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Fintech Perceived Usefulness, Ease Of Use Among Consumers And Its Effect On Satisfaction And Continuous Usage: An Impractical Study On STC Pay And Apple Pay In Saudi Arabia's Retail Sector

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Abstract

This paper study the effect of perceived ease of use and perceived usefulness on customers' satisfaction with FinTech and its impact on the continuous usage of FinTech among Saudi customers. A survey was conducted using an electronic and self-administered questionnaire. A total of 250 questionnaires were distributed among Saudi users of FinTech services. The valid questionnaires were 121; they were tested using SPSS and AMOS. This study examines the following factors: perceived ease of use and perceived usefulness as independent factors and included satisfaction as a mediator factor to study how it mediates the relationship between the independent factors and the dependent factor. The continuous usage of FinTech was the dependent factor. Results reveal that both perceived ease of use and perceived usefulness have a significant effect on customer satisfaction, and the three variables have a significant positive effect on the continuous usage of FinTech among Saudi customers. Conclusion, study limitations, and future studies were provided.

Keywords: FinTech, Saudi Arabia customers, Countiouos usage, satisfaction, perceived usefulness, perceived ease of use.

1. Introduction

Recent years have witnessed significant technological development in all aspects of life. The financial sector is no deference. FinTech is the combination of finance and technology (Duma & Gligor, 2018); it is composed of IT technologies aimed at increasing the efficiency of the financial sector. Moreover, due to the advantages and value provided to the financial ecosystem, FinTech was able to distinguish its presence in the global financial industry. FinTech has created opportunities in the financial sector (Huei, Cheng, Seong, Khin, & Bin, 2018). Nowadays, smartphones or tablets have enabled almost anyone, anywhere, anytime to access financial services (Tran, Han, & Yun, 2018). Virtual currency, identity verification, and authorization blockchain applications, credential security, and analytics in big data technologies are all components of the FinTech ecosystem (Bhardwaj, Sinha, & Pal, 2019). In this study, we have chosen STC Pay and Apple Pay as the FinTech instrument to examine the Saudi consumers' usage of FinTech and their perceived usefulness, ease of use, and satisfaction with it. Apple Pay is a mobile payment technology in which it allows users to wirelessly pay in a faster and easier manner using their smartphones. The payment is accomplished by simply holding the smartphone near the point of sale and authenticate by resting their finger on the Touch ID or facial recognition (Liu & Mattila, 2019). It first launched in the United States in 2014 (Huang, 2017). STC Pay is a secure digital wallet that enables thousands of users to take full control and manage their finances anytime, from anywhere. Through a mobile app, it directly authorizes sending, receiving, and managing money (PR Newswire, 2019).

1.1 *Purpose of the study*

. To define how the perceived ease of use and the consumer perceived usefulness of FinTech are related to understand consumers better.

. To determine the impact of consumer perceived ease of use, perceived usefulness on continuous usage of FinTech among Saudi consumers.

. To analyze the consumer's satisfaction with FinTech with respect to consumer perceived usefulness and ease of use.

. Exploring the influence of satisfaction with FinTech on continuous consumer usage of FinTech.

1.2 *Importance of the Problem*

FinTech evolution has proven its presence through the exponential growth of the number of FinTech companies. This evolution has already affected many countries' economic, social, and environmental aspects (Varga, 2017). However, little research was conducted to examine FinTech in Saudi Arabia. The results of the study will provide more understanding of Saudi FinTech users. Moreover, it will increase the knowledge of the degree to which perceived ease of use and usefulness contribute to consumer satisfaction. Also, the study can help in identifying the demographics of Saudi FinTech users, which affect many aspects of business, such as marketing, business models, and ways to reach these consumers. The following sections include previous studies of the main variables in this study. The study design, statistical results, findings, implications, and limitations of this study.

2. Literature Review

2.1 Fintech in Saudi Arabia

Globally, FinTech is continuously developing. However, Saudi Arabia has not been introduced to it until lately, yet since its introduction, FinTech has been growing dramatically in Saudi Arabia (Abubotain & Chamakiotis, 2020). Since Saudi Arabia is working on reducing its reliance on oil, one of the moves is to reach that goal is expanding the FinTech sector. The first-ever FinTech licenses in Saudi Arabia was approved by the Capital Market Authority, were Riyadh-based start-up Manafa Capital and Scopeer were approved to operate on a trial basis. Moreover, Saudi Arabia's central bank has been supportive of this movement, where they signed a deal with Ripple to help the usage of blockchain among banks of Saudi Arabia (Geronimo, 2018). As a part of vision 2030, the Saudi Arabia monetary authority (SAMA) and the Capital Market Authority (CMA) have signed a memorandum of understanding to establish a Fintech center in Saudi Arabia (Saudi Arabia: SAMA and CMA sign agreement to establish FinTech center, 2019)

2.2 Usage of FinTech (CU)

The characteristics of the technology, along with the characteristics of users, determine the diffusion speed of new technology (Ryu, 2018). The most important factor that determines whether customers will use FinTech services is degree of positive or negative evaluation of actual users of the FinTech services (Chuang, Liu, & Kao, 2016) Moreover, previous research such as (Kim, Shin, & Lee, 2009) and (Ryu, 2018) stated that perceived benefit had much more influence than perceived risk as a factor in determining the continuous usage of FinTech. Researchers like (Kuo, Wu, & Deng, 2009) and (Sharma & Sharma, 2019) have concluded that satisfaction has a significant effect on continuance usage and the intention to repurchase. Retaining existing users is as important as attracting potential users (Tam & Oliveira, 2016). According to the technology acceptance model (TAM), it proved that perceived usefulness and ease of use have significantly affected the user usage of a technology (Moon & Kim, 2001). Furthermore, market value can be enhanced through customer retention (Livne, Simpson, & Talmor, 2011).

2.3 Perceived Usefulness (PU)

According to (Davis, 1989), perceived usefulness refers to "the degree to which a person believes that using a particular system would enhance his or her job performance". The most important component of the TAM model that affects users accepting technology is perceived usefulness (Moon & Kim, 2001). (Ryu, 2018) stated that convince through reducing the effort and time users spent in conducting financial transactions was the most significant factor affecting the perceived usefulness of using FinTech. (Rojas-Osorio & Alvarez-Risco, 2019) concluded that usage is highly affected by perceived usefulness. According to TAM theory, the user's perceived usefulness is highly influenced by their perceived ease so use (Lule & Mwololo Waema, 2012)(Davis, 1989). Perceived usefulness can be promoted as a reason to encourage continuous usage of technology and bringing back discontinuous users (Wu, Jayawardhena, & Hamilton, 2014).

2.4 Perceived Ease of Use (PEU)

(Davis, 1989) has defined perceived ease of use as "the degree to which a person believes that using a particular system would be free of effort". For this study, we used this definition of ease of use, "the degree to which consumers feel relaxed and make efforts in the process of trying to learn to use FinTech services" (Hu, Ding, Li, Chen, & Yang, 2019). The customer perceived ease of use of new technology should not be overlooked by perceived usefulness since they both are core factors for raising satisfaction with setting performance and activity. Moreover, ease of use combined with other factors such as the processes of operation are friendliness, and ease of downloading application programs can affect customer attitude toward FinTech services. (Chuang et al., 2016). Other researchers argued that the user-perceived ease of does not affect the usage of FinTech (Hu et al., 2019). However, generally, the younger generation is interested in new technologies and usually view them as easy to use (Motta, Cattaneo, & Gurtner, 2013).

2.5 Satisfaction (SAT)

Brand and service trust in Fintech Services are highly affected by customer satisfaction with the Fintech Service provided by enterprises (Chuang et al., 2016). (Parasuraman, Zeithaml, & Berry, 1988) Argued that customer or user satisfaction is conceptualized by customer or user experience-based overall evaluation derive from whether their overall expectation of the service obtained has been fulfilled. However, user satisfaction with technology is defined as to what extent is technology able to satisfy the different needs of users. Moreover, the main factor contributing to satisfaction with technology is its perceived ease of use; it is also the main predictor of user satisfaction (Calvo-Porral, Faíña-Medín, & Nieto-Mengotti, 2017). However, (Sharma & Sharma, 2019) argue that system quality does not significantly affect the user's satisfaction and intention to use. Yet it could have an indirect effect, and perceived value has a more significant effect on satisfaction (Kuo et al., 2009).

3. Research Methodology

3.1 Measures

This study aims at studying the impact of perceived ease of use and perceived usefulness on consumers' satisfaction and continuous usage of FinTech. The population under study involved all Saudi consumers who use FinTech. Simple random sampling was used to collect the sample. Participants were informed of the purpose of the study. Through an online questionnaire, respondents were able to answer the questions. Questions were initially in English, and an Arabic translation was supplemented with it. The questionnaire used a 5-points Likert scale ranging from (Strongly Disagree) to (Strongly Agree). Filtering questions were mention at the top of the questionnaire to ensure that all respondents were from Saudi Arabia and FinTech users.

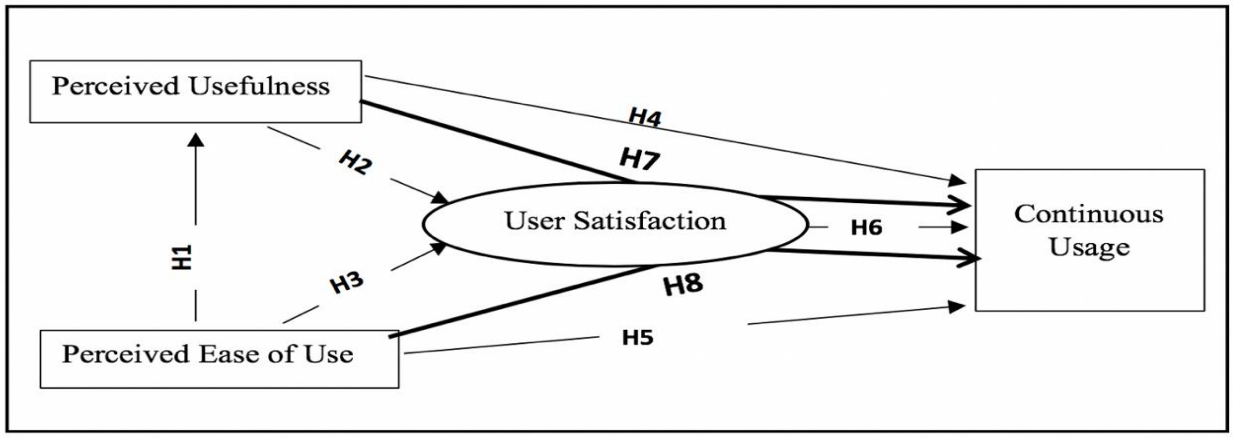
3.2 Instrument Design

The questionnaire was developed from existing scales to measure the main variables. The questionnaire contained four subscales; the first scale was about perceived usefulness, which included four questions. The second subscale was the perceived ease of use scale, which involved three questions. The first two scales were adopted from (Hu et al., 2019); however, FinTech was substituted with (STC Pay, Apple Pay). The third scale was about continuous usage, which included four questions that were adopted from (Ryu, 2018); meanwhile, FinTech was replaced with (STC Pay, Apple Pay). The last scale was about satisfaction, in included four questions that were adopted from (Baabdullah, Alalwan, Rana, Kizgin, & Patil, 2019); in these questions, Mobile banking was substituted with (STC Pay, Apple Pay). Moreover, the questionnaires involved demographic variable questions.

3.3 *Analysis Technique*

Collected data are analyzed by SPSS and AMOS; frequency and percentages were calculated to interpret the demographic characteristic of the students. 250 questionnaires were collected, however only 121 were validated for this study.

3.4 *Conceptual Model and Research Hypotheses*



Figer 1: Research Model

As shown in fig1, the research hypotheses are:

H1: There is a significant relationship between consumer perceived ease of use and the consumer's perceived usefulness.

H2: There is a significant relationship between consumer perceived usefulness and satisfaction with FinTech.

H3: There is a significant relationship between consumer perceived ease of use and satisfaction with FinTech.

H4: There is a significant relationship between consumer perceived usefulness and FinTech continuous usage.

H5: There is a significant relationship between consumer perceived ease of use and FinTech continuous usage.

H6: There is a significant relationship between satisfaction with FinTech and FinTech's continuous usage.

H7: Satisfaction mediates the relationship between Fin Tech perceived usefulness and continuous usage.

H8: Satisfaction mediates the relationship between Fin Tech perceived ease of use and continuous usage.

4. Results and Discussion

Descriptive statistics were used to describe the characteristics of the users (Gender, Age, Educational Level, and Income). As revealed in table (1), (38%) of users were males, and (62%) were females, the largest percentages of the user were females. According to Age, the largest percentage of users were of the age range of (18-29), and the lowest percent of the user were 60 and above. Thus, it is evident this stage of age range (18-29) users is the digital generation cohort and more motivated and technology oriented.

Table (1): The Percentages user's according to their Characteristic

Measure		Percent %
Gender	Male	38.0
	Female	62.0
	Total	**100.0**
Age	under 18	2.5
	18-29	61.2
	30-39	23.1
	40-49	9.1
	50-59	2.5
	60 and above	1.7
	Total	**100.0**
Educational Level	Less than high school diploma	1.7
	High school or equivalent	21.5
	Bachelor's degree	59.5
	Master's degree	14.9
	Doctorate	2.5
	Total	**100.0**
Monthly Income	Under 5000 RS	31.4
	5000 to less than 10,000 RS	24.8
	10,000 RS to less than 15000 RS	20.7
	15,000 RS to less than 20,000 RS	13.2
	20,000 RS and over	9.9
	Total	**100.0**

Regarding with Education level, the results indicated that (60%) of respondents have a bachelor's degree, followed by High school or equivalent (22%), Master's degree (15%), (3%) have Ph.D.'s, and lastly Less than high school diploma (2%). Thus, it is evident that the highest percentage of respondents was those with a bachelor's degree, whereas the lowest rate of respondents was those who have Less than a high school diploma.

Finally, it shows that (31.4%) of the respondents were their income under 5000 riyals. Whereas (9.9%) was for users with an income of more than 20,000. Hence, the largest percent of users with income under 5,000riyals and the lowest percent of users with an income of more than 20,000 riyals.

For the purpose of this research, construct validity has been assessed by using Pearson correlations analysis. The result of the test implies that items that are indicators of a specific construct should converge or share a high proportion of variance (Hair, Black, Babin, Anderson, & Tatham 2006). In other words, it assesses the degree to which measures of the same concept are correlated, with high correlation indicating that the scale is measuring its intended concept. The item-to-total correlations in this research all exceed (0.5), and all items were significant; therefore, each dimension proved to be valid.

The reliability of the scales was established by utilizing Cronbach's alpha as it is cleared in table (2). With respect to the research as a whole, Cronbach's alpha varied from (0.79 - 0.94), which is considered acceptable, as at least .70 coefficient is required to indicate an acceptable degree of reliability (Baumgartner, Strong, & Hensley 2002).

Table (2): Cronbach's Alpha for the Scales

Variables	No. of items	Cronbach's alpha
PU	1-4	.819
PEOU	5-7	.795
CU	8-11	.908
User Satisfaction	12-15	.943

The linear regression analysis of the original model reveals the model explains 75% of the variance in the dependent variable. The model is statistically significant. According to the result, the model is found to be highly fit to explain the adoption process.

Moreover, the authors selected SEM to conduct Confirmatory Factor Analysis CFA as the fundamental methodology of the current research. SEM is very useful for evaluating complicated models, especially one that has mediation or moderator; in this study, we have a mediation effect as such SEM can help uncover important relationships. Other methods, such as regression, cannot uncover measurement error, thus may result in an inflated outcome. (Rucker, Preacher, Tormala, & Petty, 2011) noted that "mediation analyses focus on examining the magnitude of indirect effects", and such effects are best accessed via SEM analyses. The study will use a single factor test to check whether variance in the data can be largely attributed to a single factor, in CFA this is done by checking the model fit indices in comparison to the measurement model (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003).

Next, all measures for the measurement models were subjected to CFA to understand the structure and underlying interrelationships of the structure. In addition, reliability and validity were also assessed. The goodness of fit for the study constructs yielded accepted results: CMIN ($\chi 2$) values all had significant p values, $p < .001$, GFI values were closer to 1, and 1 = perfect fit, NFI values were closer to 1, and 1 = perfect fit, IFI values were closer to 1, and 1 = perfect fit, TLI values were closer to 1, and 1 = perfect fit, CFI values were closer to 1, and 1 = perfect fit, RMR values < .060 represent perfect fit, Relative chi-square (R.$\chi 2$) were values between 1

Table3: Means, SD, & Correlations of Study Variables

Variables	α	Mean	SD	1	2	3	4
PU	.81	4.49	.56	-			
PEOU	.79	4.38	.69	.717**	-		
SAT	.90	4.33	.76	.821**	.768**	-	
CU	.94	4.44	.65	.790*	.778**	.820**	-
Note: Composite scores for each variable were computed by averaging respective item scores.							
Alpha and SD *Correlations are significant at the .05 level **Correlations are significant at the .01 level.							

and 5 are the accepted benchmark used in prior research (Browne, & Cudeck, 1993) and (McDonald, & Marsh, 1990).

In the above table (3), the researchers report alpha values, means, SD and the correlation coefficients showing the nature and direction of the association of the measurement variables. "PU positively correlates with SAT and CU respectively (r = .790, p < .01) (r = .821, p < .01). PEOU positively correlates with PU, SAT and CU respectively (r = .717, p < .01) (r = .768, p < .01) (r = .778, p < .01). Finally SAT positively correlates with CU (r = .820, p < .01).

In general, the significant relationships between the measurement variables provided primary support for the proposed hypotheses. Table (4) summarizes the results of hypotheses testing.

Table (4): Summary of Hypotheses Testing Results

Hypotheses	**β**	**ρ(sig)**	**Result**
H2: PU positively influences SAT.	β=.646	ρ<.001	**Supported**
H1: PEOU positively influences PU.	β=.587	ρ<.001	**Supported**
H3: PEOU positively influences SAT.	β=.234	ρ<.001	**Supported**
H4: PU positively influences CU	β=.461	ρ<.001	**Supported**
H5: PEOU positively influences CU.	β=.214	ρ<.001	**Supported**
H6: SAT positively influences CU.	β=.281	ρ<.001	**Supported**
H7: SAT mediates the relationship between Fin Tech PU and CU	β=.760	ρ<.001	**supported**
H8: SAT mediates the relationship between Fin Tech PEOU and CU	β=.715	ρ<.001	**supported**

The tests show that the first hypothesis result indicates that perceived ease of use does have a significant effect on perceived usefulness, which supports previous studies such as (Lule & Mwololo Waema, 2012). The second and third hypothesis result shows that both perceived ease of use and perceived usefulness have a significant effect on customer satisfaction. As mentioned before, perceived ease of use has an impact on perceived usefulness, where it affects customer satisfaction, confirming previous studies (Calvo-Porral et al., 2017). Furthermore, the results show that perceived ease of use, perceived usefulness, and customer satisfaction have an impact on customer's continuous usage. These results contradict (Alalwan, Baabdullah, Rana, Tamilmani, & Dwivedi, 2018), where they suggested that usefulness didn't affect customer usage. However, multiple researchers agree with the results. For example, (Ryu, 2018), (Sharma & Sharma, 2019), and (Moon & Kim, 2001).

5. Conclusion and Implications

The present research extends the line of studies on FinTech. The study provides insight into how perceived ease of use, perceived usefulness, and satisfaction affect the continuous usage of FinTech among Saudi customers. The finding of this study concluded that both perceived ease of use and perceived usefulness have a significant positive effect on customer satisfaction and continuous usage.

Based on the results of this study, the main findings have significant managerial implications. This finding reveals the importance of understanding the factors that affect the continuous usage of FinTech service since retaining exiting users is less costly than acquiring new ones (Weinstein, 2002). First, the results revealed that perceived

ease of use and perceived usefulness have to affect customers' continuous usage of FinTech. Designers can use these results to work on improving these features to develop services provided to obtain current customers. The findings confirm previous studies where it suggested that marketers should promote perceived ease of use of the FinTech service in combination with customers perceived usefulness since they both have a major effect on customer satisfaction (Chuang et al., 2016). Also, as the demographics of FinTech users shows, the majority of FinTech users are young, marketers can benefit from this finding so they can identify the target segment better.

Furthermore, this study contributes theoretically to the existing literature of FinTech usage within the domain of Saudi Arabia, where it produces new quantitative knowledge about the factors that influence the usage of FinTech among Saudi customers.

6. Limitation and Future Studies

Since little research has been conducted about FinTech in Saudi Arabia, this study provides meaningful information about Saudi FinTech. However, it has some limitations. One of the limitations is using the self-reported online survey as a tool to measure the variable, which doesn't include any direct interaction between the researcher and respondent, this can prevent the ability to clarify any questions in case of ambiguity that may influence the responded answer (Evans & Mathur, 2005). Furthermore, these surveys could allow some biases in the results (Moon & Kim, 2001). Another limitation is the research only considers two applications of FinTech, STC Pay, and Apple Pay, where they were used as measured to FinTech services. So, for future research, other FinTech services could be studied, such as virtual currencies, Robo advisors, and crowdfunding platforms in Saudi Arabia.

Moreover, other variables affecting the usage and continuous usage of Saudi consumers, such as perceived risk, could be studied to expand the understanding of Saudi FinTech users. Also, considering Saudi Arabia as one market and analyzing it without taking into account the differences between different cities within the country. So further research could be conducted through analyzing each city by itself to get more insight (Alalwan et al., 2018).

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Conflicts of Interest

The authors declare that there are no conflicts of interest.

Aauthor biography

Noura Abdulaziz Alshathry: Is a private business owner in Saudi Arabia. Noura is a master's degree graduate in business where she graduated as first on her class. She has experience in the banking system in Saudi Arabia since she previously worked in Saudi Central Bank (SAMA).

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Appendix A

Table (5): Test of Construct Validity

Factor	Item	Sig. (2-tailed)	Correlation of item-to-total
PU	PU 1	.000	0.724**
	PU 2	.000	0.785**
	PU 3	.000	0.839**
	PU 4	.000	0.877**
PEOU	PEOU 5	.000	0.887**
	PEOU 6	.000	0.869**
	PEOU 7	.000	0.774**
Continuous Usage	CU8	.000	0.847**
	CU9	.000	0.910**
	CU10	.000	0.904**
	CU11	.000	0.886**
User Satisfaction	SAT12	.000	0.928**
	SAT13	.000	0.932**
	SAT14	.000	0.942**
	SAT15	.000	0.894**

** Correlation is significant at the 0.01 level (2-tailed).

Appendix B

Table (6): Cronbach's Alpha for the Scales

Variables	No. of items	Cronbach's alpha
PU	1-4	.819
PEOU	5-7	.795
CU	8-11	.908
User Satisfaction	12-15	.943

Appendix C

Table (7): Fitness of the Model for Regression Analysis

Model	R	R Square	Adjusted R Square	S.D Error of the Estimate	F	Sig.
1	.866[a]	.750	.743	.38751	116.771	.000

a. Predictors: (Constant), PU, PEOU, CU.

b. Dependent Variable: User Satisfaction

* Statistically significant at the level of significance ($\alpha \leq 0.05$)

Appendix D

Table (8): Goodness fit indices for the measurement model

Study variables	GFI	NFI	IFI	TLI	CFI	RMR	RMSEA	$CMIN_{(df)}$	R. $\chi 2$
Single factor tests	.70	.61	.70	.68	.69	.056	.079	$2103.39_{(702)}$	2.99
PU	.84	.78	.88	.87	.88	.038	.052	$1198.77_{(642)}$	m1.87
PEOU									
SAT									
CU									

Note: R.$\chi 2$ = CMIN/df

Appendix E

Table (9): Path Analysis

IV	DV	β	S.E	t-value	Sig (p)
PU	SAT	.646	.095	6.820	***
PEOU	PU	.587	.052	7.207	***
PEOU	SAT	.234	.078	6.176	***
PU	CU	.461	.087	5.328	***
PEOU	CU	.214	.069	3.097	***
SAT	CU	.281	.071	3.941	***

Notes: *β, beta value; S.E, standard error.*

***Significant at the p < 0.05 level (two-tailed); ***Significant at the p < 0.001 level (two-tailed)*

Appendix F

Table (10): Effects distribution (Total, Direct and Indirect)

IV	DV	Total Effect	Direct Effect	Indirect Effect	Sig(*p*)
PU	SAT	.646	.646	.000	
PEOU	PU	.587	.587	.000	
PEOU	SAT	.234	.234	.000	
PU	SAT-CU	.760	.461	.299	***
PEOU	SAT-CU	.715	.214	.501	***
SAT	CU	.386	.281	.000	

Notes: **Significant at the p < 0.10 level (two-tailed); **Significant at the p < 0.05 level (two-tailed); ***Significant at the p < 0.001 level (two-tailed)*

Appendix G

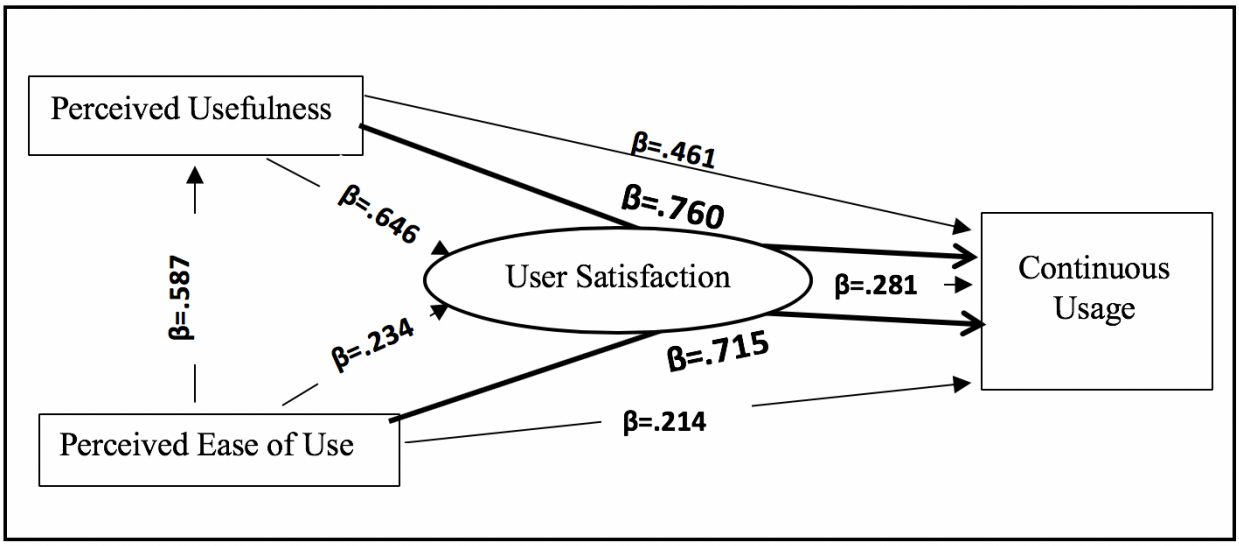

Figure 2: Research Model and Effects Analysis