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Factors influencing intention to use mobile retailing: An empirical study

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Abstract

Although mobile devices have become one of the important aspects in everyday life, the use of mobile devices in retail activities is also increasing. However, literature on acceptance of mobile retailing is still not so intensified and is limited to specific countries (Groß, 2015a) . This research aims to investigate the factors influencing consumer usage intention of mobile retailing. For this purpose, we have combined four popular theories which are mostly cited in the literature of technology acceptance, including technology acceptance model, theory of planned behavior, theory of reasoned action and innovation diffusion theory, along with trust, perceived enjoyment and perceived risk. Combining all above mentioned theories and constructs, our research model included perceived usefulness, perceived ease of use, perceived compatibility, perceived enjoyment, subjective norm, trust, perceived risk, and intention to use mobile retailing.

Primary data for this empirical study was gathered through an online questionnaires and analysis was done with the statistical analysis software SmartPLS (v. 3.2.7) (Ringle, Wende, & Becker, 2015). The empirical analysis of hypothesized relationship between latent independent construct and intention to use shows that all the predictor have insignificant effect on usage intention. However, perceived ease of use was found as the strong predictor of perceived enjoyment, and perceived ease of use and perceived compatibility were found as a significant predictor of perceived usefulness of mobile retailing.

Keywords: mobile retailing, mobile shopping, theory of planned behavior, technology acceptance model, theory of reason action, innovation diffusion theory, mobile commerce, intention, adoption.

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1 Introduction

1.1 Background

Growth in number of mobile devices and innovation in device specific features, like web browsing, location service, and mobile applications, mobile services has evolved as an essential part of everyday life (Hwang, Shiau, & Jan, 2007), thus worldwide use of mobile devices is projected to be grow substantially and is likely to reach 2.0013 billion units by 2021 (Anthony Scarsella & Stofega, 2017). As the mobile devices are capable to perform these unique features of computer, including browsing and exploring over the internet, the use of mobile internet and mobile web browsing also increases worldwide substantially in recent year. This can be found on the statistics presented by Statista (2018) that nearly half (47.74%) of total worldwide website visit in February 2017 was performed by using mobile devices.

This technological advancement and rapid development in mobile technology and its infrastructure has changed the old version of product marketing and selling. This transformation is seen in retail business, where retailing has been modified, at first by using computing devices; including desktop computers and laptops. And further, by use of mobile devices: including mobile phones, iPads and tablet phones capable of using internet and web browser and mobile application. Lipsman and Williams (2017) defined the former activities of retailing performed by using desktop and laptop as electronic commerce (e-commerce) and later activities of retailing perform by using mobile devices as mobile commerce (m-commerce) and named the overall work of retailing using both mobile and computer device as digital commerce.

Similarly, according to Agrebi and Jallais (2015) development in the internet and web browser are the precondition for the take-off of e-commerce, and advancement in mobile devices equipped with digital technology are the precondition for the development of m-commerce.

Since, m-commerce comprises of variety of services including, mobile banking, mobile payments, mobile news or information, mobile retailing or purchase, and mobile games or entertainment, through the use of mobile application and mobile websites (Zhang, Chen, & Lee, 2013). This research focuses on the activities relating to the use of mobile device for retailing, which is defined as the process of search,

browse, compare and purchase of product or services through the use of mobile device (Groß, 2015a).

Along with the wide areas of application of mobile retailing, it has been able to provide quick access, increase opportunity and enhanced accessibility (Nassuora, 2013), thus it has become one of the important changes in retailing since last decades (Groß, 2015b). Indeed, despite the worldwide growth in uses of mobile device and its use on different services, adoption of m-shopping rate is relatively low (Marriott & Williams, 2018). Similarly in Nepal, more than 63% of total Nepalese population uses internet service, out of this population of internet users more than 95% use internet from their mobile device using mobile specific technology like GPRS, EDGE, and WCDMA (Authority, 2017). Besides this figure there is no any statistics of actual number of m-commerce user, however according to Balasubramaniam (2016), CEO Asia of Kyamu.com (now daaraz.com), the future of m-commerce in Nepal will likely contribute around 70% to 80% share of total digital commerce. Thus, this research concentrates to seek the reason behind the retailer`s projection about the huge acceptance of m-commerce in Nepal, by studying the factors influencing the acceptance and intention to use of mobile commerce in Nepal, despite the lower acceptance of m-commerce worldwide.

Mobile retailing activities differs from one another in respect to various features such as space, role of time and control (Blut, Chowdhry, Mittal, & Brock, 2015) and factor affecting it also be different across countries and culture (Zhang, Zhu, & Liu, 2012). Since, in order to understand market condition, intention, acceptance, and usage of Nepalese m-commerce there are no any empirical research found so far during the literature search on electronic database. Thus, in order to fulfil this shortage of knowledge the need to carry out systematic research has been identified.

1.2 Research question

To fulfil the above-mentioned gap in academic research. It is felt necessary to investigate consumer perception about intention to use mobile retailing among Nepalese people. Thus, this research attempts to fulfil the gap by investigating following research question.

- What factor influence the intention to use mobile retailing in Nepal?

This question aims to identify different factors affecting individual intention to use mobile retailing and develop suitable framework from previous empirical research work on mobile commerce and theories related to technology acceptance, and to test the framework in the context of Nepal.

Following above research question number of hypotheses have been developed and tested to measure whether the identified factors have influence on individual intention to use mobile device for retailing activities.

1.3 Research purpose and significance:

The purpose of this dissertation is to develop an effective framework based on the previous empirical research to understand and identify those factors influencing intention to use mobile devices for retailing.

The significance of this empirical research is to fulfil the gap found during the search and study of previous studies, and to gain deeper understanding of the consumer acceptance of mobile retailing in Nepal. Since, to fulfil the shortage of electronic record of systematic empirical research conducted on Nepalese e-commerce, this research work would be foundation for the further research in the context of mobile retailing acceptance in Nepal. There is also practical contribution of this research for mobile marketer to understand the variables influencing individual intention to use mobile retailing.

1.4 Delimitation

Due to the short time frame and limited resources for this research has had, the scope of this research work has been narrowed down. As various government intervention on access of international mobile retailer platform and only few countable mobile retailers have been growing in recent year in Nepal. Thus, the scope of this study is limited within the boundary of Nepal.

2. Literature Review

2.1 Mobile retailing

Modernization in retailing activities had been found since few decades ago. As the initial invention of online shopping had started from early 1995, when UK introduces “Fraud- free electronic shopping”, and after two years Singapore and Europe introduced secured electronics transaction (Liang & Lai, 2000). Similarly, substantial growth in the number of mobile commerce providers and users have found as the mobile technology has transform the way of communication and exchange of information.

Mobile commerce includes mix of online services accessed through the use of mobile device capable to provide access across web site and applications (apps) (Zhang et al., 2013) and have most visible social change within the last decade (Groß, 2015b).

Mobile commerce is defined as the approach of browsing, searching, comparing, buying goods or services from different retailers simultaneously at any time and places (Groß, 2015a). Similarly, for this research mobile commerce or mobile shopping represents all the activity involving from product information search to purchase conducted through the mobile device regardless of specific time and place

Different dimension of mobile commerce such as instantaneity, ubiquity, localization, personalization and identification have made it different from other form of digital commerce (Zhang et al., 2012), thus mobile commerce has some advantages compared to traditional electronic commerce such as, multiple service (Sadeh, 2003), enhanced security (Wiedmann, Buxel, & Buckler, 2000), convenience and ubiquity (May, 2001).

Most of the existing literature in new technology acceptance had used technology acceptance model developed by Davis (1989). This model was developed and aimed to apply on technology acceptance within the organizational context (Davis, 1989).

However, it has been widely used in the context relating to consumer usage and adoption of new technology (Gao, Sultan, & Rohm, 2010). In our research also we chose technology acceptance model because of its wide acceptance on study of different uses of mobile technology, including mobile service (Zarmpou, Saprikis, Markos, & Vlachopoulou, 2012), mobile ticketing (Mallat, Rossi, Tuunainen, & Öörni, 2009), mobile payment (Kim, Mirusmonov, & Lee, 2010; Schierz, Schilke, &

Wirtz, 2010), and mobile commerce (Agrebi & Jallais, 2015; Groß, 2015a; Kalinic & Marinkovic, 2016; Lai & Lai, 2014; Mizanur & Sloan, 2017; Zhang et al., 2012).

Besides technology acceptance model, theory of reasoned action developed by Fishbein and Ajzen (1975), theory of planned behavior developed by (Ajzen, 1991), and innovation diffusion theory developed by (Rogers, 1995) have also been used to study the acceptance and use of mobile commerce (Khalifa, Cheng, & Shen, 2012; Yang, 2012; Zhang et al., 2012).

In our study also, we also include all above mentioned theories. Since it has been said that, technology acceptance model is only concentrates on users internal perception, whereas theory of planned behavior and theory of reason action concentrate on external factors (Ajzen, 1991), and innovation diffusion theory focuses on innovative characteristics of technology (Rogers, 1995). Therefore, combining all four theories supposed to provide comprehensive result and better understanding of factors that influence the acceptance of technology (Zhang et al., 2012).

Along with these four theory, Zhang et al. (2012) developed conceptual framework for meta-analysis including perceived cost, perceived risk, perceived enjoyment, and trust as factor influencing the acceptance of mobile retailing. Since, those variables have been found widely valid in influencing acceptance of m-commerce across different countries.

Similarly, Marriott and Williams (2018) studied the impact of trust and risk in the adoption of mobile commerce. Perceived security and individual mobility have been studied by Schierz et al. (2010) and found significant effect of these variables on acceptance of mobile commerce. Furthermore, perceived cost and personal awareness has strong impact on acceptance as found in the study conducted by (Mizanur & Sloan, 2017), and impact of personal attachment and risk avoidance had been studied by (Gao, Rohm, Sultan, & Huang, 2012).

Most of the empirical work on mobile retailing acceptance use technology acceptance modes combined with other factor influencing the acceptance of technology. Some researchers also have combined two or more theory along with technology acceptance model, like theory of planned behavior, theory of reasoned action and innovation diffusion theory.

During the literature review of previous works, perceived usefulness and perceived ease of use from technology acceptance model have found significant effect on intention to use mobile commerce. We have listed below research and their findings, which are conducted on mobile commerce during the year of 2010 to 2018. These research paper have been searched using keywords like, mobile commerce, mobile shopping, mobile retailing, technology acceptance model, theory of planned behavior, and innovation diffusion theory from various database.

Table 1: Review of previous research

Author	Theories	Sampling and country	Major findings
(Zhang et al., 2012)	Technology acceptance model, theory of reasoned action, theory of planned behavior, and innovation diffusion theory	53 articles from 58 studies conducted on different countries, for meta-analysis	Perceived cost, perceived risk, trust, and perceived enjoyment significantly influences mobile retailing acceptance. However, culture does have specific effect on mobile retailing adoption, where eastern countries have more significant effect of subjective norm than in western countries.
(Yang, 2012)	Theory of planned behavior	400 participants were online surveyed in United States	Perceived enjoyment was the strongest determinant affecting positive attitude towards adopting mobile retailing than perceived usefulness of mobile retailing.
(Schierz et al., 2010)	Technology acceptance model	1447 respondents surveyed in Germany	Perceived compatibility has the strong effect on the intention to use mobile payment services. Mobility is another driver of mobile payment acceptance. However, perceived security has a positive relation with the acceptance of mobile payment, but the link was not strong as perceived risk.
(Mizanur & Sloan, 2017)	Technology acceptance model	575 respondents surveyed in Bangladesh	Perceived usefulness, perceived ease of use and perceived awareness positively influence the m-commerce acceptance. Whereas, perceived risk

		(Dhaka and Chittagong)	and perceived cost were found as negative predictor.
(Marriott & Williams, 2018)	Risk and Trust	435 online responses, surveyed in United Kingdom	Overall trust has found the most significant predictor of intention on younger male, where older women are influenced by m-vendor trust. Similarly, overall risk perception has found insignificant predictor of m-shopping acceptance. Even though, three predictors of risk, financial, performance and psychological risk significantly contribute to overall risk.
(Kim et al., 2010)	Technology acceptance model	269 questionnaires were collected via email and visiting schools, universities, companies surveyed in Korea	Perceives ease of use and perceived usefulness are the strongest factor that affect intention to use mobile payment. Compatibility has a significant effect on perceived ease of use and perceived usefulness. However, mobility and reachability affect the ease of use of m-payment.
(Khalifa et al., 2012)	Theory of planned behavior	202 part time Master of Business Administration student in United Arab Emirate	Attitude and Subjective norm have strong effect on intention to use. Social influence is as important as the attitude of an individual in the adoption of mobile commerce. However, there is no effect of perceived behavioral control on intention to use.

(Kalinic & Marinkovic, 2016)	Technology acceptance model	224 respondents surveyed in Republic of Serbia	Social influence and customization significantly affect perceived usefulness. Perceived usefulness and perceived ease of use have a direct and positive effect on behavioral intention. Whereas, mobility, customization and personal innovativeness significantly affect perceived ease of use.
(Lai & Lai, 2014)	Unified theory of acceptance and use of technology	219 respondents from Macau	Perceived enjoyment and social influence has positive and significant effect on intention to use m-commerce.
(Groß, 2015a)	Technology acceptance model	286 respondents from German University surveyed in Germany	Perceived enjoyment and trust affect the consumer intention to engage in m-shopping. Perceived ease of use doesn't influence the attitude towards using m-shopping. However, influence of Perceived ease of use on perceived usefulness is slightly stronger than on perceived enjoyment.
(Batkovic & Batkovic, 2015)	Technology acceptance model	513 respondents in Sweden	Perceived usefulness, social influence, and compatibility significantly affect intention to use mobile retailing. Among them strong influence of compatibility had found on intention. Moreover, perceived ease of use and compatibility were

			found as strong determinant of perceived usefulness.
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2.2 Theoretical framework

There are numerous theories developed to explain the intention to use new technology and their acceptance (Lai, 2017). Among various theories on adoption of new technology, theory of reasoned action (Fishbein & Ajzen, 1975), theory of planned behavior (Ajzen, 1985, 1991), technological acceptance model (Davis, Bagozzi, & Warshaw, 1989) innovation diffusion theory (Rogers, 1995), technology acceptance model 2 (Venkatesh & Davis, 2000), and technology acceptance model 3 (Venkatesh & Bala, 2008) are widely used model to investigate the adoption of consumer oriented technology.

2.2.1 Theory of reasoned action

For the last few decades, theory of reasoned action developed by (Ajzen & Fishbein, 1980; Fishbein & Ajzen, 1975) has been accepted as a leading theory in social psychology (Trafimow, 2009). According to Ajzen and Fishbein (1980) this theory was developed to predict and understand individual's behavior and explain their behavioral intentions influencing behavioral actions.

According to this theory, person's action is the function of behavioral intention. That means, if someone is likely to perform a specific behavior if he or she intends to do it (Albarracin, Johnson, Fishbein, & Muellerleile, 2001). Similarly, behavioral intention to perform specific behavior is influenced by the individual attitude towards performing that behavior and subjective norm. Whereas, person's attitude towards behavior represent the persons positive and negative feelings towards certain specific factor and individual attitude is driven by behavioral beliefs and evaluation of outcome (Fishbein & Ajzen, 1975).

Similarly, subjective norm is the individual perception of social pressure to do or not to do the behavior (Ajzen, 1991). Precisely, it is the individual perception to do or not do the particular behavior based on the perception of other who are important to him/her (Fishbein & Ajzen, 1975). Similarly, subjective norm is driven by normative beliefs combined with motivation to perform that behavior.

One of the important assumption of theory of reason action is that human beings process information rationally which leads to examine the sources of information and their influence on attitude and intention of individual (Ajzen & Fishbein, 1980). However, theory of reason action states that intention is not strong factor of behavior, as intention can be changed overtime with change in different circumstances (Ajzen & Fishbein, 1980).

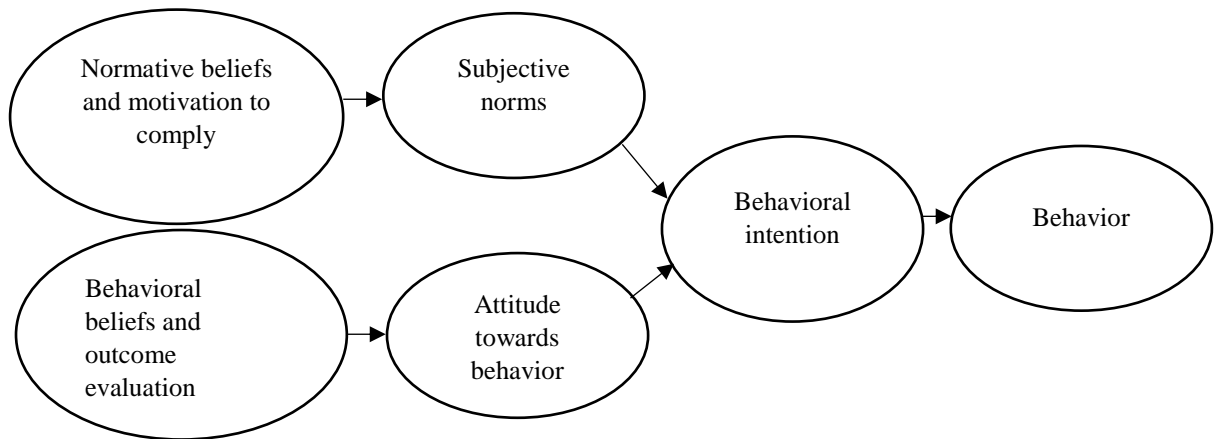


Figure 1: Theory of Reasoned Action (Fishbein & Ajzen, 1975)

Ajzen and Fishbein emphasized the applicability of the theory of reasoned action in various diverse sector, like, consumer behavior, voting in election, family planning, occupational orientation and more. This theory has been also widely used to test consumer behavior or acceptance towards food irradiation (Frishman, 2008), smart phone purchase (Chi, Yeh, & Yang, 2011), buying car (Simbolon, 2015), green technology acceptance (Mishra, Akman, & Mishra, 2014).

2.2.2 Theory of planned behavior

Theory of planned behavior is the extended version of theory of reasoned action (Ajzen, 1991). Under the theory of reasoned action, behavioral intention only is sufficient to predict the behavior in the case only when there is a complete control of behavior by persons. However, it cannot predict individual behavior under condition of incomplete volition control (Ajzen, 1991). To address this limitation of theory of reasoned action, Ajzen (1985) conceptualized theory of planned behavior to improve the predictive power of individual behavior by including perceived behavioral control. Perceived behavioral control refers to the persons perception of ease or difficulties of performing the behavior of his/her interest and it is decided by perceived control and

perceived convenience. According to theory of planned behavior, an individual's behavioral intentions determine his/her behavior, in general higher the intention to engage in behavior more likely to perform that behavior. Similarly, subjective norm and attitude determine the behavioral intention, which is the same as the theory of reason action. In addition to subjective norm, attitude and intention, theory of planned behavior includes perceived behavioral control assuming that the influence of perceived behavioral control on individual to predict the intention and action.

According to Ajzen (1991)

“intention to perform behavior of different kind can be predicted with high accuracy from attitude toward behavior, subjective norms, and perceived behavioral control, and these intentions, together with perception of behavioral control, account for considerable variance in actual behavior (p. 179)”.

Which means actual behavior can be predicted more accurately with the compound function of intention and perceived behavioral control. However, the relative importance of perceived behavioral control and behavioral intention can be varied according to situation and behavior in order to predict actual behavior (Ajzen, 1991).

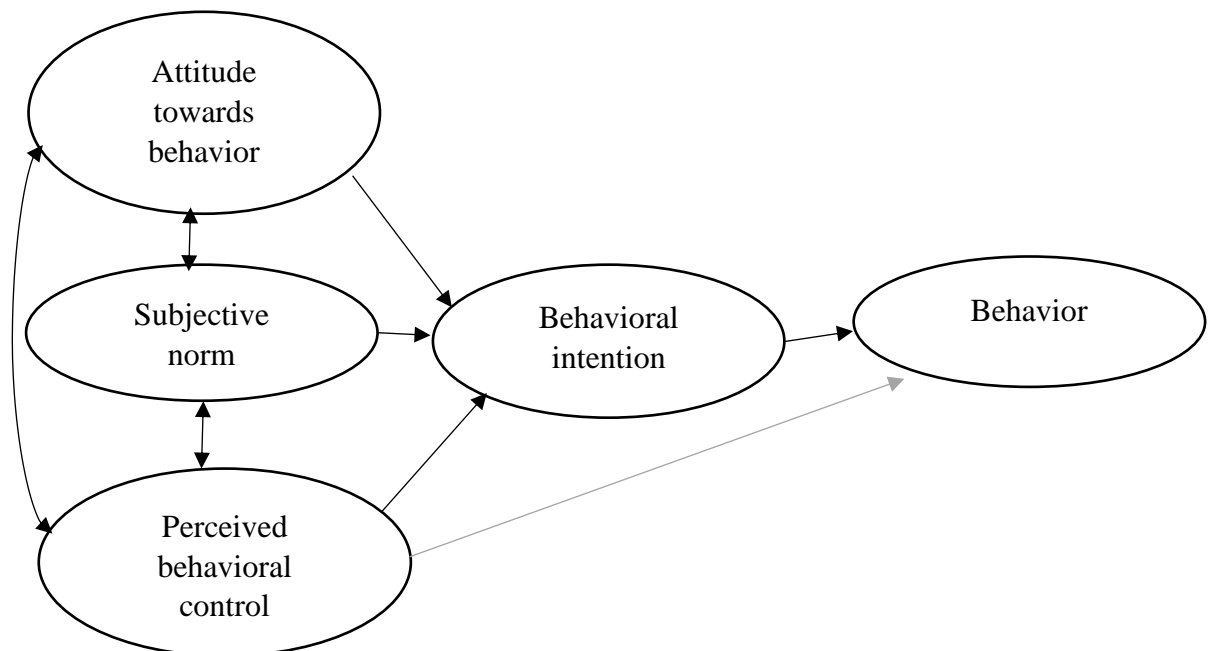


Figure 2: Theory of Planned Behavior (Ajzen, 1991)

According to this theory, the intentions and actions of individual`s are guided by different beliefs. These beliefs include, behavioral beliefs, normative believes and control believes. According to (Ajzen, 1991) each believes act as antecedents of each variable influencing intentions. More precisely, behavioral beliefs are supposed to affect attitude towards behavior, normative beliefs act as determinants of subjective norms, and control beliefs provides basis for perceived behavioral control.

During the literature search, it was found only fewer application of theory of planned behavior in study of acceptance of mobile retailing comparing with the technology acceptance model. However, the exclusion of perceived behavioral control and subjective norm in the original technology acceptance model have made reasonable to include these factors in study of acceptance of mobile retailing. Thus, some researchers had studied theory of planned behavior combined with technology acceptance model (Kalinic & Marinkovic, 2016; Zhang et al., 2012). Thus, considering the findings of previous research we have included subjective norm as determinant of acceptance of mobile retailing.

2.2.3 Innovation diffusion theory

To understand how an innovation spread over in social system, Rogers (1995) developed the framework which is called innovation diffusion theory. This theory was intended to find answer of how rate of adoption is affected by properties of an innovation. According to Rogers (1995) Innovation is “an idea, practice, or object that is perceived as new by an individual or another unit of innovation”.

According to this theory, innovation features explaining the variation in the rate of adoptions are relative advantage, compatibility, complexity, trialability, and observability, where relative advantage is the belief that the chosen product or innovation is better than that existing one. And usually, it is viewed on the basis of economic term providing us with the positive or negative result. Thus, higher the degree of perceived relative advantage of innovation, rapid will be the rate of adoption.

Similarly, compatibility refers to the consistency of potential adopter`s needs, past experiences, existing values in relation to the new innovative product. It is believed that, higher degree of compatibility provides lower uncertainty to the potential adaptors and resulted higher adoption rate.

Similarly, complexity concerns with the difficulty of using or accepting innovation, which means more complex the innovation to adopt lower the rate of adoption. On the other hand, trialability explain how easily the adapter can explore the innovation. More precisely, it is the features of the innovation that allow the potential adopters to test and experience the innovation with on a limited basis. Lastly, observability is the extent to which the benefits of adopting an innovation is visible to potential user.

However, previous empirical research shows that relative advantage, complexity and compatibility are important among five innovation characteristics, which are more consistently related to innovation adoption (Zhang et al., 2012).

To understand how the innovation is adopted, Rogers (1983) explain five stages of innovation decision process i.e. knowledge, persuasion, decision, implementation and confirmation, which helps an individual to evaluate new ideas and information for making decision regarding whether to use the new information and ideas in current situation or not. It is mainly related with the perceived new ideas about innovation and the uncertainty associated with this.

Innovation adoption process starts with individual knowledge, which is determined by his/her decision making characteristics and this characteristics is usually influenced by his/her socio-economics characteristics, personality variables, and communication behaviors (Rogers, 1983).

Similarly, persuasion occurs when the individual tries to source the information about innovation by accessing the creditability of sources and evaluates important referents' attitude toward the innovation. The formation of attitude towards the innovation based on the individual perceived of characteristics of innovation, which are relative advantage, compatibility, complexity, trialability, and observability (Rogers, 1983).

Whereas, decision takes place when individual make choice among the various course of action about whether to accept or reject the innovation. And at the implementation stage the actual use of innovation occurs after the individual decide to use it. Lastly, confirmation occurs when individual search for support in his/her decision regarding continuous usage of innovation, where confirmation about the innovation is based on level of satisfaction as well as past experiences of using innovation (Rogers, 1983).

2.2.4 Technology acceptance model

Davis (1985) technology acceptance model (TAM), developed and empirically tested in order to study and explain the effect of system characteristics on the acceptance of computer-based information system. This theory is based on theory of reasoned action developed by Fishbein and Ajzen (1975).

Technology acceptance model study how consumer cognitive responses, that is; perceived usefulness and perceived ease of use; are influenced by design feature of system and their effect on user affective response (attitude towards behavior).

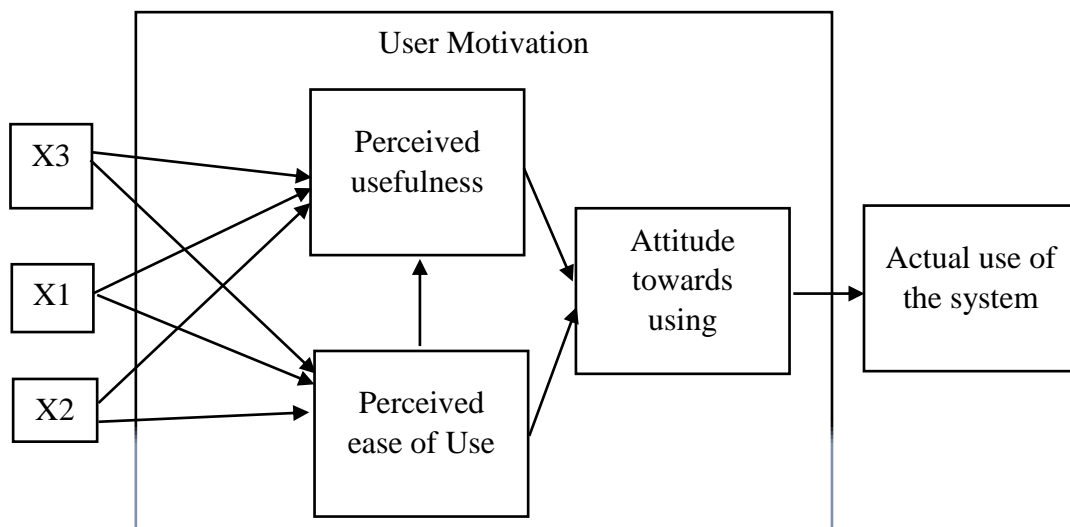


Figure 3: Original technological acceptance model (Davis, 1985, p. 24)

Following the theory, Davis (1985) explain users motivation towards actual system usage depends in to three factors; perceived usefulness, perceived ease of use and attitude towards the system. Where, it was hypothesized that, attitude towards system as a major determinant of actual system use or reject. And as explained above attitude towards a system is influenced by persons perceived usefulness and perceived ease of use towards that system, with perceived usefulness is directly influenced by perceived ease of use.

Many researchers; including Davis (1989); Davis et al. (1989); Venkatesh and Bala (2008); Venkatesh and Davis (2000) and many other researchers, apply original technology acceptance model in various aspects of technological innovation acceptance within and outside organization. Therefore, technology acceptance model

has become popular and cited in most of the technology acceptance related research works (Lee, Kozar, & Larsen, 2003). Behind the growing popularity of technology acceptance model, it has been continuously modified with adding or removing variable from original model.

In the study Davis et al. (1989), identified additional factor, behavioral intention with the direct influence by the perceived usefulness of the system, assuming that if any system is perceived to be usefulness would lead to an individual with strong behavioral intention to use that system without forming any attitude. However, perceived ease of use has found little but significant effect on intention to use. That was the first modification of original technology acceptance model.

In Davis (1993) work, it had found that perceived usefulness directly affect the actual use of system. Similarly, without forming any perception, system characteristics also influence the individual attitude towards the use of system.

Following the earlier study result, Venkatesh and Davis (1996) develop a final version of technology acceptance model by eliminating attitude construct from the model and introducing new construct behavioral intention in original technology acceptance model. This removal of attitude variable eliminate the unexplained direct effect of system characteristics on attitude as explained in Davis (1993) work. This model was said to be the final version of technology acceptance model. The external factor included in final version of technology acceptance model are system characteristics, training, user involvement in training, and the nature of the implementation process.(Venkatesh & Davis, 1996)

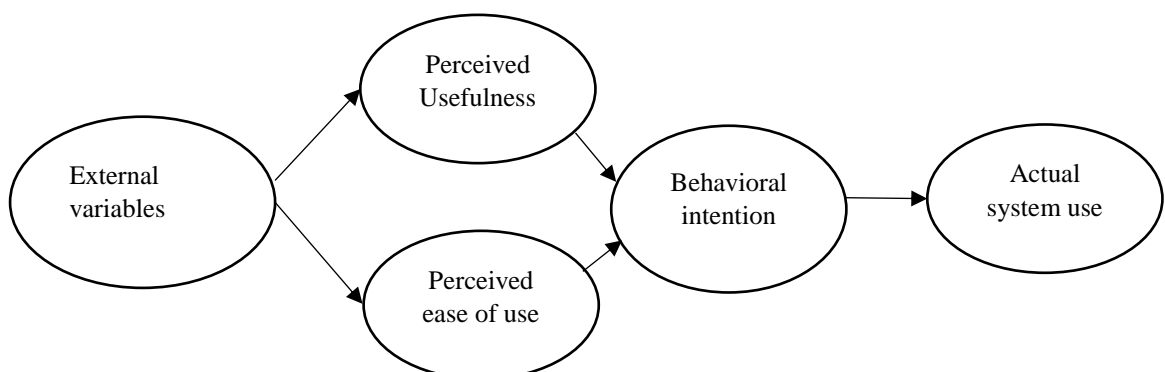


Figure 4: Final version of technology acceptance model (Venkatesh & Davis, 1996, p. 453)

Despite the final version of technology acceptance model, it has been extended over several times to explain and include more relationship variables in this model. One of the important extension is Venkatesh and Davis (2000) work. By identifying limitation of technology acceptance model on explaining the variable determining person perception towards the system to be useful, they include additional variables as antecedents of the perceived usefulness and named this model as technology acceptance model 2. Including social influence variables (subjective norms, voluntariness, and image), and cognitive instrumental process (job relevance, output quality, result demonstrability, and perceived ease of use) as the factor influencing perceived usefulness of system.

Another extension of technology acceptance model is Venkatesh (2000) work. By introducing determinants of perceived ease of use in two group anchors and adjustments. Anchors including general beliefs about computer and computer usage (computer self-efficiency, perception of external control, computer anxiety, and computer playfulness), and adjustment including beliefs based on direct experience of target system (perceived enjoyment and objective usability). In the longitudinal study conducted in three different organization with 246 respondents found significant effect of the variable in explaining perceived ease of use.

Similarly, Venkatesh, Morris, Davis, and Davis (2003) studied different 8 model of individual technology acceptance and develop unified theory of acceptance and usage of technology (UTAUT). This model, with the moderating effect of age, gender, experience, and voluntariness of use; include performance expectancy, effort expectancy, social influence, and facilitating condition as a direct determinant of user behavioral intention. Further, this model includes facilitating condition and behavioral intention as direct determinant of usage behavior. Tested empirically, this model found significant in explaining variable influencing behavioral intention and actual usage behavior.

Developed as a theory to study the acceptance of technology within the organization (Davis, 1985, 1989; Davis et al., 1989), technology acceptance model has been widely applied in many studies on different fields of study, including mobile services (Zarpou et al., 2012), mobile payment (Kim et al., 2010; Schierz et al., 2010), m-commerce (Cho, 2008; Wu & Wang, 2005), wireless technology (Yen, Wu, Cheng, &

Huang, 2010), online banking (Lin, Wu, & Tran, 2015), and internet banking (Lee, 2009).

Many researchers have applied technology acceptance model combined with other theories of technology acceptance to study acceptance of mobile commerce. Zhang et al. (2012) combined technology acceptance mode with theory of reasoned action, theory of planned behavior and innovation diffusion theory, and perform meta-analysis of research paper based on m-commerce acceptance, to explain and provide better understanding of m-commerce acceptance. Similarly technology acceptance model has been studied with other construct like perceived compatibility and mobility (Kim et al., 2010; Schierz et al., 2010), perceived risk (Mizanur & Sloan, 2017), trust (Groß, 2015a; Marriott & Williams, 2018), perceived enjoyment (Groß, 2015a; Zhang et al., 2012) and subjective norms (Kalinic & Marinkovic, 2016).

3. Conceptual framework

Mobile commerce is very similar with information technology and electronic commerce (Zhang et al., 2012) and above mentioned models were found widely valid in research of electronic commerce and information technology field. Since, technology acceptance model provides connection among acceptance of technology and its usage behavior (Agrebi & Jallais, 2015). Considering the widely acceptance of technology acceptance model in study of acceptance of mobile commerce, our research model will combine technology acceptance model and other relevant construct along with theory of reasoned action, theory of planned behavior, and innovation diffusion theory.

Perceived usefulness and perceived ease of use has direct effect on behavioral intention, and further behavioral intention has direct effect on actual usage of new technology (Agrebi & Jallais, 2015). Hence intention to use mobile retailing is one of the major dependent variable in this research model. Perceived usefulness and perceived ease of use were used from technology acceptance model. Behavioral attitude, as determinant of intention to perform behavior, is not included in this research to explain intention to use mobile retailing to make the model more simple; since it had been argued that attitude construct was difficult to measure (Venkatesh et al., 2003).

Subjective norm is the only variable borrowed from theory of reasoned action and theory of planned behavior. Since, in a meta-analysis of 53 articles with 58 studies conducted by Zhang et al. (2012) found that subjective norms has more influence on perceived usefulness in eastern culture than in western culture.

Following the Empirical research, innovation diffusion theory has also been used widely along with technology acceptance model in research of e-commerce. Among the other innovation characteristics; relative advantage, complexity and compatibility are consistently related to adoption of technological innovation (Tornatzky & Klein, 1982). However, relative advantage and complexity construct of innovation diffusion theory is similar to perceived usefulness, and perceived ease of use variable of technology acceptance model (Wu & Wang, 2005). Thus, only compatibility variable is used in our research framework.

Besides, technology acceptance model, theory of planned behavior, theory of reasoned action, and innovation diffusion theory; our research model includes trust and perceived enjoyment as a positive predictor of intention and perceived risk as negative predictor of intention to use mobile commerce. Since, perceived risk along with other variable was found to be significant determinant of mobile commerce acceptance (Groß, 2015a; Yang, 2012). And trust has been added in our framework to validate the result of previous research, since it was found as one of the important predictor of intention in developed countries (Groß, 2015a; Marriott & Williams, 2018).

Based on study of prior research studies, we developed our research framework for this thesis as follows:

3.1 Intention to use

Intention to use or behavioral intention to use new technology is the core concept of technology acceptance model (Davis, 1989). Behavioral intention is the important determinant of actual usage (Zhang et al., 2012). Chew (2006) defined behavioral intention as the strength of individual intention to perform a specific behavior. Means consumer higher intention towards using mobile retailing might result in greater actual use.

More precisely, it is an individual ability and readiness to adopt new technology. According to Ajzen (1991) “behavioral intention can find expression in behavior only

if the behavior in question is under volitional control” (p. 181). When intention to engage a behavior is stronger, its performance might be more.

Many empirical researches on mobile commerce have found positive and negative effect of various factors influencing individual intention to use. Perceive usefulness (Kim et al., 2010; Mizanur & Sloan, 2017), perceive ease of use (Kalinic & Marinkovic, 2016; Kim et al., 2010), trust (Groß, 2015a; Marriott & Williams, 2018), subjective norms and perceived enjoyment (Lai, 2017) and perceived compatibility (Schierz et al., 2010) have found positive effect on intention to use mobile commerce. On the other hand perceived risk has direct negative effect on intention to use it (Chang, Fu, & Jain, 2016).

3.2 Perceived usefulness

According to Davis (1989, p. 320) individual perceived usefulness is “the degree to which a person believes that using a particular system would enhance his or her job performance.” A system with high perceived usefulness has positive relationship with user expected performance (Davis, 1989). That means, if a person believes that adopting particular system would enhance job performance or his/her work would be easy to perform by adopting that technology, then the person would be more likely to adopt that technology.

Previous empirical research depicts that perceived usefulness is important determinant of intention to use (Davis et al., 1989; Davis, Bagozzi, & Warshaw, 1992), this relationship has been also tested and accepted in m-commerce acceptance in later study (Agrebi & Jallais, 2015; Wu & Wang, 2005). This relationship is expressed by our first hypothesis.

H1: Consumer perceived usefulness towards the mobile retailing has positive relationship with intention to use mobile retailing.

3.3 Perceived ease of use

Perceived ease of use refers to the individual’s internal perceptions that particular technology will be easy to use. As defined by Davis (1989) perceived ease of use is, “the degree to which a person believes that using a particular system would be free of effort” (p. 320).

Previous empirical research shows that perceived ease of use of specific technology is directly related with the intention to use this technology (Davis et al., 1989;

Venkatesh, 2000; Venkatesh & Davis, 2000), also perceived ease of use has more indirect effect on intention to use through perceived usefulness (Agrebi & Jallais, 2015; Davis et al., 1989; Wu & Wang, 2005), that means, person`s usefulness towards the system increases and would more likely to adopt that technology, as he/she believes that the technology will be easy to use. Further, it is assumed that the individual perception of easiness to use mobile retailing has much positive evaluation towards its usefulness. The above relationship are expressed by our second and third hypotheses.

H2: Perceived ease of use towards mobile retailing has positive relationship with intention to use mobile retailing.

H3: Perceived ease of use towards mobile retailing has positive relationship with perceived usefulness of mobile retailing.

3.4 Perceived enjoyment:

Perceived enjoyment towards using particular technology means fun or enjoyment to use such technology. Davis et al. (1992) define perceived enjoyment in the context of computer usage as “the extent to which the activity of using the computer is perceived to be enjoyable in its own right, apart from any performance consequences that may be anticipated” (p. 1113)

In the context of computer usage at work place, Davis et al. (1992) found that perceived enjoyment towards the use of computer at work has positive influence on intention to use computer at work, where perceived enjoyment and perceived usefulness are found positively correlated. Similarly, according to Agrebi and Jallais (2015) intention to use mobile retailing has positive impact of perceived enjoyment on customers, for those who are seeking more hedonic factor than utilitarian value. Similar result has been found on study conducted by Bilgihan, Kandampully, and Zhang (2016); Bilgihan, Okumus, Nusair, and Bujisic (2014) that utilitarian factor only are not sufficient without experiential (hedonic) value in acceptance of e-commerce. Similarly, Yang (2012) state that, among perceived enjoyment and perceived usefulness towards mobile retailing, perceived enjoyment has been found stronger determinant for positive attitude towards adopting mobile shopping. Based on above discussion our 4th, and 5th hypotheses are developed.

H4: Perceived enjoyment towards mobile retailing has positive impact on intention to use mobile retailing.

H5: Perceived enjoyment towards using mobile retailing has positive impact on perceived usefulness of mobile retailing.

Further, we have assumed that the easier and more instinctive mobile retailing perceived to be, it is perceived more enjoyable. Thus our 6th hypothesis is as follows.

H6: Perceived ease of use of mobile retailing has positive effect on perceived enjoyment towards using mobile retailing.

3.5 Perceived compatibility:

Rogers (1995) define compatibility as “the degree to which innovation is perceived as a consistent with existing value, past experience, and need of potential adaptors (p. 224).” Rogers (1995) found that the rate of adoption is positively related with the compatibility features of that innovation. This means, higher the compatibility of the innovation, the higher the rate of adoption.

Empirical study found that perceived compatibility is the predictor of behavioral intention to use. Schierz et al. (2010) found that compatibility affect positively on intention to use mobile payment. Similarly, in the same study it was found that the more compatible the mobile payment service is perceived, the more it is perceived to be useful. Similar result also found on study conducted by Mallat et al. (2009) in the study of mobile ticketing acceptance, it has found that the consumer usage intention is affected by perceived compatibility. So, following hypotheses have been developed for this study.

H7: Perceived compatibility towards mobile retailing has direct positive effect on intention to use mobile retailing.

H8: Perceived compatibility towards mobile retailing has the positive effect on perceived usefulness towards mobile retailing.

3.6 Subjective norm

Subjective norm is defined as “person’s perception that most people who are important to him think he should or should not perform the behavior in question” (Fishbein & Ajzen, 1975, p. 302). Social pressure was represented as a subjective

norm on theory of planned behavior and theory of reasoned action respectively as a determinant of behavioral intention (Ajzen, 1991; Fishbein & Ajzen, 1975) .

Meta-analysis of studies on mobile commerce adoption; conducted by Zhang et al. (2012) found strong influence of subjective norm on perceived usefulness in eastern culture than in western culture. Similarly, in the study of mobile entertainment service adoption conducted by Kim, Kim, and Kil (2009) found subjective norm has direct positive association with behavioral intention.

Zhou, Dai, and Zhang (2007) explain subjective norm as social influence and define sources of social influence as external and interpersonal. Where Interpersonal influence means the influence of important others, including family members, relatives, superiors, friends and colleagues who might be responsible for strong opinions about online shopping. And external influences include mass media, expert opinion, online reviews and non-personal information. In this study, only the interpersonal sources of social influences have studied.

Based on the previous study and their findings, following hypotheses have developed based on above discussion.

H9: Subjective norm has positive influence on intention to use mobile retailing.

H10: Subjective norm has strong positive influence on perceived usefulness towards using mobile retailing.

3.7 Trust

Trust is also one of important factor in determining acceptance of mobile commerce (Zhang, Zhu & Liu 2012). Researchers has defined trust in various way in existing technology acceptance literature. Tsu Wei, Marthandan, Yee-Loong Chong, Ooi, and Arumugam (2009) defined trust as in terms of privacy concern as, “the extent to which an individual believes that using m-commerce is secured and has no privacy threats” (p. 376). Cho, Kwon, and Lee (2007) defined trust as the individual buyer believes about seller credibility and kindness that resulted from buyer seller relationship.

Since there is no direct physical interaction between buyer and seller unlike other commercial activities. Many researchers emphasized an important role of trust on behavioral intention and actual usage in various aspect of mobile technology. Cho et al (2007) emphasized trust from buyers towards m-sellers as a consequence of

complex environment and information asymmetry in m-retailing. Several studies have found strong correlation between trust and behavioral intention to use mobile-commerce (Groß, 2015a; Marriott & Williams, 2018; Zhang et al., 2012).

Marriott and Williams (2018) study the relationship of trust with usage intention. Further they study the antecedents of trust consisting: m-vendor trust, m-service trust, m-device trust and disposition trust. Among above mentioned antecedents, m-vendor trust was found strongest correlation with overall mobile commerce trust perception. Similar result also found on study conducted by Groß (2015a). This means, consumer perceived trust in m-commerce provider might positively influence the consumer intention to engage in mobile commerce and hence determine m-commerce behavior. Thus, the following hypothesis proposed.

H11: Trust towards mobile retailing has positive effect on intention to use mobile retailing.

3.8 Perceived risks

Wu and Wang (2005) define perceived risk as “certain types of financial, social, psychological, physical or time risks when consumer makes transactions online” (p. 722)

Since, there are different risks associated with user’s online transactions such as late delivery of products, fraud, low quality of products and other illegal activities (Wu & Wang, 2005), data security, such as data manipulation, unauthorized data access and unwanted usage patterns tracking, as well as risks from privacy violation (Bauer, Reichardt, Barnes, & Neumann, 2005). Thus, perceived risk plays important role in adopting mobile commerce (Wu & Wang, 2005; Zhang et al., 2012) and enabling the likelihood of adoption of mobile commerce in the developing countries (Mizanur & Sloan, 2017). Therefore, it is necessary to ensure that service providers need to maintain high level of privacy and security to reduce the risk perception (Mizanur & Sloan, 2017). Yang, Pang, Liu, Yen, and Tarn (2015) highlight the significant predator of usefulness and ease of use perception are financial, security and performance risk.

The concept of perceived risk has changed since the beginning of online commerce, previously, risk was regarded as fraud or product quality risks. But now perceived risk is regarded as certain type of physical, psychological, financial, social, product

performance or time risks while making online transactions (Forsythe & Shi, 2003; Wu & Wang, 2005).

Marriott and Williams (2018) study the effect of perceived risk on intention to use and further study the effect of four antecedents (financial risk, psychological risk, performance risk and time risk). In this study, the overall risk has found insignificant to predict the intention to use mobile commerce. However, Psychological risk, financial risk, and performance risk are the most important antecedents of consumers perception towards the overall risk (Marriott & Williams, 2018). Groß (2015a); Yang (2012) calls for the further investigation of effect of risks towards m-shopping in underdeveloped areas.

Perceived risk was found as the negative predictor of attitude towards using m-commerce (Bauer et al., 2005). Similarly, Mizanur and Sloan (2017) concluded that, perceived risk has negative effect on consumer intention to use mobile commerce. However, surprisingly counter results was found by Wu and Wang (2005) on study conducted in Taiwan, found the positive relationship between perceived risk and behavioral intention to use m-commerce and made conclusion on perceived risk as an important determinant of m-commerce acceptance. However, exceptions to some research, most of the empirical research found the negative relationship between perceived risk and intention to use m-commerce. Thus our 12th hypothesis was developed as follows.

H12: Perceived risk towards mobile retailing has negative effect on intention to use mobile retailing.

Thus, from the above discussion and proposed hypothesis our conceptual model developed as follows.

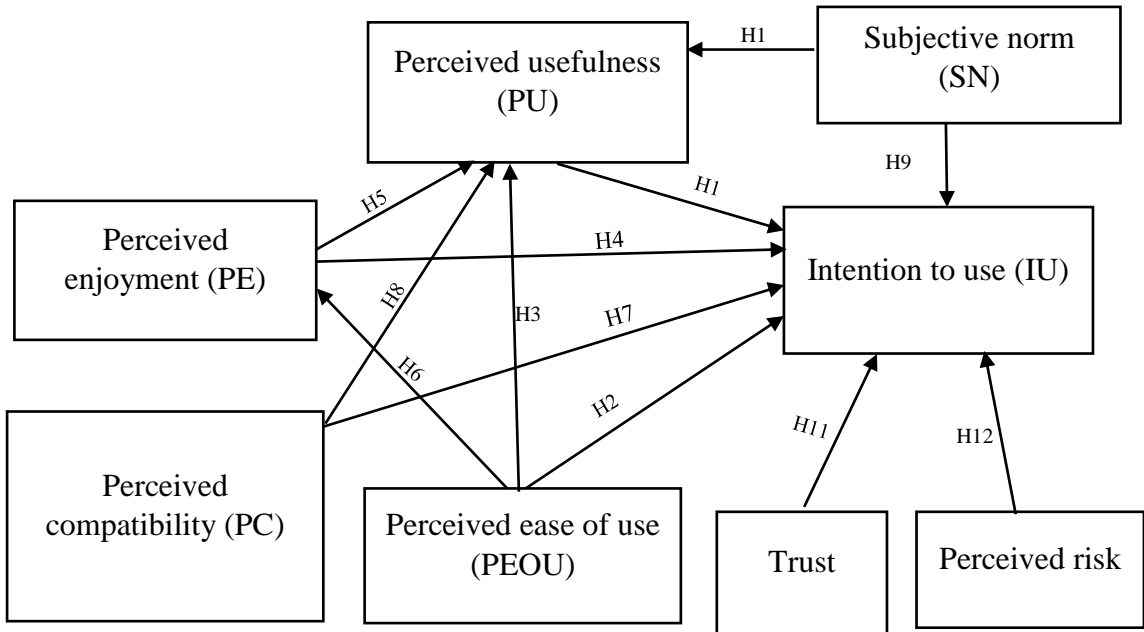


Figure 5: Proposed Research Model.

4. Research Methodology

This chapter deals with the methodology used to answer the research question. The chapter includes discussion on research design, data collection, construct measurement, and construct reliability and validity.

4.1 Research design

Choosing research design means explaining and justifying what data is to be gathered, using which method, and from where. It also includes the method of data analysis which will be sufficient to answer the research question; and is usually written before any data is collected (Easterby-Smith, Thorpe, & Jackson, 2008). Research design is the master plan following the specific process, which consist of method of data collection and data analysis by providing a framework to fulfil the objective of the study and to solve the specific research problem (Zikmund, Babin, Carr, & Griffin, 2009).

There are three choices in research design, qualitative, quantitative and mixed research (Creswell, 2014). Qualitative research is best suited when the research variables and the theory base are unknown (Creswell, 2014; Easterby-Smith et al., 2008). Using this method the researcher collects open-ended, emerging data with the primary intention of developing theory or pattern, by using either one or some of the following methods: interview, observation, document scanning, and audio visual material (Creswell, 2014).

On the other hand, quantitative research refers to the study of data which is either in the form of number or text that can be expressed in number (Easterby-Smith et al., 2008). Quantitative research design usually studies the outcome or effect that occurs as consequences of the underlying causes. This method is accused of being reductionist, that is ideas and theories are narrowed down in to small discrete set of variables comprised with research questions and number of hypotheses (Creswell, 2014). Thus, by using quantitative research design the research problem can be addressed by investigating relations between factors or variables influencing an outcome and those variables are usually brought from established ideas or theories.

Similarly, mixed method is the research approach which involves the collection of both qualitative data and quantitative data, which may consist of philosophical assumptions

and theoretical frameworks to create distinct design in order to combined and analyze the data (Creswell, 2014).

As part of our research, we are using quantitative approach, since we are conducting research which draws on established theories and previous result. Also, our research questions aim to study the relationship between factors that influence the intention to use mobile retailing in Nepal. Thus, quantitative research method is best suited for our study.

Similarly, there are different types of collecting quantitative data including experiment, survey, observation or secondary database etc. (Creswell, 2014). Due to the lack of appropriate secondary data required for our research, and because survey is most suited for collecting behavioral and opinion related data from large population (Easterby-Smith et al., 2008), we choose survey research design for our study. Our survey gathered data related to variables that influence individual intention to use mobile retailing in Nepal.

Survey method can be further divided in three different types including factual survey, exploratory survey, and inferential survey, where factual survey is used to collect factual data and usually used in market research and opinion pools.

Exploratory survey can be used to develop set of principles which can be applied in any setting, by studying social patterns in specific settings, where pre-specified hypothesis does not exist. Lastly, inferential survey is mainly used in case where the relationship between variables and concepts are desired, and such relationship are expressed in the form of hypothesis. Thus, inferential survey always consist of dependent and independent variables and it starts with the identification of such variables (Easterby-Smith et al., 2008).

Since, we have developed twelve hypotheses explaining the relationship between intention to use mobile retailing, which represents the dependent variable and several relevant antecedent variables. Inferential survey was used to gather relevant data to explain the relationship. This types of survey is also known as cross-sectional survey and it is the part of the relativist epistemology (Easterby-Smith et al., 2008).

According to Easterby-Smith et al. (2008) relativist epistemology assume that the human and organizational behavior has regular pattern, however these pattern are difficult to identify and explain due to multiple factors responsible to produce the

result. Thus, to measure the relationship between those factors cross sectional survey is suitable.

4.2 Sampling and data collection

Sampling refers to the subset of population from which evidence related to research is gathered, which in turn is used to draw conclusion about the population. Population refers to the entities as a whole on which decision are related with, and the main aim of collecting data from a sample is to make inference about the population from where the sample is extracted (Easterby-Smith et al., 2008). For our research, the population are worldwide mobile device user since they are assumed as the potential adopters of mobile commerce. However, this research is focused on the context of Nepal. Thus, our target population consist of Nepalese mobile device users who are assumed as potential adopters of mobile commerce in Nepal. The target population in this research represent the source from where the data relating to users intention to use mobile commerce was collected (Zikmund et al., 2009). In Nepal the exact number of mobile device users is hard to come by, however some sources estimate mobile internet user in Nepal to be around 16 million by the end of 2017. (Authority, 2017).

In order to select sample from the target population, we choose non-probability sampling which is different from probability sampling. In probability sampling the probability of each sample unit to be chosen as sample is known. On the other hand, in non-probability sampling it is difficult to state the chances of each unit to be selected as a sample. However, to achieve target response from large population with short time period creating probability sampling was difficult, so we choose non-probability convenience sampling to collect required data. This type of sampling involves the choice of sample units on the basis of their ease of access (Easterby-Smith et al., 2008).

As a non-probability convenience sampling, with the prior knowledge of population and its characteristics, to distribute the pre-structured survey questions, we choose five Facebook group based on Nepal, approximately comprising four hundred thousand members in total. The survey questions were posted on each group`s Facebook timeline from April 20 to April 26. In order to collect data from the member of the five Facebook groups, an online self-completion questionnaire was created. To ensure the participants were all from Nepal, the questionnaire started with the screening question “Do you live in Nepal?” Those who answers “yes” would move to

the next question in the questionnaire, while those who answered “no” would be redirected to the end of the survey.

The questionnaire was prepared in simplified English language, which can be understood by the average Nepalese people. The questionnaire begins with a paragraph explaining the nature and purpose of the research. The questionnaire also defined mobile retailing in order to establish a clear understanding of the concept. In order to get more responses, we offer chances for respondents to be entered into a draw for a reward of a mobile recharge. Further, to communicate for the reward after the survey, respondents are called to provide their email address on google form which was optional and those collected email were destroyed as soon as the respondents get reward.

The questionnaire designed for our survey took 5 to 6 minutes to complete and sensitive questions such as respondents personal use of mobile devices were avoided in order to increase response rate.

After running the online questionnaire for seven days, 210 responses were collected. Among these seven responses were not from Nepal, three responses were incomplete, and so these responses were removed from further analysis. In order to increase the reliability of the survey we filter the responses that provided identical answers for all the questions calculating individual level variances. Accordingly, responses with variances less than 0.05 were removed from analysis. In the end, we ended up with 192 valid responses for further analysis.

4.3 Pre-test

Before running the questionnaires, it was pretested in order to increase the reliability of the questionnaires and avoid potential misunderstanding on the part of the respondent (Zikmund et al., 2009). The purpose of the pre-test was to make sure that the questionnaires is relevant, concise, understandable and unambiguous.

At first, after we prepared the questionnaire we consulted with our supervisor, on the ways to circumvent potential difficulties with the questionnaire regarding leading questions, questions wording, and bias created by ordering of the questions. Following discussions with the supervisor, several changes were made across the questionnaire.

In the second stage of the pretesting, we tested the online questionnaires with 10 individuals who are representative of the final sample. Once they completed the questionnaires, we called each of them to get their opinion on the questionnaires. Despite the minor issues, such as the lack of clarity regarding the description of the reward no major issue regarding question complexity, question wording or their sequence have been found. Therefore, considering their comment, we bring the reward description just below the main instruction of the research to make noticeable by every potential respondents. The final questionnaire consisted of 25 items measuring 8 constructs.

4.4 Construct measurement

In order to test our proposed hypotheses, it is essential to measure each construct included in the conceptual framework including intention to use mobile retailing, perceived usefulness of mobile retailing, perceived ease of use of mobile retailing, perceived compatibility of mobile retailing, perceived enjoyment of mobile retailing, subjective norm influencing intention to use mobile retailing, trust towards mobile retailing, and perceived risk of mobile retailing. In order to measure the foregoing construct, measurement items for each construct were developed. Those measurement items are developed based on previous research. All the measurement items were measured using a five-point Likert scale, where participants indicate their opinion from five given options: 1 = strongly disagree, 2 = disagree, 3= neither disagree or agree, 4 = agree, and finally, 5 = strongly agree.

Each construct was measured using three or four items using the five-point Likert scale. In order to measure intention to use mobile retailing, items were borrowed from Batkovic and Batkovic (2015); Venkatesh and Davis (2000). The items were modified in order to make them suitable to the context of mobile retailing. Similarly, the items that measured perceived usefulness were borrowed were borrowed from Venkatesh and Davis (2000), the items that measure perceived ease of use were borrowed from Mallat et al. (2009); Venkatesh and Davis (2000), the items that measured perceived enjoyment were borrowed from Yang (2012), the items that measured perceived compatibility were borrowed from Mallat et al. (2009), the items that measured subjective norm were borrowed from Venkatesh and Davis (2000); Yang (2012), the items that measured trust and perceived risk were borrowed from (Marriott &

Williams, 2018). To make them fit to our research context. The measurement items and their literature sources are summary in table.

Table 2: Measurement items

Construct	Measurement Items	References
Intention to use	IU1: I am planning to use mobile device for purchasing in near future IU2: I intend to use mobile device for shopping in coming future IU3: I predict that I will use mobile device for shopping	(Batkovic & Batkovic, 2015; Venkatesh & Davis, 2000)
Perceived usefulness	PU1: Using mobile device for shopping would enable me to perform shopping more quickly PU2: Using mobile device for shopping would improve my shopping experience PU3: I find mobile shopping to be useful in my daily life	(Venkatesh & Davis, 2000)
Perceived Ease of Use	PEOU1: I feel easy to use mobile device for shopping PEOU2: Using mobile device for shopping require less mental effort PEOU3: Using mobile device for shopping is simple and understandable	(Venkatesh & Davis, 2000) (Mallat et al., 2009)
Perceived enjoyment	PE1: I feel that using mobile device for shopping is fun PE2: I feel that using mobile device for shopping is enjoyable	(Yang, 2012)

	PE3: it is interesting to use mobile device for shopping	
Perceived compatibility	PC1: Using mobile device for shopping fits well with my regular use of mobile device PC2: Using mobile device for shopping is compatible with my life style PC3: Using mobile device for shopping is convenient for me	(Mallat et al., 2009)
Subjective norms	SN1: People whose opinion I respect suggest that I should use mobile device for shopping SN2: People who are important to me think that I should use mobile device for shopping SN3: I would use mobile device for shopping because most of my friends use mobile shopping	(Venkatesh & Davis, 2000) (Yang, 2012)
Trust	TR1: I trust mobile retailers TR2: I believe mobile retailers offer the same quality products as physical store retailers TR3: I feel that mobile shopping is reliable	(Marriott & Williams, 2018)
Perceived risk	PR1: I do not feel safe providing personal information while using mobile device for shopping PR2: I believe that mobile shopping would put me at a higher risk of getting defective or low-quality product PR3: It is easy to make mistake when shopping using mobile device	(Marriott & Williams, 2018)

	PR4: I feel that using mobile device for shopping can be risky	
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4.5 Sample characteristics

Out of 210 responses collected after running the online questionnaires for seven days, we ended up with 192 usable responses for analysis. All the valid usable responses represent sample from the target population. The respondents age varies between 17 to 42 years with the mean age of 26 years. The collected sample consist majority of male consisting 67.19% of total sample. The collected responses consist large portion of student and full-time job holder representing 42.19% and 42.71% respectively. Out of five scales of monthly income asked for respondents from range of below 15000 to above 60000 Nepalese Rupees, majority of respondents (i.e. 59.89 %) represents the first two scale which is below 30000. The summary of collected sample is depicted in table below.

Table 3: Sample Characteristics

Sample description		Frequency	Percentage
Gender	Male	129	67.19%
	Female	63	32.81%
Occupation	Student	81	42.19%
	Full time job	82	42.71%
	Self-employed	17	8.85%
	Unemployed	5	2.60%
	Other	7	3.65%
Monthly income in Nepalese Rupees	Less than 15000	65	33.85%
	15000 to 30000	50	26.04%
	30000 to 45000	39	20.31%
	45000 to 60000	25	13.02%
	More than 60000	13	6.77%
Average age	26 years		

4.6 Construct reliability and validity

Studies based on relativist epistemology have similar validity and reliability issue as of research based on positivist epistemology. And always need to maximize internal validity or reliability of the measurement items (Easterby-Smith et al., 2008). Since, our research model consists of 8 latent constructs and 25 measurement items representing three to four measurement items for each construct. Thus, it is necessary to check whether the desired items works together with their respective construct and also whether they are measuring same thing or not. Thus, in order to enhance reliability and validity of measurement model, different types of statistical indicator were examined.

First, we examined the measurement items reliability by estimating factor loading. Second, convergent validity was measured interms of average variance explained, ρ_A , convergent reliability, and Cronbach's alpha. All the measure were found above the minimum threshold.

Third, discriminant validity of the measurement model was examined in terms of Fornell and Larcker (1981) of comparing square root of average variance extracted with correlation coefficient of respective variables, items cross loading and heterotrait-monotrait ratio of correlation (HTMT). And found sufficient discriminant validity for all the measuring variables.

5. Data Analysis

Prior to analyzing the data, all the measurement items were transformed into the same direction (positive measurement) by reverse coding negatively measured items PR1, PR2, PR3, and PR4. The measurement of items into same direction is supposed to reduce the acquiescence bias (Qasem, Ali, Gul, & Bilal, 2014).

To analyze the research model partial least square structural equation modeling (PLS-SEM) technique was used with the SmartPLS software (v. 3.2.7) (Ringle et al., 2015). Since SmartPLS is non-parametric analysis software it can be used in any types of sample distribution. Thus assumptions of normality of distribution was not consider (Astrachan, Patel, & Wanzenried, 2014; Hair, Hult, Ringle, & Sarstedt, 2016).

In the first stage, measurement model analysis was performed, where the analysis begins with a structural model and CFA results are part of the its initial analysis. The initial output consists of results to determine the measurement items of the constructs. The initial results provided by SmartPLS in the first analysis are indicator loadings, Cronbach alphas, composite reliability, average variance extracted, and cross loading which are discussed below. The result of the first analysis is presented in table 4, and appendix 2 and 3.

In the second stage of analysis, examination of structural model testing (hypothesis testing) was performed. In order to test significance of path coefficients and their respective significance to dependent variable, bootstrapping function was used in SMartPLS with the subsample of 5000. The summary of bootstrapping result with each hypothesized path coefficient β , their respective t-value along with R^2 , predictive relevance (q^2), and effect size (f^2) are presented in table 6, and appendix 4-6.

5.1 Measurement model analysis

Studies based on relativist epistemology have similar validity issue as of positivist epistemology, where the aim of these empirical studies is to maximize internal validity or reliability and external validity or generalizability (Easterby-Smith et al., 2008). Hence to access the internal validity of measurement model, item reliability and two types of validity were examined: convergent validity and discriminant validity (Hulland, 1999).

5.1.1 Item reliability

Item reliability is an examination of the items loading with regards to their respective construct. Normal threshold for item loading as prescribed by many researchers were found greater than 0.7, assuming representation of at least 50% share variance from measured items to respective construct (Carmines & Zeller, 1979) . However, in this study 0.5 threshold as prescribed by Hulland (1999) was considered for item reliability.

Items loading for all the constructs were ranged between 0.524 to 0.927 as shown in table 4. All the items of their respective constructs meet the 0.70 criteria with high item loading except for the first item of perceived enjoyment (PE1) which is just below 0.7 and two items of perceived risk including PR1 with loading 0.683 and PR4 with loading of 0.524. Individually, items loading for perceived usefulness ranged from 0.801 to 0.851 representing higher loading. Similarly, items loading to perceived ease of use ranged from 0.784 to 0.867. This also represents higher loading. All items of perceived compatibility were also loaded highly from 0.854 to 0.927. Similarly, all items of subjective norm ranged between 0.702 to 0.871.

However, first construct of perceived enjoyment PE1 has loading of slightly below 0.70 with items loading of 0.696, other two items PE2 and PE3 were loaded with 0.918 and 0.878 respectively. Similarly, first and fourth items of perceived risk have lower loading compared to the other items in overall model, where PR1 and PR4 loaded with 0.683 and 0.524 respectively. To enhance the convergent and discriminant validity PLS algorithm has been used several times by removing those items that have loading less than 0.7. However, any significance improvement in the validity measurement criteria has not been found, thus those items were not considered for removing (Hair et al., 2016).

Trust items were found well loaded with item loading between 0.837 to 0.887. Higher loading of all three items on intention to use was found above 0.90 representing 0.907, 0.913, and 0.908 for item IU1, IU2 and IU3 respectively. Therefore, considering Hulland (1999) criteria, items reliability for this model was achieved. This means the majority of shared variance to latent variable in our research model were contributed from respective measured items.

5.2.2 Convergent validity

Convergent validity shows the extent to which multiple items measure a common construct (Carlson & Herdman, 2012). Convergent validity of the measurement items confirmed by average variance extracted (AVE) (Fornell & Larcker, 1981), Cronbach alpha (Nunnally, 1978), and composite reliability (Gefen, Straub, & Boudreau, 2000).

Table 4: convergent validity

Construct	Items	Loading ^a	AVE ^b	rho_A ^c	CR ^d	α^e
Perceived usefulness	PU1	0.801	0.682	0.777	0.866	0.768
	PU2	0.851				
	PU3	0.826				
Perceived ease of use	PEOU1	0.867	0.691	0.804	0.870	0.779
	PEOU2	0.784				
	PEOU3	0.840				
Perceived enjoyment	PE1	0.696	0.699	0.859	0.873	0.789
	PE2	0.918				
	PE3	0.878				
Perceived compatibility	PC1	0.854	0.792	0.874	0.919	0.868
	PC2	0.927				
	PC3	0.887				
Subjective norm	SN1	0.871	0.668	0.785	0.857	0.750
	SN2	0.867				
	SN3	0.702				
Trust	TR1	0.887	0.740	0.850	0.895	0.827
	TR2	0.837				
	TR3	0.856				
Perceived risk	PR1	0.683	0.560	0.900	0.830	0.758
	PR2	0.880				
	PR3	0.850				
	PR4	0.524				
Intention to use	IU1	0.907	0.827	0.899	0.935	0.896
	IU2	0.913				

IU3	0.908
-----	-------

***Notes**

- a. Item loading > 0.50 is indicator of indicator reliability (Hulland, 1999).
- b. Convergent validity is measured by average variance extracted > 0.50 (Fornell & Larcker, 1981) .
- c. Internal reliability is measured by value > 0.70 of rho_A.
- d. Internal reliability is measured by composite reliability > 0.70 (Gefen et al., 2000) .
- e. Indicator reliability is measured by all value > 0.70 of Cronbach`s alpha (Nunnally & Bernstein, 1994).

As shown in table 4, average variance extracted for all construct of measurement model exceeded 0.560, where the cut off value for average variance extracted is 0.50 (Fornell & Larcker, 1981). Similarly, composite reliability ranged from 0.830 to 0.935 for all eight constructs, exceeding the minimum requirement of 0.70 (Gefen et al., 2000). Following the same result, all the value of Cronbach alpha and rho_A exceeded the cut off value of 0.70. Thus, convergent validity of all constructs has been established.

5.2.3 Discriminant validity

The measure of discriminant validity represents that the measurement of one construct differs from another construct used in the same model (Hulland, 1999) and to measure the discriminant validity, we first checked the square root of average variance explained with correlation coefficient of respective items (Fornell & Larcker, 1981), which is shown in appendix 2. All the value of square root of average variance extracted were found higher than the correlation coefficient for each construct in respective rows and columns. Thus, discriminant validity based on Fornell and Larcker (1981) criteria was established.

Along with Fornell and Larcker (1981) discriminant validity test criteria, alternative assessment of discriminant validity test was examined using item cross loadings. The result of cross loading examination is presented in appendix 3. All the item loadings were found higher in desired construct than their respective cross loadings, thus further evidence for discriminant validity was achieved.

However, recent literature in discriminant validity by Henseler, Ringle, and Sarstedt (2015), criticized the Fornell and Larcker (1981) assessment of discriminant validity, claiming it was unable to reliably detect the discriminant validity. According to Henseler et al. (2015) neither Fornell-Larcker criteria nor cross loading assessment would allow to determine the discriminant validity on variance based structural

equation modeling. Thus, Henseler et al. (2015) proposed an alternative approach called heterotrait-monotrait ratio of correlation (HTMT) as a new approach to establish discriminant validity in variance-based structural equation modeling. The model efficiency was accessed by using Monte Carlo simulation along with Fornell-Larcker criteria and cross loading assessment, and found superior performance for this method.

Therefore, we have also tested the discriminant validity using HTMT criteria and the result are shown in table 5. The calculated yields value of HTMT lies between 0.1277 in respect to (perceived risk and intention to use) and 0.9044 in respect of (perceived ease of use and perceived compatibility). All the value, except HTMT (perceived compatibility, perceived ease of use) meet the strictest criteria of $HTMT_{0.85}$, and liberal criteria of $HTMT_{0.90}$ (Henseler et al., 2015). However, in order to establish discriminant validity most liberal criteria ($HTMT_{inference}$) was checked by using complete bootstrapping with the subsample of 5000 (Henseler et al., 2015). Since all the value of $HTMT_{inference}$ were not found significantly 1 or above in 90% confidence interval, thus discriminant validity for our research model has been achieved (Henseler et al., 2015).

Table 5: Heterotrait-monotrait ratio of correlation (HTMT)

	A	B	C	D	E	F	G	H
Intention to use (A)								
Perceived compatibility (B)	0.6152 CI ₉₀ (0.5387,0.6886)							
Perceived ease of use (C)	0.6378 CI ₉₀ (0.5584,0.7188)	0.9044 CI _{0,90} (0.837,0.9685)						
Perceived enjoyment (D)	0.5273 CI ₉₀ (0.4372,0.6156)	0.7567 CI ₉₀ (0.6828,0.8295)	0.7385 CI ₉₀ (0.6527,0.8225)					
Perceived risk (E)	0.1277 CI ₉₀ (0.0996,0.2514)	0.3177 CI ₉₀ (0.2132,0.4287)	0.3347 CI ₉₀ (0.2255,0.4553)	0.1872 CI ₉₀ (0.156,0.3149)				
Perceived usefulness (F)	0.5123 CI ₉₀ (0.4089,0.6146)	0.6932 CI ₉₀ (0.5876,0.7975)	0.7408 CI ₉₀ (0.6351,0.8507)	0.5433 CI ₉₀ (0.4453,0.6477)	0.1669 CI ₉₀ (0.157,0.2834)			
Subjective norm (G)	0.5689 CI ₉₀ (0.4755,0.6586)	0.8264 CI ₉₀ (0.7601,0.8908)	0.8249 CI ₉₀ (0.7604,0.8906)	0.71 CI ₉₀ (0.6221,0.7952)	0.0861 CI ₉₀ (0.1046,0.2338)	0.552 CI ₉₀ (0.4216,0.6784)		
Trust (H)	0.483 CI ₉₀ (0.3861,0.5714)	0.6745 CI ₉₀ (0.6045,0.7409)	0.6771 CI ₉₀ (0.5993,0.7543)	0.5014 CI ₉₀ (0.4027,0.5985)	0.3173 CI ₉₀ (0.2291,0.4332)	0.5078 CI ₉₀ (0.3783,0.6372)	0.7246 CI _{0,90} (0.6509,0.7966)	

Note*: HTMT result marked in with shaded box indicate discriminant validity problems according to HTMT0.85, and HTMT0.90 criteria, however, HTMTinference does not indicate any discriminant validity problems in this model (Henseler et al., 2015)

5.2 Structural model analysis

Table 6: Hypothesis testing result

Hypotheses	Hypotheses path	Std Beta (β)	Std Error	t-value	Decision	f ²	q ²	95% CI LL	95% CI UL
H1	Perceived usefulness -> Intention to use	0.1007	0.0808	1.1253	Not supported	0.0079	0.0042	-0.0321	0.2349
H2	Perceived ease of use -> Intention to use	0.1855	0.0976	1.9294	Not supported	0.019	0.0111	0.0267	0.3474
H3	Perceived ease of use -> Perceived usefulness	0.3772	0.0859	4.4003**	Supported	0.0893	0.0450	0.2319	0.5124
H4	Perceived enjoyment -> Intention to use	0.1265	0.0954	1.3238	Not supported	0.0126	0.0055	-0.0302	0.2825
H5	Perceived enjoyment -> Perceived usefulness	0.0626	0.0866	0.7254	Not supported	0	-0.0026	-0.0795	0.2056
H6	Perceived ease of use -> Perceived enjoyment	0.615	0.0473	12.9291**	Supported	-	0.0000	0.5345	0.6889
H7	Perceived compatibility -> Intention to use	0.1623	0.1124	1.5241	Not supported	0.0142	0.0083	-0.0215	0.3458
H8	Perceived compatibility -> Perceived usefulness	0.2603	0.092	2.7926 **	Supported	0.0364	0.0185	0.1124	0.4132
H9	Subjective norm -> Intention to use	0.0714	0.0956	0.6967	Not supported	0.0032	0.0000	-0.0911	0.2248
H10	Subjective norm -> Perceived usefulness	-0.0159	0.0819	0.1993	Not supported	0	-0.0040	-0.1527	0.119
H11	Trust -> Intention to use	0.0962	0.0829	1.2618	Not supported	0.0095	0.0055	-0.0409	0.2309
H12	Perceived risk -> Intention to use	-0.0038	0.0786	0.3681	Not supported	0.0016	0.0000	-0.1555	0.1129

Notes: **p<0.01, *p<0.05

- Critical t-values for two-tailed test: t-value < 1.96 (P > 0.05), t-value < 2.58 (P = 0.05), and t-value > 2.58 (P < 0.001)
- R² (intention to use = 0.3669, perceived usefulness = 0.395, and perceived enjoyment = 0.3734)
- F² effect size impact indicator value of 0.02, 0.15 and 0.35 represents small, medium and large effect size (Cohen, 1988)
- Q² (intention to use = 0.278, perceived usefulness = 0.245, and perceived enjoyment = 0.2346)
- Predictive relevance (q²) of predictor exogenous latent variables according to Hair, Hult, Ringle, and Sarstedt (2014) values of 0.02, 0.15 and 0.35 represents small, medium and large predictive relevance.

To analyze the structural relationship of our model, we examined the key criteria, such as size and significance of the path coefficient, coefficient of determination (R^2 values), effect size (f^2), and predictive relevance Q^2 . At first, we calculated the size and significance of the path coefficient. As suggested by Hair et al. (2016) bootstrapping was performed using 5000 subsamples to obtain the significance level. Bootstrapping supposed to treat the observed samples as a representation of population and creates a large prespecified number of sample (Garson, 2016). The result of bootstrapping result along with its t-value is shown in table 6.

However, prior to analyzing the structural relationship, we examined the proposed model for multicollinearity. Since estimating path coefficient is based on OLS regression and the existence of multicollinearity might produce biased result (Hair, Ringle, & Sarstedt, 2013). In order to examine multicollinearity, we estimated the variance inflation factor (VIF), since variance inflation factor is frequently used method of measuring multicollinearity (Peng & Lai, 2012). Referring to appendix 4, all the estimated value of VIF lies below the recommended threshold of 3.3 (Diamantopoulos & Siguaw, 2006), thus the recommended criteria for multicollinearity among the constructs of the proposed model was achieved.

Analysis of the path coefficient and levels of significance shows that three out of twelve hypothesized relationship were failed to reject. Hypothesis 1 (H1) stated that consumer perceived usefulness towards the mobile retailing has positive relationship with intention to use mobile retailing, and it was rejected with the $\beta = 0.1007$, P-value > 0.05 , and t-value = 1.1253. This means that consumer perception of usefulness of mobile retailing does not influence on the intention to use mobile retailing.

Hypothesis 2 (H2) stated that perceived ease of use towards mobile retailing has positive relationship with intention to use mobile retailing, this hypothesized relationship rejected with the $\beta = 0.1855$, p-value > 0.05 , and t-value of 1.9294. This means, consumer perception of ease to use mobile retailing does not have any impact on intention to use mobile retailing.

Hypothesis 3 (H3) stated that perceived ease of use towards mobile retailing has positive relationship with perceived usefulness of mobile retailing. The hypothesized relationship between perceived ease of use and perceived usefulness was failed to reject with $\beta = 0.3772$, p-value < 0.001 , and respective t-value of 4.4003. This means,

the individual perception of easy to use mobile retailing has positive effect towards the usefulness of mobile retailing.

Hypothesis 4 (H4) stated that perceived enjoyment towards mobile retailing has positive impact on intention to use mobile retailing. This hypothesized relationship between perception of enjoyment to use mobile retailing and its positive impact on intention to use mobile retailing was not found significant with the $\beta = 0.1265$, P-value > 0.05 , and t-value of 1.3238. Thus, our proposed fourth hypothesis has been rejected.

Hypothesis 5 (H5) stated that perceived enjoyment towards mobile retailing has positive impact on perceived usefulness of mobile retailing. This proposed hypothesis has been rejected with $\beta = 0.0626$, P-value > 0.05 , and t-value of 0.7254. This means an individual perception of fun or excitement to use mobile retailing does not have any significant effect on its usefulness.

Similarly, hypothesis 6 (H6) stated that, perceived ease of use of mobile retailing has positive effect on perceived enjoyment towards using mobile retailing, With the standardized beta β -value of 0.615, P-value < 0.001 and t-value 12.9291, our proposed 6th hypothesis has been failed to rejected. This means the positive effect of perception of easy to use mobile retailing has significant positive effect on perception of enjoyment of mobile retailing. Precisely, the more easy to use the mobile retailing resulted with higher perception of fun or excitement to use it.

Hypothesis 7 (H7) stated that, perceived compatibility towards mobile retailing has direct effect on intention to use mobile retailing. Our 7th hypothesis explaining positive effect of perceived usefulness towards intention was rejected with $\beta = 0.162$, p-value > 0.05 and t-value of 1.5241, which means individual perception of compatibility towards using mobile retailing does not affect his/her intention to use.

Hypothesis 8 (H8) stated that, perceived compatibility towards mobile retailing has the positive effect on perceived usefulness towards mobile retailing. This hypothesized relationship failed to reject with the $\beta = 0.2603$, p-value < 0.001 , and t-value of 2.7926, which means the significant effect of perception of compatibility of mobile retailing, in regard to the regular use in daily life, significantly affect the usefulness towards mobile retailing.

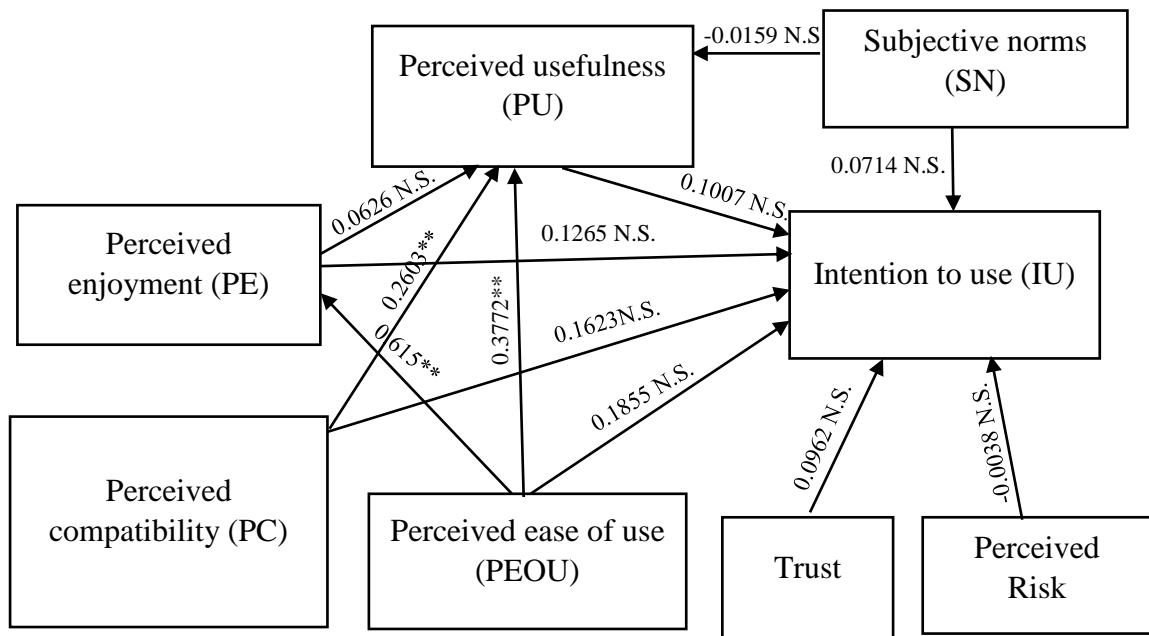


Figure 6 Hypothesis test with significance level

Note*: *significant at $p < 0.05$, **significant at < 0.001 , N.S not significant path relationship

Hypothesis 9 (H9) stated that, subjective norm has positive influence on intention to use mobile retailing. Our 9th hypothesis rejected with the $\beta = 0.0714$, $p\text{-value} > 0.05$ and $t\text{-value} = 0.6967$. Thus, impact of social influence on individual does not have any significant effect on intention to use mobile retailing.

Hypothesis 10 (H10) stated that, subjective norm has strong positive influence on perceived usefulness towards using mobile retailing. This hypothesized relationship between subjective norm and perception of usefulness was failed to satisfy with the $\beta = -0.0159$, $P\text{-value} > 0.05$ and $t\text{-value} = 0.1993$. This means social influence towards the use of mobile retailing does not influence on the individual perception towards its usefulness.

Hypothesis 11 (H11) explain that, trust towards mobile retailing has positive effect on intention to use mobile retailing. This hypothesized relationship between trust and intention to use mobile retailing failed with $\beta = 0.0962$, $p\text{-value} > 0.05$, and $t\text{-value} = 1.2618$. Which means individual trust on the mobile retailers does not have any significant effect on his/her intention to use it.

Hypothesis 12 (H12) stated that, perceived risk towards mobile retailing has negative effect on intention to use mobile retailing. This hypothesis, explaining the relationship between individual perception of risk towards using mobile retailing and his/her intention to use it, have failed to satisfy with $\beta = -0.0038$, $p\text{-value} > 0.05$, and respective $t\text{-value} = 0.3681$.

In summary, among our twelve proposed hypotheses, only three hypotheses have satisfied with $p\text{-value}$ of <0.001 . None of the hypothesized path directed with the intention to use mobile retailing have been failed to reject. Thus, only those hypothesized relationship which were found significantly failed to reject, were used meaningfully for further discussion of their size of path coefficient (Hair et al., 2014).

Second, we examined the explanatory power of structural model with the estimation of squared multiple correlation (R^2) of the three latent dependent variables perceived usefulness, perceived enjoyment and intention to use. Combining perceived ease of use, subjective norm, perceived compatibility, and perceived enjoyment explained 39.5% of variance observed in the perceived usefulness of mobile retailing. Similarly, perceived ease of use explained 37.34% of variance on perceived enjoyment, and the model accounted 36.69% variance observed on intention to use. The observed variance demonstrated moderate explanatory power (Chin, 1998).

Third, the effect size (f-square) of each latent independent variable on latent dependent variables were examined to measure the impact. The effect size determines the impact variation of explained variance as a result of inclusion of additional variables. For measuring effect size, the squared multiple correlation between latent dependent variable and latent independent variables, and the squared multiple correlation between latent dependent variable and removing particular latent independent variable were estimated on SmartPLS and further examined in Microsoft Excel using following formula (see appendix 5).

$$\text{Effect size } f^2 = \frac{R\text{-squared included} - R\text{-squared excluded}}{1 - R\text{-squared included}}$$

(Peng & Lai, 2012)

Where ;

R-square included = R-square not removing any latent independent variable

R-square excluded = R-square resulted by removing each latent independent variable.

As shown on table-6 all the predictor of intention to use has less than small effect size. Perceived ease of use and perceived compatibility predictor of perceived usefulness have small effect size (Cohen, 1988).

Third, predictive relevance (Q^2) of independent variables were tested by using blindfolding procedure on SmartPLS by omitting every seventh data point. Predictive relevance of dependent variables intention to use, perceived usefulness and perceived enjoyment were found 0.278, 0.245 and 0.2346 respectively, representing medium predictive relevance from independent latent variables (Hair et al., 2014; Henseler, Ringle, & Sinkovics, 2009). Similar to f^2 , the relative impact of inclusion of latent independent variables predictive relevance (q^2) on latent dependent variables were tested by removing those independent variables one by one and the result was further used in Microsoft Excel (see appendix 6) to calculate predictive relevance of individual independent variables. The result presented on table 6, where only perceived ease of use predictor of perceived usefulness has found small predictive relevance of 0.0450 (Hair et al., 2014). However, all the independent latent variables excluding perceived risk and subjective norm have predictive relevance greater than zero, which indicate the predictive relevance of the independent variables on the partial least square path model (Henseler et al., 2009).

$$\text{Predictive relevance } (q^2) = \frac{\text{Q-squared included} - \text{Q-squared excluded}}{1 - \text{Q-squared included}}$$

Where ;

Q-square included = Q-square not removing any latent independent variable

Q-square excluded = Q-square resulted by removing each latent independent variable

6. Discussion and conclusion

This study aimed to identify the determinants of usage intention of mobile retailing. The conceptual model was constructed based on prior literature on user acceptance of technology, which were mainly based on technology acceptance model, theory of planned behavior, theory of reasoned action, and innovation diffusion theory. Beside those theory, trust, perceived enjoyment, and perceived risk were also included in our conceptual model.

The main objective of the research was to identify the determinants of intention to use mobile retailing in the context of Nepal, thus our research questions stated : What factor influence the intention to use mobile retailing in Nepal? And is followed by twelve hypotheses explaining the relationship between construct in research model. The proposed research model was empirically tested with the data collected from sample of mobile device user. Those collected data shows the strong evidence for the validity and reliability of measurement model. Based on the empirical analysis multiple insight about intention to use mobile retailing are provided.

First, considering prior research result about positive effect of perceived usefulness on intention to use (Agrebi & Jallais, 2015; Batkovic & Batkovic, 2015; Wu & Wang, 2005), this study does not confirm that perceived usefulness produce a significant positive effect on intention to use mobile retailing. Since in general the usefulness of any technology is perceived based on the cost and benefit produced by using that technology (Batkovic & Batkovic, 2015), and consumer are always thriving to maximize benefit by minimize cost for any purchase. Considering our research result, the perceived cost: time and effort on switching devices, and spending on mobile data, in the mind of consumers by using mobile retailing is higher than the perceived benefit : utilitarian gain, and time saving.

Second, in contrast with the prior study result conducted by Kalinic and Marinkovic (2016); Kim et al. (2010); Mizanur and Sloan (2017), perceived ease of use of mobile retailing does not influence the user intention to use mobile retailing. However, perceived ease of use positively influenced the user perception of usefulness and enjoyment towards the use of mobile retailing, where as opposed to Groß (2015a) influence of perceived ease of use on perceived enjoyment was found higher than on perceived usefulness. Similar result on significant effect of perceived ease of use on

perceived usefulness was found on the study conducted by Agrebi and Jallais (2015); Groß (2015a); Wu and Wang (2005). Third, in this study enjoyment was not found significant driver of intention to use mobile retailing. Past mobile retailing acceptance research (Groß, 2015a; Lai & Lai, 2014; Yang, 2012; Zhang et al., 2012) has found the significant effect of enjoyment on user intention to use. Thus, comprising our result with the prior research result, it can be said that the consumer perception of ease of use mobile retailing only is not sufficient to drive towards intention to use mobile retailing service, unless the utilitarian and hedonic gain received from using mobile retailing is more than the effort they have made.

Fourth, prior research on acceptance of mobile commerce stressed that compatibility has strongest influence on the intention to use (Batkovic & Batkovic, 2015; Schierz et al., 2010). This study, in contradiction of previous result, does not found any significant effect of compatibility on the intention to use. However, the positive influence of compatibility on consumer perceived usefulness towards mobile retailing was found. Since, most consumer do not feel comfortable to change their shopping habit quickly, even though the new system or approach of shopping is familiar and useful in their daily life. Meanwhile, most of the people are dominated with the presence of mobile device, and it can be used in diverse activities: watching movie, playing games, buying goods, and many more, ubiquitously. Thus, based on our empirical research it can be concluded that, intention to use mobile retailing is not sufficiently derived by compatibility.

Fifth, as a human being consumer buying habit is influenced by other people. Previous studies on mobile retailing acceptance have found that the subjective norm influenced the persons intention to use (Batkovic & Batkovic, 2015; Kim et al., 2009) mobile retailing and its usefulness (Zhang et al., 2012). The recent trend in information sharing is intensified by the use of internet platform and mobile application, and consumer are able to quickly gain and share information, which allows more transparency on what other people do and what others people think about. However, this study does not confirm any significant influence of subjective norm on individual intention to use mobile retailing and perception of its usefulness.

Sixth, with the lack of physical interaction between mobile retailers and its users, the significant importance of trust on intention to use was found on study conducted by (Cho et al., 2007; Groß, 2015a; Marriott & Williams, 2018). However, our research

does not find any significant effect of trust on individual intention to use mobile retailing. As hypothesized, the negative relationship between perceived risk and intention to use also does not affect significantly in our research as it was found significant in the study conducted by Mizanur and Sloan (2017); Zhang et al. (2012). Normally, trust and risk issues are always concerned with the payment fraud and product quality issues (Wu & Wang, 2005). The reason for this insignificant result might be the contextual difference between the prior research and our research. Since in the place, from where the sample was drawn, the payment is usually made on delivery place (cash on delivery) and the defective items or low-quality product can be returned immediately, thus consumer does not have any issue of lack of trust and risk.

From the above discussion several conclusions have drawn.

- a) All the factors included in research model from technology acceptance model were not found significant predictor of intention to use mobile retailing.
- b) Subjective norm from theory of reason action or theory of planned behavior does not influence consumers intention to use mobile retailing.
- c) Perceived compatibility of innovation diffusion theory and trust, perceived enjoyment and perceived risk also does not affect intention to use individual intention to use mobile retailing.
- d) Perceived ease of use and perceived compatibility have found significant predictor of perceived usefulness of mobile retailing. Also, perceived ease of use was found predictor of perceived enjoyment of mobile retailing.

7. Contribution and implication

For the academic purpose these findings contribute as a theoretical understanding of factor influencing usage intention of mobile retailing, based on our knowledge, the context studied in this research have been ignored in the past researches. Thus, the proposed concern of this research has been achieved. This study not only represent the first steps in identifying what factors influence or why consumer intended to use mobile retailing, it also act as an extension to the technology acceptance model in growing number of mobile commerce acceptance literature.

This research contributes practical implication for mobile retailers also. First, consumers are always demanding and change their expectations as the change in technology. However, this temptation to change their preference cannot be easily expressed, which can be seen by the relationship between perceived ease of use and perceived usefulness, and perceived ease of use and perceived enjoyment. Thus, the retailers need to emphasize more on utilitarian and hedonic factors, by enhancing more user-friendly mobile retail transaction, and maximizing consumer benefit, in order to build strong presence in the mobile retail market. Second, mobile retailing is still in its infant's stage compared to other traditional retailing. As seen in our empirical result by the relationship between perceived compatibility and perceived usefulness, mobile retailers should be careful, and activities should be launch in a way that potential users consider mobile retail activities as well suited with their past experience along with fulfilling their current needs.

8. Limitation and future research

In regard to the result presented in this research, there are some limitation that should be worth to addressed. First, the research was mainly focused on the intention to use mobile retailing in specific context, thus none of the specific sectors of retailing: clothes, foods, electronics goods and so on, are considered. Second, all the mobile device including smart phone, iPad, tablet phone were consider under the study scope, thus potential misunderstanding between mobile phone and mobile device might be exist for the reader and sample unit also. Third, the findings should be generalized with the caution due the sampling limitation within the selected geography (that is Nepal). However, the strong reliability of measurement model existed thus it can be examined in other context and countries as well, to test whether the structural model

examined here hold in other countries also. Due to the limited time and large number of target population, non-probability convenience sampling was used for data collection, since it is considered as less reliable while drawing inference about population (Easterby-Smith et al., 2008), thus we recommend for further research on the same model by using probability random sampling.

Since all the factors examined under the research model were found non-significant predictor of intention to use mobile retailing, and the traditional theories used in mobile retailing acceptance were restricted to and used in specific context only. Thus, in order to identify the contextual research model on factor influencing intention to use mobile retailing, extensive qualitative research is recommended.

Finally, this study investigates the usage intention, it is recommended that future research on this model investigate the actual usage behavior of mobile retailing.

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Appendices

Appendix 1: Survey instrument

Survey on Consumer Intention to Use Mobile Retailing in Nepal

Thank you for your interest to participate in this survey.

This survey is part of the research we are conducting to complete our M.Sc. degree in Business at Nord University. The purpose of this survey is to understand the factors that influence consumers' intention to use mobile retailing in Nepal.

In this research, mobile retailing is defined as all activities including browsing, searching, comparing, and buying goods and services using mobile devices, such as smart phones and tablets.

The information that you provide will only be used for our research purpose and it will be kept confidential.

*** Required**

1. **As courtesy of your participation in this survey, we have prepared a small reward of recharge voucher worth 100 Rupees for 10 randomly selected respondents. If you want to be entered for a draw to win recharge voucher, please provide your email below**

Enter email address

2. **Do you live in Nepal currently? ***

Mark only one oval.

- Yes
 No *Stop filling out this form.*

General information about respondents

3. **Please indicate your gender ***

Mark only one oval.

- Female
 Male

4. **Please indicate your age ***
-

5. **Please indicate your current occupation ***

Mark only one oval.

- Student
- Full time job
- Self-employed
- Unemployed
- other

6. **Please indicate your current monthly income (in Nepalese Rupees) ***

Mark only one oval.

- less than 15000
- 15000 to 30000
- 30000 to 45000
- 45000 to 60000
- More than 60000

Please indicate your level of agreement with the following statements on a scale of 1 (strongly disagree) to 5 (strongly agree).

7. **Using mobile device for shopping would enable me to perform shopping more quickly ***

Mark only one oval.

	1	2	3	4	5	
Strongly disagree	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Strongly agree

8. **Using mobile device for shopping improves my shopping experience ***

Mark only one oval.

	1	2	3	4	5	
Strongly disagree	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Strongly agree

9. **I find mobile shopping to be useful in my daily life ***

Mark only one oval.

	1	2	3	4	5	
Strongly disagree	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Strongly agree

Please indicate your level of agreement with the following statements on a scale of 1 (strongly disagree) to 5 (strongly agree).

10. **I feel easy to use mobile device for shopping. ***

Mark only one oval.

	1	2	3	4	5	
Strongly disagree	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Strongly agree

11. **Using mobile device for shopping requires less mental effort. ***

Mark only one oval.

	1	2	3	4	5	
Strongly disagree	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Strongly agree

12. **Using mobile device for shopping is simple and understandable ***

Mark only one oval.

	1	2	3	4	5	
Strongly disagree	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Strongly agree

Please indicate your level of agreement with the following statements on a scale of 1 (strongly disagree) to 5 (strongly agree).

13. **I feel that using mobile device for shopping is fun ***

Mark only one oval.

	1	2	3	4	5	
Strongly disagree	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Strongly agree

14. **Using mobile device for shopping is enjoyable ***

Mark only one oval.

	1	2	3	4	5	
Strongly disagree	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Strongly agree

15. **It is interesting to use mobile device for shopping ***
Mark only one oval.

	1	2	3	4	5	
Strongly disagree	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Strongly agree

Please indicate your level of agreement with the following statements on a scale of 1 (strongly disagree) to 5 (strongly agree).

16. **Using mobile device for shopping fits well with my regular use of mobile device ***
Mark only one oval.

	1	2	3	4	5	
Strongly disagree	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Strongly agree

17. **Using mobile device for shopping is compatible with my life style ***
Mark only one oval.

	1	2	3	4	5	
Strongly disagree	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Strongly agree

18. **Using mobile device for shopping is convenient for me ***
Mark only one oval.

	1	2	3	4	5	
Strongly disagree	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Strongly agree

Please indicate your level of agreement with the following statements on a scale of 1 (strongly disagree) to 5 (strongly agree).

19. **People whose opinion I respect suggest that I should use mobile device for shopping ***
Mark only one oval.

	1	2	3	4	5	
Strongly disagree	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Strongly agree

20. **People who are important to me think that I should use mobile device for shopping ***

Mark only one oval.

	1	2	3	4	5	
Strongly disagree	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Strongly agree

21. **I would use mobile device for shopping because most of my friends use mobile shopping ***

Mark only one oval.

	1	2	3	4	5	
Strongly disagree	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Strongly agree

Please indicate your level of agreement with the following statements on a scale of 1 (strongly disagree) to 5 (strongly agree).

22. **I trust mobile retailers ***

Mark only one oval.

	1	2	3	4	5	
Strongly disagree	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Strongly agree

23. **I believe mobile retailers offer the same quality product as physical store retailers ***

Mark only one oval.

	1	2	3	4	5	
Strongly disagree	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Strongly agree

24. **I feel that mobile shopping is reliable ***

Mark only one oval.

	1	2	3	4	5	
Strongly disagree	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Strongly agree

Please indicate your level of agreement with the following statements on a scale of 1 (strongly disagree) to 5 (strongly agree).

25. **I do not feel safe providing my personal information while using mobile device for shopping ***
Mark only one oval.

	1	2	3	4	5	
Strongly disagree	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Strongly agree

26. **I believe that mobile shopping would put me at a higher risk of getting defective or low quality products ***
Mark only one oval.

	1	2	3	4	5	
Strongly disagree	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Strongly agree

27. **It is easy to make mistakes when shopping using mobile device ***
Mark only one oval.

	1	2	3	4	5	
Strongly disagree	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Strongly agree

28. **I feel that using mobile device for shopping can be risky ***
Mark only one oval.

	1	2	3	4	5	
Strongly disagree	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Strongly agree

Each statement in this section will be ask to scale between 1 to 5, where 1 represent strongly disagree, 5 represent strongly agree, and 3 is neutral.

29. **I intend to use mobile device for shopping in the near future ***
Mark only one oval.

	1	2	3	4	5	
Strongly disagree	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Strongly agree

30.

I plan to use mobile device for shopping in the near future *

Mark only one oval.


	1	2	3	4	5	
Strongly disagree	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Strongly agree

31.

I see myself using mobile device for shopping in the near future *

Mark only one oval.

	1	2	3	4	5	
Strongly disagree	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Strongly agree

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Appendix 2: Fornell & Larcker 1981 criteria of Convergent reliability

	A	B	C	D	E	F	G	H
Intention to use (A)	0.909							
Perceived compatibility (B)	0.545	0.890						
Perceived ease of use (C)	0.543	0.755	0.831					
Perceived enjoyment (D)	0.471	0.645	0.611	0.836				
Perceived risk (E)	0.126	0.268	0.248	0.170	0.748			
Perceived usefulness (F)	0.429	0.572	0.600	0.450	0.059	0.826		
Subjective norm (G)	0.472	0.668	0.641	0.578	0.068	0.434	0.817	
Trust (H)	0.430	0.586	0.556	0.423	0.294	0.412	0.570	0.860

Note*:the diagonals represent the square root of average variance extracted (AVE's) of each latent variable and indicates highest value than squared correlation between latent variable.

Appendix 3: Item cross loading

	Intention to use	Perceived compatibility	Perceived ease of use	Perceived enjoyment	Perceived risk	Perceived usefulness	Subjective norm	Trust
IU1	0.907	0.489	0.473	0.408	0.065	0.398	0.404	0.347
IU2	0.913	0.476	0.461	0.430	0.103	0.386	0.417	0.348
IU3	0.908	0.519	0.542	0.445	0.169	0.387	0.464	0.470
PC1	0.433	0.854	0.613	0.567	0.217	0.475	0.547	0.447
PC2	0.514	0.927	0.708	0.623	0.292	0.531	0.608	0.556
PC3	0.504	0.887	0.691	0.534	0.204	0.520	0.625	0.555
PE1	0.231	0.394	0.354	0.696	0.076	0.212	0.283	0.242
PE2	0.389	0.560	0.509	0.918	0.136	0.394	0.535	0.373
PE3	0.498	0.622	0.615	0.878	0.188	0.463	0.566	0.411
PEOU 1	0.488	0.719	0.867	0.580	0.139	0.628	0.617	0.460
PEOU 2	0.360	0.552	0.784	0.445	0.236	0.339	0.478	0.426
PEOU 3	0.488	0.591	0.840	0.482	0.264	0.481	0.487	0.501
PR1	0.047	0.164	0.206	0.020	0.683	0.053	0.027	0.138
PR2	0.133	0.279	0.219	0.186	0.880	0.073	0.070	0.309
PR3	0.105	0.174	0.189	0.137	0.850	-0.013	0.057	0.226
PR4	0.024	0.171	0.144	0.107	0.524	0.159	0.017	0.100
PU1	0.299	0.402	0.417	0.345	-0.059	0.801	0.319	0.296
PU2	0.384	0.518	0.493	0.371	0.165	0.851	0.393	0.365
PU3	0.371	0.486	0.562	0.395	0.019	0.826	0.358	0.353
SN1	0.439	0.591	0.576	0.550	0.030	0.447	0.871	0.482
SN2	0.369	0.523	0.517	0.405	0.037	0.331	0.867	0.376
SN3	0.337	0.521	0.470	0.450	0.116	0.256	0.702	0.562
TR1	0.417	0.531	0.523	0.346	0.274	0.370	0.512	0.887
TR2	0.278	0.393	0.381	0.325	0.242	0.313	0.404	0.837
TR3	0.389	0.560	0.503	0.413	0.239	0.371	0.533	0.856

Appendix 4: Collinearity statistics (variance inflation factor)

	A	B	C	D	E	F	G	H
Intention to use								
Perceived compatibility	3.2162					2.9055		
Perceived ease of use	2.951			1		2.6198		
Perceived enjoyment	1.9158					1.9045		
Perceived risk	1.214							
Perceived usefulness	1.7089							
Subjective norm	2.3247					2.0458		
Trust	1.8109							

Note*: Variance inflation factor <3.3 indicate absence of multicollinearity (Diamantopoulos & Siguaw, 2006)

Appendix 5: effect size

Predictor	Endogenous variable	R ² included	R ² excluded	Effect size (f ²)
Perceived ease of use	Perceived usefulness	0.395	0.341	0.0893
Perceived compatibility	Perceived usefulness	0.395	0.373	0.0364
Perceived enjoyment	Perceived usefulness	0.395	0.395	0.0000
Subjective norm	Perceived usefulness	0.395	0.395	0.0000
Perceived ease of use	Intention to use	0.367	0.355	0.0190
Perceived usefulness	Intention to use	0.367	0.362	0.0079
Perceived compatibility	Intention to use	0.367	0.358	0.0142
Perceived enjoyment	Intention to use	0.367	0.359	0.0126
Subjective norm	Intention to use	0.367	0.365	0.0032

Trust	Intention to use	0.367	0.361	0.0095
Perceived risk	Intention to use	0.367	0.366	0.0016

Appendix 6: Predictive relevance

Predictor	Endogenous variable	Q ² included	Q ² excluded	Predictive relevance (Q ²)
Perceived compatibility	Intention to use	0.278	0.272	0.0083
Perceived compatibility	Perceived usefulness	0.245	0.231	0.0185
Perceived ease of use	Intention to use	0.278	0.27	0.0111
Perceived ease of use	Perceived usefulness	0.245	0.211	0.0450
Perceived enjoyment	Intention to use	0.278	0.274	0.0055
Perceived enjoyment	Perceived usefulness	0.245	0.247	-0.0026
Perceived risk	Intention to use	0.278	0.278	0.0000
Perceived usefulness	Intention to use	0.278	0.275	0.0042
Subjective norm	Intention to use	0.278	0.278	0.0000
Subjective norm	Perceived usefulness	0.245	0.248	-0.0040
Trust	Intention to use	0.278	0.274	0.0055