

**Drivers and Barriers of Mobile Commerce: The Role of Consumers'
Personal Innovativeness**

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ABSTRACT

Mobile commerce (m-commerce) has experienced rapid growth in recent years, gaining importance in both academia and industry. However, extant literature has paid little attention to how m-commerce value is shaped, particularly in emerging economies. This study develops a framework of m-commerce value by studying its determinants. These comprise of the benefit: ubiquity (time convenience and accessibility), and barriers to m-commerce: perceived risk (financial risk /performance risk), and perceived cost. Moreover, this research investigates the moderating role of personal innovativeness on the relationship between the drivers/barriers and value. The findings of the empirical survey-based study in emerging m-commerce economies reveal a positive impact of ubiquity on value, while risk and cost have a negative influence. Furthermore, innovativeness was found to moderate the relationships between the determinants and value, apart from that between cost and value. The results further show that value positively affects actual usage and is enhanced by consumer innovativeness.

Keywords: Consumer Innovativeness, Perceived Risk, Perceived Ubiquity, Perceived Value, M-commerce

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1. Introduction

Mobile commerce (m-commerce) has been growing almost exponentially in the last few years, triggered by the ubiquity of mobile devices, such as smartphones and tablets, coupled with high speed internet. Unsurprisingly, the need to improve our understanding of the way consumers generate value from mobile services, and the pursuit to investigate how to optimize customer experience has been emphasized in recent literature (Shankar et al., 2016; Wang, Malthouse, & Krishnamurthi, 2015). Furthermore, industry reports, while pointing out the remarkable growth of mobile commerce in recent years, also predict a consistent pattern of growth for the future as well (Blair, 2016), owing to bigger screens and optimized experiences (eMarketer, 2016), making it imperative for researchers to better understand the mechanisms leading to consumers' perception of value, and the actual m-commerce usage behaviour. Industry reports suggest that the continued trend towards such growth in the future (Meola, 2016), would be particularly significant for emerging economies (Business Wire, 2017). Two south Asian countries, India and Pakistan, for instance, represent two such emerging economies where mobile commerce has seen a recent surge. The widespread penetration of smartphones and access to high-speed internet has resulted in fast-paced growth of m-commerce, to the extent that the two markets are now dubbed "mobile-first" (Govindarajan & Bagla, 2016; Younas, 2017). Understanding country-specific differences—determinants of m-commerce perceived value in the case of this research—is key for global companies (Dunning, 2009; Internet Retailer, 2016; Theodosiou & Katsikeas 2001; Tihanyi et al., 2005; UserTesting, 2017) because they have become increasingly dependent on revenues from developing markets (Morgeson III et al., 2015), where there is a growing middle-class consumer base with increasing purchasing power

and materialistic tendencies (Sharma, 2011). Moreover, value is a key marketing variable, and one that is often overshadowed in the literature by other constructs like satisfaction and loyalty (Babin & James, 2009).

As mobile technology continues to evolve and improve, it is important that consumer preferences be measured and tracked. While mobile commerce offers various new opportunities for marketing research in this relatively new and interesting context, research on the subject has been rather slow (Shankar et al., 2016; Wang et al., 2015), signalling the need for increased academic efforts to match the pace of the technology. For instance, Lemon and Verhoef (2016) call for a better understanding of the role of mobile channels in providing an improved customer experience. Kleijnen, Ruyter, and Wetzels (2007), in one of the earlier attempts to study value in a mobile context, looked at the benefits and costs contributing to the value of mobile channels. Recent literature has looked at the different factors affecting mobile commerce in the context of mobile marketing (Shankar & Balasubramanian, 2009), mobile payments (Cruz et al., 2010; Slade et al., 2014; Thakur & Srivastava, 2014), mobile banking (Lee, 2009; Yiu, Grant, & Edgar, 2007), and m-commerce users' adoption and usage behaviour (Ashraf, Thongpapanl, Menguc, & Northey, 2017; Eastman, Iyer, Liao-Troth, Williams, & Griffin, 2014; Kim & Garrison, 2009; Thakur & Srivastava, 2014).

However, for all its promise and attractiveness for practitioners, the actual rate of growth and usage of m-commerce remains low across the globe in general, and in developing economies in particular (Alalwan, Dwivedi, & Rana, 2017; Ashraf et al., 2017; Liebana-Cabanillas, Marinkovic, & Kalinic, 2017). In fact, according to both recent research (Aksoy, Buoye, Aksoy, Larivière, & Keiningham, 2013; Morgeson et al., 2015; Wang et al., 2015) and industry reports (Begg, 2017) substantial investments in marketing activities aimed at motivating mobile users—

across developing and developed countries—to adopt and continue using m-commerce have failed to yield desired results. Practitioners across different countries continue to aim towards a better understanding of how consumers derive value from m-commerce (eMarketer, 2017). Specifically, as m-commerce retailers expand their operations to various emerging and developing economies, they face the challenge of striking the optimal balance between standardizing and customizing their marketing strategies (Katsikeas, et al., 2006; Watson et al., 2017).

A fundamental concern is the lack of understanding regarding the drivers and barriers of m-commerce value perception across different countries. This is a possible cause for the relatively low mobile conversion rates of 1.4%, compared to 4.1% for desktop shoppers (Akamai Faster Forward, 2017). In particular, extant literature identifying and analyzing these factors has been scarce (Chong, Chan, & Ooi, 2012; Hubert, Blut, Brock, Backhaus, & Eberhardt, 2017), and surprisingly more so for emerging economies (Ashraf et al., 2017; Morgeson et al., 2015).

Thus, as firms branch out to markets across the globe, in response to the increasing demand for m-commerce, the ability to understand how consumers discern the value in m-commerce across different countries becomes a key factor for success (Aksoy et al., Katsikeas et al., 2006; Morgeson et al., 2015). However, previous research on m-commerce has primarily focused on m-commerce consumer behaviour in the developed world, while to an extent, overlooking the differences across different countries and regions, and thus not being able to capture the nuances of their value formation (Alalwan et al., 2017; Ashraf et al., 2017; Chong et al., 2012). These emerging economies with their substantial scope for m-commerce and the distinct cultural and social fabric, present interesting avenues for researchers to further explore (Ashraf et al., 2017; Morgeson et al., 2015). Therefore, exploring the drivers and barriers of

perceived m-commerce value in emerging countries would not only advance current m-retailing literature, but it would also help managers devise strategies to motivate consumers to use m-commerce in those countries. In fact, understanding the determinants of m-commerce across different countries has been declared as a valuable next step in the recent *Journal of Interactive Marketing* special issue on Mobile Marketing (Shankar, 2016). Additionally, recent research has time and again acted as a reminder of the importance incorporating consumers' personal characteristics and how they moderate their behaviour, when studying their adoption behaviour and usage of technology (Kleijnen et al., 2007; Oliveira, Thomas, Baptista, & Campos, 2016; Slade et al., 2015). To add to that stream of literature, the current study explores how consumers' personal innovativeness interacts with the determinants of the m-commerce perceived value, and in turn, its actual usage.

With the considerations discussed above serving as the motivation that drives this research, it investigates a set of predictors, namely, perceived risk, perceived financial costs, ubiquity and user innovativeness—of perceived m-commerce value, and in turn examines whether value affects actual m-commerce usage in relatively unexplored markets—i.e., India and Pakistan. The present study looks at perceived value as a function of costs and benefits, which is affected by the personal traits of the individual weighing them (Holbrook, 1999). This cognitive approach towards perceived value has been widely embraced in extant literature (Sanchez-Fernandez & Iniesta-Bonillo, 2007), and this study extends the knowledge further by exploring the value associated with m-commerce.

Ubiquity of mobile devices is considered one of the most essential features of m-commerce, and hence has received much attention in recent literature (Okazaki, Molina, & Hirose, 2012; Shankar, Venkatesh, Hofacker, & Naik, 2010). For developing countries where m-

commerce is slowly but surely increasing in volume, ubiquity is an important contributing factor. The positive effect of ubiquity on m-commerce usage in these countries might even be more pronounced than in the developed countries, owing to the users there being at a relatively earlier stage of technology acceptance and usage (Ashraf et al., 2016). Hinson (2011), for example argues that mobile services could help people in remote areas of some developing countries access financial services like banking. Risk, on the other hand, has been shown to have a negative effect on new technology and innovation adoption in general (Featherman & Pavlou, 2003; Hirunyawipada & Paswan, 2006), and on online transactions (Bhatnagar & Ghose, 2004; Bhatnagar, Misra, & Rao, 2000; Forsythe & Shi, 2006), and mobile commerce in particular (Slade et al., 2014; Thakur & Srivastava, 2014; Zhang, Zhu, & Liu 2012; Zhou, 2012). This study adds to that literature by studying the impact of perceived risk on the perceived value of mobile commerce, besides its actual usage. Again, the expected negative effect of risk might be even more pronounced in countries where m-commerce is a relatively new phenomenon and trust of consumers has not been completely won yet. We also look at the effect of perceived cost on m-commerce value and usage. Perceived cost has been studied as an important factor influencing m-commerce (Wei, Marathanandan, Chong, Ooi, & Arumugam, 2008; Zhang et al., 2012), and this study takes that understanding forward by looking at it in the context of countries growing in m-commerce, where monetary costs carry significant weight in determining consumer behaviour (Dai & Palvia, 2008). Moreover, personal innovativeness has been recognized as a key concept in understanding consumers' behaviour toward mobile commerce (Eastman et al., 2014; Gao, Rohm, Sultan, & Huang, 2012; Lu, 2014; Mort & Drennan, 2007). This paper, however, is among the first efforts to study how innovativeness moderates the strength and effect of the aforementioned variables on m-commerce value and usage.

The present research makes various contributions to the existing literature on m-commerce adoption and usage literature. Firstly, recent marketing literature has predicted that the ubiquitous nature of m-commerce, as it gives the user the ability to engage in commerce anytime, anywhere, may potentially change the paradigm of marketing and interaction with consumers (Lariviere et al., 2013; Shankar & Balasubramanian, 2009; Shankar et al., 2010). Not surprisingly therefore, recent literature has also called out for a better comprehension of ubiquity as a construct (e.g., Ashraf et al., 2017; Morgeson et al., 2015; Okazaki & Mendez, 2013). What is surprising, however, is that no study has thus far formally investigated the effect of ubiquity on m-commerce value perception. Furthermore, the studies that have explored the construct of ubiquity have restricted their analyses to developed countries (Okazaki & Mendez, 2013). To that end, this study empirically investigates the influence that ubiquity has on shaping consumers' m-commerce value perceptions in two emerging markets.

Secondly, past literature has largely focused on the direct relationships between the determinants of m-commerce and the behavioural consequences, and while it provides useful insights, it does not provide a thorough understanding (Ashraf et al., 2017; Kleijnen et al., 2007). In particular, previous research has shown that consumers' personal characteristics have a significant effect on consumers' perception of value (Bolton & Drew, 1991; Holbrook, 1999; Kleijnen et al., 2007). It is therefore important to observe the effects of the drivers and barriers of m-commerce value while also taking into consideration how they change based on consumers' personal traits. In this regard, individuals' personal innovativeness is an attribute that has been studied extensively in the previous literature and has been found to be highly relevant when analyzing innovation and new technology (Agarwal & Prasad, 1998; Bartels & Reinders, 2011; Yi, Fielder, & Park, 2006). There are multiple reasons as to why this study investigates the

moderating role of personal innovativeness. Firstly, barring a few efforts (e.g. Kleijnen et al., 2007), previous literature on mobile marketing has not ventured much further than exploring traditional demographics to analyze consumer m-commerce behaviour. Secondly, the previous exploration of personal innovativeness has yielded ambiguous findings (Bartels & Reinders, 2011), with some studies showing that innovativeness moderates the relationship between m-commerce drivers and usage intention, while others suggest no such relationship exists (see, Eastman et al., 2014; Li, Zhang, & Wang, 2015; Yi et al., 2006). Even though there is a strong intuitive connection, there is little empirical evidence and understanding of how personal innovativeness influences the perceived value and actual usage of m-commerce. This study therefore, to the best of our knowledge, takes the first step in examining the interactive relationships between innovativeness and specific costs and benefits that determine m-commerce value perception and actual usage. In doing so, it answers the call in recent literature to enhance our understanding of consumers' personal innovativeness (Bartels & Reinders, 2011; Thakur, Angriawan, & Summey, 2016).

Third, a limitation of the studies examining the benefits and costs associated with m-commerce has been the tendency to ignore the differences that exist across different countries and regions. For instance, the mobile commerce industries in countries like Korea, Japan, and Singapore are comparatively more mature than most countries (Zhang et al., 2012), whereas the adoption of mobile commerce has been shown to be gradual in developing countries, despite the considerable potential on offer (Ashraf et al., 2017; Thakur & Srivastava, 2014). We therefore study the factors driving mobile commerce in India and Pakistan. Both of these countries provide ideal representations of emerging markets that are still at an early stage of mobile adoption yet are experiencing rapid growth. India has seen a remarkable increase in mobile commerce in

recent years, and it is a trend that will seemingly increase in the years ahead. Based on industry estimates, India's mobile commerce market could grow up to \$19 billion by 2019, from merely \$2 billion in 2014 (Tang & Hui Ann, 2015). India's second-largest domestic e-tailer, Snapdeal, experienced a growth in its mobile sales by 25 times in 2014 alone (Arthur, 2016). Flipkart, the country's biggest e-retailer, which also dominates the market share in m-commerce, recently announced it would be shutting down its website and shifting to a mobile application-based model only (Arthur, 2016; Miglani, 2014). The announcement followed the experiment of shutting down the website of its subsidiary fashion e-commerce company, Myntra. Similarly, ever since the launch of 3G and 4G mobile technologies in Pakistan, the telecom sector has seen an addition of 1 million users of high-speed internet every month, while smartphones and tablets make up for over fifty percent of the country's mobile devices (Siddiqui, 2016). Consequently, m-commerce, though in its infancy, has emerged as a promising industry. For instance, 63% of the users on Daraz, one of the most prominent e-tailers in Pakistan, use the platform through a mobile device, a remarkable increase from just 30% the year before (The m-commerce boom, 2016). With a collective population of almost 1.5 billion, around half of which fall in the 15-29 age group, (Ashraf et al., 2017), the region represents enormous potential with regards to mobile commerce. At the same time, researchers and marketers are presented with the challenge to attain a better understanding of what drives the behaviour of these consumers. Studying the proposed framework for perceived value and usage of m-commerce in these emerging markets enables us to generate findings that extend the mobile marketing literature, as well as providing valuable practical implications.

The rest of this thesis is organized as follows. We first look at the extant literature on the different variables involved in our conceptual model, and based on the insight from existing

studies, and the psychological underpinnings, we formulate our hypotheses. The study then details the methods of data collection and statistical analyses conducted to attain the results. We then present the results before discussing them and outlaying the theoretical and managerial implications of the findings.

2. Conceptual Development

2.1 Ubiquity

The past decade has seen a major generational shift in communication technology. The diffusion of smartphones and similar portable devices, along with superior internet connectivity, has led to an unprecedented growth in the ubiquitous use of mobile devices. Previous literature defines ubiquity for m-commerce as having the distinct ability to engage in commerce “anytime, anywhere” (Balasubramanian, Peterson, & Jarvenpaa 2002; Kleijnen et al., 2007). Okazaki, Li, and Hirose (2009) narrowed down the definition to highlight how ubiquity enables time convenience and spatial flexibility, the key features of mobile commerce. In line with previous m-commerce literature (e.g. Ashraf et al, 2017; Okazaki & Mendez, 2013), we conceptualize ubiquity in m-commerce as providing consumers with time convenience and greater accessibility through spatial flexibility. The ubiquity of mobile devices has thus enabled the omnipresence of information and accessibility. An extended implication of such ubiquitous usage of m-commerce is how it is now enabling omnichannel environments where consumers can merge their in-store experiences with m-commerce.

Clarke (2001) suggests that the proliferation of mobile devices has created opportunities for e-commerce to become m-commerce. Ubiquity is considered one of the main facets of m-commerce (Okazaki & Mendez, 2013), and is principally what distinguishes mobile internet

from internet on personal computers (Balasubramanian et al., 2002; Kleijnen et al., 2007; Okazaki et al., 2012), and by that token, m-commerce from e-commerce (Ko, Kim, & Lee, 2009). In fact, researchers suggest the inevitability of mobile devices becoming the key business channels in the years to come (Shankar et al., 2010; Shankar & Balasubramanian, 2009), and ubiquity lies at the core of this phenomenon (Okazaki et al., 2012). The ubiquitous nature of mobile devices allows consumers to access, use, and download real-time information wherever they are (Ko et al., 2009). Consequently, increased personalization through the ubiquity of mobile devices renders location and time less relevant (Okazaki & Mendez, 2013), and thus allows customers to engage in commerce over their mobile devices whenever and wherever they choose to. Ubiquity provides customers with an increased control over the content they choose to read, write and hear, and ensures that interactivity could be attained anywhere (Shankar & Balasubramanian, 2009; Venkatesh, Thong, & Xu, 2012), even, for instance, on an airplane.

Mobile devices have essentially enabled users to supersede the boundaries of time and space, and have thus yielded greater ubiquity (Scharl, Dickinger, & Murphy, 2005). Mobile based devices have not only become omnipresent, but also invisible in a sense, another characteristic of ubiquity, as we no longer even notice their presence all around us (Okazaki et al. 2012, Watson, Pitt, Berthon, & Zinkhan, 2002). Hoffman, Novak, and Venkatesh (2004) linked ubiquity of internet commerce to its widespread usage and the access points of its use: the more access points for it, the more ubiquitous it becomes. Mobile devices have dramatically augmented these access points, as users carry mobile devices everyday, everywhere, and such ubiquity of devices and connectivity (Gao, Rau, & Salvendy, 2009) ensures that the users are always connected. Scharl et al. (2005) emphasized the concept of a more personalized service that ubiquity of mobile devices provides to customers, rendering location and time less relevant.

This increased control and more personalized service means customers have greater flexibility and can engage in commerce over their mobile phones at times of their convenience, and locations of their choice.

For developing countries where m-commerce is slowly but surely increasing in volume, ubiquity is an important contributing factor. For example, mobile services could help people in remote areas of some developing countries to access financial services such as banking (Hinson, 2011). The positive effect of ubiquity on m-commerce usage could be quite pronounced in developing countries (Ashraf et al., 2017), as it can provide previously less-experienced value and benefits.

Cox (2004) extends the concept of ubiquity to the consumer paradigm by introducing the term “ubiquitous consumption,” defined as “the ability to access and consume goods and services anytime and anyplace” (p.21). In a similar vein, previous literature has shown ubiquity to be a crucial factor in consumers’ decision making behaviour towards m-commerce (Ashraf et al., 2017; Okazaki et al., 2012; Okazaki & Mendaz, 2013). For example, Hubert et al. (2017) demonstrate how the ubiquitous nature of mobile phones enhances both the usefulness and the ease of use of mobile shopping, while Okazaki et al. (2012) found it to strengthen trust and attitude toward mobile ads. Similarly, Zhou (2012) shows that ubiquity has a positive influence on trust and flow, both of which subsequently determine intended and actual mobile banking usage. Perceived ubiquity has also been shown to have a positive influence on behavioural intentions to use mobile wireless technology (Kim & Garrison, 2009). Similarly, Okazaki and Mendez (2013) found ubiquity to have a positive influence on consumers’ flow experience and their perceptions of m-commerce. In a recent study, Ashraf et al. (2017) show that ubiquity positively influences consumers’ intentions to engage in m-commerce. Finally, ubiquity has been

recognized to be a favourable dimension of mobile communication that makes the acceptance of m-commerce more likely (Shankar & Balasubramanian, 2009). Previous literature, therefore, has provided considerable empirical evidence supporting the positive impact of ubiquity on consumers' behavioural outcomes. Table 1 gives a brief overview of the major works on ubiquity. Based on the insights in these studies, we propose the following hypothesis:

H1: Ubiquity will have a positive effect on the consumers' m-commerce value perception.

Table 1. Ubiquity

Study (Author, Year)	Findings
Balasubramanian et al. (2002)	One key characteristic of m-commerce is its ubiquitous, “anywhere, anytime” nature, in that at least one of the parties involved should be mobile and thus the ability to communicate should not be contingent upon a fixed physical location or a particular time.
Scharl et al. (2005)	Mobile devices augment the two essential features of electronic commerce: “location independence and ubiquity”. The ubiquitous nature of mobile devices thus goes beyond the space-time restrictions of traditional marketing, and allows for a higher degree of personalization.

<p>Nysveen, Pedersen, and Thorbjornsen (2005)</p>	<p>The prospect of unique, personalized services, as well as ubiquitous access to information and services has resulted in mobile services becoming more and more important for both consumers and marketers.</p>
<p>Junglas and Watson (2006)</p>	<p>The construct of ubiquity merges and consolidates the concepts of accessibility, reachability and portability. Individuals can access networks and also be accessed anytime, anywhere.</p>
<p>Kleijnen et al. (2007)</p>	<p>A distinctive attribute of m-commerce, from the consumers' point of view, is ubiquity. It provides consumers with the ability to engage with mobile services and conduct commerce anywhere, anytime, and thus accomplish previously unfulfilled needs.</p>
<p>Ko et al. (2009)</p>	<p>The ubiquity of m-commerce is what distinguishes it from e-commerce, in that it provides more value by allowing for more convenience and access.</p>
<p>Kim and Garrison (2009, p.326)</p>	<p>Perceived Ubiquity can be defined as “an individual’s perception regarding the extent to which mobile wireless technology provides personalized and uninterrupted connection and communication between the individual and other individuals and/or networks”</p>

Okazaki et al. (2009)	Ubiquity can be conceptualized as a second-order construct composed of time flexibility and spatial flexibility.
Okazaki and Mendez (2013)	Ubiquity in the context of m-commerce consists of four key dimensions, 1) continuity and simultaneity, 2) immediacy and speed, 3) portability and mobility and 4) searchability and reachability.
Ashraf et al. (2017)	Ubiquity is the most important utility of m-commerce and serves as a key antecedent to intention and actual m-commerce usage across different markets.

Despite the ubiquitous consumption of mobile technologies, an element of perceived risk is still associated with mobile commerce. For instance, a substantial amount of research has also suggested that consumers perceive a greater degree of risk when shopping online, than they do when shopping in a physical store (Biswas & Biswas, 2004; Chang & Tseng, 2013; Forsythe et al., 2003; Tan, 1999). The inability to touch, taste, and feel a product before buying it adds to the levels of uncertainty and risk. Moreover, factors like the absence of face-to-face transactions and giving financial information on public networks add to the concerns of some consumers.

2.2 Risk

According to Bauer (1960), perceived risk can be defined as the idea that “any action of a consumer will produce consequences which he (/she) cannot anticipate with anything approximating certainty, and some of which are likely to be unpleasant” (p. 390). In marketing literature, the perception of risk has been suggested to arise from multiple factors. For instance, perceived risk can originate due to a lack of sufficient information, the immediacy of events, or bounded rationality (Simon, 1960), as well as certain personal characteristics, such as innate customer innovativeness (Littler & Melanthiou, 2006). We discuss the interplay between perceived risk and consumer innovativeness in more detail later in this study, as the current discussion focuses on the role perceived risk plays in how consumers see value in m-commerce.

In the perspective of online shopping, Kleijnen et al. (2007) refer to perceived risk as the possibility of a loss while pursuing a desired result. Consumers typically feel reluctant to engage in commerce online, as the perception of risk can be intensified, as compared to traditional avenues of commerce. According to Kim and Lennon (2013), a customer walking into a brick-and-mortar store can typically touch and perhaps try the product before making a purchase decision, thereby reducing or eliminating the perception of risk. On the other hand, while making online transactions, customers first need to divulge personal and often sensitive information, ranging from their address to credit card information. Added to that, they then typically have to wait for days before they can ensure that the purchased product performs as promised. In some developing economies like India and Pakistan, a combination of relatively high instances of internet fraud (Kesharwani & Bisht, 2012), and the relative infancy of m-commerce (Ashraf et al., 2017), makes the effect of perceived risk even more pronounced, and poses additional

questions for practitioners. For instance, in India, security risk still features as the top reason cited by individuals for their reluctance towards online banking (Kesharwani & Bisht, 2012).

Previous literature looking at perceived risk in an online context qualifies it as a multi-dimensional construct (Hubert et al., 2017; Martins, Oliveira, & Popovic, 2014), with its role varying with the type of product or service (Featherman & Pavlou, 2003; Lee, 2009). In line with previous online literature, the present study conceptualizes perceived risk associated with mobile commerce from the perspective of financial and performance risk (Chang & Tseng, 2013; Chen & Dubinsky, 2003; Forsythe & Shi, 2003). Featherman and Pavlou (2003) conceptualize perceived financial risk as including not only the total monetary cost associated with the purchase of a product, but also the subsequent maintenance costs and more importantly, the potential financial losses due to fraud, while performance risk is referred to as “the possibility that a purchased product fails to provide the desired benefits or does not function properly” (Chang & Tseng, 2013, p. 865). The two dimensions of risk capture the perceived risk associated with m-commerce by addressing consumers’ concerns about losing out financially, as well as the apprehension about the product or service purchased not meeting expectations. As discussed earlier, these considerations on the part of the consumers are further enhanced in developing countries, with relatively fewer measures to make consumers of m-commerce feel safer.

Studies suggest that consumers’ perceptions of risk are higher when purchasing online than through traditional retail formats (e.g., Laroche, Yang, McDougall, & Bergeron, 2005). One antecedent of such perception of risk could be the inability to tangibly experience products before purchasing them (Laroche et al., 2005). Exploring another antecedent, Kim and Lennon (2013) found website quality and reputation to have a negative impact on perceived risk. Kuisma et al. (2007) point out how customers have a fear of losing money during online transactions or

transferring money online. This fear also incorporates consumers' hesitance toward the usage of credit cards for online transactions (Forsythe, Liu, Shannon, & Gardner, 2006). When considering online purchases, Featherman and Pavlou (2003) talk about perceived risk as a preoccupation on the part of the consumer about the product not living up to standards of design and performance as advertised, and thus not delivering the desired benefits (performance risk). The inability on the part of the consumer to physically examine the product on its promised features and performance can therefore lead to a perception of performance risk. Such concerns and the associated risk might appear even higher in countries where m-commerce is relatively new, and people do not trust online retailers (Ashraf, Thongpapanl, & Auh, 2014).

Perceived risk is a salient antecedent to the acceptance of new technology and innovations (Hirunyawipada & Paswan, 2006; Luo, Li, Zhang, & Shim, 2010). For example, perceived risk was found to negatively influence online customers' purchase intentions (Kim & Lennon, 2013), while studies have also shown perceived risk to adversely affect one's intention to adopt internet banking (Aldas-Manzano, Lassala-Navarre, Ruiz-Mafe, and Sanz-Blas, 2009; Lee, 2009). The perceived risk associated with product performance is exacerbated in an online context, as the consumer is not able to test the product and the transaction occurs over a public network (Glover & Benbasat, 2010). Eggert (2006) found that perceived risk associated with online purchases was higher than offline purchases, with perceived financial and performance risks being the most significant risk factors in the online environment. Likewise, results from the study by Slade et al. (2015) showed a negative influence of perceived risk on the adoption intentions of mobile payments. Based on a meta-analysis, Zhang et al. (2012) suggest that perceived risk has a negative impact on mobile commerce adoption. Therefore, in line with previous literature, we hypothesize perceived risk to act as a deterrent to the perceived value of

m-commerce usage. Specifically, we expect that the performance risk and financial risk associated with m-commerce transactions and services would adversely influence the value that consumers see in this technology.

H2: Perceived risk will have a negative effect on consumers' m-commerce value perception.

2.3 Perceived Cost

The perception that consumers have of the monetary cost of a product or service is among the most influential determinants of consumer decision-making (Jarvenpaa & Todd, 1996). In particular, with regard to the diffusion and adoption of a new technology or innovation, the factor of cost plays a key role towards determining how much value the potential consumers see in it. Perceived cost in an m-commerce context refers to an individual's perception that using m-commerce is expensive (Zhang et al., 2012), and is generally composed of the initial fees, subscription fees, communication fees, and potential upgrade costs (Luarn & Lin, 2005; Zhang et al., 2012). Research has shown that perceived monetary cost and the pricing structure of using a new technology has an effect on consumers' intentions to use the technology, and on the adoption of innovations (Venkatesh et al., 2012). For example, cost was found to be one of the major barriers to the adoption of 3G services (Pagani, 2004; Pagani & Malacarne, 2017).

Monetary considerations are often considered to be an important factor in consumers' usage of information systems, and thus, need to be taken into account (Venkatesh et al., 2012). The cost factor is one of the factors that may impede the adoption of m-commerce (Wei et al., 2009). It is therefore, important for marketers to consider the impact of perceived cost when strategizing, particularly in countries where m-commerce is still in the early stages, as efforts

towards accelerating adoption are essential. However, the negative impact of perceived cost on m-commerce is seemingly even greater than on electronic commerce and other information technology innovations, and thus captures the attention of researchers (Zhang et al., 2012). Previous literature has shown the negative effects of perceived cost on different behavioural outcomes across different online contexts.

According to Kim, Chan, and Gupta (2007), the perceived fee acts as a sacrifice that a consumer must make and thus negatively affects the perceived value. In particular, perceived cost has been shown to negatively influence mobile commerce adoption, and has been described as a factor that impedes its development (Chong et al., 2012; Wei et al., 2009). For example, in their empirical study of m-commerce adoption in Malaysian and Chinese customers, Chong et al (2012) revealed perceived cost as a significant deterrent for both. In another empirical study of mobile device users who had not yet adopted m-commerce, Khalifa and Shen (2008) found perceived cost of m-commerce to be one of the most significant deterrents to adoption. Interestingly, Dai and Palvia (2008) in their study found that perceived cost acted as a deterrent to m-commerce adoption for Chinese consumers, but not for consumers in the USA, attributing the difference to the higher spending power of American consumers. The findings can also imply that consumers who have more experience with m-commerce, or are at an advanced technology readiness stage (Parasuraman, 2000), find more value in m-commerce, and the perception of cost thus becomes less significant to them as compared to consumers who are relatively inexperienced, and thus attach a greater significance to cost when determining the value of m-commerce. For instance, based on the findings of their meta-analysis, Zhang et al. (2012) revealed that perceived cost has a larger influence on behavioural intentions of m-commerce consumers in Eastern cultures, compared to the Western ones. India and Pakistan, the two

economies we focus on, still lag behind in mobile internet usage, despite the recent surge in mobile and smartphone users (Ashraf et al., 2017), and based on the comparatively lower average purchasing power, it is reasonable to expect that perceived monetary cost might act as a deterrent to m-commerce usage. Previous literature, however, has not sufficiently explored the effect of perceived cost on the perceived value of m-commerce. Going beyond the investigation of the adverse effects that perceived cost bears on behavioural outcomes, this study aims to explore its role in determining consumers' perception of the value of m-commerce. The present study seeks to empirically investigate this relationship. In line with the findings discussed in this section, we hypothesize:

H3: Perceived cost will have a negative effect on consumers' m-commerce value perception.

To get a more comprehensive idea of how consumers perceive value, it is also important to look at consumers' internal reactions toward technology (Kleijnen et al., 2007). Personal innovativeness has been recognized as a consumer characteristic that significantly influences new technology adoption (Agarwal & Prasad, 1998), and a factor that needs to be focused on with regards to innovation adoption research (Hauser, Tellis, & Griffin, 2006). However, research investigating how innovativeness influences perceived value in the context of mobile commerce is rather limited. The present study, therefore, seeks to add to the existing literature by examining how it moderates the relationship between ubiquity, perceived cost, perceived risk and perceived value.

2.4 Consumer Innovativeness

Some individuals are inherently more open to try out new technologies and innovations, compared to others who are generally averse to change (Roehrich, 2004; Yi et al., 2006).

Personal innovativeness has been defined as the extent to which an individual is willing and open to try out a new information technology (Agarwal & Prasad, 1998), or perceives themselves to be an early adopter or opinion leader of mobile devices and applications (Gao et al., 2012). That is, individuals' natural predisposition toward trying new things and technologies might determine their innovativeness toward newer technologies (Roehrich, 2004; Yi et al., 2006). Agarwal and Prasad (1998) assert that the concept of innovativeness is not global in nature, but rather domain-specific, and innovativeness in the context of information technology in general reflects more positive attitudes about technology consumption.

The understanding of customer innovativeness is an increasingly important concept for marketers (Aroean & Michaelidou, 2014; Gao et al., 2012), particularly in the context of digital and mobile products and services, where innovation is perpetual (Lu, 2014; Lu, Yao, & Yu, 2005). Roehrich (2004) suggested that a need for stimulation, novelty seeking, independence toward others' consumption experiences, and a need for uniqueness act as antecedents of higher levels of innovativeness among individuals. Previous literature has also attempted to profile consumers that have a high level of innovativeness on the basis of demographics and psychographics (Rogers, 1962; Steenkamp, Hofstede, & Wedel, 1999). Yi et al. (2006) assert that individuals' natural predisposition toward trying new things and technologies might determine their innovativeness toward newer technologies. In trying to understand the factors that can account for such predisposition to innovativeness, Roehrich (2004), suggested four

possible explanations, including, “stimulation need, novelty seeking, independence towards others’ communicated experience, and (the) need for uniqueness” (p. 671). Similarly, Tellis, Yin, and Bell (2009) reviewed the literature to identify ten key dimensions of consumer innovativeness. These include novelty-seeking, risk-taking, variety-seeking, opinion leadership, stimulus variation, habituation, nostalgia, suspicion, effort, and frugality.

Likewise, previous literature has also looked at the role of innovativeness as a factor influencing new product purchase and innovation adoption (Agarwal & Prasad, 1998; Cowart, Fox, & Wilson, 2008; Hirunyawipada & Paswan, 2006), use of internet (Lam, Chiang, & Parasuraman, 2008), adoption of mobile banking (Sulaiman, Jaafar, & Mohezar, 2007), attitudes toward mobile marketing (Gao et al., 2012) and its positive influence on the perceived usefulness and continuation intention in mobile commerce (Lu, 2014). For example, Rohm et al. (2012) showed that consumers’ innovativeness positively affects their attitudes toward mobile advertising, as they learn and become stimulated by the innovative means of marketing communication experience, while Lewis, Agarwal, and Sambamurthy (2003) found innovativeness to positively influence both the beliefs about ease of use and usefulness of a new technology. Similarly, Thakur and Srivastava (2014) found personal innovativeness to positively affect both the adoption readiness and behavioural intention to use mobile payment services. In their study of consumers’ adoption of new technological products like smartwatches, Hong, Lin, and Hsieh (2017) found consumer innovativeness to be an antecedent of both hedonic and utilitarian value. Furthermore, Hong et al. (2017) also highlight the consideration that users’ continuation intentions also depend on their innate innovativeness, in addition to the products’ perceived value. Innovative consumers not only tend to be early adopters of new technologies, but they also act as agents of dissemination of information and ideas among the consumption

community (Rogers, 1962). For instance, a higher degree of innovativeness among users of social networking sites was found to have a positive influence on the usage and tendency to contribute on such social networks (Pagani, Hofacker, & Goldsmith, 2011). In a similar vein, Yuan, Lin, and Zhuo (2016) found a strong influence of consumer innovativeness on knowledge sharing in online travel communities.

Based on Rogers' (1962) diffusion of innovations theory, individuals react differently to new ideas and objects, driven by their natural individual innovativeness. The innate characteristic of innovativeness can therefore be expected to have an effect on how the drivers and barriers of a new technology like m-commerce impact consumers' perceptions of value. In other words, a customer's perceived value is a value judgement, based on the customer's evaluation of the trade-offs in a situation (Ulaga & Chacour, 2001), and is thus subjective to the individual (Babin, Darden, & Griffin, 1994). It would thus be intuitive to expect the innate consumer attribute of innovativeness to moderate how the determinants of m-commerce lead to or inhibit the value perception among these consumers.

In this regard, past research has explored the moderating role of innovativeness across different contexts. Table 2 provides a recap of some important previous studies on personal innovativeness. Agarwal and Prasad (1998) asserted that consumers' personal innovativeness moderates the relationship between their perceptions towards a new information technology, and their usage intentions. Their rationalization was drawn on the expectation that innovative consumers would be predisposed to take risks, and therefore would have more positive behavioural intentions towards new technologies when compared to less innovative individuals. Extant literature also offers empirical support for such a moderating role of consumers' personal innovativeness. For instance, Eastman et al. (2014) looked at innovativeness as having a positive

moderating effect between consumer involvement and their purchase and usage behaviour, in the domain of mobile technology. Similarly, Li et al. (2015) examined the moderating role of innovativeness and found it to be positive between new product originality and consumers' intentions to adopt the new product when both attributes are at a lower level. In their study of online banking, Aldas-Manzano et al. (2009) found that consumer innovativeness reduces the impact of risk perception on online banking usage, while Citrin, Sprott, Silverman, and Stem (2000) found that domain-specific consumer innovativeness enhances the impact of internet usage on online shopping. However, Yi et al. (2006) did not find innovativeness to have any moderating effects between innovation characteristics (usefulness, ease of use, and compatibility), and intention to use online shopping. As such, we hypothesize that innovativeness will moderate the influence of perceived risk, perceived cost, and ubiquity on perceived value, thereby enhancing the positive effect of the driver (ubiquity), and thus reducing the negative effect of the deterrents (risk, cost) of the perceived value of m-commerce.

H4a: Consumer innovativeness will moderate (enhance) the positive effect of ubiquity on perceived m-commerce value.

H4b-c: Consumer innovativeness will moderate (suppress) the negative effect of perceived risk and perceived cost on perceived m-commerce value.

H4d: Consumer innovativeness will moderate (enhance) the negative effect of perceived value on actual m-commerce usage.

Table 2. Personal Innovativeness

Study (Authors, year)	Title	Context
Agarwal and Prasad (1998)	Personal innovativeness in information technology displays moderating effects on the antecedents and outcomes of individual perceptions.	Information technology
Im, Bayus and Mayson (2003)	Personal characteristics of age and income are stronger antecedents of new product ownership than is personal innovativeness.	Consumer electronics
Gielens and Steenkamp (2007)	Consumer acceptance of new products is higher among individuals with higher personal innovativeness.	Consumer packaged goods
Schreier and Prugl (2008)	The more innovative an individual's personality, the stronger his/her demonstrated lead usersness will be, which also translates to a faster and more intensive adoption of new products.	Extreme sports communities

Shoham and Ruvio (2008)	Consumers' personal innovativeness is positively related to the tendencies of opinion leadership and opinion seeking.	Computers and software
Aldas-Manzano et al. (2009)	Consumers' personal innovativeness positively effects adoption behaviour and negatively effects risk perceptions.	Electronic banking
Yuan et al., (2016)	Innovativeness has a positive influence on online knowledge sharing.	Online travel communities
Hong et al., (2017)	Personal innovativeness has a positive impact on continuance intentions, mediated by both hedonic value and utilitarian value.	Smartwatches
Truong et al., (2017)	Personal innovativeness has a greater positive effect on new product evaluation for products that have new rather than existing brand names.	High technology products
The current study	Personal innovativeness moderates the relationship between m-commerce perceived value and its antecedents, such that the positive influence of the drivers is enhanced, and the	Mobile commerce

	negative influence of the barriers is suppressed.	
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2.5 Perceived Value

Perceived value refers to the customers' perception of the trade-off between costs and benefits (Brady et al., 2005). Specifically, it can be defined as the "consumer's overall assessment of the utility of a product (or service) based on perceptions of what is received and what is given" (Zeithaml, 1988, p. 14). This study conceptualizes perceived value using Zeithaml's unidimensional definition. This cognitive approach towards perceived value has been widely embraced in extant literature (Sanchez-Fernandez & Iniesta-Bonillo, 2007). Consumers may develop a cognitive perception of what they will achieve and what they will have to give up. The sacrifice however, extends beyond monetary cost (Kuo, Wu, & Deng, 2009), as is the case with the conceptual model of the current study (Figure 1), which incorporates the perceived risk associated with m-commerce as well. Perceived value has been discussed in marketing literature as one of the key determinants of long-term success (Sanchez-Fernandez & Iniesta-Bonillo, 2007; Woodruff, 1997), and the basis for marketing activity (Holbrook, 1999). A perception of attaining value from an exchange is not only an important consideration in offline contexts, but also in online ones (Wu et al., 2014), such as m-commerce (Kuo et al., 2009; Lin & Wang, 2006).

Perceived value is rooted in economic theory and cognitive psychology (Sanchez-Fernandez & Iniesta-Bonillo, 2007). As the economic theory of utility suggests, the customer

tries to attain maximum utility, and as perceived value reflects the benefits measured against the costs, perceived value is therefore an indicator of usage intention (Kim et al., 2007). Past research has found perceived value to positively affect customer satisfaction and post-purchase intention (Kuo et al., 2009) and customer loyalty in m-commerce (Lin & Wang, 2006). Particularly, in the mobile commerce domain, perceived value has been shown to have a positive influence on adoption intention (Kim et al., 2007), and usage intention (Kleijnen et al., 2007). Accordingly, we expect to find in this study that the perceived value of m-commerce positively influences its usage. We therefore, hypothesize:

H5: Perceived value will have a positive effect on consumers' actual m-commerce usage.

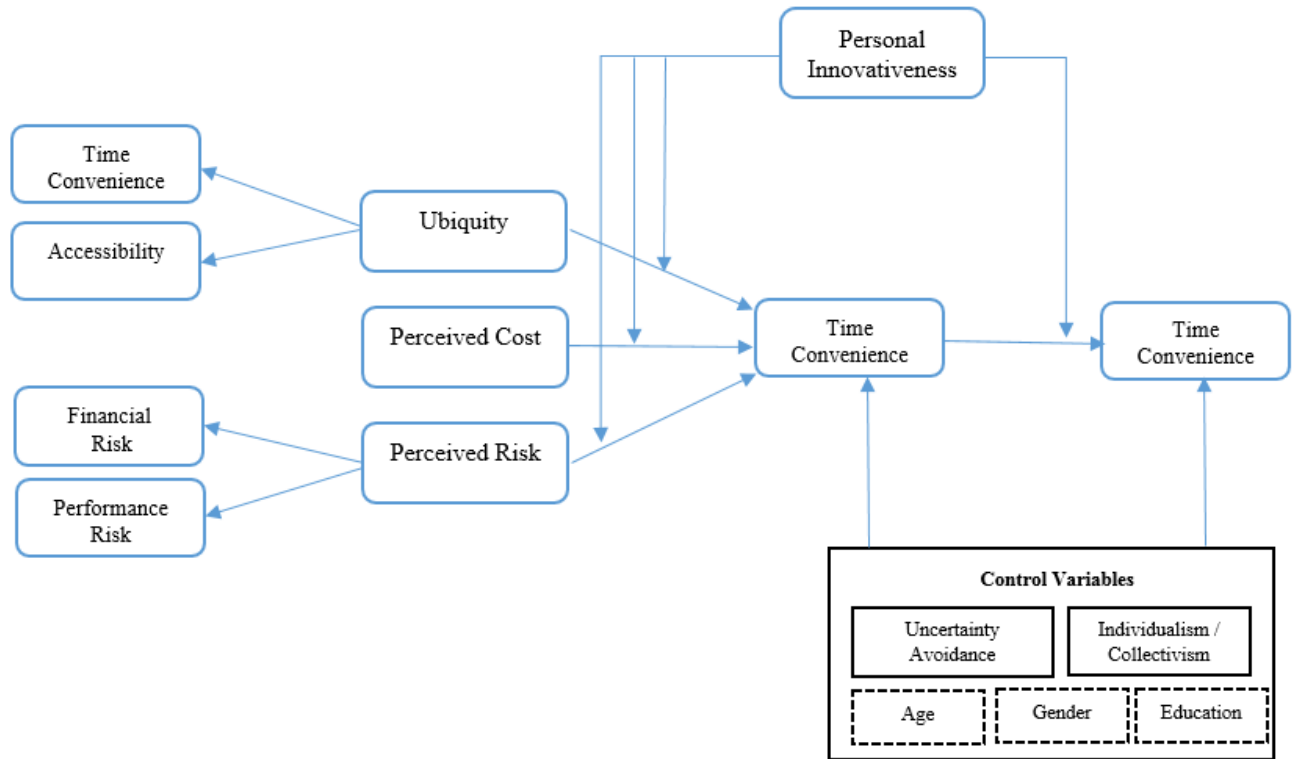


Figure 1. Conceptual Model

3. Methodology

3.1 Data Collection

Data for the analysis were collected through a professional online consumer panel provider. The data collection was carried out in two stages. In stage one, this study administered a questionnaire that included all variables except the actual usage behaviour. We obtained responses from 488 smartphone users in India (216) and Pakistan (272). One month later, in stage two, we administered a second questionnaire—using the same consumer panel provider—to the same participants across both countries and we received 398 total responses: India (186)

and Pakistan (212). In the second questionnaire, besides measuring actual usage behaviour, we used a shortened format of the original questionnaire to assess the common method bias (Yli-Renko, Autio, & Sapienza, 2001). For each construct, we chose one proxy item that we believed best represented the original overall construct (De Clercq, Thongpapanl, & Dimov, 2013).

Before administering the survey for our main study, we followed the pretest and pilot test procedure recommended by Hult, Hurley, and Knight (2004). Initially, we consulted five academics as expert judges in the marketing and information systems disciplines to assess the items' accuracy in representing corresponding constructs. We provided the academics with a detailed description of the focal constructs along with the representative items. The pretest was followed by a pilot test of 103 MTurk participants to evaluate the quality of content and reliability of measures. MTurk is an online marketplace where individuals or “workers” seek simple jobs or tasks for small cash incentives. While not perfectly representative of the international population, evidence shows that MTurk samples are not dramatically skewed or biased in comparison with other online and offline survey collection methods (Ashraf & Thongpapanl, 2015; Goodman, Cryder, & Cheema, 2013). We used MTurk for the pilot test as its respondents are much more demographically varied and diverse, with workers residing in dozens of countries worldwide. This versatility further supports our cause by increasing the generalizability of our pilot test results. The findings from the pretest indicated that the scales used exhibited acceptable psychometric properties in terms of both reliability and validity.

All of the variables used are operationalized according to previously validated measurement scales. Except actual usage behaviour, we used seven-point Likert-type scales (1 = “strongly disagree” and 7 = “strongly agree”) to record participants' responses. For actual usage behaviour, we used a seven-point Likert scale (1 = “not at all,” and 7 = “several times a day”).

For the dependent variables, we adapted measures for perceived value from Kleijnen et al.'s (2007) study, and actual usage from Limayem, Hirt, and Cheung's (2003) study. For the independent variable ubiquity, we adapted the measures from Okazaki and Mendez's (2013) and Kleijnen et al.'s (2007) studies, whereas measures for innovativeness were adapted from Parasuraman's (2000) study. For control variables, we adapted measures for collectivism-individualism and uncertainty avoidance from Sharma's (2010) and Tuyet, Jung, Lantz, and Loeb's (2003) studies.

3.2 Statistical Analysis

We used Partial Least Squares (PLS) modeling to test our measurement and structural models. We selected PLS for several reasons. First, PLS structural equation modeling (PLS-SEM) is considered a robust approach with few identification issues, and it minimizes the residual variances of the endogenous constructs (Hair, Ringle, & Sarstedt, 2011). Second, researchers have argued in the past that data from customer research often do not satisfy the requirements of multivariate normality (Morgeson et al., 2015). Although the covariance-based structural equation modeling (CB-SEM) and PLS-SEM path modeling procedures differ from a statistical point of view, PLS estimates may represent good proxies of the CB-SEM results if the CB-SEM premises are violated (e.g., assumption of normality) (Henseler, Ringle, & Sinkovics, 2009). That is, relying on the ordinary least square estimation techniques, PLS relaxes the assumption of multivariate normality. Third, past studies have also shown PLS to be robust against inadequacies such as skewness and omission of regressors (omitted variable bias) (Cassel, Hackl, & Westlund, 1999).

Previous studies have often looked at countries together to attain a better understanding of regions. For instance, Oliveira and Martins (2010) studied industries across Europe to

examine their e-business adoption, while Maswera, Dawson, and Edwards (2008) collected data from four African countries to investigate e-commerce adoption in the travel and tourism industry. To provide a holistic picture and better understating of the region, in line with past research, we provide findings for our overall model (i.e., merged India and Pakistan into one sample). More importantly, India and Pakistan are both at the low mobile readiness stage and past findings have shown similar behavioural patterns toward m-commerce adoption across the two countries (Ashraf et al., 2017). The two countries are also deemed to be similar in cultural aspects like uncertainty avoidance and collectivism (Hofstede, 2007).

3.3 Measurement Model

To assess the quality of the measurement model, we conducted several tests of convergent and discriminant validity as recommended by Hair, Sarstedt, Hopkins, and Kuppelwieser (2014). We assessed convergent validity using (1) individual item reliability and (2) construct reliability. As Table 3 shows, all AVE scores exceeded the recommended value of .50 (Fornell & Larcker, 1981). Similarly, the composite reliability values for each of the scales used was well above the commonly used cutoff of .70 (Straub, Boudreau, & Gefen, 2004), indicating that our measures are reliable.

Table 3. Outer model with PCA loadings

Indicator	Item Loadings
Actual ($\alpha = .88$; AVE = .80; CR = .94)	
"How many times have you accessed M-commerce during a week for the last month," with 1 = not at all and 7 = several times a day	0.948
"How many times have you used M-commerce during a week for the last month," with 1 = not at all and 7 = several times a day	0.946
Cost ($\alpha = .78$; AVE = .69; CR = .87)	
I think 3G/4G subscription fees are too expensive	0.811
I think M-commerce transactions (e.g., using 3G/4G services) are costly	0.842
M-commerce communication or access fees are expensive for me	0.833
Financial Risk ($\alpha = .92$; AVE = .86; CR = .94)	
There is a good chance that I may lose money if I use M-commerce (e.g., buying a product or checking bank account)	0.924
Using M-commerce could involve important financial losses	0.932
Using M-commerce may lead to financial risk	0.918
Performance Risk ($\alpha = .85$; AVE = .77; CR = .91)	

As I consider using M-commerce, I worry about whether it will really perform as well as it is supposed to	0.898
The thought of using M-commerce causes me to be concerned for how really dependable it is	0.876
There is a good chance that M-commerce may not perform well and process my payments incorrectly	0.865
Consumer Innovativeness ($\alpha = .83$; AVE = .67; CR = .89)	
Among your friends, you are usually the first to try out new technologies	0.832
If you heard about a new technology, you would look for ways to experience with it	0.857
You like to experiment with new technologies	0.837
You would consider buying a new technology, even if you hadn't heard of it yet	0.737
Time Convenience ($\alpha = .86$; AVE = .78; CR = .91)	
I believe using M-commerce is convenient for me	0.847
I believe using M-commerce allows me to save time	0.909
I believe using M-commerce makes tasks (e.g., searching information or purchasing products) less time consuming	0.886
Accessibility ($\alpha = .87$; AVE = .80; CR = .92)	
Mobile Internet allows me to access information at the best moment for me	0.898

Mobile Internet allows me to get things done regardless of my location	0.911
Mobile Internet is practical because I can use it without difficulty wherever I am	0.871
Perceived Value ($\alpha = .94$; AVE = .74; CR = .96)	
Using M-commerce is:	
1 = Very ineffective and 7 = very effective	0.823
1 = Not at all functional and 7 = very functional	0.879
1 = Very impractical 7 = very practical	0.869
1 = Very useless and 7 = very useful	0.895
1 = Not at all sensible and 7 = very sensible	0.829
1 = Very inefficient and 7 = very efficient	0.868
1 = Very unproductive and 7 = very productive	0.851
1 = Very bad and 7 = very good	0.871
1 = Very unpleasant and 7 = very pleasant	0.843
Second Order Latent Construct	
Perceived Risk ($\alpha = .93$; AVE = .74; CR = .94)	
Financial Risk	0.950
Performance Risk	0.940
Ubiquity ($\alpha = .92$; AVE = .70; CR = .93)	
Time Convenience	0.940
Accessibility	0.950

<i>Control Variables</i>	
Individualism/Collectivism ($\alpha = .88$; AVE = .68; CR = .86)	
I would rather depend on myself than others	0.885
My personal identity, independent of others, is important to me	0.866
Individual success is more important than group success	0.710
Uncertainty Avoidance ($\alpha = .82$; AVE = .73; CR = .89)	
I prefer specific instructions to broad or general guidelines	0.884
I tend to get anxious easily when I don't know an outcome	0.907
I prefer a routine way of life to an unpredictable one full of change	0.764

To assess discriminant validity, we conducted two tests. First, we used the cross-loading method (Chin, 1998) and calculated each item's loading on its own construct and its cross-loading on all other constructs. Each item had a higher loading on its intended construct than on its cross-loading with other constructs. Second, computing the Fornell–Larcker (1981) criterion, we find that the square root of AVE for each construct was higher than the correlations between it and all other constructs, and was greater than .50 for overall and country-specific models (see Table 4 for the discriminant validity results).

Table 4. Discriminant validity and tests of differences between correlations

	ACT	CST	FR	PR	INNO	TC	ACC	VAL	UNC	IN- CO
ACT	0.947									
CST	-0.664	0.829								
FR	-0.655	0.528	0.925							
PR	-0.507	0.512	0.502	0.880						
INNO	0.600	-0.501	-0.522	-0.547	0.817					
TC	0.608	-0.564	-0.651	-0.661	0.538	0.881				
ACC	0.678	-0.585	-0.631	-0.648	0.605	0.684	0.894			
VAL	0.681	-0.667	-0.616	-0.623	0.675	-0.648	0.673	0.859		
UNC	0.328	-0.198	-0.324	-0.307	0.341	0.300	0.312	0.320	0.854	
IN- CO	0.347	-0.247	-0.255	-0.287	0.357	0.377	0.409	0.340	0.358	0.824

Note: ACT = Actual Usage, CST= Cost, FR = Financial Risk, PR = Performance Risk, INNO = Innovativeness, TC = Time Convenience, ACC = Accessibility, VAL = Value, UNC = Uncertainty, IN-CO = Individualism-Collectivism

3.4 Control Variables

In line with past research, we included five control variables: collectivism-individualism, uncertainty avoidance (Sharma, 2010; Tuyet et al., 2003), age, gender, and education (Ashraf et al., 2014). Even though several dimensions of national culture exist, previous research suggests (cf., Auh, Menguc, Spyropoulou, & Wang, 2016; Griffith, Hu, & Ryans, 2000) that only the dimensions that are strongly tied to the construct of interest should be incorporated in the nomological network under investigation (thereby satisfying the philosophical goal of parsimony). Research has shown that culture has a significant influence on consumers' behaviours (Dwyer, Mesak, & Hsu, 2005; Thompson & Chmura, 2015). More importantly, recent studies have provided growing evidence of transitional economies (i.e., markets moving from command to free market economies and from closed to open economies) (Tuyet et al., 2003). For example, in many South East Asian countries, including India, Vietnam and China, individuals are moving away from collectivist values and mentality, and are moving towards individualistic values and mentality. Similarly, due to the unique nature of m-commerce (i.e., consumers can not touch, taste, or feel the product), it is perceived as risky (Shankar et al., 2010). More importantly, India and Pakistan are considered as high uncertainty avoidance countries (Hofstede, 2007). Hence, this research incorporates collectivism-individualism and uncertainty avoidance dimensions of culture into the model as control variables.

3.5 Common Method Bias

Since the data collected are cross-sectional and use a single-source method, common method bias may cause spurious relationships among the variables (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). To assess common method bias, we first conducted Harman's single-factor

test using exploratory factor analysis. The results revealed that the first factor did not account for the majority of the variance in the data and was well below the cut-off point of 40%. Second, following prior research (Yli-Renko et al., 2001), common method bias was also assessed by administering a follow-up study four weeks after the initial one. In the follow-up survey, a shortened format of the original questionnaire was used: for each construct, we chose one proxy item that we believed best represented the original overall construct (De Clercq et al., 2011). The results showed positive and significant correlations between the original and follow-up items. These results, together with arguments that common method bias is less prevalent in studies using multi-item scales (Bergkvist & Rossiter, 2007) and for moderating effects rather than main effects (Simons & Peterson, 2000), alleviate possible concerns related to common method bias.

3.6 Structural Model

In order to test whether or not the path coefficients differ significantly from zero in the model, we computed t-values using a nonparametric bootstrap procedure (Henseler et al., 2009).

3.6.1 Direct Effects

We hypothesized that ubiquity will have a positive effect on perceived value (H1), whereas perceived risk (H2) and perceived cost (H3) will have a negative effect on perceived value. Our results provide strong support for the hypothesized linkages. Ubiquity ($\beta = .30, p < .01$), risk ($\beta = -.10, p < .05$), and cost ($\beta = -.45, p < .01$) are not only significant predictors of perceived value but are also in the expected directions, hence providing support for H1, H2, and H3. Likewise, our results indicate that perceived value is a significant and positive predictor of actual m-commerce usage ($\beta = .71, p < .01$), providing support for H5.

Table 5. Structural model estimates

Structural Model Results			
Variables	Perceived Value	Actual Usage	Hypothesis
Direct Effects			
Ubiquity	0.30*	-	H1: Supported
Perceived Risk	-0.10*	-	H2: Supported
Perceived Cost	-0.45*		H3: Supported
Perceived Value	-	0.71*	H5: Supported
Consumer Innovativeness	0.12*	0.13*	
Interaction Effects			
Ubiquity x Consumer Innovativeness	0.14*	-	H4a: Supported
Perceived Risk x Consumer Innovativeness	0.11*	-	H4b: Supported
Perceived Cost x Consumer Innovativeness	0.06		H4c: Not Supported
Perceived Value x Consumer Innovativeness			
Innovativeness	-	0.07*	H4d: Supported
Control Variables			
Age	0.01	0.04	
Education	0.03	-0.03	
Gender	-0.01	0.03	
Individualism-Collectivism	0.02	0.04	
Uncertainty Avoidance	-0.05	-0.03	

R2

0.74

0.72

Note: * $p < .05$

3.6.2 Interaction Effects

We posit in H4a that innovativeness will positively moderate the relationship between ubiquity and perceived value, whereas in H4b and H4c we hypothesize that innovativeness will have a suppressing effect on the negative relationship between (1) perceived risk and perceived value and (2) perceived cost and perceived value. Finally, in H4d we propose that innovativeness will positively moderate the relationship between perceived value and actual m-commerce usage. We find that except in H4c, all interactions effects are significant at $p < .05$ (see Table 3). H4a ($\beta = .14$, strengthened), H4d ($\beta = .07$, strengthened), and H4b ($\beta = .11$, suppressed) are supported by the data; for H4c ($\beta = .06$, suppressed), we did not find a significant interaction effect; however, the effects found are opposite in sign to the direct effect of perceived cost. Our results also reveal that the variance explained (R^2) in the endogenous variables perceived value ($R^2 = .74$) and actual usage ($R^2 = .72$) are high and acceptable. Variance Inflation Factors (VIF) were used to test for multicollinearity, and were found to be below the threshold of 4.0.

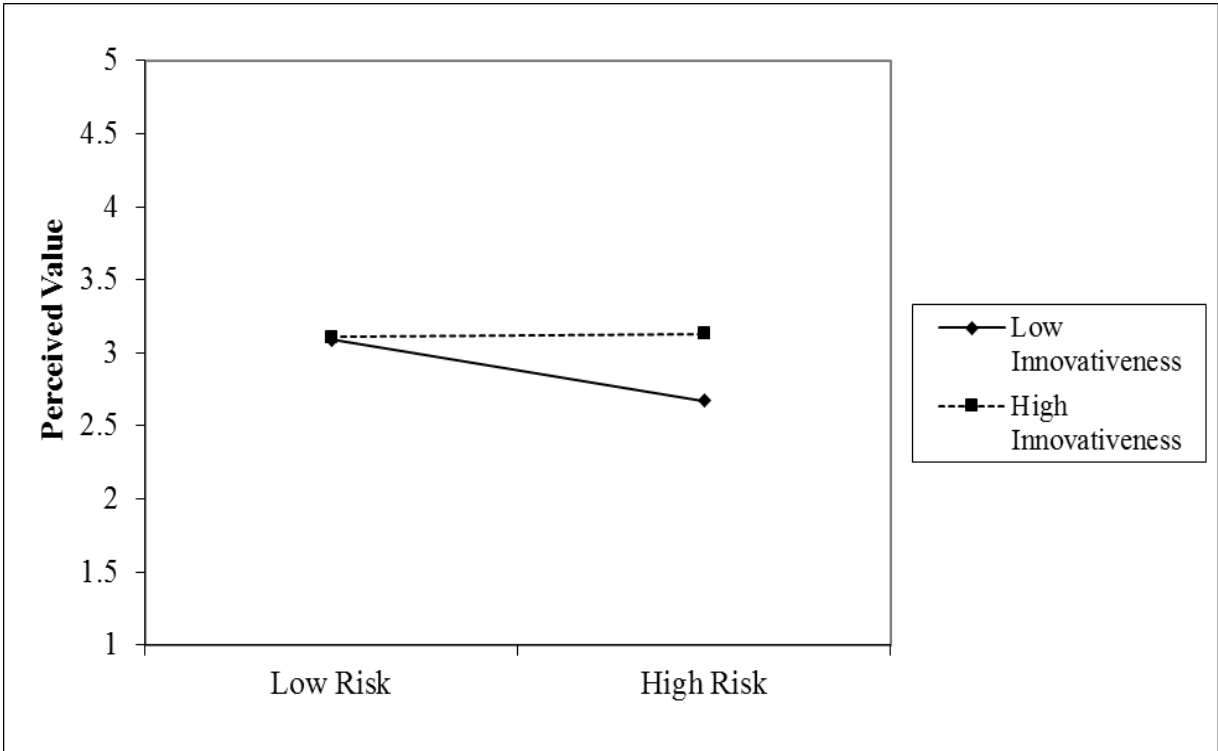


Figure 2. Consumer innovativeness suppressing effect on perceived risk-perceived value relationship

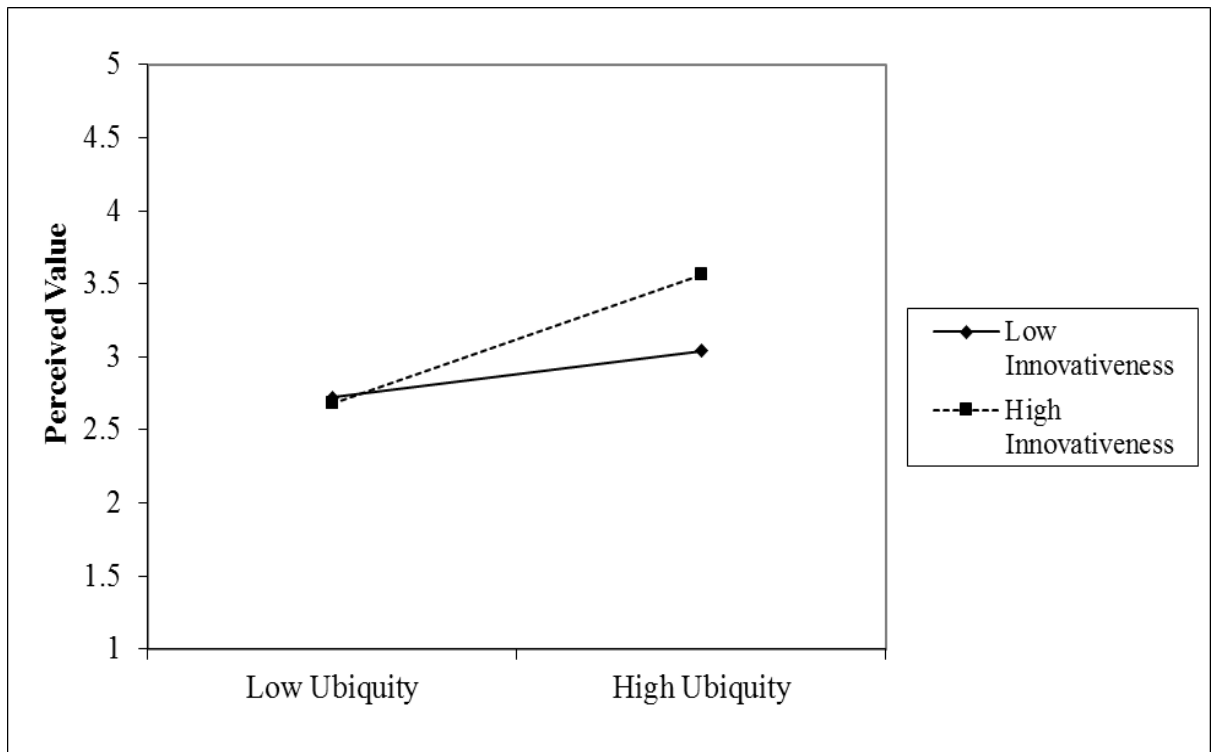


Figure 3. Consumer innovativeness enhancing effect on ubiquity-perceived value relationship

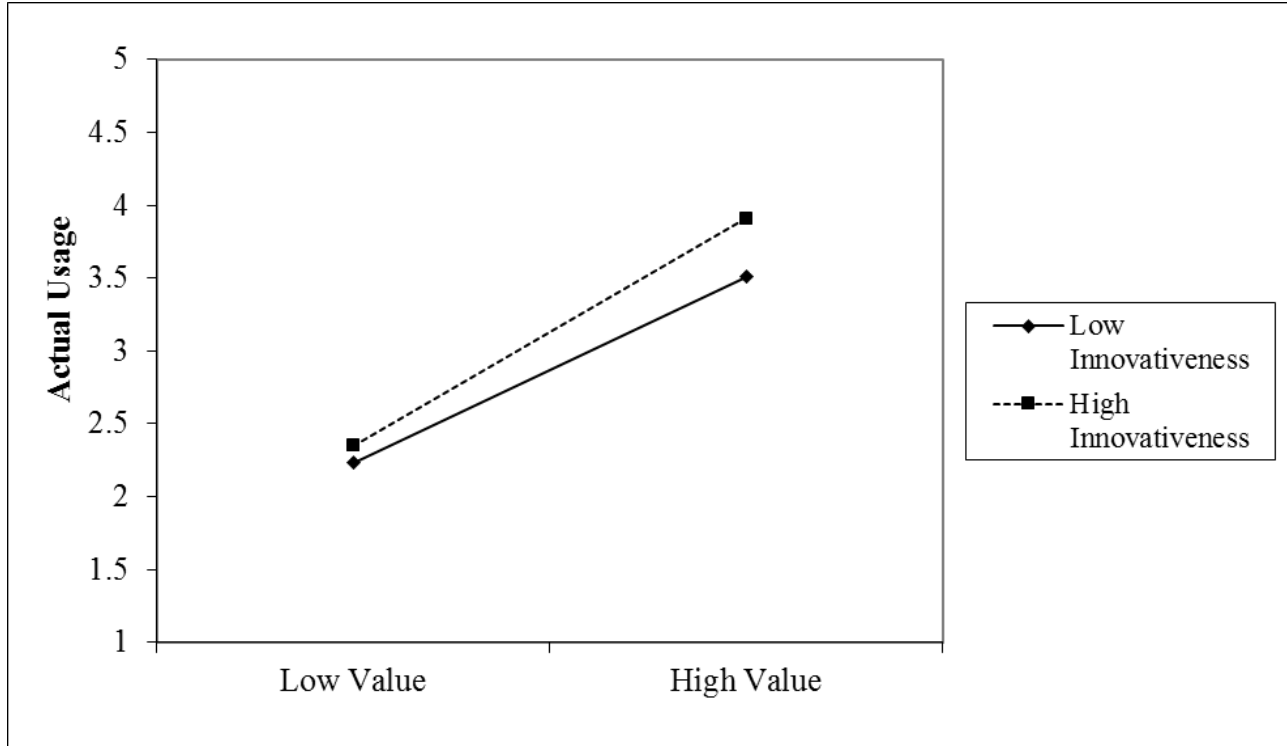


Figure 4. Consumer innovativeness enhancing effect on perceived value-actual usage relationship

4. Discussion

This study holds valuable contributions to the contemporary research on international marketing, in the context of mobile commerce. Previous m-commerce literature has focused mainly on the adoption of m-commerce and has overlooked the investigation of how consumers' perception of value is formed. Perceived value is a fundamental concept around which firms design their marketing activity (Holbrook, 1999). To that end, the current research presents a model explaining value creation in m-commerce. Moreover, to capture a more comprehensive

and nuanced picture of value formation and the impact of the determinants on it, this study observes the moderating role of consumers' personal innovativeness. Extant literature on m-commerce has also predominantly focused on developed countries, and thus the differences that exist between emerging economies and developed economies have been ignored (Aksoy et al., 2013; Alalwan et al., 2017; Morgeson et al., 2015). This study explores the proposed framework in the context of two emerging m-commerce markets, India and Pakistan.

The results show the impact of different determinants that drive or deter the perceived value of m-commerce in countries where the phenomenon is still in a nascent stage. Barring one, all the hypothesized relationships were supported by the results. The study discovered perceived financial risk and performance risk to have a significant negative influence on the perceived value of m-commerce. Similarly, in line with previous literature, perceived cost was also found to have a negative influence on m-commerce perceived value. Thus, the perception of risk and the extent to which consumers see m-commerce as being costly collectively act as the barriers to m-commerce value.

Interestingly, despite the attention that has been paid to perceived risk as a deterrent to m-commerce adoption (Slade et al., 2015; Thakur & Srivastava, 2014; Zhang et al., 2012), this study revealed an even stronger negative impact of perceived cost. This might point to the increased importance attached to perceived monetary cost in economies with comparatively lower spending power and should be considered by marketers when strategizing for price. The result also emphasizes the need for more research on emerging markets, and cautions about generalizing across countries. As m-commerce retailers expand their operations to various emerging and developing economies, they face the challenge of striking the optimal balance

between standardizing and customizing their marketing strategies (Katsikeas et al., 2006; Watson et al., 2017). Thus, we provide a deeper insight into the consumers' value formation in these emerging economies.

The perceived ubiquity of the technology, on the other hand, was found to have a significant positive effect on perceived value. In line with this study's expectations and discussion of the past literature (e.g., Okazaki and Mendez, 2013), perceived ubiquity was found to be a key driver of m-commerce value. The ease and flexibility of engaging with m-commerce service without the limitation of time and place holds significant value for consumers. The results also reiterated perceived value to be a predictor of actual m-commerce usage, reaffirming the findings in previous literature that consider perceived value to be one of the most significant predictors of consumers' behavioural outcomes (Chen & Dubinsky, 2003; Wu et al., 2014).

The results also revealed some insightful interaction effects of these predictors with the consumers' innate characteristic of innovativeness. As predicted, innovativeness was found to enhance the positive impact of ubiquity on perceived value. Thus, innovative consumers would see even higher value in the time convenience and the ubiquitous accessibility offered by m-commerce. By observing the interaction of ubiquity with a key personality trait, the findings advance the knowledge on ubiquity, an aspect that recent mobile marketing literature has called for more research on (Okazaki & Mendez, 2013).

On the other hand, increased levels of innovativeness in consumers were found to suppress the negative impact of perceived risk on value. Recent literature has looked at innovativeness and risk separately, and how they affect behavioural intentions (Slade et al., 2015). By exploring the interaction of the two variables, and how that shapes their perception of value, this study adds to the psychological underpinnings that determine consumer perceptions.

This finding also has important practical implications, as discussed in the following sections. Additionally, it was also found that innovativeness strengthens the effect of perceived value on actual m-commerce use. The findings thus confirm our expectations that levels of innovativeness among consumers plays an important role toward their perception and behaviour toward m-commerce.

The study did not, however, find a significant interaction effect between innovativeness and perceived cost. This finding is a little surprising and counterintuitive. However, it may yet again highlight the high importance attached to perceived cost in emerging economies, to the point where individuals might not believe it is worth the monetary sacrifice, despite their inherent innovativeness.

4.1 Theoretical Implications

Extant literature on m-commerce research across differing cultural and economical contexts is rather limited and thus does not provide an established framework of factors that predict the value and usage of m-commerce (Ashraf et al., 2017, Aksoy et al., 2013; Morgeson et al., 2015). Moreover, the literature addressing the predictors of m-commerce value and usage is mostly based on Western countries and often fails to account for the economic, social, and cultural differences that exist across different countries, particularly for products and services based on new technologies (Ashraf et al., 2014; Chong et al., 2012).

From a theoretical perspective, the current study examined how the multidimensional second order latent construct of ubiquity positively impacts the perceived value of m-commerce. Though the effect of ubiquity on m-commerce adoption (Ashraf et al., 2017; Okazaki et al.,

2012) and m-commerce flow experience (Okazaki & Mendez, 2013) has been explored, this study marks the first attempt at exploring how it augments value to the consumer. Furthermore, we also investigate its interaction effects with the relevant consumer characteristic of innovativeness, and how that effect impacts consumers' perceived value. Our results advance the previous literature that found similar effects of ubiquity (Kleinen et al., 2007; Okazaki & Mendez, 2013).

In order to capture perceived value as a function of costs and benefits (Brady et al., 2005), this study also explores the deterrents to the value of m-commerce. The perceived financial and performance risks, and the perceived monetary costs associated with m-commerce, were found to have a negative influence on value. The results reaffirm the findings from previous studies, (Thakur & Srivastava, 2014; Zhang et al., 2012), as well as help in establishing a framework of factors that predict the value of m-commerce in emerging economies. As with the driver of m-commerce, this study observed how the personality trait of innovativeness affects the risk-value and cost-value relationships.

Another major contribution of the present research is the investigation of the model of m-commerce perceived value by incorporating personal innovativeness as a moderating variable. Previous literature has suggested that the process of value formation needs to be looked at as a function of not only the costs and benefits of the product or service, but also the personal characteristics of the individuals weighing these costs and benefits (Holbrook, 1999; Kleijnen et al., 2007). To that end, personal innovativeness is a highly relevant and influential personality trait, especially in the context of new technologies (Agarwal & Prasad, 1998; Lu, 2014). Not

surprisingly, recent literature has called upon marketing research to explore consumer characteristics (Hofacker, Ruyter, Lurie, Manchanda, & Donaldson, 2016), particularly the innate trait of innovativeness, in more depth (Pagani & Malacarne, 2017; Slade et al., 2015). This study therefore explores how innovativeness enhances the effect of the drivers, and suppresses the effects of the barriers to the perceived value of m-commerce. While the results for the influence of innovativeness on ubiquity and risk were as hypothesized, its impact on cost did not generate significant results. This interesting finding could be attributed to the notion that the relatively lower purchasing power and the nascent stage of m-commerce services in these two countries make cost a highly important factor, to an extent where even innovative consumers fail to see much value in the technology. Of course, further research, and cross-country comparisons in this regard might yield further interesting insights. This study presents one of the few empirical works investigating the moderating role of consumer innovativeness, and thus enriches the theory on this subject.

4.2 Practical Implications

In recent years, there has been a rapid growth of m-commerce in India and Pakistan. The advent of 3G and more recently 4G technologies and the widespread availability of smartphones has resulted in m-commerce growth to an extent that the two countries are considered truly mobile-first now (Govindarajan & Bagla, 2016; Younas, 2017).

With a collective population of almost 1.5 billion, around half of which falls in the 15-29 year age group, (Ashraf et al., 2017), the region represents an enormous potential with regards to mobile commerce. Industry reports also show positive indicators. M-commerce platforms are

experiencing enormous growth. For instance, Flipkart, the country's biggest e-retailer, recently announced it will be shutting down its website and shifting to a mobile application-based model only (Arthur, 2015; Miglani, 2014). Similarly, Pakistan's m-commerce market is also booming, with most start-ups attributing about 75% of their activity to m-commerce (Younas, 2017).

Having said that, there still remains a large disparity between the proportion of people owning smartphones and those engaging in m-commerce activities (Arthur, 2015; Siddique, 2016). In order to create value in these countries, marketers would need a mobile-first strategy (Govindarajan & Bagla, 2016), and a sound understanding of consumers' value perception would help them strategize accordingly. An enhanced understanding of what the consumers find value in would therefore yield significant results in better developing these markets.

The gap between the potential and the current situation calls on practitioners and marketers to cultivate a better and more tailored understanding of how consumers perceive value in these countries, which can then be translated to actual usage behaviour. The current study holds implications that can be of significant value to practitioners seeking to offer value to m-commerce consumers in these countries.

Our results show perceived risk to be a significant deterrent to value, understandably as the technology is still new in these countries (Ashraf et al., 2017) and culturally, they usually score high on uncertainty avoidance. Added to that, countries in the infancy stages of m-commerce still lack the regulatory environment and mechanisms which heightens consumers' risk perceptions (Kesharwani & Bisht, 2012; Younis, 2017). Practitioners in these countries are recommended to make efforts to reduce the perceived risk through strategies aimed at ensuring payment security and performance guarantees. Corporate credibility has been shown to mitigate the negative effects of risk (Featherman, Miyazaki, & Sprott, 2010), and can also be used to

minimize risk. For instance, partnering with credible brand names like Paypal, or other trusted services, warning consumers about phishing scams, and providing options to return products not functioning to satisfaction are all examples of measures that can be taken to address perceived financial and performance risks. Moreover, practitioners can use third-party certifications and should continuously look to adopt mechanisms aimed at ensuring consumer security (Thakur & Srivastava, 2014). The results also revealed that cost is a strong barrier to m-commerce value in these markets. In the light of these results, marketers could adopt revised pricing strategies to enable more people to see the value in m-commerce. Moreover, mobile promotions and offers hold significant value for consumers, as consumers can benefit monetarily and enjoy receiving bargains (Andrews, Goehring, Hui, Pancras, & Thornswood, 2016). Employing similar promotional strategies in India and Pakistan might offer another way for marketers to minimize the perception of high costs associated with using m-commerce.

In terms of benefits offered, the current research shows that the ubiquity of mobile commerce is valued by customers, and therefore presents an opportunity for practitioners to formulate strategies that enable consumers to shift from using traditional brick-and-mortar commerce, and even e-commerce, toward m-commerce. Highlighting the time convenience and accessibility of m-commerce, practitioners can push to increase the penetration of m-commerce services. Industries that could benefit from the ubiquity of mobile devices and the internet include mobile banking, entertainment, education, healthcare, sharing economy, and online shopping, among others (Govindarajan & Bagla, 2016).

Finally, this study shows how personal innovativeness can enhance the effects of the drivers of m-commerce, while reducing negative consequences of the barriers, to an extent.

Practitioners should therefore aim their promotional and advertising campaigns towards triggering the interest of innovative consumers, as they tend to provide valuable feedback (Lu, 2014) and are quicker to react to marketing communications (Rohm et al., 2012). The identification and targeting of those users who are high in innovativeness can enable marketers to involve them in co-creating content and mobile apps (Lu, 2014). For instance, marketers could consider tailoring some of their advertising content to focus on the innovative segments of the market (Thakur & Srivastava, 2014).

5. Conclusion

The growth of mobile commerce has been well-documented in recent literature (Shankar et al., 2016; Wang et al., 2016). Industry figures also paint a similar picture, pointing to the rapid expansion of mobile commerce (eMarketer, 2015). At the same time, practitioners also find themselves searching for a more comprehensive understanding of how consumers perceive value, and what antecedents lead up to it. In particular, telecommunication companies are expanding their operations to emerging markets that offer immense potential, yet are still in nascent stages of m-commerce. The development of effective strategies for international markets holds considerable value for managers, as such strategies can lead to higher levels of growth, stronger competitive advantages, and long-term profitability (Theodosiou and Katsikeas, 2001).

Perceived value has often been described as one of the key marketing constructs, and one that leads to favourable behavioural outcomes (Babin & James, 2009; Kleijnen et al., 2007; Sanchez-Fernandez & Iniesta-Bonillo, 2007; Wu et al., 2014). Understanding what factors drive and what factors act as barriers to perceived value can help managers strategize accordingly. To

that end, this study presents a framework of the drivers and deterrents of m-commerce's perceived value, which in turn, leads to actual purchase behaviour. Moreover, past research has emphasized the need to take into account consumers' individual personality traits that may also play a role in determining such value. This study advances the literature on mobile marketing by observing how consumers' innate innovativeness moderates the relationship between ubiquity (driver), perceived risk and perceived cost (barriers), and consumers' perception of m-commerce value.

To achieve a more nuanced understanding of the relationships, ubiquity and perceived risk have been studied as multi-dimensional constructs. In line with the hypothesized expectations, the results reveal a positive effect of ubiquity on perceived value, and a negative one for perceived risk and perceived cost. Furthermore, since value is a subjective construct (Babin et al., 1994), we observe how personal innovativeness moderates the proposed relationships. We empirically demonstrate that personal innovativeness moderates the positive effect of ubiquity on perceived value, so that the effect is enhanced. On the other hand, personal innovativeness significantly suppresses the negative effects of perceived risk on perceived value. No significant moderating effect was found for personal innovativeness on the relationship between perceived cost and perceived value.

To the best of our knowledge, this study marks the first attempt to investigate the perceived value of m-commerce as a function of its drivers and barriers, and to explore how consumer innovativeness interacts with these determinants to shape consumers' ideas of perceived value. In addition to advancing the theory on mobile marketing, this study holds valuable implications for practitioners as well. As individuals in different countries may perceive value differently and, in line with past international business research, a more granular and

multidimensional analysis of what constitutes a valuable m-commerce experience at the country level is relevant (Cano-Kollmann, Cantwell, Hanningan, Mudambi, & Song 2016; Dunning, 2009; Rubera, Ordanini, & Griffith, 2011). In particular, as telecom companies expand their operations to the emerging and developing markets, they seek to strike the optimal balance between standardizing and customizing their marketing strategies (Katsikeas et al., 2006; Watson et al., 2017). Industry reports point to the increasing tendency among giants like Facebook and Google to “make mobile commerce more local” (eMarketer, 2016), amplifying the need for researchers to also discard the one-size-fits-all approach to study consumers’ m-commerce behaviours. The results of this study provide insights into what factors to account for when strategizing for m-commerce consumers in emerging economies like the ones discussed in this study.

6. Limitations and Future Research

As with any research, the current study has some limitations that could provide opportunities for future research. First, we present a framework of m-commerce perceived value by exploring its drivers and barriers. However, naturally, the factors presented do not represent an exhaustive list of determinants, and future research should identify and investigate other constructs that might act as drivers of or barriers to perceived value. With a rapidly evolving technology like m-commerce, the way consumers derive value may also change over time, making it useful for future work to investigate and identify such changes.

Second, we observe the moderating effects of personal innovativeness on the principal relationships of the drivers and barriers on perceived value. While personal innovativeness has

been found to be one of the most relevant and significant individual traits when studying technology (Agarwal & Prasad, 1998; Lu, 2014), many other personality traits and individual orientations might merit investigation to determine how they shape perceived value.

Future research should also reflect upon the role that infrastructure plays in leading to more or less mobile commerce. Regions that lack a developed retail or other forms of infrastructure may be able to utilize mobile retailing to create new options. A more detailed analysis of how the gaps can be filled as suggested, and how they might benefit the users, may lead to some valuable insights.

Furthermore, the focus of this research was to examine ubiquity as the underlying driver of m-commerce. However, future research should also explore the increasingly interesting role that the ubiquity of m-commerce plays in making it a substitute and/or compliment to the transactional and non-transactional services provided by omnichannel retailers.

Finally, this study explored m-commerce consumer behaviour in the emerging markets of India and Pakistan. Future research should extend our findings by conducting cross-country investigations of how such consumer behaviour could change amongst countries, and what factors might be similar. Such studies could hold significant practical implications for managers by suggesting optimal levels of balance between customization and standardization (Katsikeas et al., 2006). To cite but one possible metric, technology readiness (Parasuraman, 2000) could be employed as a continuum on which to base future m-commerce markets' investigations.

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