Factors Affecting Customer's Intention to Use Mobile Shopping Applications

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ABSTRACT

The aim of this research is to examine the factors that impact the intention to use mobile shopping applications. The study used perceived ease of use, perceived usefulness, satisfaction, perceived enjoyment, perceived risk and personal innovativeness as independent variables and intention to use mobile shopping applications as dependent variable. The relevant data was gathered from 229 users of mobile shopping applications. PLS-SEM is used to analyze the relationship between the variables. Results of the study show that personal innovativeness, perceived enjoyment and satisfaction have a positive and significant impact on intention to use, whereas, perceived risk has a negative and significant impact, perceived usefulness and perceived ease of use have a positive and insignificant influence on intention to use. This study offers valuable insights for m-commerce sector, managers and strategists regarding the effect of factors influencing intention to use mobile shopping applications.

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1.   Introduction

Over the last few years, a very deep impact of internet has been witnessed on the routine lives of individuals. Nowadays, it has become a common practice to adopt and utilize newly launched technologies and make them an integral part of our day-to-day activities and Musa et al. (2016) suggested that the revolutionary impact of internet and the rise of the Smartphone industry have caused companies to focus on mobile commerce (m-commerce). M-commerce is a growing and booming category of electronic commerce (e-commerce), a type of business where companies or individuals perform business through internet (Zhang et al., 2012). To carry out m-commerce activities, different social networking sites, introduced buy buttons on their mobile applications during the period of mid 2010s, which enabled users to easily make purchases from different pages (Bloomenthal, 2019).

Meola (2019) referred to m-commerce as the process of shopping with the help of a mobile device, mainly a Smartphone. M-commerce experienced a boom due to the greater usage of smartphones and convenience, since people prefer to shop online with ease and without any time constraint (Meola, 2019). Every business is focusing on developing its mobile applications to drive m-commerce business and it has been estimated that there will be about 3.5 billion

Smartphone users in 2020 worldwide (Georgiev, 2019). Because of the greater usage of smartphones, m-commerce is growing and businesses are trying their best to provide user friendly mobile interfaces to provide ease to the customers (Kim et al., 2010).

Perceived ease of use (PEOU) depicts how less mental effort any technology requires (Natarajan et al., 2017). Different mobile application features affect the PEOU which might alter the intention of use of the users. It is also assumed that the PEOU of m-commerce might be different for users with varying demographics (Chong et al., 2012). Utilizing mobile shopping applications (MSA) provides the advantage of personalized services as well that might impact the perceived usefulness of the users (Agrebi and Jallais, 2015).

Perceived usefulness (PU) accompanying the utilization of MSA provides advantage to users by not being limited by aspects such as location or time zone and it is useful to carry a smartphone everywhere that adds to the intention of to use (IU) such applications (Chong et al., 2012). Mobile applications have made it easy for users to find anything and everything and purchase it at their fingertips (Natarajan et al., 2018). On one hand, m-commerce has a lot of benefits but on the other hand, many people become victims of different online scams every day which increases the perceived risk associated with using such applications (Verkijika, 2018).

Natarajan et al. (2017) referred to perceived risk (PR) as the uncertainty about facing any negative consequence related to using mobile shopping applications. Theft of personal credentials or scams through the mobile applications put the safety of users at stake and in situations where a high level of risk exists; users might be reluctant to use such applications (Dwivedi et al., 2017; Raza et al., 2018a). However, some people who enjoy making purchases via smartphones might even overlook any existing uncertainty (Zhang et al., 2012).

Making purchases through MSA can be perceived as a pleasant experience by many people (Natarajan et al., 2017). Smartphone, being a wireless device is used by people to pass their time on the go and when people have enjoyment while making mobile purchases, they become more comfortable with m-commerce which might have a positive effect on the intention to use (IU) mobile applications (Agrebi and Jallais, 2015). Perceived enjoyment (PE) associated with MSA might even be taken as an expectation of the users while using them and individuals who enjoy trying out new ideas are considered to be innovative (Natarajan et al., 2017).

Personal innovativeness (PI) depicts that how quickly a person adopts new ideas as compared to other individuals of the society (Rogers, 1983). Innovativeness is basically a personality characteristic that shows whether people are willing to accept ideas that are new to their personal experience (Lu, 2014). People who show more willingness towards innovation have a tendency to have a greater intention to use MSA (Alda´s-Manzano et al., 2009). When people happily perform mobile purchases, they are also satisfied with their purchases (Agrebi and Jallais, 2015).

Satisfaction (SAT) is one of the variable that contributes to the intention to use MSA and in context of m-commerce it is the emotional response of individuals to the mobile shopping activities (Agrebi and Jallais, 2015). When users are highly satisfied this might lead to an increased IU (Natarajan et al., 2017).

Numerous studies have been carried out in the developed and developing countries. A study by Islam et al. (2013) explored the IU of advanced services of mobile phone. Alda´s-Manzano et al. (2009) explored the effect of personality factors associated to technology on the mobile shopping intention. Chi (2018) examined the factors affecting the IU m-commerce in context of apparel industry. Alda´s-Manzano et al. (2009) also examined the role that PI and PR play in the IU online banking. Agrebi and Jallais (2015) examined the factors impacting the IU

smartphones for the purpose of mobile shopping. Ellahi and Manarvi (2010) studied PU and PEOU in context of computer usage in police department of Pakistan. Dwivedi et al. (2007) examined the impact of PEOU on intention of the costumers to use broadband in Pakistan. Farah et al. (2018) examined the impact of PR on adoption intention of mobile banking in Pakistan. Natarajan et al. (2017) explored all factors influencing the IU mobile shopping applications but to the finest knowledge of author, no such study has been conducted in the region of Pakistan.

In Pakistan, almost 91 percent people own a smartphone and the m-commerce industry is estimated to grow to $1 billion in the year 2020 (Khan, 2019). A number of m-commerce initiatives have been started by different sectors such as Telenor's Easy Paisa mobile application, UBL's Net banking application and daraz.pk mobile shopping application to name a few (Mehmood, 2019). Due to the development of mobile applications, shopping has become hassle free for people. M-shopping has transformed shopping into a luxury for people since the desired product can be shopped just through a mobile portal (Zafar, 2017).

The contribution of the study is that it puts forward an assimilated model regarding the domain of technology acceptance. Findings of this study will add to the already done work on m-commerce and mobile shopping. This study is an attempt to get detailed learning about the relationship among the study variables in the context of Pakistan. It will help marketers and businesses understand the importance of MSA. Thus, the findings of this study will help strategists and managers in formulating strategies to create such mobile shopping applications that increase the intention to use them. An improved understanding of mobile shopping can have practical implications for the m-commerce sector, managers and strategists.

This study presents an empirical assessment of the relationship between the study variables in context of Pakistan. It is considered that this study will help in examining the different factors that affect the intention of using MSA. An improved understanding of mobile shopping can have useful consequences for the mobile commerce sector, managers as well as strategists. Findings will offer a draft for managers that might help in boosting shopping experiences of their mobile applications. Furthermore, it will also provide a course of action to the application developers for the improvement of the existing applications. In addition to this, the findings will benefit the new business entrants by providing the guidelines regarding which factor affecting the customer's intention to use needs to be paid more attention upon.

2.   Theoretical Background and Hypothesis Development
2.1. Theoretical Background

The conceptual model of this study is established upon the Technology Acceptance Model (TAM). TAM was proposed by Davis et al. (1989) and is an extensively accepted model applied in order to explain the acceptance and IU of the information systems. It is thought as a strong as well as flexible model that can be used to explain the relationship between acceptance and behavior towards usage of a novel technology. According to Davis et al. (1989), since technological innovations are complex and carry a component of uncertainty, so individuals have different intentions for using the new technology. TAM provides the opportunity of extending a theory through the addition of new variables (Kim et al., 2010).

This study uses TAM that is based upon the relations namely, PEOU that leads towards IU and PU that leads to IU. These associations have been previously explored by Agrebi and Jallais (2015) and Natarajan et al. (2018). The additions of SAT, PE, PR and PI have been made to the actual TAM (Agrebi and Jallais, 2015; Ali et al., 2018). An extended version of TAM has set the base for the conceptual model which will help in providing improved understanding of the factors affecting the intention to use MSA.

3.   Hypothesis Development
3.1.   Perceived Risk (PR) and Intention to Use (IU)

PR refers to the uncertainty or insecurity associated with a product/service and the chances of coming across any ambiguity or losses due to it (Featherman and Pavlou, 2003). The expectation of any negative consequence creates an obstacle in procurement or usage of a product/service. It is the opinion of an individual about the risks linked to the use of a technology (Verkijika, 2018). In context of m-commerce, it is suggested that there is less probability of a technology being used if the perceived risks associated with it are high (Zhang et al., 2012). It has been estimated that about 75 percent users over the internet worry about risks (Lu et al., 2011). Previously studies have discussed PR to be a key element of IU and have addressed the relationship between them. Natarajan et al. (2017) reported significant connection between PR and IU. Kim et al. (2008) explored same association in context of e-commerce and it was found statistically significant. Zhang et al. (2012) found a negative but significant effect of PR on intention to adopt and use m-commerce. In this study, perceived risk is examined as a factor affecting IU. Therefore, it is hypothesized that:

H1: There is a significant relationship between PR and IU mobile shopping applications.

3.2.   Perceived Usefulness (PU) and Intention to Use (IU)

PU is considered to be one of the fundamental variables of TAM to describe intention (Jeyaraj et al., 2006). According to Davis (1989), it is the level of an individual's faith that use of a system would advance their job performance. In the technological context, PU will denote that using a particular technology would be useful for an individual to achieve some outcome. Vijayasarathy (2004) referred to it as the degree of a consumer's belief in accessing useful information and quick purchasing process while making purchases online. Kim et al. (2010) and Luarn and Lin (2005) indicated a significant impact of PU on IU in context of m-commerce. Studies by Agrebi and Jallais (2015), Natarajan et al. (2017), Hubert et al. (2017) and Nysveen et al. (2005) empirically demonstrated the relationship between PU and IU in the field of m-commerce and mobile internet activities. Thus, it is hypothesized that:

H2: There is a significant relationship between PU and IU mobile shopping applications.

3.3.   Perceived Ease of Use (PEOU) and Intention to Use (IU)

PEOU is a variable present in TAM. It is defined as a person's perception regarding the effortlessness or ease of a specific system (Davis, 1989). As defined by Davis et al. (1989), it is the level to which a person considers using some system would be effort free. Wei et al. (2009), Islam et al. (2013), Liébana-Cabanillas et al. (2017), Hubert et al. (2017), Luarn and Lin (2005) and Natarajan et al. (2017) studied the link between PEOU and IU m-commerce and MSA. The relationship was reported to be significant in most studies, except Wei et al. (2009) and Liébana-Cabanillas et al. (2017) that found insignificant relationship between the variables. Kim et al. (2010) also indicated a significant effect of PEOU on the IU m-payments. So, we hypothesize that:

H3: There is a significant relationship between PEOU and IU mobile shopping applications.

3.4.   Perceived Enjoyment (PE) and Intention to Use (IU)

In context of information system, PE refers to the amount of computer usage which is perceived to be pleasant, irrespective of any consequences predicted from its usage (Davis et al., 1992). Kim (2008) found that when smartphone users experience pleasure or joy in the usage of

a technology there is a probability that they use it more. One of the studies that explored the relationship between PE and IU was by Nysveen et al. (2005) and they found significant link between the constructs in context of mobile chat services. Dickinger et al. (2008) also explored the connection in context of mobile services and found it to be statistically significant. A study by Zhang et al. (2012) reported a significant impact of PE on IU. Thus, it is hypothesized that:

H4: There is a significant relationship between PE and IU mobile shopping applications.

3.5. Personal Innovativeness (PI) and Intention to Use (IU)

PI is defined as the extent of a person's speed in embracing novel ideas in contrast to the other individuals of the society (Rogers, 1983). MSA are generally considered as a technological revolution. Rogers (1983) also referred to PI as a person's ability to experiment with some new technology. Different studies have studied personal innovativeness of people in context of m-commerce and MSA (Aldás-Manzano et al., 2009; Natarajan et al., 2017). Previously the link between PI and the IU mobile phones for the purpose of MSA was explored and Zhang et al. (2012) and Natarajan et al. (2017) found a significant effect of PI on IU. Therefore, it is hypothesized that:

H5: There is a significant relationship between PI and IU mobile shopping applications.

3.6. Satisfaction (SAT) and Intention to Use (IU)

Oliver (1981) defined satisfaction (SAT) as an individual's mental or responsive state emerging from the valuation about the gap between expectations and performance of a system. In context of m-commerce, it represents the emotional response resulting from m-commerce activities and is an important construct that accelerates future IU any application (Agrebi and Jallais, 2015). Past study by Natarajan et al. (2017) found a significant relationship between SAT and IU m-shopping applications. Previous work in the context of technology acceptance also studied the relationship between SAT and IU and found it significant (Agrebi and Jallais, 2015; Irani et al., 2013). So, it is hypothesized that:

H6: There is a significant relationship between SAT and IU mobile shopping applications.

4.   Research Methodology
4.1.   Research Design/ Sample Size

This purpose of this research is explanatory. Explanatory research helps in the in depth study of the problem which presents an opportunity to be able to define and study more things related to a particular subject. It helps in understanding, explaining and predicting relationships among the variables. This paper has adopted quantitative approach because through this approach a large number of data can be collected through survey questionnaires and deeper understanding can be gained about the underlying opinions, reasons and motivations and the results are also unbiased, moreover, the quantitative approach is considered as systematically objective and rational.

This study has used correlational research design. Correlational research is a type of quantitative research that measures the statistical relationship between two or more variables (Leedy and Ormrod, 2015). It is non-experimental research in which variables are examined under a natural environment and its results are conveniently applicable on routine lives. Furthermore, it helps in determining the strength of the relationship between different variables and can even provide a basis for future researches.

This study has used convenience sampling technique. It is also known as non-probability sampling. Convenience sampling lets the researcher choose easily accessible respondents and collect data from them at ease (Etikan et al., 2016). The target population of the study included university students, employees and family members who use mobile shopping applications. The population resided in Karachi, Pakistan only. The population of Karachi was selected as target since it is a metropolitan city. A survey questionnaire was sent to 250 respondents. Out of 250 questionnaires 229 were received back. The sample size is based on the recommendation of prior research (Sharif and Raza, 2017).
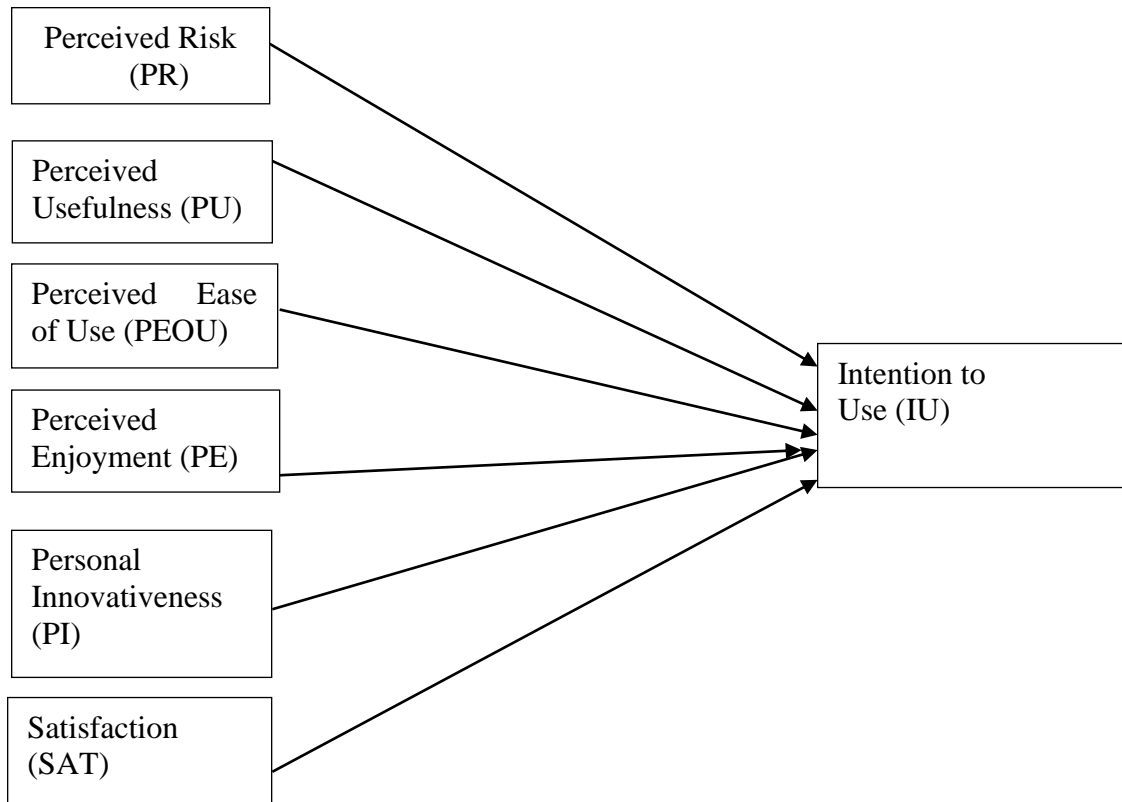

Figure 1: Conceptual Framework

4.2. Questionnaire and Measurement Instrument

For the purpose of data collection, questionnaire is used based on a 5-point Likert scale ranging from strongly disagree (1) to strongly agree (5). It is divided into two sections of demographics and statements. Demographics intend to cover different age groups, genders, education and income level of the respondents. Statement's section includes all the variables and their items. The questionnaire was validated by the field professionals. Seven variables are part of the instrument. PR has 5 items adapted from Featherman and Pavlou (2003) and Kang et al. (2012). PU has 5 items adopted from Davis (1989). PEOU has 4 items adopted from Davis (1989) and Moore and Benbasat (1991), whereas, PE has 3 items adopted from Davis et al. (1992). PI has 5 items adopted from Goldsmith and Hofacker (1991) and Agarwal and Prasad (1998). SAT has 4 items adapted from Bhattacherjee (2001). Moreover, there are 4 items of IU adopted from Kim et al. (2010).

4.3. Demographic Result

The demographic traits of participants are reported in Table 1. There were 229 participants, of which 110 (48%) are male and 119 (52%) are female. Most participants aged between 18 to 25 years with a total of 77 (34%) responses, 58 participants (25%) were aged between 26 to 30 while the rest of the respondent's aged between 31 to 35 were 46 (20%) and 36 and above were 48 (21%). The education showed that 61 respondents (27%) were under graduates, 76 respondents (33%) were graduates, and 52 respondents (23%) were post graduates while the 40 respondents (17%) had some other education. The income (in rupees) of the respondents showed that, 64 respondents (28%) earned income between 20000 to 25000, 50 respondents (22%) earned income between 26000 to 30000, 53 respondents (23%) earned income between 31000 to 35000, and the rest of the respondents that are 62 (27%) earned 36000 and above income.
Insert Table 1-

5. Results and Discussions
5.1. Results

In order to analyze the developed hypothesis and conceptual model Smart PLS 3 (Ringle et al., 2015) is used. Partial least square (PLS) was developed by Joreskog and Wold (1982) and Wold (1975, 1980). The technique employed in the study is SEM. PLS helps in the observation of the association among the latent variables. Aibinu and Al-Lawati (2010) defined a latent variable (LV) as an unobserved or concealed construct that causes the association among other analyzed variables. PLS has the capability of working with LV and it also has the capacity to comprehend the errors in the improvement of LV (Chin, 1998). There are two steps of PLS-SEM namely, measurement model and structural model. For analyzing the model effectiveness two measures are considered, namely, convergent validity (Cook and Campbell, 1979; Raza and Hanif, 2013) and discriminant validity (Campbell and Fiske, 1959).

Table 1
Profile of Respondents

Demographic Item	Frequency	Percentage
Age:		
18-25	77	34
26-30	58	25
31-35	46	20
36 and above	48	21
Gender:		
Male	110	48
Female	119	52
Education:		
Under Graduate	61	27
Graduate	76	33
Post Graduate	52	23
Others	40	17
Income:		
20,000-25,000	64	28
26,000-30,000	50	22
31,000-35,000	53	23
36,000 and above	62	27

5.2. Measurement Model
5.2.1.Convergent Validity

It is examined based upon four criterions namely, individual item reliability, Cronbach's α, composite reliability and average variance extracted (AVE). Table 2 presents the convergent validity. The internal consistency of responses amongst the items is indicated by individual item reliability. The Table 2 represents that individual reliability of all the variables is higher than 0.7 and this fulfills the criteria proposed by Churchill (1979). It is also shown from the Table 2 that Cronbach's α values fulfill the criteria and are according to the suggested benchmark of greater than 0.7 (Churchill, 1979; Raza et al., 2018b). To evaluate reliability of the constructs, composite reliability is examined. It shows the internal consistency among items within a construct, with the criteria to be above 0.7 as proposed by Straub (1989). The composite reliability of all constructs meets the criteria. For the convergent validity to exist, average variance extracted (AVE) should be more than 0.5 (Fornell and Larcker, 1981) and all the variables fulfill this requirement. Since Table 2 meets all required criterion it can be stated that convergent validity exists in the proposed framework.

Table 2
Measurement Model Results

Constructs	Items	Loadings	Cronbach's α	Composite reliability	Average variance
IU	IU1	0.976	0.985	0.985	0.941
	IU2	0.970			
	IU3	0.978			
	IU4	0.957			
PE	PE1	0.954	0.973	0.973	0.924
	PE2	0.966			
	PE3	0.965			
PEOU	PEOU1	0.964	0.987	0.987	0.950
	PEOU2	0.978			
	PEOU3	0.979			
	PEOU4	0.978			
PI	PI1	0.957	0.984	0.984	0.923
	PI2	0.969			
	PI3	0.956			
	PI4	0.960			
	PI5	0.962			
PR	PR1	0.819	0.958	0.958	0.821
	PR2	0.845			
	PR3	0.958			
	PR4	0.912			
	PR5	0.985			
PU	PU1	0.978	0.988	0.988	0.944
	PU2	0.962			
	PU3	0.976			
	PU4	0.959			
	PU5	0.982			
SAT	SAT1	0.981	0.988	0.988	0.955
	SAT2	0.987			
	SAT3	0.965			
	SAT4	0.976			

Notes: IU = Intention to Use, PE = Perceived Enjoyment, PEOU = Perceived Ease of Use, PI = Personal Innovativeness, PR = Perceived Risk, PU =Perceived Usefulness, SAT =Satisfaction.

5.2.2.Discriminant Validity

It is determined by analyzing the square root of AVE, cross loadings and hetrotrait-monotrait (HTMT) ratio of correlations. Table 3 shows the square root of the AVE in bold diagonal and fulfills the criteria proposed by Fornell and Larcker (1981) that the square root of AVE should be more than the correlation of the constructs in the off diagonal.

Table 4 represents the cross loadings for every item. According to Gefen and Straub (2005), each item should highly load in its relevant construct. Table 4 shows that each variable has highly loaded in its relevant construct.

Table 3
Correlation Matrix

Constructs	IU	PE	PEOU	PI	PR	PU	SAT
IU	0.970						
PE	0.882	0.961					
PEOU	0.868	0.883	0.975				
PI	0.886	0.869	0.849	0.961			
PR	0.830	0.845	0.827	0.828	0.906		
PU	0.879	0.896	0.874	0.862	0.945	0.972	
SAT	0.899	0.803	0.862	0.880	0.920	0.887	0.977

Notes: IU = Intention to Use, PE = Perceived Enjoyment, PEOU = Perceived Ease of Use, PI = Personal Innovativeness, PR = Perceived Risk, PU =Perceived Usefulness, SAT =Satisfaction.

Table 4
Cross Loadings

	IU	PE	PEOU	PI	PR	PU	SAT
IU1	**0.976**	0.968	0.949	0.953	0.910	0.960	0.972
IU2	**0.970**	0.943	0.923	0.969	0.889	0.942	0.957
IU3	**0.978**	0.957	0.949	0.968	0.915	0.955	0.963
IU4	**0.957**	0.943	0.936	0.934	0.893	0.941	0.950
PE1	0.937	**0.954**	0.946	0.940	0.897	0.950	0.945
PE2	0.948	**0.966**	0.940	0.923	0.923	0.959	0.953
PE3	0.947	**0.965**	0.950	0.931	0.906	0.958	0.958
PEOU1	0.933	0.930	**0.964**	0.917	0.882	0.935	0.930
PEOU2	0.947	0.964	**0.978**	0.933	0.901	0.950	0.938
PEOU3	0.947	0.968	**0.979**	0.924	0.910	0.956	0.940
PEOU4	0.947	0.970	**0.978**	0.926	0.919	0.955	0.944
PI1	0.943	0.935	0.929	**0.957**	0.895	0.922	0.932
PI2	0.955	0.946	0.933	**0.969**	0.899	0.947	0.958
PI3	0.942	0.910	0.901	**0.956**	0.881	0.911	0.945
PI4	0.947	0.949	0.903	**0.960**	0.897	0.925	0.942
PI5	0.948	0.914	0.894	**0.962**	0.884	0.915	0.928
PR1	0.761	0.767	0.760	0.756	**0.819**	0.790	0.745
PR2	0.785	0.795	0.790	0.785	**0.845**	0.802	0.765
PR3	0.891	0.919	0.872	0.901	**0.958**	0.899	0.895
PR4	0.848	0.863	0.846	0.850	**0.912**	0.847	0.840
PR5	0.916	0.927	0.919	0.899	**0.985**	0.934	0.911
PU1	0.957	0.971	0.966	0.948	0.916	**0.978**	0.957

PU2	0.942	0.961	0.949	0.918	0.910	**0.962**	0.954
PU3	0.955	0.971	0.941	0.927	0.927	**0.976**	0.968
PU4	0.939	0.954	0.923	0.932	0.916	**0.959**	0.944
PU5	0.962	0.971	0.952	0.947	0.924	**0.982**	0.970
SAT1	0.971	0.955	0.935	0.960	0.891	0.957	**0.981**
SAT2	0.977	0.981	0.955	0.963	0.914	0.971	**0.987**
SAT3	0.956	0.955	0.927	0.950	0.886	0.957	**0.965**
SAT4	0.966	0.980	0.945	0.956	0.906	0.972	**0.976**

Notes: IU = Intention to Use, PE = Perceived Enjoyment, PEOU = Perceived Ease of Use, PI = Personal Innovativeness, PR = Perceived Risk, PU =Perceived Usefulness, SAT =Satisfaction.

The Table 5 shows HTMT. All the construct values are less than 0.85 and fulfill the criteria of being not more than 0.85 (Henseler et al., 2015; Raza et al., 2019). Hence, all the three criteria are met and it is determined that discriminant validity exists in the model.

Table 5
HTMT Results

	IU	PE	PEOU	PI	PR	PU	SAT
IU							
PE	0.782						
PEOU	0.768	0.783					
PI	0.786	0.769	0.749				
PR	0.727	0.742	0.724	0.725			
PU	0.779	0.794	0.774	0.762	0.743		
SAT	0.790	0.790	0.762	0.780	0.717	0.787	

Notes: IU = Intention to Use, PE = Perceived Enjoyment, PEOU = Perceived Ease of Use, PI = Personal Innovativeness, PR = Perceived Risk, PU =Perceived Usefulness, SAT =Satisfaction.

5.3. Structural Model
5.3.1.Path Analysis

Table 6
Standardized Regression Weights (SRW) for the Research Model

Hypothesis	Regression Path	Effect type	SRW	P Value	Remarks
H1	PR --> IU	Direct effect	-0.018	0.022	Supported
H2	PU --> IU	Direct effect	0.096	0.393	Unsupported
H3	PEOU --> IU	Direct effect	0.022	0.637	Unsupported
H4	PE --> IU	Direct effect	0.172	0.070	Supported
H5	PI --> IU	Direct effect	0.336	0.003	Supported
H6	SAT --> IU	Direct effect	0.392	0.002	Supported

Notes: IU = Intention to Use, PE = Perceived Enjoyment, PEOU = Perceived Ease of Use, PI = Personal Innovativeness, PR = Perceived Risk, PU =Perceived Usefulness, SAT =Satisfaction.

Table 6 represents the path analysis results. As stated by Wixom and Watson (2001) the hypotheses are defined by the SRW's (coefficient) sign, size and significance level between the independent variable (IV) and dependent variable (DV). The extent of the impact of IV on DV is denoted by the SRW. The P-value helps in determining the significance. Hypotheses having P value lesser than 0.1 are considered significant. Hence, it is concluded from Table 6 that H1, H4, H5 and H6 are accepted and H2 and H3 are rejected as they have P-values greater than 0.1. The SRW of all paths are positive except for the path presenting the impact of perceived risk (PR) on IU.

5.4. Discussions

The above-mentioned results deduce that four hypotheses are supported and the remaining two are rejected. The path showing the relationship between PR and IU is negative and significant (β = -0.018, $p < 0.1$). The results indicate that PR impacts IU negatively and significantly. This result is in accord with the study carried out by Natarajan et al. (2017) and Zhang et al. (2012). These studies found a significant and negative influence of PR on IU in m-commerce context. Verkijika (2018) studied identical relation in context of m-commerce applications and a negative and significant relationship was found. These findings imply that risk factor associated with the mobile shopping applications hinders its usage. It could be due to the reason that the applications do not offer reliable and secure payment processing or the security systems incorporated in the applications are not strong enough to reduce the users concern regarding risk and uncertainty. Another possible reason could be that people fear their personal details entered on the applications can be misused and this reduces their intention to use them. Individuals might show higher IU m-commerce if they are aware that it's completely safe and protected.

H2 shows the relationship between PU and IU. The hypothesis is rejected since there is a positive but insignificant relationship between the two variables (β = 0.096, $p > 0.1$). This result is similar to the studies of Chong et al. (2012) and Zhang et al. (2012). Both studies found a positive but insignificant impact of PU on IU. The positive SRW refers that individuals might use mobile shopping applications if they find them useful. A possible explanation for such finding could be that mobile shopping applications have become quite common and almost every other business has developed its own mobile application and many of them also operate through it, thus the individuals use them to enhance their productivity and effectiveness.

H3 represents the path linking PEOU with IU. The hypothesis is found to be insignificant. Results indicate that PEOU influences IU positively (β = 0.022, $p > 0.1$). This result contradicts the studies carried out by Hubert et al. (2017) and Natarajan et al. (2017). Studies by Kim et al. (2010) and Luarn and Lin (2005) also indicated a significant effect of PEOU on IU in context of m-payments. However, this result is similar to the studies of Wei et al. (2009) and Liébana-Cabanillas et al. (2017) that found a positive and insignificant impact of PEOU on IU. Mobile shopping applications have become quite common and people intend to use them more if the interface is easy to use. Another possible reason could be that prevalence of such applications has made individuals learn how to use them and if it does not involve much mental effort they intend to use such applications more.

H4 shows the relationship between PE and IU (β = 0.172, $p < 0.1$). The result indicates that H4 is accepted and PE impacts positively on IU and the association between PE and IU is significant. This result is similar to the findings of Nysveen et al. (2005), Dickinger et al. (2008) and Zhang et al. (2012) who investigated this relationship in different contexts and found a positive and significant impact of PE on IU. This could be due to the reason that individuals consider it important to have fun while using mobile shopping applications. When the applications provide a pleasant experience to the users, they use it more often since the experience of using

them is enjoyable and interesting. Mobile shopping applications also try to make their interface as enjoyable as possible by incorporating interesting graphics and features and this might be creating an affirmative effect on the users.

The hypotheses H5 denote the path linking PI with IU (β = 0.336, p < 0.1). The hypothesis is accepted as it is significant and PI has a positive impact on IU. This outcome is in harmony with the study of Zhang et al. (2012) and Natarajan et al. (2017) as they found a positive and significant impact of PI on IU. A possible explanation could be that people who are innovative quickly adopt or intend to use new things and also tell their opinions to others. This trait of the individuals might create inclination in them to try out and use the mobile shopping applications.

The path presenting the relationship between SAT and IU is positive and significant (β = 0.392, p < 0.1). Thus, H6 is supported. This finding is analogous with the result of past study by Natarajan et al. (2017) that also found a positive and significant relationship between SAT and IU in m-shopping application context. Previous conducted studies regarding technology acceptance have also studied the association between SAT and IU and found it to be positive (Agrebi and Jallais, 2015; Irani et al., 2013). Satisfaction has a high positive impact on IU and is a critical factor, because if the MSA are not pleasing and satisfying for the users, they will be less attracted to use them. On the other hand, if the application offers a satisfactory experience to the users they will probably use it more often and might incorporate its usage in their routine lives.

6.   Conclusion & Recommendations
6.1. Conclusion

The aim is to examine the factors that affect the intention to use MSA. The conceptual model is established upon the Technology Acceptance Model (TAM). An extended version of TAM has set the base for the conceptual model. The study used perceived ease of use (PEOU), perceived usefulness (PU), satisfaction (SAT), perceived enjoyment (PE), perceived risk (PR) and personal innovativeness (PI) as IV and intention to use (IU) as DV. This study has used convenience sampling technique. The target population of the study included university students, employees and family members who used MSA and resided in Karachi. The sample size is 229 respondents. PLS-SEM is used to examine the gathered data and determine the relationship between variables. It is found that PR, PI, PE and SAT have a significant impact on IU, whereas, PU and PEOU have an insignificant influence on IU. Lastly, recommendations are given for mobile commerce sector, managers, strategists and future researchers.

6.2. Managerial Implications

This study offers valuable insights for m-commerce sector, managers and strategists regarding the effect of factors influencing intention to use MSA. It is found that satisfaction (SAT) has a strong positive and significant impact on IU. SAT is essential, because if MSA do not seem alluring, users will be less prone to use them. Hence, it is recommended that in order to increase the IU, it is important to increase the satisfaction felt by the users while using them. Therefore, it is recommended to identify the user preferences and cater the mobile shopping applications to provide a satisfactory experience to the users. This could be done by providing application personalization options to the users and a complain box should also be provided. Furthermore, periodic surveys should be conducted from the application users to get firsthand information regarding their satisfaction level and improvements should be made accordingly.

Personal innovativeness (PI) has a significant and positive influence on IU. It is suggested that to increase usage intention, it is very important to encourage MSA associated innovativeness amongst the users. This should be done by offering exclusive access of application features to the

innovators as this would improve the IU not only among the innovators but also others. Furthermore, applications should offer incentives to the first-time users such as discount offers, vouchers or promo codes since this would encourage individuals to use the applications.

Perceived enjoyment (PE) has a positive and significant impact on IU. It is suggested that the fun side of using mobile shopping applications should be highlighted to increase IU. The interface and usage experience should be made as enjoyable and pleasant as possible. This should be done by integrating interesting graphics and features to create a positive impact on the users. In addition to this, short games or contests should be run on the applications to increase their enjoyment quotient.

As for perceived usefulness (PU) there is a positive but insignificant relationship between PU and IU. Some people are becoming more proficient and comfortable in using mobile shopping applications; they tend to care less about their perceived usefulness. On the other hand, some people prefer using them because of their effectiveness. Thus, to increase the intention to use, new strategies should be established as well as emphasis on usefulness of the applications should also be made. Applications should concentrate on developing a reliable system to meet the user needs and desires. This could be done by offering faster payment methods and providing detailed description of each product or service on the application.

The relationship between perceived ease of use (PEOU) and IU is found to be positive. Thus, MSA should emphasize upon getting the users involved in the new features development and align them with the needs and wants of users. Menu on the applications should be organized in appropriate segments such as product wise or price wise categories for easier searching. Furthermore, usage assistance should be provided by installing chat bots in the applications.

The result of perceived risk shows that it significantly but negatively impacts IU. So, the PR associated with MSA usage can be minimized by developing strategies that portray their secure functioning. This will help in the reduction of the risk perception of individuals and thus increase their future intention to use MSA. Furthermore, the security systems built in the applications should be made strong enough to protect the personal details of the users. This could be done through multi factor authentication, secure payment methods, protection of the application server against viruses and hackers.

6.3. Future Recommendations

The study has some limitations. Firstly, the data is gathered from just one city of Pakistan i.e., Karachi and respondents from other cities were not approached. Future researchers should conduct this study by targeting respondents from other cities of Pakistan as well. Secondly, limited factors impacting the intention to use are considered in this study. Thus, future studies could be carried out by analyzing some other factors or by improvising the model through the addition of moderators such as attitude, experience or frequency of use. Lastly, the data is gathered from a sample size of 229 respondents only. Future studies should gather data from a larger sample size to increase the generalizability of the results.

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