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Understanding Consumer Purchase Intention via Mobile Shopping Applications: An Empirical Study from Vietnam

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Abstract

With the dramatic increase in mobile usage, more and more businesses see the potential of m-commerce. This study focuses on a subcategory of m-commerce, a mobile shopping application. To understand the purchase intention via m-commerce applications, this study is aimed to identify the main factors that are related to the applications and explore the influence of these factors on consumers' mobile shopping intention. This study uses quantitative research methods and selects Vietnam as its case study. The survey responses of 450 Vietnamese mobile shoppers were analyzed using partial least squares structural equation modeling (PLS-SEM). The results indicated that online reviews, e-service quality, and information quality are significant predictors of behavior intention, and perceived risk negatively influences consumer online purchase intention via the applications. The content enriches the combined research of detailed and possible models with quality dimensions and risk perception. Practitioners such as e-retailers and developers can enhance the quality of applications and determine strategies to reach potential users and maximize revenue. M-commerce providers should pay adequate attention to credible and influential online reviews since mobile shoppers heavily rely on reading reviews before buying a product.

Keywords: Consumer Behavior, M-commerce, Mobile Applications, PLS-SEM

JEL Classification Code: M31, M37, M39

1. Introduction

The information technology revolution has dramatically transformed communication channels and businesses. With the rapidly growing number of Internet users, Forster Institute reported that the business of trading with the (B2C) consumers, which are done via the Internet, is increasing at the rate of 19% annually and online shopping has become familiar to most of the consumers all over the world (Kim et al., 2008). In 2021, it is expected that around 2.14 billion people in the world make online purchases compared with 1.66 billion global online shoppers in 2016 (Statista, 2021). Accordingly, it accelerated an expansion of e-commerce which is dominating the traditional retail business. Nevertheless, online users primarily make use of the Internet as a new channel for seeking information, price, and reviews relating to the products rather than making online transactions and purchases (Nguyen et al., 2021).

As a form of e-commerce, mobile commerce (m-commerce) refers to online shopping using mobile devices such as mobile phones or tablets (Chong, 2013). According to the statistics, m-commerce is expected to contribute 72.9 percent of all retail e-commerce in 2021 (Statista, 2018) as a result of increasing smartphone ownership worldwide. This study focuses on a subcategory of m-commerce, a mobile shopping application, which is any commercial transactions that take place via mobile apps. Taylor and Levin (2014) also note that a mobile retail app represents a self-contained system and is similar to a virtual store dedicated to that specific retailer. Consumers now can browse the product and make an online purchase within an application without desktop usage on the web via

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their computers or laptops (Verma et al., 2016). The two major characteristics of m-commerce, including mobility and broad reach, have made this trend of shopping become a common mode of transaction. Moreover, the COVID-19 pandemic has led to a surge in e-commerce in general, and mobile devices which are considered the most popular device, is providing online shopping platforms together accelerated the growth of m-commerce. Specifically, according to Timotius and Octavius (2021), consumers would choose mobile apps rather than websites to be the shopping platform. Thus, it is necessary to study the nature of mobile shopping apps and consumer shopping intention in this virtual environment.

Although based on a systematic literature review on e-commerce, there has been numerous research on customers' experience and behavior via the online shopping websites (Ahn et al., 2014; Gudigantala et al., 2016; Liu et al., 2017; Chen, 2016; Ali, 2016), it has shown the increasing demand in m-commerce research. Indeed, Adobe Scene Inc. (2011) reported that many mobile device owners make online purchases via their phones, and more than half of them are satisfied and have a good experience with mobile usage. Hence, recently e-retailers have been aggressively promoting and encouraging the usage of mobile shopping to their consumers by providing good quality service and convenient features on the applications (Thakur, 2018; Tiwari & Buse, 2007). The relevant literature has discussed several variables, concepts, theories, and existing frameworks related to consumers' mobile application behavior (Vahdat et al., 2020), such as the theory of reasoned action (Fishbein, 1979), theory of planned behavior (Ajzen, 1991), and technology acceptance model (Davis, 1989). Nevertheless, according to Alnawas and Aburub (2016), prior studies were aimed to predict or evaluate the intention of adopting a future mobile application but examine whether applications affect consumers' purchase behavior. Even though researchers across the world have studied considerably the initial adoption of m-commerce and similar technologies in various domains (Bitner et al., 2000; Curran & Meuter, 2005), there is a lack of research on the factors that influence consumers' online purchase intention via mobile applications.

Therefore, this study constructs the four factors of information quality, e-service quality, consumers' perceived risk, and online reviews together with its aim to examine the effect of these factors on consumers' purchase intention in mobile apps. This study attempts to analyze the main factors that push customers to purchase mobile apps given the rise of mobile retailing. It aims to significantly support mobile app developers with a critical guideline to create high-quality applications which appropriate to customers' needs, thereby formulating appropriate strategies, reducing risks, reaching more potential consumers, and increasing revenue.

2. Literature Review and Hypothesis

2.1. Information Quality

In the context of online shopping, information quality represents the extent to which it can help consumers find and evaluate the desired products (Yen, 2014). Wixom and Todd (2005) proposed different aspects of information quality encompassing completeness, accuracy, format, and currency in online settings. In this era of rapid technological advances, the advantage of mobile applications is that they can provide timely and relevant information as needed to consumers (Kennedy-Eden & Gretzel, 2012; Nikou & Mezei, 2013). Especially, as online information overload and uncertainty increase, higher quality information will positively influence the consumers' shopping experience and intention to buy products and services online (Ghasemaghaei & Hassanein, 2016), leading to better buying decisions and higher levels of consumer satisfaction (Peterson et al. 1997). In contrast, inaccurate, unclear, or hidden information will have a negative effect on attitude and intention to purchase online because they will consider the products as sub-standard or even counterfeit goods. Moreover, information quality is an important determinant of consumer satisfaction with the mobile shopping system (Park & Kim, 2006; Ghasemaghaei & Hassanein, 2015). And the relationship between online information and behavioral intention has been confirmed in relevant research (Jeong & Gregoire, 2003; Yen, 2014). Therefore, information quality is a key success factor behind mobile commerce apps, which retailers have to notice. Hence, H1 is developed as follows:

H1: *Information quality has a positive effect on consumers' purchase intention via mobile applications.*

2.2. E-service Quality

E-service quality is defined as the level to which a system delivers the excellence and quality of e-service in a virtual marketplace (Santos, 2003). In recent years, service quality has been one of the major determinants for e-retailers to achieve success or failure in business (Yang, 2001). Parasuraman et al. (2005) developed a core scale for measuring e-service quality comprising efficiency, fulfillment, system availability, and privacy. Many scholars have stated that e-service quality has a strong effect on online purchase intention (Gounaris et al., 2010; Yi & Gong, 2008). However, Martono et al. (2020) found that service quality is not a significant predictor of intention to use an information system. Thus, this study expects that e-service quality can have a positive impact on online purchase intention in the context of mobile shopping applications. Hence, H2 is outlined as follows:

H2: *E-service quality has a positive effect on consumers' purchase intention via mobile applications.*

2.3. Perceived Risk

Being different from traditional shopping, consumers may face a lot of problems in online shopping such as e-payment security, data privacy, hidden or unclear information disclosure, and product quality (Paynter & Lim, 2001). Perceived risk refers to consumers' unexpected insights provided by the unpredicted and changeable results from the purchased products (Laroche et al., 2005). Based on the previous literature, the major dimensions of perceived risk consist of performance, financial, time, safety, social, and psychological risks (Featherman & Pavlou, 2003), or functional, financial, physical, and psychological risks (Bhukya & Singh, 2015). Perceived risk plays a significant role in consumer behavior research (Ariffin et al., 2018). Consumers with higher perceived risk tend to be fairly thoughtful decision-makers (Lee & Tan, 2003). In other words, risk perception has a negative association with online purchase intention (Kim & Lennon, 2013; Liu & Wei, 2003). Sang (2021) pointed out the direct relationship between perceived risk and the intention to use mobile banking applications of consumers in Vietnam during the COVID-19 pandemic. Because consumers experience higher risks when shopping in a virtual environment than in physical stores, it is important to study consumers' perceptions of risk in non-store retailing contexts in general and mobile shopping contexts in particular. Hence, this study aims to examine the relationship between perceived risks and customer purchase intention in the context of mobile shopping. H3 is developed as follows:

H3: *Perceived risk has a negative effect on consumers' purchase intention via mobile applications.*

2.4. Online Reviews

Online reviews refer to consumer-generated evaluations of the products which are posted by Internet users who purchased them (Chen, 2016). An online review created by online shoppers often contains both their personal experiences and evaluations of the products, thereby representing both information and recommendation regarding their last purchases (Park et al., 2007). As such, consumers usually associate the content of online reviews with the quality of the products and consider them a major information source while making the decision process. A high-quality online review is expected to be comprehensible, product-relevant, sufficient, and objective (Zhang et al., 2010). As a result, consumers generally perceive online reviews as more trustworthy and helpful than marketer-generated content (Dellarocas, 2003; Li et al., 2013; Park et al., 2007). Prior studies showed that an online review is a powerful force in increasing product sales by positively shaping customers' attitudes and affecting their purchase intention (Chevalier & Mayzlin, 2006; Dellarocas et al., 2007; Park et al., 2007; Duan et al., 2008; Zhu & Zhang, 2010). Therefore, it can be expected that the quality of reviews will positively affect consumers' purchase intentions (assuming that the overall valence of reviews is positive rather than negative, similarly hereinafter) (Zeng et al., 2020). Hence, H4 is outlined as follows (Figure 1):

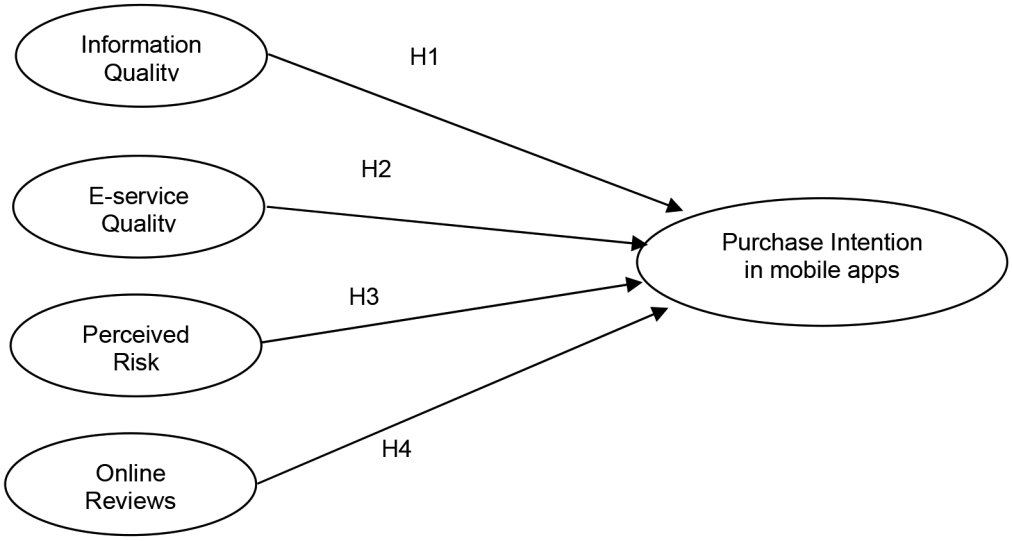

Figure 1: Proposed Research Model

H4: *Online reviews have a positive effect on consumers' purchase intention via mobile applications.*

3. Methodology

3.1. Questionnaire Design

The study used a self-administered questionnaire. At the beginning part of the survey, the respondents are asked whether or not they have had mobile commerce application purchase experience within the last 12 months as the respondents should have a clear picture and memory of the purchases (Wu, 2013). The questionnaire was used to measure the following variables of the study: information quality (5 items) was developed by Lai and Chang (2011); perceived risk (5 items) was developed by Featherman and Pavlou (2003), Masoud (2013) and Dai et al. (2014); online reviews (4 items) were developed from Bambauer-Sachse and Mangold's (2011); e-service quality (10 items) were developed from Parasuraman et al. (2005) and consumers' purchase intention (3 items) were developed from Fang et al. (2011). When developing the questionnaire, the multiple-item method was used, and each item was evaluated based on a five-point Likert scale from 1 = strongly disagree to 5 = strongly agree.

Moreover, in the light of developed instruments by the aforementioned researchers, the measurement items have been modified by three Vietnamese marketing experts to identify ambiguities in terms and meanings and evaluate whether the items of variables are appropriate for investigating Vietnamese consumers' purchase intention via mobile shopping applications. All of the items are in English, then the questionnaire is translated into Vietnamese, and bilingual reviewers used the back-translation method to evaluate it. A pilot test was then conducted to revise and complement the measurement items of the study.

3.2. Data Collection

The Vietnamese version of the questionnaire is pretested and modified based on the feedback obtained from the pretest samples (n = 50). Users were invited for an online survey and were chosen based on past usage or experience with mobile shopping. The target respondents were primarily students, academicians, and staff working in universities in Ho Chi Minh City. Because in this big city, a large number of online shoppers are concentrated in and familiar with fast-evolving m-commerce. We received 467 responses, of which 450 responses were usable. The data of this study are analyzed using SPSS 22 and PLS smart 3.0.

4. Results

4.1. Sample Characteristics

Among 450 valid responses, the gender distribution was slightly different with 61 percent females and 39 percent males. In terms of age, 42 percent of the respondents were between 18–24 years old, followed by those in the age group 25–35 (32 percent) and 36-to 45 (22 percent). In addition, 49 percent of them have used mobile shopping applications for 1–3 years, 40 percent of subjects had 3–5 years of experience in using the applications, and 11 percent had more than 5 years of mobile application usage experience (Table 1).

4.2. Measurement Model Assessment

SPSS was used for the descriptive statistical analysis, and the partial least squares (PLS) approach was used to estimate both the measurement and the structural parameters in the structural equation model. We used Smart-PLS version 3.0 for the analysis. We examined the reliability, convergent validity, and discriminant validity of the measurement instruments used in this study. The reliability was assessed using composite scale reliability (CR), average variance extracted (AVE), and Cronbach's alpha (Table 2).

All α-values range from 0.872 to 0.965, which surpasses the recommended value of 0.7 (Hair et al., 2010). All factor loadings for the constructs exceed 0.50, which is an acceptable cutoff factor loading value (Hair et al., 2010). The AVE and CR values for each construct are above 0.50, indicating that the measurement has good convergent validity (Fornell & Larcker, 1981).

Table 1: Demographic Information

Gender	
Female	61%
Male	39%
Age	
18–24	42%
25–35	32%
36–45	22%
Above 45	4%
Mobile shopping application usage experience	
1–3 years	49%
3–5 years	40%
More than 5 years	11%

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Table 2: Cronbach's Alpha, Composite Reliability, and AVE Scores for Constructs

Constructs	Cronbach's Alpha	Composite Reliability	Average Variance Extracted (AVE)
E-Service	0.951	0.957	0.693
Information Quality	0.872	0.908	0.663
Online Review	0.920	0.944	0.807
Perceived Risk	0.965	0.973	0.878
Purchase Intention	0.919	0.948	0.860

Table 3: Discriminant Validity (Fornell-Larcker Criterion)

	E-Service	Information Quality	Online Review	Perceived Risk	Purchase Intention
E-Service	**0.832**				
Information Quality	0.358	**0.814**			
Online Review	0.445	0.267	**0.898**		
Perceived Risk	–0.407	–0.281	–0.746	**0.937**	
Purchase Intention	0.526	0.392	0.628	–0.629	**0.927**

Table 4: Structural Model Results

	Hypothesized Direction	Path Coefficient	*p*-values	Results
E-Service → Purchase Intention	(+)	0.233	0.000	Supported
Information Quality → Purchase Intention	(+)	0.156	0.001	Supported
Online Review → Purchase Intention	(+)	0.264	0.000	Supported
Perceived Risk → Purchase Intention	(-)	–0.293	0.000	Supported

The discriminant validity of the measurement constructs can be confirmed by taking the square root of AVE. For each factor, the square root of AVE is significantly larger than its correlation coefficients with other factors (Fornell & Larcker, 1981). Table 3 exhibits the square roots of the AVE (in the diagonal and boldface) and the correlation among all the constructs. Their values show sufficient discriminant validity. Table 3 also shows descriptive statistics and correlations among variables.

4.3. Structural Model and Hypotheses Testing

To test the proposed hypotheses, we used structural equation modeling through Smart-PLS 3.0. The path significance levels were computed using bootstrap resampling methods (Henseler et al., 2009) with 5000 iterations of resampling (Chin, 1998). According to the model shown in Figure 1 and the results in Table 4, the standardized estimates of the model support the positive effect of information quality, e-service quality, perceived risk, and online reviews on consumer purchase intention. The results in Table 4 suggest that online reviews is the strongest positive predictor ($\beta = 0.264$, $p < 0.001$), followed by e-service quality ($b = 0.233$, $p < 0.001$), information quality ($b = 0.193$, $p < 0.001$). The H3, suggesting that the perceived risk of the mobile shopping app negatively affects consumers' purchase intention, was accepted ($\beta = –0.293$; $p < 0.001$). Therefore, H1, H2, H3, and H4 are supported.

5. Conclusion and Limitations

To explain users' behaviors towards mobile application shopping, a research model was developed and evaluated. The model focused on various aspects of information system quality, including e-service quality, information quality, and online reviews. The findings of the study reveal that key

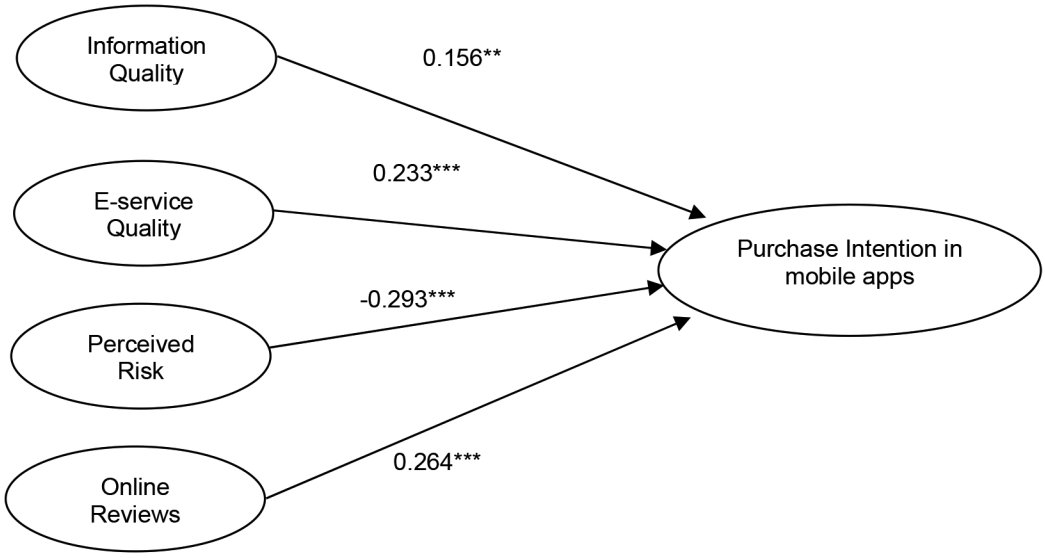

Figure 2: PLS Path Model and Results. ***p < 0.001, **p < 0.05

predictors of purchase intention via mobile applications in order of significance are online reviews, e-service quality, and information quality. In addition, users' perceived risk is negatively related to online purchase intention through applications. Based on these results, we can identify the preditors of effective shopping applications and evaluate the effects on consumer behaviors during their online shopping.

While m-commerce application shopping is convenient for online shopping due to its characteristics, it is perceived with a higher risk compared to traditional shopping (Timotius & Octavius, 2021). Hence, perceived risk has been identified as an important barrier for online consumers who are considering whether to purchase smartphones. Prior research has discussed its common effect on online decisions when consumers are reluctant to purchase on the Web (Kim et al., 2008). Yet because of the high penetration of mobile phones in everyday life, the use of mobile applications to purchase online becomes popular and involves consumers' concerns about the difficulty to judge the quality of products and online transactions. Hence, our research contributes to research on the perceived risk in this way. Contributing to the extant literature on mobile shopping, this study, in particular, identified the negative impact of perceived risk specifically applied to mobile applications.

In terms of drivers of mobile shopping behavior, we focus on the well-known constructs of e-service quality, information quality, and online reviews. In line with information system literature, we differentiate the investigation of these constructs relating to a mobile application. Considering the strongest effect of online reviews on purchase intention, the presence of online reviews in marketing communications could persuade consumers about product quality. In the context of developing e-commerce, as consumers rely predominantly on user-generated content for their purchase decisions, this is a timely and relevant study to acquire a deep understanding of the concepts and influence as well as contribute to the extant literature with respect to online reviews in m-commerce. Therefore, marketers that publish content of online reviews must be aware of the valence and the quality of reviews hosted in their applications.

From the results mentioned above, e-service quality also has a great effect on purchase intention. It is consistent with the developing concept that much attention is given to the research of service quality in m-commerce based on the well-known SERVQUAL model (Salameh & Hassan, 2015). This finding provides understanding, specifically to the developers and their respective clients of the strengths and benefits of m-commerce service quality by adapting the instruments in Parasuraman et al. (2005).

And information quality is another significant predictor of purchase intention via applications. It is the same as the results of previous researchers who found a significant influence on intention to use information systems (Martono et al., 2020). Noticeably, this finding expressed differently from the research of Tarhini et al. (2019) that information quality predicted the largest effect on consumers' intention to adopt m-commerce. Although there is enough information available to users, it is usually difficult and time-consuming to go through each product and evaluate it based on the content of the mobile applications. Thus, mobile users seem to be more interested in numerous aspects of the information presented by the system.

In summary, this study has important theoretical and practical significance. It theoretically enriches and completes the contents of research in the field of mobile shopping. The current research puts forward the model of the influence factors of user purchase intention via applications and analyzes the relationships between those factors and online consumer behaviors. It also creates new integration of both information system quality and risk perception into a set of significant predictors in mobile application shopping. In previous studies, the research was conducted mainly on consumers' mobile shopping behavior towards desktop or mobile sites or adoption behavior towards the applications. In this research, we combined the influence factors related to the shopping applications together to explore consumers' online purchase intention via that platform. Besides, it practically contributes suggestions for service providers and application developers in m-commerce. The findings propose that managers should focus on not only providing high-quality information and reviews but also improving the service quality that can assist the users in mobile shopping. Also, to reduce consumers' unwillingness and encourage them to complete online transactions, it is imperative to control perceived risk with respect to error, uncertainty payment, security, and hacker. Then the e-retailers may positively influence the potential users who have not been involved in m-commerce applications and increase revenue.

Although the study offers positive new insights for both practice and theory, the findings should be taken with caution because they face the following limitations. First, because convenient sampling and data are collected in Ho Chi Minh city, it does not represent the population of mobile application shoppers throughout the country. And only a mobile shopping application has been chosen in the survey. Therefore, future research should be extended through different geographical locations and include various types of m-commerce applications. Second, this study concentrates on determining the indicators that are related to the information system quality and characteristics, an assessment of additional consumer behavior characteristics should be represented as important elements in the purchase intention via m-commerce applications.

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