to 45 days	
Perceived behavioral control (PBC)	PBC1	Simple registration	Hayhoe et al. (1999), Kaynak and Harcar (2001), Guriting and Ndubisi (2006), Erdem (2008), Lydia et al. (2008), Ahmed (2009)
	PBC2	Use credit card easily	
	PBC3	Perform simply	
	PBC4	Payment everywhere and every time	
	PBC5	Transactions are performed in seconds	
	PBC6	Comfort and confidence	
	PBC7	Learn to use easily	
Perceived risk (PR)	PR1	Paying bills by credit cards would be failed	Featherman và Pavlou (2003), Chan (2004), Park et al. (2004)
	PR2	Using credit cards is unsecured	
	PR3	Using credit cards leads to a loss of privacy	
	PR4	Using credit cards is expensive	
	PR5	It takes time to pay bills by credit cards	
	PR6	Sense of anxiety is about credit card use	
Intention to use credit cards (IU)	IU1	Desire to use	Davis et al. (1989)
	IU2	Use as soon as possible	Davis et al. (1989)
	IU3	Use usually in the future	Davis et al. (1989)
	IU4	Encourage others to use	Davis et al. (1989)

The survey was applied to 365 respondents selected via convenient sampling of which 290 answer sheets were found eligible to be analyzed. The descriptive statistics of the respondents are summarized in Table II. The data from 290 respondents is suitable for 31 observed variables in factor analysis (Catell, 1978) as well as 4 explanatory factors in multivariate linear regression (Tabachnick and Fidell, 1996).

Table II: The descriptive statistics of the respondents

	Profile	Description	Respondents	Percentage
1	Gender	Female	85	29.3
		Male	205	70.7
2	Age	Less than 25	24	8.3
		25-49	202	69.7
		Above 50	64	22.1
3	Marital status	Single	230	79.3
		Married	60	22.7
4	Education level	Associate's degree or less	31	10.7
		Bachelor's degree	210	73.4
		Master's degree or above	49	16.9
5	Income level	Less than \$500	29	10.0
		\$500-\$900	156	53.8
		\$900-\$1,600	91	31.4
		Above \$1,600	14	4.8
6	Occupation	Agriculture, forestry and fishery	8	2.8
		Industry	16	5.5
		Trade and services	103	35.5
		Finance and banking	89	30.7
		Public services	74	25.5

Findings

Reliability Coefficient with Cronbach's Alpha Analysis on Data from Online Survey

This study uses data collected from 290 online respondents, who are required to rate their level of agreement with 31 items or statements. The internal consistency reliability of the items is determined by using the Cronbach's Alpha analysis (see Table III). The overall reliability analysis coefficient is 0.895, greater than 0.6, that is the measurements were reliable and acceptable (Nunnally, 1978; Peterson, 1994). Moreover, the values of corrected item-total correlation are greater than 0.3 for all observed variables. Thus, all observed variables are eligible to factor analysis.

Table III: Reliability coefficient with Cronbach's Alpha analysis

Code	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Corr.	Cronbach's Alpha if Item Deleted
SN1	75.5000	123.808	.395	.893
SN2	75.5103	124.666	.348	.894
SN3	75.5103	123.240	.410	.893
SN4	75.5000	122.417	.457	.892
SN5	75.4862	123.143	.428	.892
PU1	75.5345	121.149	.498	.891
PU2	75.5000	119.960	.584	.889
PU3	75.5552	121.521	.519	.891
PU4	75.5310	121.745	.499	.891
PU5	75.4862	120.880	.531	.890
PU6	75.5379	121.391	.511	.891
PU7	75.5828	122.403	.472	.892
PU8	75.5379	122.187	.492	.891
PU9	75.0655	119.010	.589	.889
PBC1	75.4966	121.773	.503	.891
PBC2	75.5483	124.089	.376	.894
PBC3	75.5552	122.884	.461	.892
PBC4	75.4793	123.648	.423	.893
PBC5	75.5793	122.286	.455	.892
PBC6	75.5517	122.497	.445	.892
PBC7	75.4966	122.465	.461	.892
PR1	75.6138	123.151	.432	.892
PR2	75.5483	124.034	.374	.894
PR3	75.5207	122.216	.456	.892
PR4	75.4966	122.133	.480	.891
PR5	75.5207	122.527	.460	.892
PR6	75.5138	122.908	.433	.892
IU1	9.36	7.317	.588	.768
IU2	9.36	6.736	.607	.760
IU3	9.29	6.648	.666	.729
IU4	9.37	7.141	.613	.756

(Export from SPSS)

Factor Analysis

An exploratory factor analysis is applied through Principal Components extraction with Varimax rotation for 27 variables of subjective norms, perceived usefulness, perceived behavioral control and perceived risk on the scale to identify their relationships. As a result, SN2, PU7, PBC3 is eliminated from the analysis due to they appear in two components and the difference of their loading factors is less than 0.3.

Continuously, 24 remaining variables, which loading factors are greater than 0.5 (Hair et al., 2010), are arranged into 4 components with sum of squared loadings is 50.12%, greater than 50% as required by Gerbing and Anderson (1988). Moreover, none of them takes part in two different components (Hair et al.,

2010). Thus, the factors of subjective norms, perceived usefulness, perceived behavioral control, and perceived risk are represented by these extracted components with 24 observed variables.

Finally, the factor analysis is also applied to 4 observed variables of intention to use credit cards. Only one component is extracted from this analysis, in which the loading factors of these variables are greater than 0.5, the sums of squared loadings is 62.96%, also greater than 50%. That means the factor of intention to use credit cards is shown by one component with all 4 mentioned variables above (see Table IV).

Table IV: Exploratory factor analysis

Observed Variables	Factor				
	1	2	3	4	5
SN1				.673	
SN3				.665	
SN4				.693	
SN5				.655	
PU1	.704				
PU2	.668				
PU3	.672				
PU4	.642				
PU5	.650				
PU6	.678				
PU8	.627				
PU9	.796				
PBC1			.589		
PBC2			.743		
PBC4			.628		
PBC5			.658		
PBC6			.665		
PBC7			.660		
PR1		.670			
PR2		.710			
PR3		.661			
PR4		.618			
PR5		.662			
PR6		.643			
IU1					.770
IU2					.785
IU3					.829
IU4					.790
KMO	.900				.798
Barlett's Test	.000				
Eigenvalue	6.697	2.114	1.828	1.390	2.518
Variance Explained (%)	27.904	8.808	7.616	5.790	62.958
Cumulative variance explained (%)	27.904	36.712	44.328	50.118	62.958

(Export from SPSS)

Linear Regression

Linear regression is applied to 4 independent variables, including (1) subjective norms (SN), (2) perceived usefulness (PU), (3) perceived control behavior (PBC) and (4) perceived risk (PR). This regression uses the factor of intention to use credit cards (IU) as the single dependent variable. The model is consistent relatively at significant level of 5% with explain ability up to 56 percent of population (see Table V). The values of significant level from regression indicate that all 4 independent variables have impact on intention to use credit cards; the regression model is shown as follows:

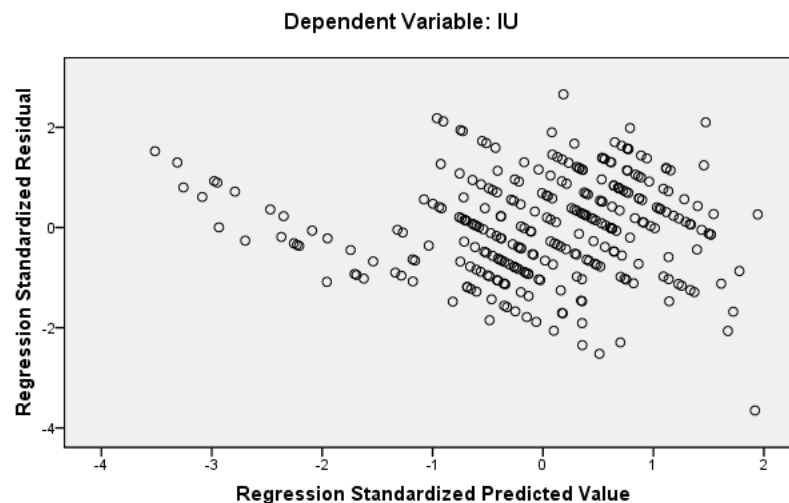
$$IU = -1.290 + .265*SN + .370*PU + .453*PBC - .418*PR \quad (1)$$

Table V: The result of linear regression

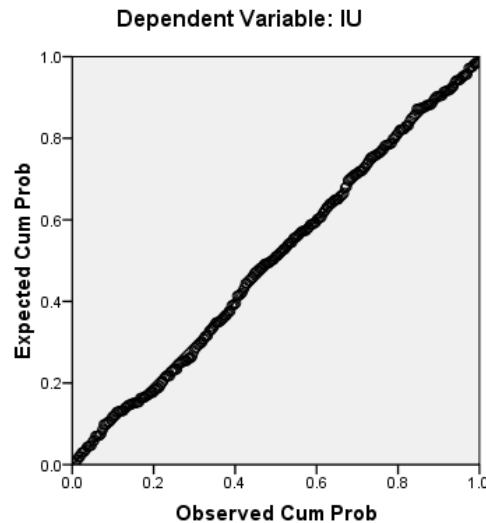
	B	Std. Error	T	Sig.	VIF
Constant	-1.290	.236	-5.467	.000	
NS	.265	.066	3.990	.000	1.320
PU	.370	.068	5.412	.000	1.380
PBC	.453	.067	6.721	.000	1.303
PR	-.418	.069	-6.103	.000	1.347
R				.746	
R²				.557	
Adjusted R²				.551	
F				89.622	
Sig.				.000	
Dubin-Watson				1.864	
N				290	

(Export from SPSS)

The Durbin-Watson test has a value of 1.864 in the range of (1; 3), that means there is no autocorrelation phenomena in the model. Multicollinearity is not occurred in the model when all VIF values are less than 10. Moreover, a non-parametric test clarifies that there is no correlation between the residual and independent variables in the model; the assumption of heteroscedasticity is not violated. Continuously, in the plot of residuals versus predicted values, the points are symmetrically distributed around a diagonal line in the former plot, the assumption of linearity is accepted (Figure 2). Finally, in the normal P-P plot of regression standardized residual (Figure 3), the points fall close to the diagonal reference line, the assumption of normality is unbroken. Thus, all 5 assumptions involving to linear regression with Ordinary Least Squares are met; the regression model (Equation 1) is valuable and usable.

Figure 2: Scatterplot of residuals versus predicted values

The regression model (Equation 1) confirms that the factor of subjective norms positively effects on intention to use credit cards at the 1% significant level, the hypothesis H1 is accepted. This study is agreed with Hilgert et al. (2003), Jorgensen (2007) in the role of parents, co-workers and the media on one's decision. However, opposed to prior studies, the role of friends is discarded on the relationship with intention to use credit cards. It may be derived from all respondents are mature with a stable job. They spend most of time for their family and their job. Sometimes, they go out with friends, and credit cards may not be appropriate for these occasions. Meanwhile, parents, co-workers play more and more frequently in their lives, and have increasing influences on their own.

Figure 3: Normal P-P plot of regression standardized residual

The hypothesis H2 is also accepted when perceived usefulness positively effects on intention to use credit cards at 1% significant level. Almost respondents preferred to credit cards because of their convenience. The convenience can be realized through that customers can purchase without cash (Barker and Sekerkaya, 1992; Sudhagar, 2012), or they can buy first and repay later (Alhassan and Yakubu, 2007). They also enhanced the function of cash advance as one of the most special features of credit cards (Kaynak and Harcar, 2001). Some customers supposed that credit cards help them accessing modern banking services with international standards.

The regression results showed that perceived behavioral control has positive impact on intention to use credit cards at 1% significant level. The hypothesis H3 is not violated. The study supposed that customers were very interested in accessibility and usability of credit cards (Barker and Sekerkaya, 1992; Alhassan and Yakubu, 2007; Sudhagar, 2012). They are likely to appreciate not only the availability of 24/7 services, but also the card acceptance network (Arbote and Busacca, 2009). However, customers had no agreement on the complexity of credit card usage. Some of them determined that using credit cards is simple, while it is difficult for others to pay bills by credit cards. Thus, the simplicity of credit card usage is discarded from the factor of perceived behavioral control.

Finally, the factor of perceived risk negatively effects on intention to use credit cards at the 1% significant level, the hypothesis H4 is accepted. The respondents identified clearly perceived risk and all measurements of this scale are reliable and acceptable. This result is consistent with the previous researches, for example Park et al. (2004), Littler and Melanthiou (2006), Fang and Peter (2007), which found that e-commerce, e-banking and e-payment are effected by perceived risk.

Conclusions

This study is a pioneering effort in applying combination of the TAM, the TPB and the TPR to credit card, which has developed inadequately with the existing potentials. The results indicate that all hypothesized relationships derived from the core models were confirmed. This study has two contributions to technology acceptance. First, it successfully applied a combination of the TAM and the TPB in credit cards' adoption. Consistent with previous studies (Hayhoe et al, 1999; Kaynak and Harcar, 2001; Alhassan and Yakubu, 2007; Ismail et al., 2014, Sudhagar, 2012), subjective norms, perceived usefulness and perceived behavioral control have positive impact on credit cards' adoption. Second, this study firstly considered and found that perceived risk has a significant influence on the intention to use credit cards. Park et al. (2004), Littler and Melanthiou (2006), Fang and Peter (2007) found the same results in their studies on acceptance of e-commerce, e-banking and e-payment.

Although this study provided substantive explanations for customers' acceptance of credit cards, it still has several limitations. It considered the intention to use credit cards from the effect of subjective norms, perceived usefulness, perceived behavioral control as well as perceived risk. However, customers are always reasonable, they accept to use credit cards when they are aware of the need to use in the future. In addition, this study has not determined the role of customers' demographic characteristics on their decision to use or not to use credit cards. Thereby, future studies should address these shortcomings.

About the study implications, with a better understanding of customers, banks enact policies aimed to encourage customers registering and using credit cards for goods and services. Changing consumers' perception toward credit cards should be carried out seriously and continuously. Customers should be equipped with adequate information about credit cards, from utilities, functionalities, using cost, to problems arising and how to deal them effectively. This information may help customers to have a comprehensive view of credit cards, a special product of modern banking services. Once customers are fully aware of credit cards, they are willing to accept the offers from credit card issuers and encourage others to use credit cards.

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