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Effect of Performance Expectancy and Effort Expectancy on the Mobile Commerce Adoption Intention through Personal Innovativeness among Pakistani Consumers

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Abstract

Global environment is now changing drastically, and a revolutionary change has been observed in consumer buying behavior, radically shifting from physically environment to mobile commerce. Regardless of the previous researches that has executed by researches over the last two decades on the adoption behavior of mobile commerce in a field of marketing and IT, further empirical investigation is required to explore the individual characteristic such as personal innovativeness that stimulate the consumers to adopt the mobile commerce services. Primarily this research is conducted to understand the relationships among performance expectancy, effort expectancy, personal innovativeness and behavioral intentions in a Pakistani consumer market and how individual variable dubbed personal innovativeness mediates the relationship among performance expectancy, effort expectancy, personal innovativeness and behavioral intentions using framework of unified theory of acceptance and use of technology (UTAUT). The study has conducted a questionnaire-based survey of 320 users of mobile commerce in total. Structural equation modeling (SEM) technique is used through AMOS version 23. Results show that the performance expectancy and effort expectancy are significantly influence the behavioral intentions to adopt mobile commerce with significant effect of mediator and the results for this study could be fruitful for telecommunication, mobile commerce companies and marketers in formulating strategies to attract potential consumers effectively and efficiently. The present study enriches and adds value to limited literature on performance expectancy, effort expectancy, personal innovativeness and behavioral intentions. In addition, personal innovativeness has not been inspected earlier as a mediating variable.

Keywords: M-commerce, performance expectancy, effort expectancy, personal innovativeness, behavioral intentions.

1. Introduction

The traditional experiences of consumers have transformed in a mobile shopping environment. It is a popular way for modern consumers to search and pay for their purchasing via mobile platform (Hung, Yang, & Hsieh, 2012). People have adopted mobile devices since the last decade to perform the daily tasks. The reliability of consumers on their mobile devices in every purchase will continually grow, and they will be more and more dependent on it in the future (Kourouthanassis & Giaglis, 2012). The users of mobile devices (e.g., smartphone or mobile tablets) prefer those websites that they can navigate quickly via their devices (Zamfiroiu, 2014). Experts has reported that the size of mobile data is increasing around the globally every month; estimated as eleven exabytes during the period of 2012 to 2017. Despite the high penetration towards the mobile commerce transactions still there is need to discover the phenomena through which consumers are engaged in the mobile commerce activities. The focus of past researches is to explore the technological factors, how these factors influence consumers behavioral intention and scant studies are conducted those explore the individual characteristics. The present study bridges this gap and investigate the consumer personal characteristic that is personal innovativeness as a mediating variable along with the two technological variables that are performance expectancy and effort expectancy.

Revolutionary change has been accrued in Pakistan in the use of mobile technology. The volume of financial transaction in Pakistan is increasing every day and mobile commerce transactions are becoming the integral part of routine life. For instance, according to the vision of State Bank of Pakistan (SBP) that every bank should lunch their services in a branchless banking to facilitate the consumers, for this State Bank of Pakistan formulated its regulations in 2008 so that the financial transactions may be conducted through the mobile phones. Practically, mobile commerce models are working herein Pakistani consumer market e.g., Easypaisa (Telenor), Mobicash (Mobilink), HBL Express (Habib Bank Limited). United Bank Limited has introduce mobile application to facilitate their consumers to make transaction from distance. In a similar way, Standard Chartered Bank have their mobile application dubbed 'Breeze'. Online purchasing trends is growing rapidly, especially young consumers are choosing online environment for buying the products rather visiting physical store. The more recent trend in shopping in wireless environment by using mobile communication technology and it has an exponential growth rate. No longer, computer tools are using in purchasing but consumers are using their smart phones and other personal devices e.g., tablets (Benou & Bitos, 2008). The scant researches conducted that has explored factors effecting mobile commerce adoption intention. Therefore, it is decided to explore phenomena through which phenomena consumers are adopting the mobile commerce transactions in Pakistan i.e., which technological factors are affecting mobile commerce adoption with special reference of Pakistan and how the personal factor, "personal innovativeness" influence the behavioral intentions to adopt mobile commerce.

2. Literature Review

The term mobile commerce explains how business activities conducted through wireless environment. Clarke (2008) has defined mobile commerce that it covers all types of transactions conducted via mobile devices. In other words, purchasing and selling through the relatively new method called wireless mode. In the current research study mobile commerce is considered as any type of buying and selling that involved the

transference of ownership or right of products that is executed via mobile devices by accessing a computer-network (Chong, 2013). The concept of mobile commerce is evolved in 1997 in Helsinki, Finland. Officially, first time this term is used in is its place of birth. Albeit, mobile commerce is getting popularity everyday but there is not a single definition for this concept. According to scholars, minor differences are there in the interpretation of mobile commerce term. Various definitions exit in contemporary literature and author has adopted Tiwari and Buse (2007) definition of mobile commerce for this study that is "any transaction, involving the transfer of ownership or rights to use goods and services, which is initiated and/or completed by using mobiles access to computer-mediated networks with the help of mobile devices". According to Siau et al. (2001) both the concepts e-commerce and mobile commerce are not similar and are differentiate clearly. They have clearly mentioned that mobile commerce is operationally different from e-commerce and transactions through the mobile commerce model are conducted by internet over wire with the unique features that are associated with smart devices. The unique features of mobile commerce are: a) ubiquity b) personalization c) flexibility and d) dissemination.

Most of the existing research studies regarding consumer acceptance were conducted by using previous technology acceptance theories for instance, Theory of Reasoned Action abbreviated as TRA (Jiang, 2009), Innovation Diffusion Theory abbreviated as IDT (Lu et al., 2011), Technology Acceptance Model-TAM (Davis, 1989; Davis et al., 1992), Motivational Model-MM (Davis et al., 1992), Theory of Planned Behavior-TPB (Schifter & Ajzen, 1985; Ajzen, 1991), Model of PC Utilization-MPCU (Thompson et al., 1991), Decomposed Theory of Planned Behavior-DTPB (Taylor & Todd, 1995), Innovation Diffusion Theory-IDT (Moore & Benbasat, 1991), Socio Cognitive Theory-SCT (Compeau & Higgins, 1995). The Theory of Planned Behavior abbreviated as TPB (Ruiz-Mafe et al., 2013). Of course, TAM is used widely in the technology acceptance, but it is not free of limitation. The major limitation is that it does not explain how to acceptance mobile technology and how to use mobile technology (LópezNicolás et al., 2008). UTAUT theory has established in 2003 by Venkatesh et al. after the integration of well-established above eight theories from the existing literature. UTAUT (Venkatesh et al., 2003) theory is therefore has been selected as a theoretical base for the current research study along with individual variable.

Finally, UTAUT proposed four critical constructs from the above listed theories including *performance expectancy, effort expectancy, social influence* and facilitating conditions. These extracted constructs shape the consumer behavior to adopt information technology (IT). The construct *performance expectancy* is near the concepts; *relative advantage and perceived usefulness* (name of old constructs). *Effort expectancy* is near the concepts; *perceived ease of use* (name of old constructs) and these two constructs are being studied in the current study. The variable of interest is a behavioral intention to adopt mobile commerce.

2.1 Discussion on Study Dimensions

2.1.1 Performance Expectancy

Venkatesh et al. (2003) has defined the variable 'performance expectancy' as it is a degree to which one believes that the job performance will improve by using innovative technologies. The concept 'perceived usefulness' in the behavior models such as the

Technology Adoption Model (TAM) is consistent with the 'performance expectancy'. Other studies stated the 'performance expectancy' as it is individuals' perception that the usage of system will improve the performance (Min et al., 2008; Jambulingam, 2013).

2.1.2 Effort Expectancy

Likewise, 'performance expectancy' another major variable that is found in the UTAUT model is 'effort expectancy'. The study variable 'Effort expectancy' (EE) can be defined with respect to ease that is how an individual feel either he/she use technology in easy way and how much strength of ease is there in usage of technology. Based on the technology usage behavior (either easy or difficult) consumers decide either mobile commerce option is feasible in their practical lives.

2.1.3 Personal Innovativeness

Accompanied by the technological factors, consumers' individual characteristics on technological adoption are explored by investigators and have received much attention in an area of marketing and information technologies research for instance personal innovativeness (Thakur & Srivastava, 2014). Prior UTAUT models have not specifically addressed this individual variable personal innovativeness. According to the many researchers it is a considerable psychological antecedent to recognize the consumer behavior regarding technological adoption in different context. The examples of such context exist in past researches: e-payment adoption (Lin & Nguyen, 2011) and online purchasing intention in village (rural) tourism (San Martin & Herrero, 2012).

2.1.4 Behavioral Intention (BI) To Adopt Mobile Commerce

Behavior of consumers towards the technology or actual use of novel technology is predicted by the well-established predictor that is behavioral intention (Zhang et al., 2012). The concept behavioral intention is playing a central role in both theories of TAM and UTAUT introduced by Davis (1989) and Venkatesh et al. (2003). In accordance with Zarmpou et al. (2012) the variable behavioral intention defines as it is a subjective approach of consumers towards the adoptability of mobile commerce. The concept mobile commerce is not approached at its maturity but it is evolved since last two decades and not fully implemented by the developing nations, so it is decided for the current study is to explore the consumers' behavioral intentions of mobile commerce acceptance rather to investigate the actual use of mobile commerce and this practice is being followed in past researches (e.g., Chong et al., 2012; Dai & Palvia, 2009; Wei et al. 2009; Zarmpou et al., 2012).

3. Hypothesis Discussion

Various studies describe that the factor performance expectancy influences significantly the consumers' behavioral intention to accept and adopt mobile commerce adoption in different context for example, the study of Yu (2012) investigates the mobile banking, the research of Kuo and Yen (2009) examines m-data services, Shin (2009) exposes the m-payment and m-stock trading behavior explores by Tai and Ku (2013). Specifically, the researcher Yu (2012) has investigated the determinants in the adoption of mobile banking. The specific theory that is employed during this investigation is UTAUT. For this purpose, a sample of 441 participants has been drawn for this study and has inference that the consumers' intention to adopt m-banking is majorly affected by two factors that are performance expectancy and social influence. Furthermore, the researches Tai and Ku

(2013) have explored the derivers associated with the m-stock trading in the lens of stock investor. To investigate stock investor intention about m-stock trading, 329 stock investors from Taiwan are participated in a phase of data collection. After analyzing the received data, it is observed that the determinant performance expectancy is significant to measure the behavioral intention in the usage of m-stock trading along with other two factors. This dimension is like to the perceived usefulness factor that is described in TAM. Generally, it is perceived from the existing literature that consumers want to adopt emerging technologies if the consumers believe that the new technology will help and useful to them (Alalwan et al., 2017). Repeatedly it has found by the researchers that the perceived usefulness is a significant determinant of consumers' continuance intentions towards mobile commerce in Taiwan (Hung et al., 2007; Lin & Shih, 2008) Performance expectancy is an individual perception that the usage of mobile commerce applications can be helpful while conducting business activities. The results of this dimension are mixed, however, some of researches have supported the positive relationship between perceived usefulness and behavioral intention to adopt mobile commerce (Faqih & Jaradat, 2015; Liébana-Cabanillas et al., 2017), on the other hand Zhang et al., (2012) reported that there is no significant relationship. The determinant of performance expectancy in much more than the perceive usefulness that contains the extra aspects e.g., 1) relative advantage and 2) extrinsic motivation (Huang & Kao, 2015). So, it can be possible that the findings of performance expectancy may differ from the perceived usefulness for instance, the results of the study Jaradat and Rababaa (2015) explained that performance expectancy influences the adoption behavior of mobile commerce significantly and this research is conducted in Jordan. Currently, there are more evidences in literature that indicate the same findings about the performance expectancy that it is significant predictor of mobile payments adoption (Alalwan et al., 2017; Morosan & DeFranco, 2016; Oliveira et al., 2016). A more recent study executed in Taiwan (Chou et al., 2018) that is conducted with 435 valid responses have us used performance expectancy as predictor of mobile commerce. The study results indicated that performance expectancy significantly influence the consumers' behavioral intention in the mobile commerce environment.

As aforementioned literature is demonstrating that performance expectancy is most important factor that has strong effect on consumers' behavioral intention to adopt mobile commerce technologies, Therefore, the following hypothesis is proposed:

- **H_1:** A positive relationship exists between performance expectancy and behavioral intentions to adopt mobile commerce technology.

As aforementioned, effort expectancy is equitant to the concept easy to use i.e., at what extant consumers feel about technology that it is easy to use (Jambulingam, 2013). The adoption behavior may vary across the culture, so consumers behave differently around the globe. For instant, Teo and Noyes (2014) have conduced study in Singapore on a behavioral intention. The data is collected from the pre-service registered teachers at the National Institution of Education in Singapore through the survey questionnaire. They have analyzed the data set of 264 (received responses), SEM statistical technique is applied and have found that effort expectancy influences the consumers behavioral intention to use technology. So, effort expectancy is a considerable factor of users' behavioral intentions. Consumers' intentions to use information technology is adopted if it is perceived by consumers that it is easy to use. Similar results have been found in the

study of Tan et al. (2012). This study is conducted at Malaysia to investigate the mobile learning behavioral adoption. The data is collected through the questionnaire from the university students belongs to private sector situated at Perak state and total received responses are 402. Multiple regression technique is applied, and results show that the ease of use is a significant determinant of the adoption of mobile learning. A strong relation exists between ease of use and adoption of mobile learning. The corollary of this research findings indicates that the demographics are also considerable elements in technology adoption like age in this case is significant. Young consumers are more suitable and consistent with the factor ease of use i.e., youngsters can easily adopt mobile learning. The study predictor effort expectancy is equivalence to old construct perceived ease of use. The results of study Faqih and Jaradat (2015) have explored that perceived ease of use is an important indicator of the adoption behavior of mobile commerce. Likewise, the findings of a study conducted in Jordan have shown the similar results that effort expectancy is positively associated with consumer intention to use mobile commerce. On the other hand, recent researches that have studied on the adoption intention of other m-technologies have not shown the direct relationship between effort expectancy and intention to use (Morosan & DeFranco, 2016; Oliveira et al., 2016). Whereas, an indirect effect of effort expectancy on behavioral intention has observed i.e., effort expectancy has positive effect on performance expectancy and hence on behavioral intention (Alalwan et al., 2017; Herero et al., 2017; Oliveira et al., 2016). A more recent study executed in Taiwan (Chou et al., 2018) and study results indicated that effort expectancy significantly influence the consumers' behavioral intention in the mobile commerce environment.

Abovementioned discussion and findings are demonstrating that *effort expectancy* (i.e. consumers perceive it an "ease of use") is most important determinant that has a direct and strong influence on consumers' behavioral intention to adopt mobile commerce technologies, Therefore, the following hypothesis is proposed:

- **H_2:** A positive relationship exists between effort expectancy and behavioral intentions to adopt mobile commerce technology.

Some of the previous studies conducting to explore factors affecting the mobile commerce have demonstrated that the individual psychological construct, personal innovativeness is a valuable predictor that influence the users' behavioral intention to adopt mobile commerce. The examples of such studies are; 1) of Dai and Palvia (2008) on mobile commerce and 2). Kim et al. (2010) on m-payment. It is inferenced and deducted from the studies of Ko et al. (2009) and Kuo and Yen (2009) that there is positive association between personal innovativeness and technology adoption i.e., the novel technology adoption is more likely by those consumers of higher personal innovativeness. Truong (2013) argue that the construct personal innovativeness is well known, established, and universally accepted in such a way that all the consumers around the globe are supposed to be similar who have willingness to accept new things. According to Truong, the individual psychological characteristic, personal innovativeness i.e., novelty looking for is not eroded by consumers' cultural differences. In the study of Kuo and Yen (2009) personal innovativeness have a direct effect on behavioral intention and have effect indirectly on behavioral intention through perceived usefulness (i.e., performance expectancy) perceived ease of use (i.e., effort expectancy). The study predictor effort expectancy is equivalence to old construct perceived ease of use. The

results of study Faqih and Jaradat (2015) have explored that perceived ease of use is an important indicator of the adoption behavior of mobile commerce. Likewise, the findings of a study conducted in Jordan have shown the similar results that effort expectancy is positively associated with consumer intention to use mobile commerce. On the other hand, recent researches that have studied on the adoption intention of other m-technologies have not shown the direct relationship between effort expectancy and intention to use (Morosan & DeFranco, 2016; Oliveira et al., 2016). Whereas, an indirect effect of effort expectancy on behavioral intention has observed i.e., effort expectancy has positive effect on performance expectancy and hence on behavioral intention (Alalwan et al., 2017; Herero et al., 2017; Oliveira et al., 2016). A more recent study executed in Taiwan (Chou et al., 2018) and study results indicated that effort expectancy significantly influence the consumers' behavioral intention in the mobile commerce environment.

Considering the above arguments and collective findings in the current literature, it has been demonstrated that the personal innovativeness is important construct that may play the role of mediator, therefore, it can be hypothesized that:

- **H_3:** Personal innovativeness will mediate the relationship between performance expectancy, effort expectancy, and behavioral intentions to adopt mobile commerce.
- **H_{3a}:** Personal innovativeness will mediate the relationship between performance expectancy and behavioral intentions to adopt mobile commerce.
- **H_{3b}:** Personal innovativeness will mediate the relationship between effort expectancy and behavioral intentions to adopt mobile commerce.

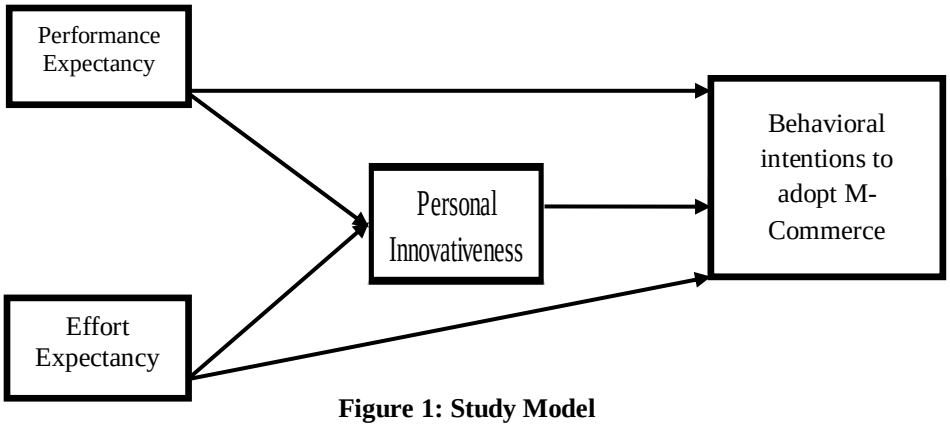

Figure 1: Study Model

4. Research Methodology

Positivist philosophy is assumed in the study because of the nature of the research that is conducted to explore the determinants of consumers' behavior in the adoption of mobile commerce. The human behavior is being recognize through the positivism framework so, objectivist approach is used in collecting the numerical data for analyses. The reason of selection of positivism philosophy is that it is consistent and match with existing marketing studies in literature of same nature in which consumer behavior is explored (Boateng & Owusu, 2013). Therefore, the philosophical stance that is taken for the current research is positivism. Relating to this philosophy the appropriate research approach that is incorporated for the study is deductive. Deductive approach supports the

researches to formulate the hypotheses from the existing theory and further allow to develop a specific research design to test it (Silverman, 2013). In case of present research, the aim of study is to identify the significant determinants that effect the consumers' behavioral intentions to adopt the mobile commerce technology. For this purpose, two kinds of hypotheses are developed first type formulate the hypotheses that are related to the technological factor; either technological factor performance expectance and effort expectancy are positively influence to the behavioral intention to adopt mobile commerce and second type of hypotheses are related to indirect path, either individual level characteristics personal innovativeness is mediating the relationship between independent and dependent variable. Further, explanatory survey research strategy is used to explore the research question. The survey research design that permits to work with positivist approach and allow researcher to test the theory and it is scientific approach to investigate research Saunders et al. (2012). Regarding the nature of study, in the current study the numeric data is expected to collect so, study is conducted by using positivist research philosophy with quantitative-survey technique. The explanatory study is involved because this study contributes an explanation in the existing knowledge. Further, the type of investigation is correlation owing to the involvement of number of variables in this study. As aforementioned, for current study quantitative approach is appropriate so, the researchers' involvement is minimal. The study setting is non-contrived. The unit of analysis is individual because author is going to collect data from the university students having knowledge about mobile commerce technology. It is a cross-sectional study.

Primary data is gathered by visiting the respondents through survey. The questionnaire is adopted from the previous studies and the questionnaire is comprised of 16 items. Each dimension is explained by at least three elements. Measuring items are shown in appendix A. Author has selected the students of public and private institutes across Pakistan that are enrolled in business schools accredited at National Business Education Accreditation Council (NBEAC) as a target population. The logic behind the selection of students at university level is, they are actively used the smartphones and internet, young consumers have grown up with new technologies. Hypotheses are related to mobile commerce, so smartphone users are highly relevant. The reliability and validity of the research instrument is tested before and after the pilot testing through the Cronbach's alpha coefficient (α) and Average Variance Explained (AVE) respectively to avoid any possible error and all the numerical values are in the acceptable range. The overall value of Cronbach's alpha coefficient is $\alpha = .835$, according to Brown et al., (2000) the acceptable vale is 0.70 and hence, within the range.

According to Lian and Xiu-zhen (2010) and Islam et al. (2010), there are four major categories of mobile commerce services. More explicitly, these categories 2) commercial transactions (e.g., shopping, and banking etc.), 2) entertainment (e.g., download videos and TV streaming services etc.), 3) information (e.g., news and searching Islamic Hijri calendar etc.) and 4) Communication and these types of users are considered in a target population for the current study. As for as sampling design is concerned, author is used multi-stage sampling technique i.e., segregate the target population in two strata public and private universities then define the proportion of target population which one is higher finally get required sample by applying the convenience sampling. The advantage of convenience sampling is that it allows researcher to collect large sample in a quick and

easy way (Yang, 2005) and is appropriate for this study because past studies are applying this sampling technique in similar type of studies (e.g., Koury & Yang, 2010; Harris et al., 2005 and Tai & Ku, 2013).

Tanaka (1987) explained that in the 'item response theory', 10 responses are sufficient for one item (10:1). Generally, 10:1 case, responses to item ratio is used but some researchers recommended higher ratio of 20:1 (Kline, 2013) and later ratio is adopted for this study. As aforementioned all the construct items are adapted from the previous studies and total 1668 items are measured on Likert-scaled. The sample size is 320 (16*20=320) therefore, 320 questionnaires in hard form are distributed among respondents in which 300 fully filled responses are received so, the response rate is 93.75%. Field work to collect data methods was simple and collected by visiting the respondents and collected data was entered in SPSS version 23, AMOS version 23 for analyses of data and various statistical techniques have applied after feeding data and codification.

5. Results & Interpretation

5.1 Analysis Procedure

After data screening and cleaning, preliminary analysis has done because it leads towards appropriateness of data set to investigate for further statistical techniques and to apply these tests author used IBM SPSS version 23. Further, Structural Equation Modeling technique is used that allows research to test the inter dependency among variables and explore the nature of relationships. One of the advantage using SEM is that it assesses the interrelated dependency in a one phase. If in a study the number of dependent, independent, mediating, moderating variables are more than one then SEM is more appropriate technique to examination the hypotheses. SEM can be permitted to evaluate the fitness of model overall. Visually, the relationships are presenting through the path diagram and observed variables are shown in rectangles and unobserved variables are shown in elliptical or circle. Anderson and Gerbing (1982) recommend two approaches for model in SEM; first one is to draw measurement model and second one is to test structural model while Kline (1998) have considered CFA (confirmatory factor analysis) is compulsory with max. likelihood estimation process to measure the convergent validity and discriminant validity. To apply the statistical technique SEM by using so-called data analysis software i.e., AMOS version 23. All the basic assumptions e.g., normality, linearity multicollinearity, homoscedasticity etc. of SEM are confirmed in a pre-testing phase. After the satisfactory results regarding basic assumptions of SEM test is performed.

5.2 Preliminary Analysis

Respondent's biographical profile is explained through their gender, age, marital status, education and institution and data this data is analyzed through frequencies tables and show that 49.8% respondents are male and 50.2% are female and 51.2% respondents belong to public sector and 48.8% belong to private sector. This private-sector and public-sector ratio is predefined in a sampling strategy. Reliability of instrument is tested through the Cronbach's Alpha (α) and overall value of α is 0.835. Convergent validity of instrument is tested by calculating composite reliability (shown in table 1) and the values of all constructs are in acceptable range and greater than 0.60 (Malhotra, 2010) so there is no issue of instruments' reliability and convergent validity. Whereas, the values of

average variance extracted (AVE) are shown in table 1 and are above 0.50. So, the discriminate validity is confirmed too (Kline, 2005; Hair et al., 2010). Correlations among variables are reflected by the Pearson correlation coefficient, all the correlation values of Performance Expectancy, Effort Expectancy, Personal Innovativeness with dependent variable that is "Behavioral Intentions" are significant at the 0.01 level (2-tailed) (i.e., r = .325, .248, .444, p<0.01.). The statistical vale of KMO and Bartlett's test of sphericity is 0.789 (p < 0.001) that show that sample is adequate. The preliminary analyses of course allow researcher to proceed for further.

Table 1: Cronbach's Alpha, Composite Reliability and Average Variance, Extracted Values of the Measurement Scale

Variables	No. of Items	Cronbach's Alpha	Composite Reliability	AVE
Performance Expectancy	5	0.733	0.678	0.518
Effort Expectancy	3	0.727	0.722	0.508
Personal Innovativeness	4	0.810	0.678	0.525
Behavioral Intentions	4	0.731	0.750	0.575

4.3 Measurement Model

Table 2: Standardized Regression Weights for Constructs

Variables			Estimate	p-value
BI_13	<---	B_Int	0.687	.000
BI_14	<---	B_Int	0.773	.000
BI_15	<---	B_Int	0.655	.000
BI_16	<---	B_Int	0.488	.000
PE_01	<---	P_Exp	0.695	.000
PE_02	<---	P_Exp	0.611	.000
PE_03	<---	P_Exp	0.562	.000
PE_04	<---	P_Exp	0.439	.000
PE_05	<---	P_Exp	0.388	.000
EE_06	<---	E_Exp	0.541	.000
EE_07	<---	E_Exp	0.798	.000
EE_08	<---	E_Exp	0.695	.000
PI_09	<---	P_Ino	0.131	.000
PI_10	<---	P_Ino	0.990	.002
PI_11	<---	P_Ino	0.539	.000
PI_12	<---	P_Ino	0.922	.001

Note. B_Int & BI = Behavioral Intentions, P_Exp & PE = Performance Expectancy, E_Exp & EE = Effort Expectancy, P_Ino & PI = Personal Innovativeness

All the required values of fit indexes are within the recommended range (see Table 3). The value of X^2/d.f. is acceptable up to 3 and herein the study measurement model the value is 2.304 and the value of GFI-goodness of fit index = 0.903 (> 0.9), the value of AGFI-adjusted goodness of fit index = 0.955 (> 0.80), the values of RMSEA-root mean square error of approximation 0.046 (< 0.08). The value of RMR- root mean square residual, NFI-normed fit index, CFI-comparative fit index, PCLOSE are 0.027 (< 0.08), 0.919 (> 0.90), 0.952 (> 0.95) and 0.814 (> 0.05) Hence, all the resultant values are significant and above the recommended range hence, model is good fit. Table 2 shows all the standardized regression estimated values and clearly depicted from table values that all the factor loadings are significant at p < .001 and above the acceptable threshold values.

Table 3: Model Fit Summary for Measurement Model

Fit indices	**Recommended values**	**Results**
X^2/d.f.	< 3	2.304
GFI (goodness of fit index)	> 0.9	0.903
AGFI (adjusted goodness of fit index)	> 0.80	0.955
RMSEA (root mean square error of approximation)	< 0.08	0.046
RMR (root mean square residual)	< 0.08	0.027
NFI (normed fit index)	> 0.90	0.919
CFI (comparative fit index)	> 0.80	0.952
PCLOSE > 0.05 0.278	> 0.05	0.814

Table 4: Standardized Regression Weights for Structural Equation Model

Path of Variables			**Estimate**	**S.E.**	**C.R.**	**p-value**
Personal_Ino	<---	Performance_Exp	0.168	0.010	3.699	.000
Personal_Ino	<---	Effort_Exp	0.304	0.013	6.689	.000
Behavioral_Int	<---	Performance_Exp	0.331	0.032	8.322	.000
Behavioral_Int	<---	Personal_Ino	0.452	0.131	13.054	.000
Behavioral_Int	<---	Effort_Exp	0.220	0.047	5.195	.000

All the required values of fit indexes are within the recommended range. The value of X^2/d.f. is acceptable up to 5 and herein the study SE model the value is 3.399 and the value of GFI-goodness of fit index = 0.998 (> 0.90), the value of AGFI-adjusted goodness of fit index = 0.957 (> 0.80), the values of RMSEA-root mean square error of approximation 0.062 (< 0.08). The value of RMR- root mean square residual, NFI-normed fit index, CFI-comparative fit index, PCLOSE are 0.001 (< 0.08), 0.998 (> 0.90), 0.999 (> 0.95) and 0.278 (> 0.05) Hence, all the values of fit indexes are significant and above the recommended range hence, model is good fit.

Table 4 shows all the standardized regression estimated values and clearly depicted in said table that all the factor loadings are significant at $p < .001$ and above the acceptable threshold values. Therefore, variable paths in structural equation model are significant for all theoretical relationships.

5.3 Mediation Analysis

Table 5: Inference for Mediation

Hypothesis	**Direct Beta w/o Med**	**Direct Beta w/Med**	**Indirect Beta**	**Mediation type observed**
[1]Performance_Exp-Personal_Ino-Behavioral_Int	β = 0.284 p = 0.001	β = 0.023 p = 0.611	β = 0.225 p = 0.001	Full Mediation
[2]Effort_Exp-Personal_Ino-Behavioral_Int	β = 0.284 p = 0.001	β = 0.160 p = 0.001	β = 0.088 p = 0.001	Partial Mediation

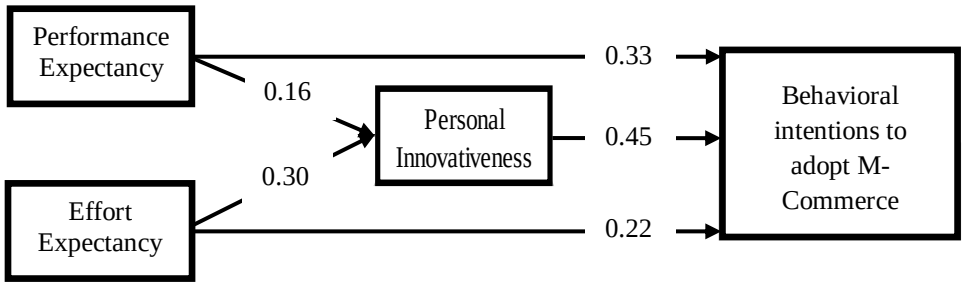

Figure 2: Path analysis

Mediation 1 as depicted in table 5 that direct effect in the absence of mediator is significance and the direct effect in the presence of mediator is not significance whereas indirect effect of mediator that is significant between PE and BI. So, it is obvious that the direct effect of PE towards BI is significant without mediator and is insignificant with mediator and it is significant through indirect path. Hence, PI fully mediates the relationship between PE and BI.

Mediation 2 as depicted in table 5, both the direct effects, in the absence of mediator and in the presence of mediator are significance whereas indirect effect of mediator that is also significant between EE and BI. So, it is described that the direct effect of EE towards BI is significant without mediator and with mediator and even it is significant through indirect path. Therefore, the final decision about the mediator has reported that is PI partially mediates the relationship between EE and BI.

5. Discussion, Implications and Conclusion

5.1 Discussion of Findings

First hypothesis (H_1) propose to establish relationship between performance expectancy (PE) and behavioral intentions (BI) to adopt mobile commerce technology. The

numerical value of $r = 325$, $p < 0.01$ conveyed a strong positive relationship between PE and BI. Statistical value of Standardized regression weights ($\beta = 0.331$, $p < 0.001$) from the structural equation modeling show a significant (positive) relationship between PE and BI and SEM analysis is confirmed the adequacy of a hypothesized model. This finding of the current study is matching with the past research (Chou et al., 2018) and the study results of Verkijika (2018) is contradicted with the present study. According to Verkijika (2018), performance expectancy has no direct effect on consumer behavioral intention but effort expectancy positive effect on performance expectancy. The reason of matching and differing the results is that the first study is conducted in Asia (Taiwan) and second study is conducted in Africa (Cameroon). Performance expectancy is an important predictors of mobile commerce adoption intention like other scholars (Faqih & Jaradat, 2015; Liébana-Cabanillas et al., 2017). Consumers opt the mobile commerce services if they feel confidence on the usefulness of services. Hence, the first hypothesis (H_1) is fully supported as the behavioral intention to adopt mobile commerce is a function of usefulness i.e., PE is a significant determinant of adoption behavior.

Hypothesis second (H_2) is assumed the relationship between effort expectancy (EE) and behavioral intentions (BI) to adopt mobile commerce technology. The correlational coefficient value is $r = 0.220$, $p < 0.01$) that elaborates a significant positive relationship between EE and BI. Standardized regression weights through SEM is calculated that shows significant (positive) relationship between EE and BI that is $\beta = 0.266$ ($p < 0.001$). So, the interpretation of findings has specified that the EE impact on consumers' adoption intentions of mobile commerce positively significant. This finding of the current study is matching with the past research (Chou et al., 2018). Effort expectancy is an important determinant of behavioral intention of mobile commerce like other scholars (e.g., Aloudat et al., 2014; Faqih & Jaradat, 2015). Results of the study revealed that consumers in Pakistan are using mobile commerce services and believe that mobile commerce technology is easy to use and easy to understand. Hence, the second hypothesis (H_2) is fully supported as the behavioral intention to adopt mobile commerce is a function of ease of use. i.e., EE is a significant determinant of adoption behavior.

Third hypothesis is proposed to test the mediational effect of personal innovativeness between independent and dependent variables. Mediation analysis is applied in SEM through bootstrapping. In case of sub hypotheses, H_{3a} and H_{3b}; β_a is a direct beta without mediation, β_b is a direct beta with mediation, and β_c is an indirect beta and these beta values are calculated to check the mediational effect. The calculated values of three betas of the two sub hypotheses are: ($\beta_a = 0.284$, $p = 0.001$; $\beta_b = 0.023$, $p = 0.611$; $\beta_c = 0.225$, $p = 0.001$), ($\beta_a = 0.284$, $p = 0.001$; $\beta_b = 0.160$, $p = 0.001$; $\beta_c = 0.088$, $p = 0.001$), respectively. The results of H_{3a} indicate that there is full mediation. The results of H_{3b} show that there is partial mediation. Hence, the third hypothesis (H_4) is fully supported that PI mediates the relationship between PE & BI and EE & BI. The previous studies also support that personal innovativeness is a significant factor that positively influence on adoption behavior of mobile commerce (e.g., Lu, 2014; Luqman et al., 2016; Anwar, 2018). Based on the discussion of H_3 it is suggested to concerns that offering mobile commerce services that they should consider personal innovativeness (i.e., individual characteristic) while segmenting the consumers and should launch the services accordingly.

5.2 Theoretical Implications

Of course, various studies have published that investigate the behavioral intentions to adopt mobile commerce, but the researches that empirically testing the individual differences to adopt the mobile commerce is in emerging phase (Choi et al., 2011). The individual characteristics: personal innovativeness is imbedded in an original UTAUT framework and empirically it is tested in Pakistani market by collected data from young consumers of mobile commerce and hence this study is contributing in the existing body of knowledge. The empirical results of the study have exposed that personal innovativeness is positively significant effect on the adoption intentions of mobile commerce hence, hypothesis related to personal innovativeness is supported. Personal innovativeness mediates the relationships between performance expectancy, effort expectancy and behavioral intention. Conclusively, study insights have contributed in the knowledge creation that the individual features in the mobile commerce technology adoption among the young consumers in Pakistan.

5.3 Managerial Implications

The managerial implications of the study are recommended to the business practitioners of mobile industry that assist to judge the successful drivers (i.e., performance expectancy and effort expectancy and the mediating factor personal innovativeness) in the development of mobile applications and these managerial contributions help the practitioners that are working in the field of m-commerce adoption for young consumers in Pakistan. Performance expectancy is found important and should built-in by experts that providing mobile commerce services while introducing their services so that mobile commerce services become more beneficial to their consumers. Therefore, it revealed from the results that users in Pakistan are opting mobile commerce services because of its productive nature. Secondly, effort expectancy is equal to the ease of use so, it is recommended to the practitioners to make the user-friendly services and that are easy to understand, and they have tried their best to make easy as possible. For this they may add the bilingual interfaces and make the design simple while offering the services in market. Personal innovativeness is observed as an influential driver of adoption intentions towards mobile commerce among the young Pakistani consumers. It facilitates the m-commerce services providers to segregate the consumers in two segments based on individual consumer characteristic: consumers who are highly personal innovative and those who are low personally innovate before the implementation of marketing strategy. Eventually, marketing expert may use the social media tools for instance, Facebook, Twitter etc. in Pakistan in place of traditional ways of communication channels (e.g., TV) to appeal the target users effectively and these modern communication strategies could facilitate the practitioners to deliver the effective massages for young consumers.

5.4 Limitations and Associated Opportunities for Future Research

Following are the limitations of the present study and associated future directions:

The present study has various limitations that may address in future researches. All the respondents are taken from Pakistan for this research and ignore cross cultural context that's why the results of the study have the issue of generalizability in western societies because of substantial cultural differences. Moreover, respondents are taken from the university students that are user of mobile commerce technology that may create problem in the way of external validity. In accordance with Pahnila et al. (2011) majority of

university students in a data set have not typical representative of online purchase behavior. This study also put the limits on generalizability as the data is collected from young consumers and age belongs to the 20-30 years segment. These limitations may hinder the generalizability of study results. Future opportunity is associated with these limitations that may lead researchers to do the future studies by collecting data from the respondents of different ethnicities or by conducting future studies in a multi-country and comparison can be drawn to explore the consumers' adoption intentions in a various cultural context. Various age group consumer may help in depth understanding of consumers' behavioral intentions to adopt mobile commerce.

The current study is a cross-sectional and limits the study due to its temporal nature that has investigated the consumers' perception and adoption intentions at a specific time shot. It is suggested by researchers that perception and adoption intentions vary with the passage of time so, gained information may merely be valid for the current situation in Pakistan. Therefore, the results of the study may not be appropriate for upcoming period because data may be considered as redundant or outdated. This limitation of the study may overcome in future studies by applying the longitudinal time frame for the investigation of consumers behavioral intention to adopt mobile commerce over time so that study model would be authenticated in different time shots for instance, future researches may be conducted to study the consumers' adoption intentions in steps: a) pre-adoption and b) post adoption of m-applications.

5.5 Conclusion

Significance of mobile commerce among the young consumers of Pakistani is in progress and the current study exposes that why users in Pakistan are accepting mobile commerce services and how performance expectancy, effort expectancy and personal innovativeness motivate to adopt it. To achieve the study aims, author has proposed a model that considers both technological factors and individual characteristic: [1]Performance Expectancy, [2]Effort Expectancy (from the UTAUT model) and [3]Personal Innovativeness as a supplementary variable which extends the UTAUT model. All the study constructs are adopted from literature that have identified that these factors determine the adoption intention of consumers. The results of the study have demonstrated that three study factors have positive significant effect on the adoption intention in consumer market with reference to Pakistan therefore, all the projected hypotheses H_1, H_2, and H_3 are fully supported.

REFERENCES

Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes, 50*(2), 179-211.

Alalwan, A. A., Dwivedi, Y. K., & Rana, N. P. (2017). Factors influencing adoption of mobile banking by Jordanian bank customers: Extending UTAUT2 with trust. *International Journal of Information Management, 37*(3), 99-110.

Aloudat, A., Michael, K., Chen, X., & Al-Debei, M. M. (2014). Social acceptance of location-based mobile government services for emergency management. *Telematics and Informatics, 31*(1), 153-171.

Ali, A. (2018). *Drivers and Barriers of Mobile Commerce: The Role of Consumers' Personal Innovativeness.* (MSc), Brock University, Ontario.

Anderson, J. C., & Gerbing, D. W. (1982). Some methods for respecifying measurement models to obtain unidimensional construct measurement. *Journal of Marketing Research, 9*(4), 453-460.

Benou, P., & Bitos, V. (2008). Developing mobile commerce applications. *Journal of Electronic Commerce in Organizations, 6*(1), 74-88.

Boateng, K. A., & Owusu, O. O. (2013). Mobile Number Portability: On the Switching Trends among Subscribers within the Telecommunication Industry in a Ghanaian City. *Communications of the IIMA, 13*(4), 75-90.

Brown, A., Cramer, L. D., Eckhaus, D., Schmidt, J., Ware, L., & MacKenzie, E. (2000). Validity and reliability of the dexter hand evaluation and therapy system in hand-injured patients. *Journal of Hand Therapy, 13*(1), 37-45.

Compeau, D. R., & Higgins, C. A. (1995). Computer self-efficacy: Development of a measure and initial test. *MIS Quarterly, 19*(2), 189-211.

Chong, A. Y.-L. (2013). A two-staged SEM-neural network approach for understanding and predicting the determinants of m-commerce adoption. *Expert Systems with Applications, 40*(4), 1240-1247.

Chong, A. Y.-L., Chan, F. T., & Ooi, K.-B. (2012b). Predicting consumer decisions to adopt mobile commerce: Cross country empirical examination between China and Malaysia. *Decision Support Systems, 53*(1), 34-43.

Chou, Y. H. D., Li, T. Y. D., & Ho, C. T. B. (2018). Factors influencing the adoption of mobile commerce in Taiwan. *International Journal of Mobile Communications, 16*(2), 117-134.

Clarke III, I. (2008). Emerging value propositions for m-commerce. *Journal of Business Strategies, 25*(2), 41-57.

Dai, H., & Palvia, P. (2008). Factors affecting mobile commerce adoption: a cross-cultural study in China and the United States. *Proceedings of the Fourteenth Americas Conference on Information Systems, Toronto, ON, Canada August 14 th-17th, 2008, 204.*

Dai, H., & Palvi, P. C. (2009). Mobile commerce adoption in China and the United States: a cross-cultural study. *ACM SIGMIS Database, 40*(4), 43-61.

Davis, F. D., Bagozzi, R. P., & Warshaw, P. R. (1992). Extrinsic and intrinsic motivation to use computers in the workplace. *Journal of Applied Social Psychology, 22*(14), 1111-1132.

Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly, 13*(3), 319-340.

Faqih, K. M., & Jaradat, M.-I. R. M. (2015). Assessing the moderating effect of gender differences and individualism-collectivism at individual-level on the adoption of mobile commerce technology: TAM3 perspective. *Journal of Retailing and Consumer Services, 22*, 37-52.

Hair, J. F., Black, W. C., Babin, B. J., Anderson, R. E., (2010). Multivariate Data Analysis. Pearson, Upper Saddle River.

Harris, P., Rettie, R., & Cheung, C. K. (2005). Adoption and usage of m-commerce: A cross-cultural comparison of Hong Kong and the United Kingdom. *Journal of Electronic Commerce Research, 6*(3), 210-224.

Herrero, Á., & San Martín, H. (2017). Explaining the adoption of social networks sites for sharing user-generated content: A revision of the UTAUT2. *Computers in Human Behavior, 71*, 209-217.

Huang, C. Y., & Kao, Y. S. (2015). UTAUT2 based predictions of factors influencing the technology acceptance of phablets by DNP. *Mathematical Problems in Engineering*, Article ID 603747.

Hung, M. C., Hwang, H. G., & Hsieh, T. C. (2007). An exploratory study on the continuance of mobile commerce: an extended expectation-confirmation model of information system use. *International Journal of Mobile Communications, 5*(4), 409-422.

Hung, M.-C., Yang, S.-T., & Hsieh, T.-C. (2012). An examination of the determinants of mobile shopping continuance. *International Journal of Electronic Business Management, 10*(1), 29-37.

Islam, M. A., Ahmad, T. S. B., Khan, M. A., & Ali, M. H. (2010). Adoption of M-commerce services: The case of Bangladesh. *World Journal of Management, 2*(1), 37-54.

Jambulingam, M. (2013). Behavioural intention to adopt mobile technology among tertiary students. *World Applied Sciences Journal, 22*(9), 1262-1271.

Jiang, P. (2009). Consumer adoption of mobile internet services: An exploratory study. *Journal of Promotion Management, 15*(3), 418-454.

Kim, C., Mirusmonov, M., & Lee, I. (2010). An empirical examination of factors influencing the intention to use mobile payment. *Computers in Human Behavior, 26*(3), 310-322.

Kline, P. (2013). *Handbook of psychological testing*: Routledge.

Kline, R. (1998). Principles and practice of structural equation modeling: A very readable introduction to the subject, with good coverage of assumptions and SEM's relation to underlying regression, factor, and other techniques: NY: Guilford Press.

Kline, R. B., (2005). Principles and Practice of Structural Equation Modeling, second ed. Guilford Press, New York.

Ko, E., Kim, E. Y., & Lee, E. K. (2009). Modeling consumer adoption of mobile shopping for fashion products in Korea. *Psychology & Marketing, 26*(7), 669-687.

Kourouthanassis, P. E., & Giaglis, G. M. (2012). Introduction to the special issue mobile commerce: the past, present, and future of mobile commerce research. *International Journal of Electronic Commerce, 16*(4), 5-18.

Kuo, Y.-F., & Yen, S.-N. (2009). Towards an understanding of the behavioral intention to use 3G mobile value-added services. *Computers in Human Behavior, 25*(1), 103-110.

Kwok, M. (2015). *Examining factors affecting adoption of mobile commerce by young consumers in china.* (PhD), University of Newcastle, China.

Lian, D., & Xiu-zhen, S. (2010). *The Key Issues to Develop M-Business System.* Paper presented at the E-Business and E-Government (ICEE), 2010 International Conference.

Liébana-Cabanillas, F., Marinković, V., & Kalinić, Z. (2017). A SEM-neural network approach for predicting antecedents of m-commerce acceptance. *International Journal of Information Management, 37*(2), 14-24.

Lin, C., & Nguyen, C. (2011). Exploring e-payment adoption in vietnam and Taiwan. *Journal of Computer Information Systems, 51*(4), 41-52.

Lin, Y. M., & Shih, D. H. (2008). Deconstructing mobile commerce service with continuance intention. *International Journal of Mobile Communications, 6*(1), 67-87.

Lu, Y., Yang, S., Chau, P. Y., & Cao, Y. (2011). Dynamics between the trust transfer process and intention to use mobile payment services: A cross-environment perspective. *Information & Management, 48*(8), 393-403.

Lu, J. (2014). Are personal innovativeness and social influence critical to continue with mobile commerce? *Internet Research, 24*(2), 134-159.

Luqman, A., Razak, R. C., Ismail, M., & Alwi, M. A. M. (2016). Continuance intention of mobile commerce usage activities: Does personal innovativeness matter? *The Social Sciences, 11*(11), 2817-2827.

Malhotra, N. K. (2010). *Marekting research: an applied orientation* (6th ed.). New Jersey, Upper Saddle River: Pearson.

Min, Q., Ji, S., & Qu, G. (2008). Mobile commerce user acceptance study in China: a revised UTAUT model. *Tsinghua Science & Technology, 13*(3), 257-264.

Moore, G. C., & Benbasat, I. (1991). Development of an instrument to measure the perceptions of adopting an information technology innovation. *Information Systems Research, 2*(3), 192-222.

Morosan, C., & DeFranco, A. (2016). It's about time: Revisiting UTAUT2 to examine consumers' intentions to use NFC mobile payments in hotels. *International Journal of Hospitality Management, 53*, 17-29.

Oliveira, T., Thomas, M., Baptista, G., & Campos, F. (2016). Mobile payment: Understanding the determinants of customer adoption and intention to recommend the technology. *Computers in Human Behavior, 61*, 404-414.

Pahnila, S., Siponen, M., & Zheng, X. (2011). Integrating habit into UTAUT: the Chinese eBay case. *Pacific Asia Journal of the Association for Information Systems, 3*(2), 1-30.

Ruiz-Mafe, C., Sanz-Blas, S., Hernandez-Ortega, B., & Brethouwer, M. (2013). Key drivers of consumer purchase of airline tickets: A cross-cultural analysis. *Journal of Air Transport Management, 27*, 11-14.

Saunders, M., Lewis, P., & Thornhill, A. (2012). *Research methods for business students* (6 Ed.): Pearson Education India.

Schifter, D. E., & Ajzen, I. (1985). Intention, perceived control, and weight loss: an application of the theory of planned behavior. *Journal of Personality and Social Psychology, 49*(3), 843-851.

Shin, D.-H. (2009). Towards an understanding of the consumer acceptance of mobile wallet. *Computers in Human Behavior, 25*(6), 1343-1354.

Siau, K., Lim, E.-P., & Zixing, S. (2001). Mobile commerce: promises, challenges, and research agenda. *Journal of Database Management, 12*(3), 4-24.

Silverman, D. (2013). *Doing qualitative research: A practical handbook*: SAGE Publications Limited.

Soroa-Koury, S., & Yang, K. C. (2010). Factors affecting consumers' responses to mobile advertising from a social norm theoretical perspective. *Telematics and Informatics, 27*(1), 103-113.

Tai, Y.-M., & Ku, Y.-C. (2013). Will stock investors use mobile stock trading? A benefit-risk assessment based on a modified UTAUT model. *Journal of Electronic Commerce Research, 14*(1), 67-84.

Tan, G. W.-H., Ooi, K.-B., Sim, J.-J., & Phusavat, K. (2012). Determinants of mobile learning adoption: An empirical analysis. *Journal of Computer Information Systems, 52*(3), 82-91.

Tanaka, J. S. (1987). " How big is big enough?": Sample size and goodness of fit in structural equation models with latent variables. *Child Development, 58*(1), 134-146.

Taylor, S., & Todd, P. (1995). Decomposition and crossover effects in the theory of planned behavior: A study of consumer adoption intentions. *International Journal of Research in Marketing, 12*(2), 137-155.

Teo, T., & Noyes, J. (2014). Explaining the intention to use technology among pre-service teachers: a multi-group analysis of the Unified Theory of Acceptance and Use of Technology. *Interactive Learning Environments, 22*(1), 51-66.

Thakur, R., & Srivastava, M. (2014). Adoption readiness, personal innovativeness, perceived risk and usage intention across customer groups for mobile payment services in India. *Internet Research, 24*(3), 369-392.

Thompson, R. L., Higgins, C. A., & Howell, J. M. (1991). Personal computing: toward a conceptual model of utilization. *MIS Quarterly, 15*(1), 125-143.

Tiwari, R., & Buse, S. (2007). *The mobile commerce prospects: A strategic analysis of opportunities in the banking sector*. Germany: Hamburg University Press.

Truong, Y. (2013). A cross-country study of consumer innovativeness and technological service innovation. *Journal of Retailing and Consumer Services, 20*(1), 130-137.

Verkijika, S. F. (2018) Factors influencing the adoption of mobile commerce applications in Cameroon. *Telematics and Informatics, 35* (6), 1665-1674.

Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003). User acceptance of information technology: Toward a unified view. *MIS Quarterly, 27*(3), 425-478.

Wei, T. T., Marthandan, G., Chong, A. Y.-L., Ooi, K.-B., & Arumugam, S. (2009). What drives Malaysian m-commerce adoption? An empirical analysis. *Industrial Management & Data Systems, 109*(3), 370-388.

Yang, K. C. (2005). Exploring factors affecting the adoption of mobile commerce in Singapore. *Telematics and Informatics, 22*(3), 257-277.

Yu, C.-S. (2012). Factors affecting individuals to adopt mobile banking: Empirical evidence from the UTAUT model. *Journal of Electronic Commerce Research, 13*(2), 104-121.

Zamfiroiu, A. (2014). Factors influencing the quality of mobile applications. *Informatica Economica, 18*(1), 131-139.

Zarmpou, T., Saprikis, V., Markos, A., & Vlachopoulou, M. (2012). Modeling users' acceptance of mobile services. *Electronic Commerce Research, 12*(2), 225-248.

Zhang, L., Zhu, J., & Liu, Q. (2012). A meta-analysis of mobile commerce adoption and the moderating effect of culture. *Computers in Human Behavior, 28*(5), 1902-1911.

Appendix A: Measures for variables

Measurement Items	
Using m-commerce improves my efficiency in my daily task Using m-commerce enables me to do my task conveniently Using m-commerce would enhance my effectiveness in my daily work Using m-commerce would improve my task productivity In general, I believe that m-commerce useful	*(Performance Expectancy: Kwok, 2015)*
Learning to use m-commerce is easy for me Overall, M-commerce is understandable and clear Overall, using M-commerce is easy.	*(Effort Expectancy: Kwok, 2015)*
When I hear about m-commerce I am looking for possibilities to try it. I don't want to try new m-commerce. I am usually the first to try out new m-commerce. I like to try new m-commerce.	*(Personal Innovativeness: Kwok, 2015)*
I intend to use m-commerce in future I expect that I would use m-commerce in the future I plan to use m-commerce in the future I will purchase m-commerce enabled phones in the near future	*(Behavioral Intentions: Kwok, 2015)*