Asia Pacific Journal of Information Systems
Vol. 32 No. 2 (June 2022), 307-326

ISSN 2288-5404 (Print) / ISSN 2288-6818 (Online)
https://doi.org/10.14329/apjis.2022.32.2.307

Effect of e-Commerce History on Consumer Perception: A comparative study of United States of America versus Vietnam

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ABSTRACT

Currently, Mobile-commerce is active around the world, and consumers' online activities have changed significantly from pc-base to mobile-base. Unlike IT advanced countries such as the United States, which experienced PC-based online commerce (hereafter, PC-commerce) before Mobile-commerce, developing countries such as Vietnam have a relatively short history of PC-commerce. Consumers' experience with PC-commerce may affect their acceptance and use of Mobile-commerce. In this study, we tried to see if different online commerce histories differently affect consumers' online purchasing behavior. We selected the United States and Vietnam, with longer PC-commerce experience and shorter one, respectively. Data were collected for the following four groups: 1) the U.S. PC-commerce (n=256), 2) the U.S. Mobile-commerce (n=283), 3) the Vietnamese PC-commerce (n=159), and 4) the Vietnamese Mobile-commerce (n=225). As results, it was first confirmed that different e-commerce histories in developed and developing countries make the online shopping process different. Second, navigability has a huge impact on consumers' decision support satisfaction in Vietnam where PC-commerce history is shorter. Third, we identified that pre-purchase phase is more related with decision support satisfaction and that purchase phase is more related with task support satisfaction.

Keywords: Mobile-Commerce, Pc-Commerce, E-Commerce, Shopping Behavior, Decision Support Satisfaction, Task Support Satisfaction

Ⅰ. Introduction

The Internet has had a huge impact on how consumers buy products and services (Sandhu, 2012). From the consumer's point of view, shopping online on a computer is useful, but computer-based commerce (PC-commerce) has two major limitations: time and place (Cheong and Park, 2005). Mobile device-based

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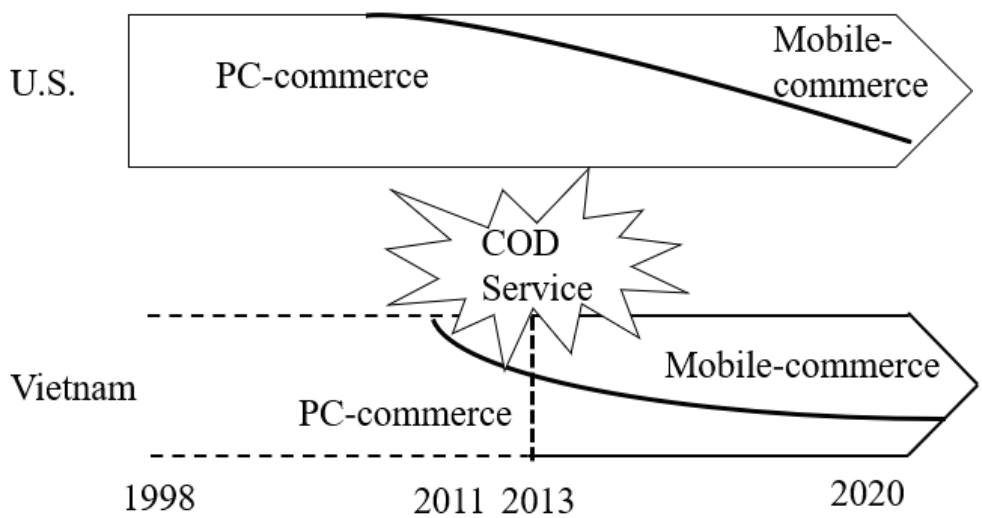
commerce (Mobile-commerce) overcomes those two limitations by giving consumers access to the Internet and services anytime, anywhere. Because of these strengths, mobile devices, technologies, and services have seen considerable development in recent years (Hanafizadeh et al., 2014; Malaquias and Hwang, 2016), leading to a significant shift from online consumer activity's "e-decade" to a new "m-decade"(Ullah and Khan, 2012; Wagner, 2005; Yazdanifard and Elkhabir, 2011).

Mobile devices have brought the Internet to the world regardless of a user's location or the time (Choi et al., 2008), and the technology has made mobile commerce available in many developing countries today (Khaskheli et al., 2017; Tarhini et al., 2019). Unlike in developed countries such as the United States, there are few differences in developing countries' PC-commerce and Mobile-commerce phases of development. Whereas developed countries already had long experience with online transactions on computers before the advent of mobile technology, developing countries such as Vietnam had only short histories with even broad computer access. Figure 1 illustrates the historical trend shift from PC-commerce to Mobile-commerce, reflecting that the United States began its PC-commerce phase in the early 1990s, well before Mobile-commerce was ever possible(Tian and Stewart, 2006). In Vietnam, e-commerce on computers arrived later and was not widely accepted; the early e-commerce market share was very low. In fact, Vietnamese consumers did not begin to accept online shopping in earnest until after Lazada Group introduced a deferred payment system called cash on delivery (COD). With the introduction of mobile commerce, e-commerce in general became much more popular.

Overall, having used PC-commerce greatly affects consumers' acceptance of Mobile-commerce (Akman and Rehan, 2016). Given that, if periods during which consumers become accustomed to PC-commerce and Mobile-commerce differ, variables that affect consumer satisfaction, such as navigation, product information, customization, purchasing process, and security/privacy, will be different.



<Figure 1> Device Trend of E-Commerce (Ratio)

Research Question: Are there any differences in the factors that affect consumers' PC-commerce and Mobile-commerce process satisfaction between countries with different online commerce histories?

To examine this question, we examined a research model in which we compared four groups: 1) U.S. (long PC-commerce experience) and PC-commerce, 2) U.S. (long PC-commerce experience) and Mobile-commerce, 3) Vietnam (short PC-commerce experience) and PC-commerce, 4) Vietnam (no PC-commerce experience) and Mobile-commerce. Although some Vietnamese people have PC-commerce experience, for this study, we operationalize negligible periods of experience as having no experience. We selected the United States and Vietnam to compare very clear differences in online commerce experience. We reviewed previous studies on customer satisfaction in online shopping during both the pre-purchase phase and the purchase phase. Navigation, product information, and customization are the pre-purchase phase; they relate to decision-making. Security and privacy and the act of completing the transaction comprise the purchase phase and relate to task support satisfaction. In the rest of this paper, we present a background and literature review. Next, we present the research hypotheses, data and methodology. We finally present the research results, conclusion, and discussion. The results showed differences between the United States and Vietnam and also between Mobile-commerce and PC-commerce within Vietnam.

Ⅱ. Theoretical Background

2.1. Pre-Purchase Phase

The pre-purchase phase of online shopping includes browsing for and seeking product information (Detlor et al., 2003), which is also a critical phase of the buying process. In order to promote product sales, online shopping malls should understand the attributes of the pre-purchase phase because their consumers perceive and are influenced by those attributes (Rezaei et al., 2018). During the pre-purchase phase, navigation, product information, and customization have positive impact on customer satisfaction.

Navigation is an act of moving from page to page and seeking products on the online shopping mall's website (Kalbach, 2007; Pan, 2015). The goal of navigation is to support consumer seeking products and searching for product information (Pan, 2015), and is influence on consumer satisfaction (Tandon et al., 2017). Consumer satisfaction may be divided into task support satisfaction and decision support satisfaction (Sanders, 1984).

During the pre-purchase phase, navigation impacts consumers' decision support satisfaction rather than task support satisfaction. Consumers' previous online shopping experience can reduce their navigation time on online shopping websites during the purchasing process (Rezaei et al., 2018). Thus, consumers who have a great deal of online shopping experience can more easily find product pages and product information.

Presenting product information is a way to provide indirect product experiences and to attract consumers (Park, 2009). Product information is important for consumers during online shopping. Consumers think that product information in an online environment is more extensive and diverse than pyscical stores (Jonsson, 2018). This extensive and diverse information can lead to ambiguity and inaccuracy in product information in online shopping environments (Yu et al., 2012). Online shopping malls can help consumers make decisions about purchasing products by delivering accurate and detailed information about their products.

Customization refers to the tailoring of the online

shopping mall to the individual needs and preference of each consumer. Customization reflects each customer's needs and enable the online shopping mall's website to provide appropriate services (Dobre and Milovan Ciuta, 2015). Online shopping malls can provide recommendations that match customer's needs (Srinivasan et al., 2002). Customization in online shopping malls can increase consumers' loyalty and their willingness to revisit that online mall due to higher consumer satisfaction (Cho and Lau, 2013; Tsai and Huang, 2007; Zhu et al., 2010).

2.2. Purchase Phase

After the pre-purchase phase, consumers enter the purchase phase. During the purchase phase, consumers select products, order products, provide their delivery information and confirm payment (Jiang et al., 2011; Jiang et al., 2013; Nguyen et al., 2018). During this purchase phase, the purchase process and security/privacy have positive impact on customer satisfaction.

We refer to the purchase process as convenience and completeness of service in the purchase process of the online shopping mall. The convenience of the purchasing process is an important factor in e-commerce (Beauchamp and Ponder, 2010) becauseit is consumer's main motive to use a particular online shopping mall (Jiang et al., 2013). If consumers experience a cumbersome, uncomfortable, or annoying purchasing process, they may give up purchasing the products in their shopping carts (Indiani and Fahik, 2020). An inconvenience purchasing process also reduces consumer satisfaction, whereas a convenient purchasing process has a positive influence on consumer satisfaction (Saha et al., 2021).

Security/privacy is also an important factor for online consumers (Chen et al., 2011; Miyazaki and Fernandez, 2001). Security includes data protection and combating cybercrimes (Union, 2014). According to Westin (1968), privacy is the degree to which consumers decide when, how, and to what extent information about them will be delivered to others. Security/privacy can reduce consumers' risk concerns and lead to increased consumer' satisfaction (Kim et al., 2009; Liu et al., 2008; Udo, 2001).

Ⅲ. Research Model

For this study, we considered that overall satisfaction encompassed two components, satisfaction with decision support and with task support, because considering the two together gives more specific, more detailed outcomes (Garrity et al., 2005). Considering satisfaction, a consequence of consumers' experiences through a series of purchasing phases, we built a model that comprised of pre-purchase and purchase. We also investigated how the effects of the preceding factors on online purchase satisfaction differed depending on the period of informatization (longer vs. shorter experience) and the devices (computer vs. mobile) used in the purchase process.

During the pre-purchase phase, consumers execute a set of steps that includes looking for a product, reading product information, evaluating choices, and making the purchase decision (Broilo et al., 2016). The next phase is the service encounter phase, the moment consumers interact directly with a service company. This complex process can shape a consumer's expectations and overall satisfaction (Coye, 2004), loyalty, repurchase intentions, and word-of-mouth behavior (Bitner et al., 2000). Pham and Ahammad proposed navigation, product information, and customization as constructs of customer satisfaction in the pre-purchase phase (2017) that involve consumers'

identifying their needs and the products that will best meet those needs with minimal search and processing costs (Alba et al., 1997).

Related to the latter, online purchases require identifying and entering websites, making the ease of navigating a site the next concern (Cheung and Lee, 2005; Pentina et al., 2011). The main purpose at this phase is identifying sites that offer convenient or otherwise pleasing shopping. We propose that websites should be well organized, user-friendly, and easy to navigate because of the following hypothesis:

H1: Good navigation positively affects consumers' decision support satisfaction in online shopping.

To facilitate online shopping decisions, websites must provide information about their displayed products, and the information should be in-depth, detailed, and comprehensive to give consumers the full picture of a product's quality and function (Wolfinbarger and Gilly, 2003); websites with detailed product information attract more consumers (Jiang and Rosenbloom, 2005). In addition, product information displayed should be current, consistent, accurate, and straightforward (Park and Kim, 2003). More intensive, higher-quality information significantly decreased consumers' decision-making effort and increased their satisfaction (Peterson et al., 1997). Based on these findings, we proposed the next hypothesis:

H2: Product information quality positively affects consumers' decision support satisfaction in online shopping.

The vast range of choices available on the Internet and resulted in confused consumers, which has led to the rise of customization, with its function of narrowing choices by suggesting products based on consumers' needs and preferences (Thirumalai and Sinha, 2011). Customization reduces the effort needed to decide what to buy, which expedites the purchase decision-making process (Häubl and Trifts, 2000). In fact, customization allows site owners to collect consumer preference information that can be used to easily target consumers for specific products and services, and offer high-quality support such as product recommendations and promotions notification. Through tailoring products and services to meet individual needs, we propose that customization influences consumers' decision-making as follows:

H3: Customization positively affects consumers' decision support satisfaction in online shopping.

The purchase phase, the purchase, involves placing and completing an online order. The primary steps include selecting and ordering the product, providing shipping information, and confirming payment to complete the transaction. Among these, paying for the product is the main step, and we propose that it should be easy and fast because an expedient process increases consumer satisfaction (Ho and Wu, 1999; Kim, 2005; Zviran et al., 2006). Following these findings, we hypothesized the following:

H4: A positive purchasing process positively affects consumers' task support satisfaction in online shopping.

It is not possible to shop online without confronting privacy and security concerns because it is necessary to provide sensitive information to complete payments, but unfavourable media reports about personal data disclosure, identity theft, credit card theft, phishing websites, and other hacking incidents are needless to say concerning to online consumers (Cozzarin and Dimitrov, 2016). For instance, consider a simple

Mobile-commerce scenario in which a single customer uses his cell phone to contact a website and provide an address and a credit card number for payment and shipping. None of the required information seems redundant, but many potential security vulnerabilities already exist (Ackerman and Davis Jr, 2003). In fact, the convenience of online shopping does not come without risk but rather is accompanied by security threats like identity theft and fraud (Tsiakis, 2012). Because privacy and security are such serious concerns, consumers in previous research have demonstrated greater satisfaction with websites they perceived as having low security and privacy risk (Szymanski and Hise, 2000). Based on these findings, we proposed the following hypothesis:

H5: Security and privacy positively affect consumers' task support satisfaction in online shopping.

According to Garrity et al. (2005), in the context of online shopping, there are three fundamental components of user satisfaction (decision support, task support, and interface) although the authors included interface satisfaction (related to design, format and speed) under decision support satisfaction. In their paper, the focus was more on the ease of use of a WIS system, whereas our focus was on consumers' behavior. We thus incorporated the remaining two main elements of user satisfaction, decision support and task support, into our study as antecedents of overall satisfaction. That is, in this study, overall satisfaction is the outcome of customers' series of experiences during the purchasing process (Liu et al., 2008).

For e-commerce consumers, satisfaction derives not only from the final result but from the process as well. Consumers' experiences during any state of the process and their related emotions can affect their overall perceptions of the provider's performance (Jiang and Rosenbloom, 2005). However, the vital concern of how satisfaction evolves over the course of the whole process has not received adequate attention (Mattsson, 1994). To fill that apparent gap in the research, in this paper, we conceptualize an actual purchase process as comprising two crucial stages, decision support and task support.

As mentioned, our aim in this study was to examine consumer satisfaction through the whole purchase process, step by step. During the pre-purchase phase, when consumers go online to find the products or services they need, decision-making comes first. People tend to settle for imperfect choices in return for lower effort (Bettman et al., 1990; Johnson and Payne, 1985), and web-based decision-making support is evaluated on the extent to which it reduces consumers' effort (Garrity et al., 2005). This suggests defining decision support satisfaction as the ability of information systems to reduce consumers' necessary decision-making effort (Kirs et al., 1989). Findings indicate that higher decision support satisfaction positively influences consumers' task support satisfaction (Garrity et al., 2005; Garrity et al., 2009), which leads us to propose the following in turn:

H6: Decision support satisfaction positively affects consumers' overall satisfaction in online shopping.

After making a decision, consumers move through the purchase process to placing their orders, and from the consumer perspective, e-commerce provides crucial assistance in completing tasks satisfactorily (Bharati, 2003). Task support satisfaction is thus defined in terms of how information systems help or hinder the consumer's ability to perform task requirements (Garrity et al., 2005; Kirs et al., 1989), and we proposed the following:

H7: Task support satisfaction positively affects consumers' overall satisfaction in online shopping.

Today, in many countries, the trend in e-commerce is shifting from online shopping on computers to online shopping on mobile devices (Ullah and Khan, 2012; Wagner, 2005; Yazdanifard and Elkhabir, 2011). Mobile-commerce should be considered simply an extension of PC-commerce with unique advantages (ubiquity, portability) but also inevitable limitations (user interface, screen size) (Jun et al., 2016; Sanakulov and Karjaluoto, 2015). Many developing countries use Mobile-commerce today (Khaskheli et al., 2017; Tarhini et al., 2019), but unlike developed countries, these developing countries adopted Mobile-commerce without having prior experience with PC-commerce.

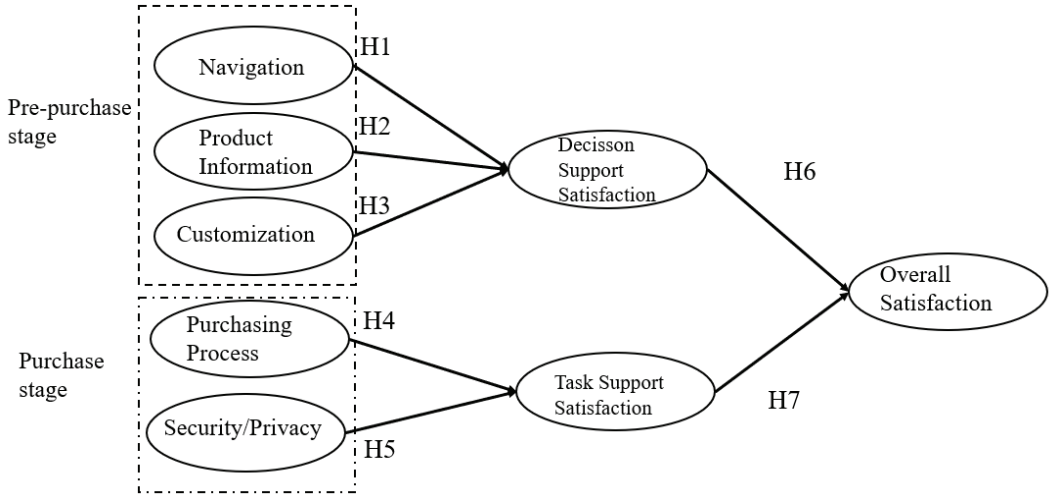
For instance, in Vietnam, PC-commerce was introduced before mobile commerce, but it failed to gain acceptance owing to the lack of consumer trust and low credit card penetration, both based in the fact that Vietnam's was a cash-oriented culture. (Choi and Mai, 2018; Han et al., 2016). Vietnamese consumers began to accept online shopping in earnest after Lazada introduced COD service to address consumers' lack of confidence in online transactions (Choi and Mai, 2018; Kim et al., 2019). COD is a deferred payment service that sellers use to receive cash payments for online purchases after the customer receives the product, and it is how Vietnamese consumers began online shopping with mobile devices. Subsequently, computers were distributed to homes in Vietnam, and pc-commerce began in earnest.

In contrast with the case in Vietnam, U.S. consumers had much more experience because they were shopping online from the time it became an option. In short, these developed and developing countries have had different online commerce trajectories. In previous studies, experiences using PC-commerce greatly affected consumers' acceptance of Mobile-commerce (Akman and Rehan, 2016). In the case of online shopping malls that also support mobile commerce, these sites' original shopping portals were PC web pages that site owners simply converted to mobile versions following the advent of that technology. For this reason, consumers who had already been using PC versions of online shopping malls found their mobile counterparts much easier to use than did customers who began with the mobile version versions. In similar ways, the attitudes of consumers in developing countries toward Mobile-commerce will be different from the attitudes in developed countries because developing countries have little prior PC-commerce experience.

Our study hypotheses reflect our consideration that these differences in online commerce history have led to differences in the factors that affect customers' satisfaction in the online purchasing process. Although the U.S. and Vietnam have the different size and population of countries, both countries have high adoption rate of mobile commerce: mobile commerce adoption rate of Vietnam is 59% in 2019 and U.S. is 61% in 2020. Comparing users in developed and developing countries where e-commerce thrive well can give a lot of insight for introducing e-com-

<Table 1> Descriptive statistics of respondents

Type	PC-commerce	Mobile commerce
Developed country	Group 1: U.S. & PC-commerce	Group 2: U.S. & Mobile-commerce
Developing country	Group 3: Vietnam & PC-commerce	Group 4: Vietnam & Mobile-commerce



<Figure 2> Research Model

merce in other countries. Due to the difference in PC-commerce experience between the two countries, we divided the groups into PC-commerce and Mobile-commerce.

We used the 2 × 2 factorial study design shown in <Table 1> as the experimental method for this study with the duration of PC-commerce use (developed country vs. developing country) and e-commerce type (PC-commerce vs. M-commerce) to compare the four groups where the United States is the developed country and the developing country is Vietnam, and we proposed the final hypothesis:

H8: Depending on the duration of PC-commerce use (developed country vs. developing country) and e-commerce type (PC-commerce vs. M-commerce), the impacts of the preceding factors on satisfaction (DSS and TSS) will different.

Ⅳ. Methods

We examined the research question and tested the hypotheses using a quantitative approach with an online survey methodology. The measurement items were inherited, examined, and administered to a sample that was representative of the population. In a 2 × 2 factorial design, country type (developed country vs. developing country) and e-commerce type (PC-commerce vs. mobile-commerce) were between-subject factors. Details are as follows. In the United States, we collected data from 539 participants through Amazon Mechanical Turk, 283 for Mobile-commerce and 256 for PC-commerce. In Vietnam, we collected data from 384 participants through Facebook and Zalo, a Vietnamese social network, 225 users of Mobile-commerce and 159 PC-commerce users (see <Table 2>).

All measurements of our constructs were derived from previous studies on e-commerce customer satisfaction, determinants of online satisfaction, e-satisfaction decision support satisfaction, and task support satisfaction extend literature and then revised to adapt to the context of this paper. All items were rated on 5-point Likert scales that ranged from 1 = strongly disagree to 5 = strongly agree (see <Table 3>).

<Table 2> Demographic Characteristics of Respondents

		United States		Vietnam		All	
		PC	Mobile	PC	Mobile	PC	Mobile
Gender	Male	147	146	89	98	236	244
	Female	109	137	70	127	179	264
Age	Under 29	75	89	110	137	185	226
	30-39	88	108	48	81	136	156
	40-49	53	51	1	4	104	5
	Over 50	40	35	0	3	40	38
Education	~ High school	23	37	8	23	31	60
	College/University	132	141	129	184	261	325
	Graduate/ Post Graduate School	101	105	22	18	123	123

<Table 3> Measurement Items

Constructs	Items	Measurement Items	Sources
Navigation	NV1	The start page (screen) of XYZ store leads me easily to the information I need.	Liu et al. (2008).
	NV2	The start page (screen) of XYZ store tells me immediately where I can find the information I am looking for.	
	NV3	I found it easy to move around in the XYZ store.	
	NV4	XYZ store and all of its linked pages work well.	
Product information	PI1	XYZ store provides accurate information on products.	Park and Kim (2003); Srinivasan et al. (2002).
	PI2	XYZ store provides detailed description of products.	
	PI3	XYZ store presents clear visual images of products.	
	PI4	XYZ store provides consistent information about products.	
	PI5	The information on XYZ store is complete for purchase decisions.	
Customization	C1	XYZ store provides recommendations that match my needs.	Srinivasan et al. (2002); Thirumalai and Sinha (2011).
	C2	XYZ store sends me information (advertisements and promotions) customized to my personal preference.	
	C3	XYZ store enables me to order products that are tailor-made for me.	
Purchasing process	PP1	Purchasing processes are completed within XYZ store.	Liu et al. (2008).
	PP2	Purchasing transactions in XYZ store are fast.	
	PP3	The instructions for purchasing transaction are sufficient.	
Security/privacy	SP1	I feel secure giving out credit card information at XYZ store.	
	SP2	XYZ store has adequate security features.	
	SP3	XYZ store collects my personal data only for its activity.	
	SP4	XYZ store cares about my privacy.	
	SP5	I feel safe when sending my personal information to XYZ store.	
Decision support satisfaction	DSS1	XYZ store improves the quality of my selecting products/services.	Davis (1989); Garrity et al. (2009).
	DSS2	Use of XYZ store enables me to make better selection of products/services.	
	DSS3	XYZ store assists me in selecting products/services more effectively.	
	DSS4	Use of XYZ store enables me to set my priorities in selecting products/services.	
Task support satisfaction	TSS1	I could come to rely on XYZ store in performing my tasks (purchases).	
	TSS2	Using the XYZ store enables me to accomplish tasks (purchases) more quickly.	
	TSS3	XYZ store makes it easier to do my tasks (purchases)	
Overall satisfaction	OS1	My choice to shop on XYZ store was a wise one.	Liu et al. (2008).
	OS2	I have truly enjoyed shopping from XYZ store.	
	OS3	Overall, I am satisfied with the online shopping experience in XYZ store.	

Ⅴ. Result

We examined the reliability, validity of the constructs, and we used the partial least square (PLS) technique of structural equation modeling to test the research model (Atapattu et al., 2016). Specifically, we used SmartPLS 2.0 for the analysis (Ringle et al., 2005). We tested the measurement model with con-

<Table 4> Convergent Validity Construct

Variables	Items	Factor Loading	Composite Reliability	AVE
Navigation	NV1	0.809	0.870	0.625
	NV2	0.786		
	NV3	0.787		
	NV4	0.778		
Product information	PI1	0.829	0.903	0.650
	PI2	0.817		
	PI3	0.814		
	PI4	0.772		
	PI5	0.798		
Customization	C1	0.818	0.844	0.625
	C2	0.818		
	C3	0.770		
Purchasing process	PP1	0.799	0.848	0.650
	PP2	0.831		
	PP3	0.788		
Security/privacy	SP1	0.859	0.911	0.673
	SP2	0.839		
	SP3	0.769		
	SP4	0.769		
	SP5	0.859		
Decision support satisfaction	DSS1	0.792	0.875	0.637
	DSS2	0.813		
	DSS3	0.803		
	DSS4	0.782		
Task support satisfaction	TSS1	0.827	0.851	0.655
	TSS2	0.804		
	TSS3	0.796		
Overall satisfaction	OS1	0.864	0.895	0.740
	OS2	0.855		
	OS3	0.860		

firmatory factor analysis (CFA). First, we evaluated reliability of the constructs through composite reliabilities. Composite reliabilities should be higher than 0.70 (Werts et al., 1974) and the composite reliabilities for all constructs exceeded 0.70. average variances expected (AVE) should be greater than 0.5 and that factor loadings should be greater than 0.70. In Gefen's research, average variances expected (AVE) should be greater than 0.5 and that factor loadings should be greater than 0.70 (Gefen et al., 2000). Our result shows that the AVEs for all constructs were greater than 0.5 and that all factor loadings of the constructs were greater than 0.7 (see <Table 4>).

After we analyzed all participants, we compared the four groups (1. U.S. and PC-commerce, 2. U.S. and Mobile-commerce, 3. Vietnam and PC-commerce, 4. Vietnam and Mobile-commerce) and found the following results (see <Figures 3-A, B, C, D> and <Table 5>). We controlled age, gender and education variables and confirmed that none was a significant factor in this model as a control variable.

In the first group, U.S. and PC-commerce, H2 had a path coefficient of 0.336 and a t of 2.533.; this showed that product information had a significant effect on decision support satisfaction. H3 had a path coefficient of 0.390 (t = 3.450.), showing that perceived customization has significant effect on decision support satisfaction. H4's path coefficient of 0.371 and t of 3.791 showed a significant effect of purchase process on task support satisfaction. H5, with a path coefficient of 0.455 and a t of 4.939., showed a significant effect of customers' security and privacy concerns on task support satisfaction.

In the second group, U.S. and Mobile-commerce, H2 had a path coefficient of 0.337 and a t of 2.200., indicating a significant effect of product information on decision support satisfaction. H3 had a path coefficient of 0.289 and a t of 3.002, and H4 had a path coefficient of 0.404 and a t of 3.350; these two indicated that purchase process had a significant effect on task support satisfaction. In the Vietnam and PC-commerce group, H1 had a path coefficient of 0.297 and t = 2.247, which showed a significant effect of navigation on decision support satisfaction. H4 had a path coefficient of 0.358 and t was 2.633, and these showed that purchase process had a significant effect on task support satisfaction.

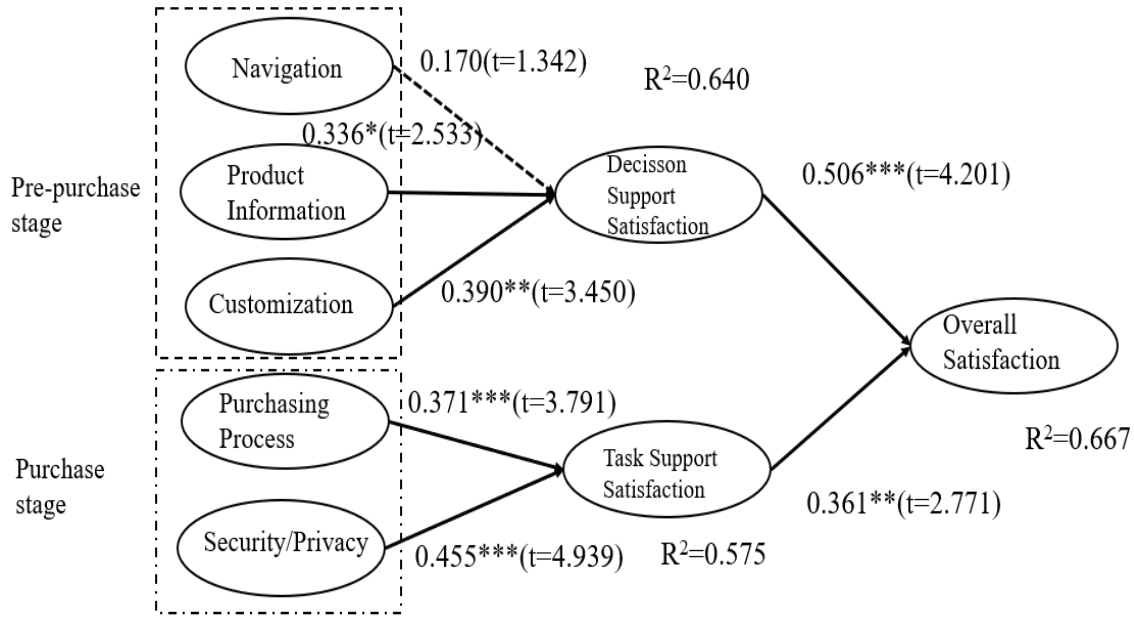
The last group was Vietnam and Mobile-commerce; in this group, H1 had a path coefficient of 0.401 and a t of 3.967, and these indicated that navigation had a significant effect on decision support satisfaction. H4 had a path coefficient of 0.458 and a t of 3.692, reflecting a significant effect of purchase process on task support satisfaction. H5's path coefficient of 0.213 and t of 2.104 meant that customers' security and privacy concerns had a significant effect on task support satisfaction.

The empirical findings of this study confirm some different processes for online shoppers with different experiences between PC-commerce and mobile device commerce. The different variables did not have differing effects on task support satisfaction, but their impacts were different for decision support satisfaction across the four study groups. In all four groups, however, decision support satisfaction had a significant effect on overall satisfaction (H6 accepted), and H7 was supported because task support satisfaction had a significant effect on overall satisfaction.

Ⅵ. Discussion

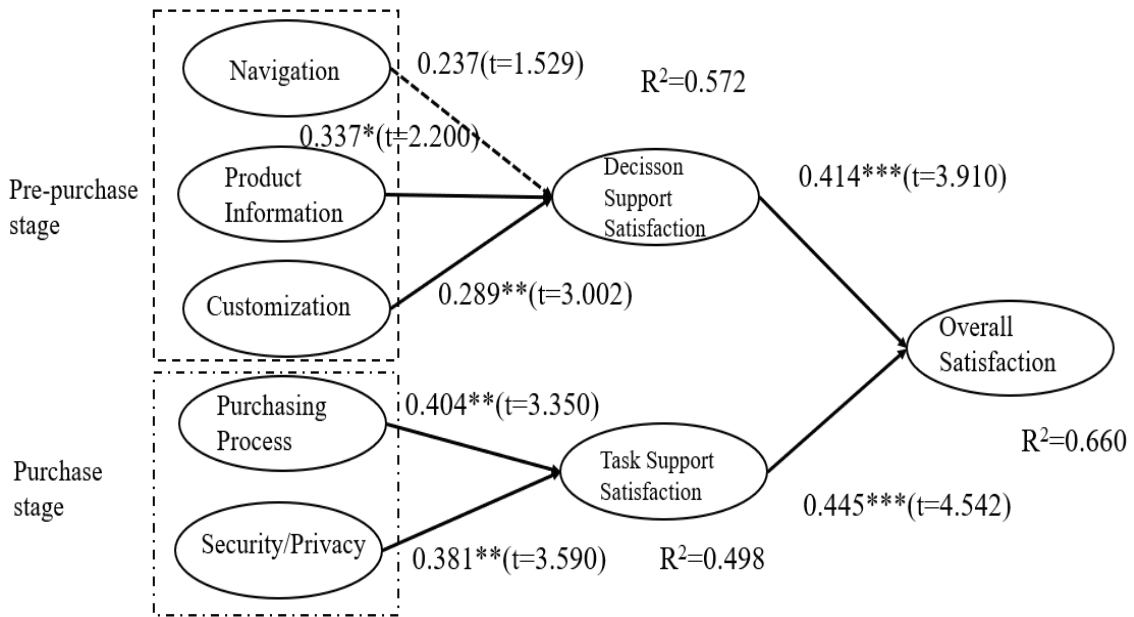
6.1. Theoretical implication

Our study has a number of implications for e-commerce research. First, we confirmed that differing histories of online commerce between developed and developing



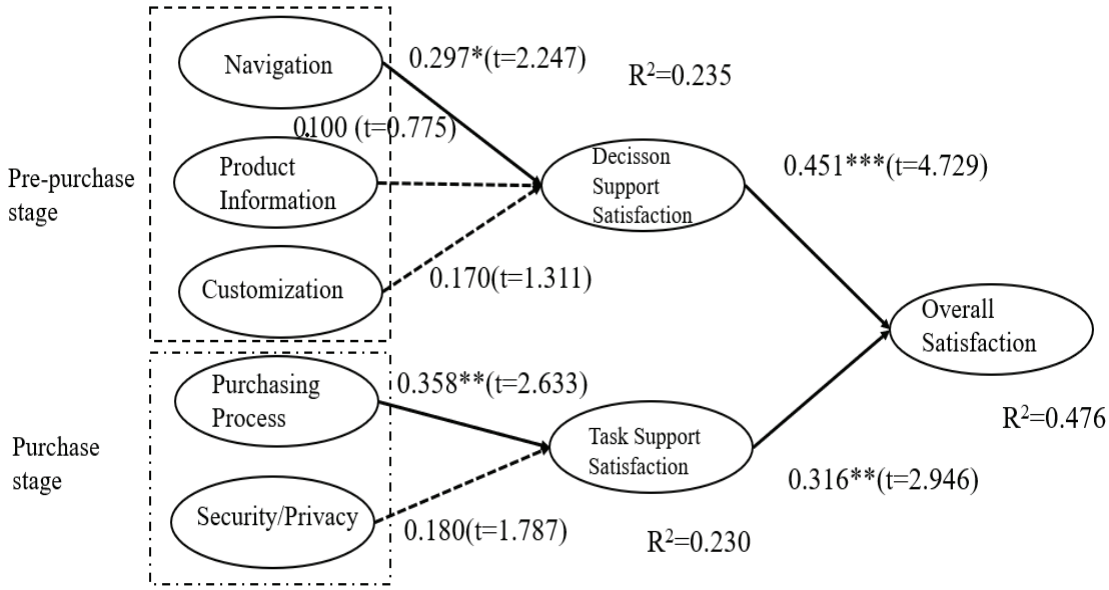
<Figure 3-A> Analysis and Hypothesis Testing: U.S. & PC-commerce

Note: * p < 0.05, ** p < 0.01, *** p < 0.001, ns: insignificant at the 0.05 level



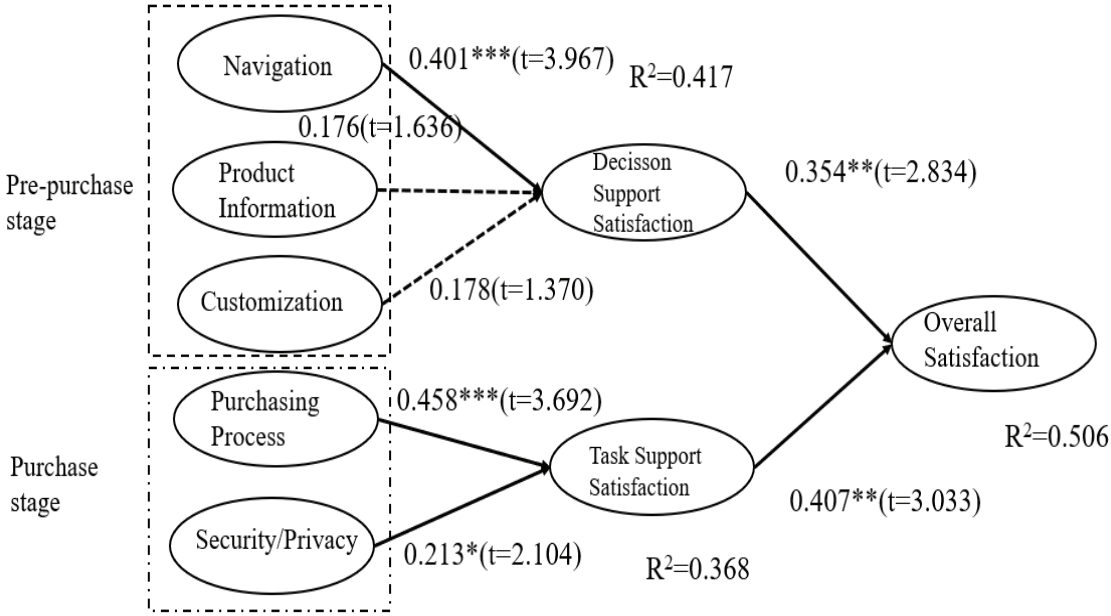
<Figure 3-B> Analysis and Hypothesis Testing: U.S. & Mobile-commerce

Note: * p < 0.05, ** p < 0.01, *** p < 0.001, ns: insignificant at the 0.05 level



<Figure 3-C> Analysis and Hypothesis Testing: Vietnam & PC-commerce

Note: * p < 0.05, ** p < 0.01, *** p < 0.001, ns: insignificant at the 0.05 level



<Figure 3-D> Analysis and Hypothesis Testing: Vietnam & Mobile-commerce

Note: * p < 0.05, ** p < 0.01, *** p < 0.001, ns: insignificant at the 0.05 level

<Table 5> Hypothesis Test Result

Group	H1 NV ⇒ DSS	H2 PI ⇒ DSS	H3 C ⇒ DSS	H4 PI ⇒ TSS	H5 SP ⇒ TSS
U.S. and PC-comerce	Reject (p = 0.170)	**Accept** (p = 0.336*)	**Accept** (p = 0.390*)	**Accept** (p = 0.371***)	**Accept** (p = 0.455***)
U.S. and M-comerce	Reject (p = 0.237)	**Accept** (p = 0.337*)	**Accept** (p = 0.289**)	**Accept** (p = 0.404**)	**Accept** (p = 0.381**)
Vietnam and PC-commerce	**Accept** (p = 0.297*)	Reject (p = 0.100)	Reject (p = 0.170)	**Accept** (p = 0.358**)	Reject (p = 0.180)
Vietnam and Mobile-comerce	**Accept** (p = 0.401***)	Reject (p = 0.176)	Reject (p = 0.178)	**Accept** (p = 0.458***)	**Accept** (p = 0.213*)

countries causes the process of online shopping to differ as well; consumers in the United States and in Vietnam considered different sets of online shopping factors as relevant in their shopping satisfaction. Currently, in many developing countries, the ratio of PC-commerce is decreasing, and mobile commerce accounts for a large percentage. Researchers can use the findings from this study in future studies on online commerce. Second, we confirmed that navigation is a significant influence on decision support satisfaction among customers who had short periods of experience with e-commerce. Navigation is a significant determinant of the convenience of using an online shopping mall, and for users who do not have long e-commerce experience, finding information conveniently and moving around shopping malls with ease are crucial. Lastly, we confirmed that factors during the pre-purchase phase influence decision support satisfaction and that purchase-phase factors influence task support satisfaction. Our research model can further the understanding of the different influences on consumer satisfaction and guide future research.

6.2. Practical implication

The findings of this research would be helpful to practitioners, especially the e-commerce companies in developing countries. Our results suggest that those companies should focus on website navigation and purchasing process. In countries with a short history of e-commerce, consumers started Mobile-commerce without getting used to PC-commerce. Due to short PC-commerce experience, consumers should be able to clearly know what is on the applications and websites. They also want all transactions to be completed within that the applications and websites. Unlike developed countries with long PC-commerce experience, companies should differently approach consumers in developing countries.

6.3. Limitation and future study

Our study has several limitations. First, we use small size of sample in Vietnam. This sample shortage occurred because we could collect only a small number of PC-commerce users and Mobile-commerce users in Vietnam. Second, we used data from only two countries, the United States and Vietnam; if we use more countries, the results might be more meaningful from a larger sample of both developed and developing countries. Third, with this study we focused on the pre-purchase and purchase phases of online shopping,

but it is also important to study consumer satisfaction and leading factors at the post-purchase phase.

We recommend that future researchers lead in the following ways based on our findings and limitation. First, future researchers should collect more samples and more detail demography data (income levels, job and region). Population sampling should be further elaborated. Second, future researchers should compare more countries. Even within the group of developed countries, consumers in the United States, the UK, Japan, and South Korea have different PC-commerce experiences that might result in different influences on customer satisfaction with online shopping. In addition, cultural difference should be reflected in the research.For instance, Vietnam and other Southeast Asian countries have cash-oriented cultures, whereas South Africa and Nigeria have high ratios of online credit and debit card payments online. We used data from only two countries, the United States and Vietnam; results might be more meaningful from a larger sample of both developed and developing countries. Future researchers should compare these countries for achieving meaningful results. Lastly, future researchers should add the post-purchase phase. In the e-commerce, post-purchase phases such as whether the purchased product arrives properly and customer support services also have a great influence on customer satisfaction. If researcher add the post-purchase phase, they can accurately compare the factors that affect customer e-commerce satisfaction; we believe future researchers should pursue this line of study.

Ⅶ. Conclusion

With this study, we investigated how website navigation, product information and customization influenced customer satisfaction in two different countries (developed vs. developing) for two e-commerce types, (PC-commerce vs Mobile-commerce). We also investigated how purchasing process and security/privacy influenced customer satisfaction depending on country and e-commerce type. In our research model, customer satisfaction comprised decision support satisfaction, task support satisfaction and overall satisfaction. Our findings indicated that factors in the pre-purchase and purchase phases influenced consumers' satisfaction depending on country.

In the United States, product information and customization capability at the online store influenced satisfaction by reducing the customer's decision-making effort with both Mobile-commerce and PC-commerce. Task satisfaction for U.S. customers was influenced by the ease of completing the purchase process and by customers' perceptions of a site's safety regarding security and privacy, and this was also the case for both Mobile-commerce and PC-commerce.

In Vietnam, in contrast, product information and customizability had no significant relationships with decision support satisfaction, which indicated that product information had little influence on making purchase decisions. In Vietnamese online commerce, consumers value product price and care less about product information. Also, in contrast with U.S. customers, Vietnamese shoppers placed value on ease of a website's navigation in shopping decision-making. Consumers in Vietnam have little experience with online shopping on computers, so they are not familiar with online commerce variables. Thus, in Vietnam, convenience is one of the most important factors in choosing products when shopping online.

Vietnam showed differences between Mobile-commerce users and PC-commerce users. Mobile shoppers' satisfaction with task requirements was influenced by the completeness of the purchase process and the perceived safety of making purchases with regard to se-

curity, but perceived safety of a site did not affect task support satisfaction among PC-commerce customers; this difference between PC-commerce and Mobile-commerce can be attributed to the process of COD for mobile online purchases in Vietnam. Mobile commerce customers care about the safety of online stores because they pay through COD mobile applications without changing their devices, whereas PC-commerce shoppers make their purchases in payment rather than on their computers. Thus, they do not need to be concerned about the safety of the online store in completing their shopping tasks.

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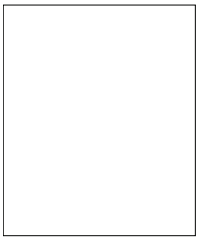

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Submitted: August 3, 2021; 1st Revision: October 22, 2021; 2nd Revision: February 12, 2022;
Accepted: March 30, 2022