FACTORS AFFECTING MOBILE SHOPPERS' LOYALTY: THE MEDIATING ROLE OF PERCEIVED VALUE

Ruoqing Zhang, Department of Management (MSC 3DJ), College of Business,
New Mexico State University, Las Cruces, NM 88003, U.S.A. Email: ruoqing@nmsu.edu

Eugene Sull, Department of Management (MSC 3DJ), College of Business,
New Mexico State University, Las Cruces, NM 88003, U.S.A. Email: esull@nmsu.edu

Minjoon Jun, Department of Management (MSC 3DJ), College of Business,
New Mexico State University, Las Cruces, NM 88003, U.S.A. Email: minjun@nmsu.edu

ABSTRACT

This paper develops a research model to investigate the effects of key mobile shopping factors on mobile shoppers' perceived value and loyalty. We first identify four major mobile shopping factors, such as product perceptions, monetary savings, customer service quality, and perceived risks based on a review of the relevant literature. Then, we employ structural equation modeling to analyze data collected from 160 U.S. mobile shoppers. Our empirical analysis results indicate that all the four mobile shopping factors except customer service quality have significant and positive impacts on customer perceived value and in turn customer loyalty. Specifically, we find that (1) customer perceived value fully mediates the effects of monetary savings and perceived risks on customer loyalty; (2) customer perceived value partially mediates the effect of product perceptions on customer loyalty; and (3) customer service quality has a direct and positive effect on customer loyalty.

INTRODUCTION

The diverse advantages of using mobile internet and applications, such as ubiquity, flexibility, and personalization, have made mobile shopping (m-shopping) increasingly popular among consumers. Industry reports suggest that m-shopping adoption has been rapidly growing in the past several years. For example, Pew Research (2017) has reported that, in 2017, 77% of Americans own a smartphone, up from 35% in 2011; the annual Mobile Money Report (MEF, 2017) has revealed that about 80% of U.S. customers made a purchase using their mobile devices, such as smartphones and tablets, in 2016; and eMarketer (2016) predicts that U.S. m-shopping sales would reach $242 billion in 2020, an increase of 96.7% from the year 2016. These figures imply that, in recent years, there has been a very rapid evolution of mobile content and applications, and broadly information systems and communication technologies, leading to the exponential growth of mobile commerce in today's global market.

In general, the term mobile shopping (m-shopping) can be defined as an advanced mobile service that enables customers to browse or purchase products and services from retailers via mobile devices from anywhere at any time (Groß, 2015). As noted by San-Martín et al. (2015) and Wong et al. (2015), mobile retailers (m-retailers) have been successful in attracting a fairly large number of customers by offering them various m-shopping benefits, such as ubiquity (Through mobile

devices, retailers are able to reach more customers regardless of where and when they are), flexibility (Customers can browse mobile internet and applications content to conduct transactions or receive information wherever they are as mobile devices are inherently portable), convenience (Customers can easily access their needed information and purchase product/services via mobile devices), and personalization (Each mobile device is usually dedicated to a specific user so that it is personal).

Mobile shoppers (m-shoppers) can purchase products either through mobile website browsers (known as mobile web apps) connected by Wireless Access Protocol (WAP), or via mobile applications (known as native apps) (Heitkötter, Hanschke, & Majchrzak, 2012; Wang, Malthouse, & Krishnamurthi, 2015). Compared with mobile web apps through which m-shoppers can open a web browser and then type in a uniform resource locator (URL), native apps are much easier and faster for m-shoppers to access m-retailers' offerings and check their account balance.

While most prior studies on m-shopping have focused on mobile websites and applications simultaneously, relatively little research has paid particular attention to m-shopping through mobile apps only, which have their unique advantages over mobile websites: mobile apps offer seamless experiences with their ability to work offline and online; all mobile apps offer instant access by a tap; and all mobile apps enable users to review their content quickly by storing vital data that can be accessed offline (Fang & Fang, 2016; Liu, Zhao, Chau, & Tang, 2015).

Moreover, although many prior studies have addressed the issue of customers' m-shopping adoption, only few studies have examined the issue of m-shoppers' loyalty (Agrebi & Jallais, 2015). In order to expand a loyal customer base, it is crucial for m-retailers to understand fully what m-shoppers perceive to be key m-shopping factors (e.g., product perceptions and perceived risks), and how these key m-shopping factors impact their m-shopping intention. Therefore, in this paper, we attempt to identify major factors that significantly influence m-shoppers' perceived value and in turn loyalty in the context of m-shopping, particularly via native mobile apps.

DEVELOPMENT OF HYPOTHESES

Product perceptions and perceived value

Product perceptions refer to how consumers think and ultimately respond to different kinds of goods and services (Jarvenpaa & Todd, 1997). For the present study, product perceptions consist of two important components: product variety and quality. If m-shoppers fail to find the products/services they are interested in from a certain m-retailer or purchase products/services with substandard quality from the m-retailer, it would be highly likely that they have no intention to visit the m-retailer again. Perceived product quality refers to consumers' subjective perceptions from a specific consumption setting (Zeithaml, 1988). In the context of online shopping, Wen et al. (2014) assert that online consumers will perceive a higher value when they have a better perception of product quality and product variety from an online retailer. In addition, Jiang, Jun, and Yang (2016) demonstrate that product portfolio (i.e., offering diverse products) has a significant and positive effect on customer perceived quality. Therefore, we hypothesize that:

H1: Product perceptions have a positive impact on perceived value.

Monetary savings and perceived value

Monetary savings can be defined as a consumer's perceptions of economic savings from purchasing products/services using m-shopping apps (Liu et al., 2015). M-shoppers frequently evaluate whether the total purchasing prices, including product prices, taxes, processing fees, and delivery costs, are fair and reasonable. If the total purchasing costs are unduly high, customers' perceived value would be very low. For example, Gupta and Arora (2017), in their empirical study of m-shopping adoption in India, validate that consumers who are high on price-saving orientation are more likely to shop through non-traditional retail formats. In the m-shopping context, m-retailers, like online retailers, tend to have competitive advantages over offline retailers in offering products at competitive prices, since they do not need to maintain physical outlets for their businesses and thus incur lower fixed costs. Therefore, we hypothesize that:

H2: Monetary savings have a positive impact on perceived value.

Customer service quality and perceived value

Customer service quality can be defined as the gap between customers' expectations and retailers' actual service performance (Wen et al., 2014). In the context of offline retailing, Parasuraman et al. (1988) empirically identify five key dimensions of service quality, such as tangibles (physical facilities, equipment, and appearance of personnel), reliability (ability to perform the promised service dependably and accurately), responsiveness (willingness to help customers and provide prompt service), assurance (knowledge and courtesy of employees and their ability to inspire trust and confidence) and empathy (caring, individualized attention the firm provides its customers). These five service quality attributes constitute the basis for global measurement of service quality, namely SERVQUAL. Since that time, in assessing customer service quality performance, the identified five key dimensions of SERVQUAL have been applied to a wide range of service industries, including online (e.g., Jiang et al., 2016) and mobile retailing (e.g., Chen, 2013, Huang, Lin, & Fan, 2015). For example, Chen (2013), in his empirical study of m-shopping quality systems in Taiwan, identify four SERVQUAL customer service quality dimensions, such as reliability, empathy, assurance, and responsiveness, as the key elements of customer service quality in m-shopping. Regarding the relationship between customer service quality and perceived value, many researchers have suggested that customer service quality has a significant and positive effect on customer perceived value (Bernardo, Marimon, & del Mar Alonso-Almeida, 2012; Jiang et al., 2016). Therefore, we hypothesize that:

H3: Customer service quality has a positive impact on perceived value.

Perceived risk and perceived value

Perceived risks refer to the extent to which consumers perceive the possible losses that could be created due to the uncertainties of using m-shopping apps (Yang, Liu, Li, & Yu, 2015). Perceived risks associated with mobile transactions include consumers' privacy risk and economic risk (Zhang, Zhu, & Liu, 2012). Huang et al. (2015) define privacy risk as the degree to which customers perceive the transactions with the m-retailer to be safe, and as the extent to which their personal information is protected. Jiang et al. (2016), in the online retailing context, find that security risks have a significant and negative effect on customer perceived value. Similarly, Liu et al. (2015) empirically demonstrate that perceived risks negatively affect the perceived value of m-coupon apps. Therefore, we hypothesize that:

H4: Perceived risks have a negative impact on perceived value.

Perceived value and customer loyalty

Customers are usually value-driven, and thus how a customer perceives products/services is crucial for marketers and researchers (Wu, Vassileva, Noorian, & Zhao, 2015). Perceived value can be defined as a consumer's overall evaluation of the utility of a product or service based on perceptions of what is received and what is given (Zeithaml, 1988). Several studies have discussed the concept of perceived value in the e-commerce setting. These studies commonly maintain that customer perceived value is a key antecedent of customer loyalty. For example, Tsao and Tseng (2011) note that high value is one of the primary motivations for customer patronage. Wu et al. (2014), based upon a survey of 887 online shoppers from a relational exchange perspective, suggest that consumers' perceived value is positively related to repurchase intention. Similarly, Xu, Peak, and Prybutok (2015), based on a sample of 347 U.S. students, find that app users who perceive greater value from using an app tend to recommend the app in question. Later, Jiang et al. (2016) have uncovered the significantly positive effect of customer perceived value on customer loyalty. Therefore, we hypothesize that:

H5: Perceived value has a positive impact on customer loyalty.

Figure 1 illustrates the hypothesized conceptual model. As shown in Figure 1, our research model suggests that customer perceived value exerts a mediating effect on the relationship between four m-shopping factors, such as product perceptions, monetary savings, customer service quality, and perceived risks, and customer loyalty.
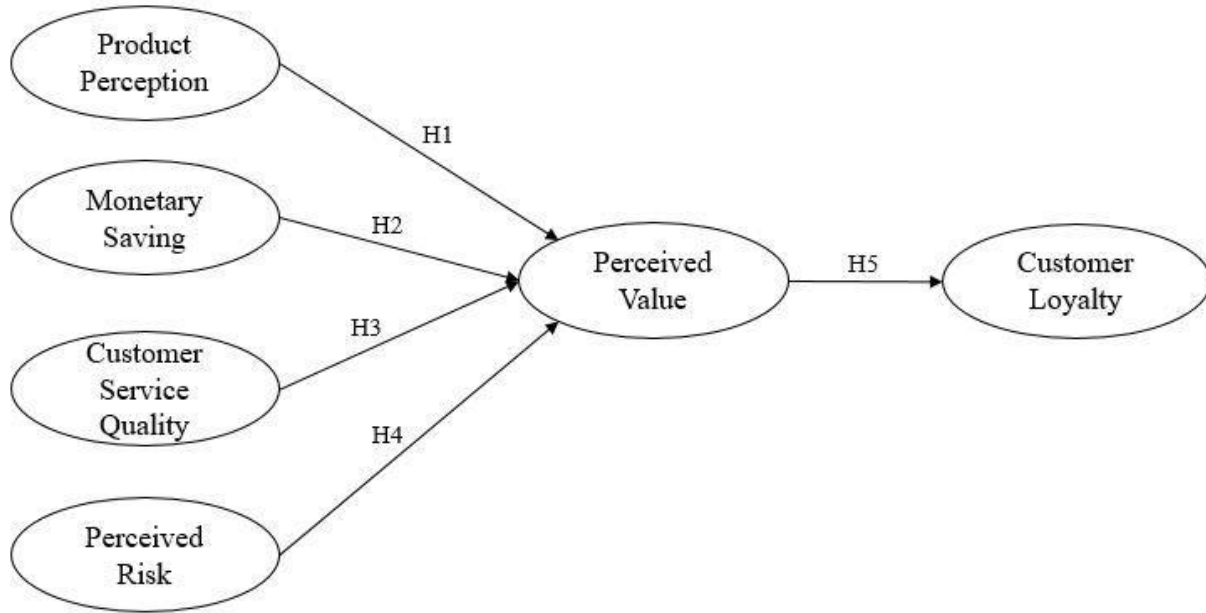
Figure 1. Hypothesized model

METHOD

An online survey was conducted to measure the study's key constructs in April 2017 through the Web service of the Amazon's Mechanical Turk (AMT) (www.mturk.com). It has been argued that data gathered via AMT are at least as reliable as those obtained via traditional data collection methods (Buhrmester, Kwang, & Gosling, 2011; De Vericourt et al., 2013; Paolacci, Chandler, & Ipeirotis, 2010). The survey questionnaire consists of two parts. The first part addresses the issues related to the demographic characteristics of the study's participants. The second part comprises a total of 17 scale items: 14 items for measuring respondents' perceptions of m-shopping factors and the remaining three items for assessing their loyalty to m-retailers. The respondents were requested to select the response that best indicate their experiences and perceptions on the statements regarding the study's constructs, using a Likert-type five-point scale, where 1 = strongly disagree, 2 = disagree, 3 = neutral, 4= agree, and 5 = strongly agree. In this study, we measured the following six constructs: product perceptions, monetary savings, customer service quality, perceived risks, customer perceived value, and customer loyalty. All of the scale items assessing these six constructs were adapted from the relevant literature. A summary of scale items is presented in the Appendix.

A total of 198 surveys were collected. Of these, 38 responses were dropped because of incomplete information. Thus, the remaining 160 surveys were usable for subsequent analyses, resulting in a response rate of 80.8%. All of the survey participants were U.S. residents selected through the use of AMT service and they were compensated at the standard pay rate. The demographic characteristics of these respondents are summarized in Table 1.

Table 1. Respondents' characteristics ($n = 160$)

Variables	Groups	Frequency (%)
Gender	Female	81 (50.6)
	Male	79 (49.4)
Age	18-19	9 (5.6)
	20-24	24 (15)
	25-34	71 (44.4)
	35-44	38 (23.8)
	45 or over	18 (11.2)
Education	Trade/technical/high school or less	25 (15.6)
	Some college	41 (25.6)
	College graduate	78 (48.8)
	Graduate school	16 (10)
Average number of times per week the respondents have purchased products via m-apps	Less than 1 time	7 (4.4)
	1-2 times	89 (55.6)
	3-4 times	32 (20)
	5-6 times	14 (8.8)
	7-8 times or over	18 (11.2)

ANALYSIS AND RESULTS

Analysis of reliability and validity

Reliability is an essential prerequisite for validity. The composite reliability test reflects the internal consistency of the indicators (Fornell & Larcker, 1981). As shown in Table 2, the composite reliability estimates of all the constructs are greater than the recommended level of 0.7 (Nunnally, 1978). Confirmatory factor analysis (CFA) was performed to assess both convergent and discriminant validity. Regarding convergent validity, as shown in Table 2, the indicators have significant loadings on their assigned constructs, indicating no obvious violation of convergent validity. Next, discriminant validity of a construct implies that one can empirically differentiate the construct from other constructs that could be similar in nature (Kerlinger, 1992). As presented in Table 2, the average variance extracted (AVE) of each construct is greater than any of the correlations between the corresponding construct and another construct (Jöreskog & Sörbom, 1996), which indicates a satisfactory level of discriminant validity.

Table 2. Standardized factor loadings, composite reliability, and AVEs for the measurement

Construct	Indicator	Loading	Composite reliability	AVE
Product Perception (PP)	PP1	0.734	0.793	0.570
	PP2	0.705		
	PP3	0.821		
Monetary Saving (MS)	MS1	0.803	0.886	0.728
	MS2	0.875		
	MS3	0.879		
Customer Service quality (CSQ)	CS1	0.839	0.824	0.644
	CS2	0.935		
	CS3	0.596		
Perceived Risk (PR)	PR1	0.818	0.791	0.802
	PR2	0.967		
Perceived Value (PV)	PV1	0.792	0.821	0.605
	PV2	0.779		
	PV3	0.763		
Customer Loyalty (CL)	CL1	0.876	0.921	0.797
	CL2	0.901		
	CL3	0.901		

Note: AVE= Average Variance Extracted

Overall, the CFA model of the study's constructs is over-identified (i.e., 153 distinct sample moments > 49 parameters to identify). The chi-square test is statistically non-significant (CMIN = 120.422, p = .129). There are no negative variances and all standardized residual covariances are below 2.00. All standardized regression weights are above .5. The model fit indices (AGFI = .886, TLI = .987, CFI = .990, and RMSEA = .032) indicate an acceptable model fit. Table 3 presents the means, standard deviations, and correlations of the constructs.

Table 3. Means, standard deviation, and correlations of the constructs

	Mean	SD	PP	MS	CS	PR	PV	CL
Product Perception (PP)	4.20	0.70	1					
Money Savings (MS)	3.94	0.81	0.513**	1				
Customer Service (CS)	3.63	0.87	.281**	.459**	1			
Perceived Risk (PR)	2.43	1.02	-.249**	-.198*	-.163*	1		
Perceived Value (PV)	3.93	0.75	.538**	.596**	.342**	-.332**	1	
Customer Loyalty (CL)	4.12	0.89	.619**	.530**	.370**	-.349**	.643**	1

** significant at the 0.01 level, * significant at the 0.05 level

Results of hypotheses testing

We employed a structural equation modeling (SEM) technique and tested the hypothesized relationships between the study's constructs as shown in Figure 2, using AMOS 23.
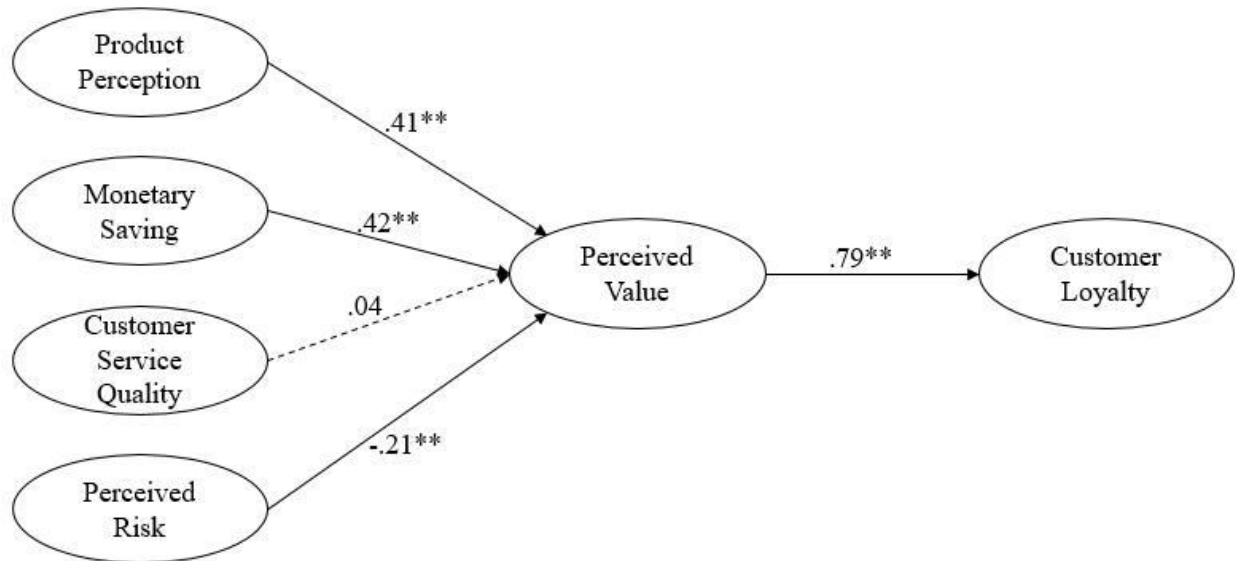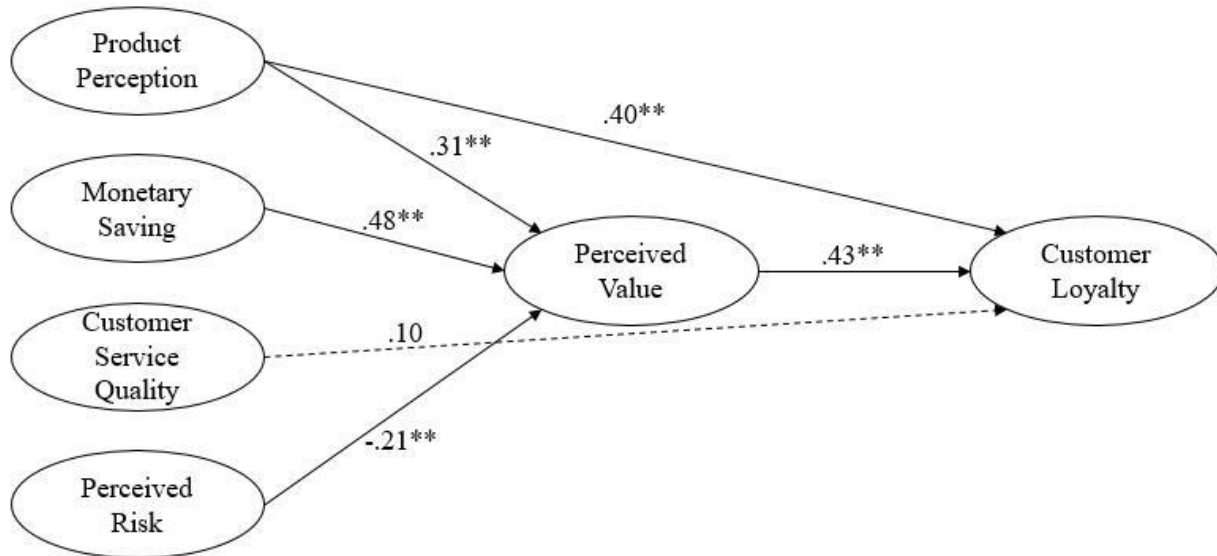

** significant at the 0.01 level

Figure 2. SEM analysis results of the hypothesized model

The hypothesized structural model test turned out to be a poor fit as demonstrated by the following model fit indices: CMIN = 19.146. p = .001, AGFI = .791, TLI = .818, CFI = .951, and RMSEA = .154.

Therefore, based on the modification indices, as shown in Figure 3, we modified our original structural equation model by deleting one path, PV<-CS, and adding two paths, CL<-PP and CL<-CS. We tested the modified model, and the analysis results are presented in Figure 3. The modified model is over-identified as the number of correlations was greater than the number of parameters that need estimation (i.e., 21 correlations > 17 parameters). The chi-square test result is statistically non-significant (CMIN = 2.132, p = .545). There are no negative variances, and all standardized residual covariances are below 2.00. All modification indices were low, indicating that the model has a good fit. In addition, the resultant model fit indices (AGFI = .969, TLI = 1.014, CFI = 1.000, and RMSEA = .000) indicate that the modified structural equation model significantly fits to the data.

** significant at the 0.01 level

Figure 3. SEM analysis results of the modified model

CONCLUSIONS

Our analysis results show that H1, H2, H4, and H5 are supported, but H3 is rejected. Therefore, our analysis results indicate that, of the four m-shopping factors, three factors, such as product perceptions, monetary savings, and perceived risks, significantly and positively affect customer perceived value and subsequently customer loyalty. On the other hand, the remaining m-shopping factor, customer service quality, has no statistically significant relationship with customer perceived value. One plausible explanation for this finding could be that customers seldom communicate directly with m-retailers' employees due to the typically impersonal nature of m-shopping transactions. In addition, the analysis results have revealed that two m-shopping factors, such as product perceptions and customer service quality, have a direct and significantly positive impact on customer loyalty.

The References and Appendix are available upon request from Ruoqing Zhang