The role of user adaptation and trust in understanding continuance intention towards mobile shopping: An extended expectation-confirmation model

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Abstract: With the rapid growth and intense competition of the mobile commerce market, mobile vendors consider retaining current users and facilitating them to continue shopping as vital to sustain profitability and development. This study investigates the influence of trust and perceived usefulness on continuance intention to use mobile shopping, mediated by user adaptation. This study was based on an extended expectation-confirmation model (ECM) by incorporating trust and user adaptation. A questionnaire-based survey was designed to gather data from 445 mobile shoppers in Vietnam using face-to-face interview. Structural equation modelling analysis was applied to validate the hypothesised model. Our results revealed that all relationships, except for the direct relationship between trust and continuance intention significantly affect continuance intention. In addition, user adaptation is verified to mediate fully the relationship between trust and continuance intention. Our work is the first study to extend ECM by integrating trust and user adaptation in an integral way to advance our understanding of how mobile

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PUBLIC INTEREST STATEMENT

Mobile commerce is currently booming in Vietnam, leading to competition between service providers by keeping users to continue shopping on their application platform. We investigate the influence of two factors including adaptive behaviour and user trust to make users continue to use mobile shopping services. The study findings reveal that user adaptation has a strong direct impact on users' continued intention towards mobile shopping. In addition, for users who have trust in mobile commerce, the user adaptation makes them decide to continue shopping via mobile devices. Mobile commerce firms' managers are recommended effectively retaining users by promoting factors including user satisfaction, trust and especially adaptation.

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shoppers continue to use mobile shopping services. Finally, our study offers insightful theoretical and practical implications for academicians and firm managers to retain users effectively by promoting the factors that motivate the continuance intention.

Subjects: Management of IT; Business, Management and Accounting; Information Technology

Keywords: mobile shopping; mobile commerce; user adaptation; continuance intention; trust; expectation-confirmation model; Vietnam

1. Introduction

It is without doubt that smartphones and internet-enabled mobile devices have become inseparable for many users to shop online. Mobile shopping applications (m-apps) allow users to conduct a convenient information search for a product, purchase and payment anywhere and anytime (Groß, 2016; Ko et al., 2009; Tam et al., 2018). Users tend to use mobile shopping (m-shopping) as an alternative to electronic commerce (e-commerce) and traditional shopping practices. According to Statista, mobile shopping is projected to account for 72.9 percent of worldwide retail online commerce in 2021, an increase up from the 67.2 percent in 2019. The volume in the US market was $339 billion in 2020, an increase from the $207 billion in 2018 (Coppola, 2020). For the Southeast Asia (ASEAN) region, the world’s fastest growing Internet mobile commerce (m-commerce), Google and Temasek, estimated that its volume will jump from $100 billion in 2019 to $300 billion by 2025 (Hoppe & Baijal, 2019). For the Vietnamese market alone, m-commerce has outpaced traditional e-commerce with a growth rate of 18.6 percent annually; the volume has increased from $5.1 billion in 2019 to a predicted $10.2 billion in 2023, accounting for 57% of the overall e-commerce and (JPMorgan, 2020). This impressive emerging potential of the m-shopping business has attracted much attention from managers and researchers (Gao et al., 2015). For example, after attaining remarkable success in the ride hailing service in the Vietnamese market, Grab launched a multi-applications platform to enter delivery (Grab Express) and online payment market (Grab Pay) while Tiki, a successful m-shopping local provider, launched Tiki Card for banking and Tiki Now for e-entertainment. The topic related to mobile shopping soon attracted many researchers in the information technology (IT) system, marketing and user behaviour. For instance, Hung et al. (2012) applied ECM in Taiwan, combining it with trust to explain the users’ behaviour in m-shopping. Lu and Yu-Jen (2009) investigated how innovativeness and social influence impact user intention to continue using m-commerce in the USA.

Despite the growing attention, mobile shopping definitions remain ambiguous. On the one hand, researchers referred to m-shopping as a subset of m-commerce and defined it as any payment or monetary transaction for buying a good or service via mobile devices (Hung et al., 2012; Ko et al., 2009; Yang, 2010). On the other hand, m-shopping was defined as being not just restricted to buying and payment, but it was also seen as having broader uses including pre-shopping and post-shopping activities such as communicating with relevant parties, searching product and price, ordering, paying and after purchasing activities (Holmes et al., 2014; R. J.-H. Wang et al., 2015; Lu & Yu-Jen, 2009). This study refers to m-shopping in a broad sense, as being any shopping-related activity conducted by users using mobile internet devices (or smartphones, for short). These activities include planning their pre-shopping behaviours (e.g., activating m-apps to browse websites for comparing the prices, or finding the producer’s and retailer’s store location), purchasing (e.g., negotiating, arranging and placing orders) and conducting payment transactions using the user smartphone regardless of time and place (Gao et al., 2015; Holmes et al., 2014). While they are shopping, mobile shoppers (m-shoppers) may repetitively communicate online with the relevant parties (e.g., m-vendors, producers, payment platform providers, other m-shoppers) for
checking information and to be sure about the target product and the delivery, and to make sure of the online payment transaction.

Compared to traditional online shopping, mobile commerce shoppers may have to adapt gradually to this way of mobile shopping. The m-shopping issues encountered by users can be technical attributes (smartphone’s small screen or a complex mobile navigation), unsecured mobile payments and trust in m-apps (Bhattacherjee & Harris, 2009; Cao et al., 2018; Groß, 2016; Ozok & Wei, 2010). These limitations are considered to be the cause of growth not being as fast as expected by the industry (Jocevski et al., 2020; Nafea & Younas, 2014). The Vietnam E-Commerce and Digital Economy Agency (IDEA, 2020) reported that, while 60% of mobile users have accessed the Internet for entertainment (e.g., music and movies) and 57% for social networking, only 45% have ever searched for shopping information. The Deloitte Vietnam claimed that non-store-based sales (including e-commerce) account for only about 3%, while conventional store-based sales remain at 97% of total retail sales of the country (Duc, 2020). Thus, these statistics imply that Vietnam’s m-commerce is just at its infancy stage, with users remaining wary of participating in m-shopping, even though it has benefited them in multiple ways. Furthermore, the market has witnessed intense competition among domestic retailers and also with the dominant multinational providers (Coppola, 2020; Duc, 2020; Hoppe & Baijal, 2019). In particular, when m-shopping sites or m-apps are comparably similar in terms of functionality and user interface, m-shoppers can promptly switch to another provider with their smartphone at almost no cost. Previous studies have shown that acquiring a new user costs much more than maintaining an existing user (Lin & Wang, 2006; Rosenberg & Czepiel, 1984). For mobile commerce service providers, attracting potential m-shopping apps users to make a first purchase is just the beginning, and retaining existing users in the m-shopping apps to continue shopping makes the providers sustainable and successful (Bhattacherjee, 2001b; Chen et al., 2012; Hsiao et al., 2016).

Presently, despite intensive research on user continuance usage (e.g., Bhattacherjee & Lin, 2015; Bölen & Öz-en, 2020; Marinković et al., 2020), only a few studies take into account the user’s adaptation perspective (e.g., Jasperson et al., 2005). Although the significance of user adaptation and its motivating effect on continued use have been noticed (Beaudry & Pinsoneault, 2005; Bhattacherjee & Harris, 2009; Cooper & Zmud, 1990; Karahanna et al., 1999), surprisingly, however, there has been no empirical evidence of the relationship of the adaptation with user intention to continue as reported (Ambalav, 2018; Nabavi et al., 2016; Shaikh & Karjaluoto, 2015). Also, while using an IT-based service system (i.e., mobile-shopping) user adaptation is essential, some adaptive behaviours are unavoidable as an IT platform will never fit effortlessly into a user situation (Leonard-Barton, 1988; Schmitz et al., 2016). Furthermore, while the influence between user trust and initial adoption of m-commerce has largely been focused (e.g., Chong et al., 2012; Liébana-Cabanillas et al., 2017), the relationship between trust and post-adoptive factor, continuance intention (CI), is insufficient and inconsistent (Hung et al., 2012; Qureshi et al., 2009; Sarkar et al., 2020). Moreover, there has been no empirical research on the relationships between trust with user adaptation and CI to date. The present study fills this gap by examining the effects of user adaptation and trust on CI in m-shopping setting. Our study is among the first to bring adaptation and trust into an integrated model to uncover new motivations for users to decide to continue using the m-shopping service.

Considering the importance of maintaining users and the continued usage motivation of users, this study investigates the impacts of two determinants, adaptation and trust, and on the CI of users for the mobile shopping service. More specifically, the main research question this work attempts to answer is: “How do trust and adaptation affect CI to use m-shopping?” To answer this question, we employed an expectation confirmation model (ECM, Bhattacherjee, 2001a) in conjunction with the perspectives of user adaptation and trust to derive an extended continuance model, and then empirically confirmed the proposed research model in the context of m-shopping service in Vietnam.
2. Theoretical backgrounds

2.1. IT Continuance
Using an IT system in the current digital age benefits individuals and businesses practically in their daily efforts. IT literature often judges IT continuance as a form of behavioural post-adoption (e.g., Bhattacherjee & Lin, 2015; Hong et al., 2006; Karahanna et al., 1999). The term “continuance” relates to a user's behavioural consequence of the post-adoptive stage which includes both CI and continuance use of an IT (Nabavi et al., 2016). IT continuance refers to a user's commitment to continue using a certain IS continuously, and the final success of the IT is conditional on the user's continuance (Bhattacherjee & Lin, 2015; Gao et al., 2015). Agarwal and Prasad (1997) distinguishes between “current use” and “future use”, and describes “future use” intention as the intention to “use the innovation in the future” (p. 568) in a Web service context. Bhattacherjee (2001b) posited IT continuance as “users' decisions to continue using an IT in the long run, contrary to IT acceptance which focuses on the user's initial adoption or first-time decision to use” (pp. 351–352). Lu (2014) defined CI as “a mental state reflecting an individual's decision to repeat her current behaviour” (p. 138) and regarded it as “the intention to repurchase in marketing.” In our study, CI refers to the user's intention to continue using m-shopping.

2.2. Expectation-Confirmation Model (ECM)
Rooted in Expectation-Confirmation Theory (ECT, Oliver, 1980), Bhattacherjee (2001b) introduced ECM and validated it in online banking setting. While Oliver's ECT framework was applied to investigate the user's satisfaction (SA) and how it influences one's decision to repurchase a good or service, ECM examines the CI using a user's satisfaction with the IT that one has been adopting, confirmation of expectations and perceived usefulness (PU) of an adopted IT (i.e., post-adoptive beliefs). The main difference between the two is that the Oliver's ECT addressed both two stages of users' expectations and Bhattacherjee's ECM explicated only post-usage expectations. Different from pre-adoptive acceptance models, for example, the TAM (technology acceptance model) (Davis et al., 1989) and the UTAUT (unified theory of acceptance and use of technology) (Venkatesh & Davis, 2000), the post-adoptive ECM views perceived ease of use (PEOU) as a negligible element, whereas users get more experience while adapting to the IT at a later stage (Karahanna et al., 1999).

2.3. Continuance in m-shopping
Based on distinguishing pre- and post-adoptive stages of acceptance, ECM enlightens the formation of the continued use of IT by new variables, appropriate in multiple settings, including e-learning, online services, mobile banking, e-commerce and social network usage (Shaikh & Karjaluo, 2015). Research on continuance has widely applied solely ECM or integrated with other theories and frameworks such as TAM (e.g., Bockye et al., 2014; Joia & Altieri, 2018; Nan et al., 2020), theory of reasoned action (TRA) and theory of planned behaviour (TPB) (e.g., Centefelli et al., 2008; Liang et al., 2013), UTAUT and UTAUT2 (e.g., Lu, 2014; Venkatesh et al., 2003, 2011; Zhao & Bocac, 2020), diffusion of innovation theory (DIT) (e.g., Joia & Altieri, 2018; Lin, 2013), self-determination theory (SDT) (e.g., Roca & Gagné, 2008; Wang & Wang, 2019), effort-accuracy model (EAM) (Ashraf et al., 2020) and Information system (IS) success model (Gao et al., 2015; L. Wang et al., 2019; Zhou, 2013). Besides, a plethora of factors influencing IS continuance have been investigated such as perceived value, experience, habit, network size and risk, to name a few. Moreover, Bhattacherjee and Borfar (2011) argued that initial or pre-adoptive and post-adoptive concepts are distinctive, and users may change their expectations behaviours while experiencing and accepting the IT. Despite such an intensive research on IT continuance, there has been no empirical evidence reported to date on the relationship with user adaptation, which is a well-established post-adoptive factor affecting continuance usage (Bhattacherjee & Borfar, 2011; Faber & de Reuver, 2019; Nabavi et al., 2016). Scholars have argued that, after the initial or pre-adoptive use, the CI becomes an attentive issue which maintains the long-run success and productivity (Tam et al., 2018). Thus, the fact that the ECM model is applied and integrated with the factors influencing post-adoptive stage outcomes means that it is the most suitable for this study.
2.4. User Adaptation
Adaptation (ADP) of innovation and new technology (e.g., IT) has been studied for decades (e.g., DeSanctis & Poole, 1994; Kwon & Zmud, 1987; Rice & Rogers, 1980). Tyre and Orlikowski (1994) claimed that technological adaptation “refers to adjustments and changes following installation of a new technology in a given setting” and regarded “users’ procedures, assumptions, knowledge, or relationships” with IT in an organisational context. IT implementation literature (e.g., Cooper & Zmud, 1990; Jasperson et al., 2005) described adaptation as the third of six phases of an IT implementation process. Leonard-Barton (1988) also described adaptation is as the “mutual adaptation” of both technology attributes and users’ activities to improve the productivity. According to the DIT (Rogers, 1983), once the diffusion of an IT achieves the “confirmation” stage as the IT is adapted, users may continue using that IT. Both adaptive structuration theory (AST, DeSanctis & Poole, 1994) with group level analysis and AST for individual (ASTI, Schmitz et al., 2016) considered the adaptation process as “structuration”, in which users obtain, adapt and change the IT (i.e., IT functions), their practice in workplace (i.e., procedures) to achieve outputs (i.e., performance expectation), user’s decision outcomes (i.e., continuance or discontinuance). The coping model for user adaptation (CMUA, Beaudry & Pinsonneault, 2005) posited user adaptation as “coping” acts (p. 494), and related a user’s adaptation to an individual’s effort to act on the technology (i.e., IT features), the task (i.e., work procedures) and oneself (i.e., belief). Likewise, Information system use-related activity model (ISURA, Barki et al., 2007), which relied on task-technology fit (TTF, Goodhue & Thompson, 1995), operationalised IS use behaviours as a collective construct of users’ behaviours including IT interaction (i.e., IT-predefined task performing), task-technology adaptation (i.e., changing functions or interface of an IT) and self-adaptation (i.e., learning on IT). As such, according to existing frameworks and models on IT adaptation, adaptation is empirically observed as individuals’ usage behaviours, leading to decision outcomes, better performance and whether one stays or exits from the IT (Barki et al., 2007; Beaudry & Pinsonneault, 2005; Muhammad et al., 2020). Based on prior works, this study refers user adaptation as the actions performed by users to adjust IT application attributes and shopping practice to fit their preferences, needs and situations. Thus, adaptation behaviours with an IT service system may lead to user post-adaptive or continuance use and to bring about satisfaction while using the IT. Although the understanding of user adaptation is quite obvious, this perspective was, however, surprisingly scarce in IT usage studies and the application of adaptation into ECM may fill this gap.

2.5. Trust
As mobile commerce takes shape and expands rapidly in emerging markets, many users may feel that online shopping using mobile commerce is unsafe and unprotected. Unlike in-person interactive shopping, users may have different perceptions of parties including online vendors, mobile platforms and online payment transactions are vulnerable. Trust (TR) has long been regarded as an important factor in online interactivity, including mobile commerce and the lack of trust prevents consumers from purchasing online (Gefen et al., 2003; Qureshi et al., 2009; Shao et al., 2019; K. Wu et al., 2011).

Prior studies have used different definitions of trust (Susanto et al., 2016; K. Wu et al., 2011). In m-commerce, the differences between the definitions of trust are explained by its complex nature and the fast-developing m-commerce context (Chen & Dhillon, 2003). Morgan and Hunt (1994) contended that trust occurs once a party believes in a partner’s integrity and reliability. Mayer et al. (1995) refers trust as “the willingness of a party to be vulnerable to the actions of another party based on the expectation that the other will perform a particular action important to the trustor, irrespective of the ability to monitor or control that other party.” Researchers explained trust by three beliefs including integrity, ability and benevolence. Integrity implies that online vendors keep their promises and do not mislead the users. Ability implies that online vendors possess the competence, knowledge and skills necessary to deliver their service. Benevolence means that vendors care for the users’ interests and benefits. Pavlou (2003) argued that trust is the belief which allows buyers to willingly become vulnerable to the online vendors after learning about the characteristics of the vendors from which they are purchasing. Wei et al. (2009) refers
“trust as the extent to which an individual believes that using m-commerce is secure and has no privacy threats” (p. 376). Recently, Qalati et al. (2021) refer to trust as an essential factor of purchase intention as it mitigates “perceived risk” in online shopping context (p. 4). Drawing on the previous studies, trust is the belief in our study which enables users to participate in m-commerce service willingly, while taking into account its vulnerable interactive characteristics. Given the m-commerce nature (e.g., online-offline interactions, ubiquity and payment patterns) users may experience risk or dissatisfaction caused by m-commerce vendors, online payment systems and other involved parties including mobile telecom networks and the shippers. Trust likely reduces perceived uncertainty, facilitates user initial adoption, enables users to utilise m-shopping and leads to m-shopping continuance (Gao et al., 2015). Prior research studied the relationship between trust and initial adoption of m-commerce (e.g., Chong et al., 2012; Liébana-Cabanillas et al., 2017), but studies on the associations between trust and post-adoptive factors (i.e., continuance intention) were insufficient and empirically inconsistent (Hung et al., 2012; Qureshi et al., 2009; Sarkar et al., 2020). Our work aims to bridge this research gap by integrating trust into ECM to examine how trust influences CI.

3. Research model and hypotheses development
Based on the above review of existing theoretical perspectives, a hypothesised model is proposed to investigate the CI to use m-shopping and how it is influenced by user adaptation and trust. Figure 1 depicts the hypothesised model.

3.1. ECM based hypotheses
Our work applies the ECM as its basic research framework. Based on a variety of previous empirical studies using original ECM in different contexts (Ambalov, 2018; Nabavi et al., 2016; Shaikh & Karjaluoto, 2015), we formulate the hypotheses as follows:

H1. User satisfaction is significantly associated with CI to use m-shopping.

H2. User perceived usefulness is significantly associated with CI to use m-shopping.

H3. Confirmation of user expectations is significantly associated with satisfaction with m-shopping.

H4. Confirmation of user expectations is significantly associated with the perceived usefulness of m-shopping.
H5. User perceived usefulness is significantly associated with user satisfaction with m-shopping.

3.2. Trust in m-shopping

User trust has been identified as one of the most important factors influencing the use of mobile commerce in previous research. Previous research has also looked at trust as a variable that influences both behavioural intention and actual use in both the pre-adoptive and post-adoptive phases of the adoption process (Venkatesh et al., 2011). However, the empirical research that has been conducted on trust in the context of m-commerce has largely produced conflicting results in terms of its relationships with antecedents and consequences (Sarkar et al., 2020; K. Wu et al., 2011). M-commerce benefits users in saving time and having flexibility, which further enhances users’ effectiveness in shopping (Afshan & Sharif, 2016; Hung et al., 2012). Given such advantages delivered by m-commerce, users turn to develop trust, and we believe that users’ assessments of usefulness significantly influence trust, which in turn impacts on adoption (i.e., the initial use) and CI to use mobile shopping (Marinković et al., 2020; Susanto et al., 2016; Venkatesh et al., 2011). Thus, we propose the following hypotheses:

H6: User perceived usefulness is significantly associated with trust.

H7: Trust is significantly associated with CI to use m-shopping.

3.3. Adaptation with m-shopping

Previous research has mostly focused on studying CI, continuance usage and the ultimate success of the IT based service system. Although user adaptation has been suggested as being a post-adoptive behaviour leading to a continuance decision and extended use (Barki et al., 2007; Bhattacharjee & Barfar, 2011; Jasperson et al., 2005), the prior researches on the IT-based system (i.e., m-commerce) hardly ever investigated the interdependence of adaptation on CI or behaviour in an integrated model. Additionally, whereas the links between adaptation behaviours performed by a user on the certain system and user satisfaction, future usage and repurchase with the IS have also been proposed (Agarwal & Prasad, 1997; Barki et al., 2007; DeLone & McLean, 2003, 2016), these associations between user adaptation and satisfaction are yet to be confirmed in an m-commerce context. Also, previous research has established the link between a user’s perception about usefulness with their initial use. This is because the more useful the system is, the more it is adopted to use (Saeed & Abdinnour-Helm, 2008; Venkatesh et al., 2003).

Thus, based on the original ECM, our theoretical model aims to delve into the relationships of users’ adaptation with user perceived usefulness, satisfaction and CI by proposing the following hypotheses:

H8. User perceived usefulness is significantly associated with user adaptation with m-shopping.

H9: Trust is significantly associated with user adaptation with m-shopping.

H10. User adaptation is significantly associated with CI to use m-shopping.

H11. User adaptation is significantly associated with user satisfaction with m-shopping.

4. Research methodology

4.1. Data Collection and Sampling

Data were gathered to provide empirical evidence to validate the hypothesised model. The questionnaire was first established in English and then translated into Vietnamese utilising
Brislin's back-translation approach (Brislin, 1970) to eliminate the impact of cultural and verbal discrepancies. The Vietnamese version was verified by a panel of senior lecturers and professionals working in the areas of mobile commerce. A pretest was also performed with a group of 30 m-shopping users who are students and academic staff members of business administration faculties at different universities. All participants reported that the words and expressions used for observable items were plain and understandable. To ensure high response rates, a group of senior business administration students who are part-time online shopping shippers are trained to undertake interviews. During the four-month sample period from September to December 2020, the study gathered data from 445 respondents who are users of one of the m-shopping platforms (e.g., Lazada, Tiki, Sendo, Shopee, Thegioididong and Grab) and made at least two online purchases or transactions during the previous month using convenient sampling and using direct interviews. The respondents were approached in the six cities/provinces across Vietnam including Ho Chi Minh City, Hanoi, Quang Ninh, Da Nang, Long An and Binh Duong. These locations were randomly selected from all three regions to ensure that people from various socioeconomic backgrounds were included in the sample. On the day of the interview, some respondents who wanted to answer questionnaires later via emails received a link to the questionnaire by interviewers with a deadline of one week to response. In total, 445 valid responses were obtained from 600 contacted respondents (74.2%).

All of the respondents were between the ages of 18 and 58, with the younger users (those between the ages of 18 and 30) accounting for 65 percent of the sample and the older users (those between the ages of 31 and 58) accounting for the remaining (35 percent). The level of education includes primarily respondents with a high school education or a college degree (60 percent) and university degree (28 percent). The sample respondents with less than 12 years of schooling account for only 12 percent.

4.2. Measures

All items were measured using a seven-point Likert scale. The scale ranged from 1 “strongly disagree” to 7 “strongly agree”. Six latent variables were examined, and latent variables were measured through measured variables. Our study used measurement scales adapted from previous validated literature to fit our study. All latent variables, measured variables and supporting references are presented in Appendix A.

4.3. Data analysis

IBM SPSS AMOS 24 was used in the analysis. Data analysis employed two-step approach recommended by Anderson and Gerbing (1988). First, once a measurement model was formed, the confirmatory factor analysis (CFA) procedure was completed to calculate model fit indices ($\chi^2$/df; NFI—normed fit index; CFI—comparative fit; GFI—goodness of fit; NFI—normed fit; RMSEA—root mean square error of approximation; RMR—standardised root mean square residual). Additionally, reliability, convergent validity and discriminant validity were also assessed using thresholds recommended by Bagozzi and Yi (1988), Anderson and Gerbing (1988), and Fornell and Larcker (1981). Next, a structural model was established, and the significance of the hypothetical paths was checked.

5. Results

5.1. Measurement Model Evaluation

Initially, the data were checked to ensure no outliers and normality assumption (Byrne, 2010; Hair et al., 2010; Kline, 2015). Data screening detected no outliers. Normality was assessed using the skewness and kurtosis indexes. The absolute values of skew were shown to be less than 3 and the values of kurtosis were less than 7, indicating a normal distribution of the dataset (Kline, 2015). Next, conducting Cronbach’s alpha of the constructs proved that the measured items secured the scale reliability. All values, starting from 0.754 (CON) to 0.842 (ADP), with the removal of an item of PU3 (Perceived Usefulness), were above the threshold of 0.70 (Nunnally & Bernstein, 1994).
Table 1. CFA analysis with reliability and validity

| Constructs           | Items  | SFL   | Cronbach’s alpha | AVE   | CR    |
|----------------------|--------|-------|------------------|-------|-------|
| Perceived Usefulness | PU1,P2 | 0.708*** 0.814*** 0.690*** | 0.764 | 0.547 | 0.782 |
|                      | PU4    |       |                  |       |       |
| Trust                | TR1,TR2,TR3,TR4 | 0.798*** 0.700*** 0.749*** 0.727*** | 0.829 | 0.554 | 0.832 |
| Confirmation         | CON1,CON2,CON3 | 0.735*** 0.712*** 0.684*** | 0.754 | 0.505 | 0.754 |
| Adaptation           | ADP1,ADP2,ADP3,ADP4 | 0.646*** 0.718*** 0.914*** 0.782*** | 0.842 | 0.595 | 0.852 |
| Satisfaction         | SA1,SA2,SA3,SA4 | 0.706*** 0.696*** 0.676*** 0.604*** | 0.764 | 0.451 | 0.766 |
| Continuance Intention| CI1,CI2,CI3 | 0.703*** 0.819*** 0.657*** | 0.763 | 0.532 | 0.772 |

Model fits: ***p < 0.001; χ² = 304.535; CMIN/df = 1.750; CFI = 0.961; GFI = 0.938; TLI = 0.953; RMSEA = 0.041

Table 1 shows that the relevant fit measures, such as standardised factor loading (SFL), the composite reliability (CR) and the average variance extracted (AVE) were checked against the recommended thresholds. All SFLs, ranging from 0.604 to 0.914, were acceptable and significant at the 0.001 level (Anderson & Gerbing, 1988). The CRs ranged between 0.754 (CON) and 0.852 (ADP) which are well above the cut-off value of 0.70 (Bagozzi & Yi, 1988). All AVEs were between 0.505 (CON) and 0.595 (ADP), except for the AVE of SA, which was 0.451. Fornell and Larcker (1981) suggested that if the AVE is smaller than 0.5, while the CR is more than 0.60, the construct convergent validity is adequate. Since the CR of SA was 0.766 (i.e., greater than 0.7), this indicates that the convergent criteria were satisfactory. The test results verified good reliability of the research tool confirming the convergent validity of the research data (Bagozzi & Yi, 1988; Fornell & Larcker, 1981; Hair et al., 2010). Additionally, the discriminant validity of the measurement model was sufficient thanks to the square root of the AVE for each factor exceeding the correlation between that factor and others, as presented in Table 2. As demonstrated in Table 2, chi-square χ² was 304.535 (df = 174, p = 0.000), CMIN/df was 1.750 (less than 2), CFI was 0.961 (greater than 0.95), GFI was 0.938 (greater than 0.9) and RMSEA was 0.041 (less than 0.06), and all fit results proved the very good fitness of the measurement model (Anderson & Gerbing, 1988; Hair et al., 2010).

The hypothesised relationships were evaluated using a path analysis. The structural model also revealed a good fit with GFI = 0.930, AGFI = 0.909, NFI = 0.899, CFI = 0.946 and RMSEA = 0.047 (Hair et al., 2010; Hu & Bentler, 1999).

All hypothesised relationships were significantly supported between trust and CI, except for H7. Confirmation has significant associations with perceived usefulness (β = 0.384, p < 0.001) and user satisfaction (β = 0.332, p < 0.001). Perceived usefulness has positive associations with the following connected constructs: satisfaction (β = 0.170, p < 0.05), adaptation (β = 0.208, p < 0.001), trust (β = 0.233, p < 0.001) and CI (β = 0.244, p < 0.001). Satisfaction, in turn, has significantly influenced CI (β = 0.224, p < 0.001) and is affected by adaptation with p < 0.001 and β = 0.226. Trust positively
Table 2. Correlation and discriminant validity

| Construct | ADP | SA | TR | CON | PU | CI |
|-----------|-----|----|----|-----|----|----|
| ADP       | 0.771 |    |    |     |    |    |
| SA        | 0.337 | 0.672 |    |     |    |    |
| TR        | 0.381 | 0.251 | 0.744 |    |    |    |
| CON       | 0.229 | 0.445 | 0.467 | 0.711 |    |    |
| PU        | 0.274 | 0.351 | 0.200 | 0.363 | 0.739 |    |
| CI        | 0.283 | 0.360 | 0.198 | 0.262 | 0.361 | 0.730 |

Note: The diagonal and bolded values describe the square root of AVEs. 5.2. Structural Model Evaluation

influences adaptation with $\beta = 0.333$ and $p < 0.001$. Specially, user adaptation with m-shopping has the significant relationship with CI ($\beta = 0.123$, $p < 0.05$), uncovering that our new hypothesis is empirically verified at first-hand. Table 3 depicts that ten out of the eleven hypothesised associations were statistically supported.

6. Discussion and implications
As our obtained results have shown, all of the proposed hypotheses are supported in the m-shopping setting, except for the H7 link betweentrust and CI. The study results affirm all five essential associations of Bhattacharyee’s ECM, and then reveal the significant relationships between user adaptation and perceived usefulness, satisfaction and CI. Additionally, the impact of trust on adaptation has also been explored and is positively significant. It is noteworthy that, for the first time in IT continuance study, the results of an investigation uncover a causal relationship between user adaptation and CI towards mobile shopping. Thus, with the inclusion of user adaptation as a new factor, this extended ECM shows that CI is driven not only by user perception about usefulness and satisfaction, but also by one’s adaptation behaviour performances by users with m-shopping.

As observed in previous studies on CI (Bhattacharyee, 2001b; Oliver, 1980; Weng et al., 2017), confirmation as a post-adoptive judgment influencing positively on user perceptual experience such as perceived usefulness and satisfaction. Our results reveal that confirmation is a significant element in the m-shopping context and users realise their satisfaction and expected benefits through the actual experience. The findings also confirm that perceived usefulness and satisfaction are two factors that motivate users’ intentions to continue using m-shopping, in line with reported investigations in a similar context (e.g., Bhattacharyee, 2001b; Lee & Kwon, 2011; Li & Liu, 2014; Sreelakshmi & Prathap, 2020). This study finding is expectedly meaningful for practitioners and researchers to explore further how users accommodate and utilise m-shopping. Moreover, the findings also indicate that trust is driven by perceived usefulness. While previous studies on the link of trust and perceived usefulness demonstrate varied and mixed results (e.g., Gefen et al., 2003; Y. Wang et al., 2016; K. Wu et al., 2011) in online contexts, our findings confirm the significant effect of perceived usefulness on users’ trust, which is in agreement with most of the studies on mobile commerce continuance (Afshan & Sharif, 2016; Sarkar et al., 2020; Susanto et al., 2016).

Contrary to expectations, our survey data has not confirmed a direct association between trust and the intention to continue using m-shopping. Although this insignificant association is in conflict with some prior research (e.g., Shao et al., 2019; K. Wu et al., 2011), it reinforces the results of numerous reported empirical investigations in m-commerce settings (Bölen & Özen, 2020; Cao et al., 2018; Susanto et al., 2016). Instead, trust indirectly affects CI via users’ adaptation, by which they accommodate a mobile platform, adjust how to perform mobile transactions, and interact with online vendors and related parties. The explanation for these findings is that, as users believe and feel confident with m-shopping, they would actively
| Hypotheses | Standardised path estimate | p     | Supported |
|------------|----------------------------|-------|-----------|
| H1 SA-CI   | 0.224                      | 0.000 | Yes       |
| H2 PU-CI   | 0.244                      | 0.000 | Yes       |
| H3 CON-SA  | 0.332                      | 0.000 | Yes       |
| H4 CON-PU  | 0.384                      | 0.000 | Yes       |
| H5 PU-SA   | 0.170                      | 0.011 | Yes       |
| H6 PU-TR   | 0.233                      | 0.000 | Yes       |
| H7 TR-CI   | 0.039                      | 0.524 | No        |
| H8 PU-ADP  | 0.208                      | 0.000 | Yes       |
| H9 TR-ADP  | 0.333                      | 0.000 | Yes       |
| H10 ADP-CI | 0.123                      | 0.049 | Yes       |
| H11 ADP-SA | 0.226                      | 0.000 | Yes       |
participate and perform behaviours that make themselves and m-shopping fit with each other, so that users decide to continue using it. These results substantiate the results in prior research which claim that trust cannot always have a significant impact on service use, although it can only affect it in the short term rather than during the long-term continuation of service use (Grayson & Ambler, 1999).

Additionally, our study finds that the influences of perceived usefulness and trust on adaptation are positive. These results are consistent with prior research which report that user actual use is influenced by trust (Corbitt et al., 2003) and usefulness (Saed & Abdinnour-Helm, 2008). In particular, our results highlight the significant link between adaptation with satisfaction and CI. This outcome is consistent with the ISS model (DeLone & McLean, 2003, 2016) which proves the link of use and satisfaction and asserts that “intention to reuse” is contextually aligned to the purpose of the IS usage and the measure of the IS success outcome. The most significant finding is that user adaptation is empirically observed as a major driving force of intention to continue using m-shopping, along with satisfaction and perceived usefulness of original ECM model. In our view of m-shopping, because users are adapting and experiencing with the emerged service, their experience and adaptation will lead from an initial phase of usage to the CI in the long-term, as reported by prior seminal works (Davis & Venkatesh, 2004; Mou et al., 2017). Thus, user perception of usefulness, satisfaction and adaptation are critical before users decide to continue using m-shopping services.

6.1. Theoretical contributions
Our work provides four theoretical contributions. First, realising several limitations of the original ECM model, Bhattacharjee (Bhattacharjee, 2001a; Bhattacharjee & Barfar, 2011) calls for extending the model by incorporating post-adoptive factors such as user adaptation, resistance and switching behaviours to further advance IT continuance research without abandoning its roots of the original expectation-confirmation theory (Oliver, 1980). For such a motivation, our work is the first to include user adaptation and trust into ECM to study CI in the context of m-commerce. While user adaptation and trust have been introduced as significant influencers to post-adoptive behaviours (Bhattacharjee & Harris, 2009; Groß, 2016; Tam et al., 2018), previous studies have not been able to provide robust evidence for how these two factors influence CI, and prior research of IT continuance have hardly ever examined the interdependence among adaptation, trust and CI in an integrated model. Our empirical results confirmed all the relationships in the model but not the direct relationship between trust and CI. As a result, our model can be used as a theoretical one for future studies to understand the dynamics of ECM, trust and user adaptation on CI in other settings.

Second, although IT literature has largely studied user adaptation (Beaudry & Pinsonneault, 2005; Bhattacharjee & Harris, 2009; Jasperson et al., 2005), very few research has examined trust and user adaptation as drivers of long-term continued usage (DeLone & McLean, 2016). In a similar vein, no prior research has ever studied ECM in combination with trust and adaptation in an integral way. For such a motivation, our study can be considered among the pioneering studies to fill a research gap in IT continuance literature by examining the importance of trust and user adaptation on CI in the m-commerce setting. Our work extends and advances our understanding of ECM extension, including trust and adaptation as post adaptive variables.

Third, this study provides significant insights into the relationship between trust, user adaptation and CI in the perspective of ECM extension. Although trust has caused much concern among researchers in m-commerce settings (Kim & Peterson, 2017; Sarkar et al., 2020) the research involving trust has mostly ignored the relationship between trust and adaptation (Sarkar et al., 2020; K. Wu et al., 2011). This inadequacy may result in an insufficient assessment of the role of user trust, including its role on how users adapt steadily to m-shopping and to what extent they are experienced to it (Rousseau et al., 1998; Susanto et al., 2016). The results from our work will unravel and shed light on the understanding of how trust influences CI through the adaptation...
process, along which users perform to adapt with the m-shopping service. Thus, due to the impact of trust, adaptation will motivate users to decide to continue m-shopping.

Finally, very rare or no research has ever studied the mediating role of adaptation in the relationship between trust and CI in the context of m-commerce. For such a motivation, our work is the first to conceptualise adaptation as a mediator to advance our understanding of the relationship between trust and CI. Our findings reveal that the relationship between trust and CI is fully mediated by adaptation. In other words, it is the user adaptation mechanism that strengthens the effect of trust (i.e., trust in m-shopping) on the intention to continue and motivates users to decide to continue using m-shopping.

6.2. Practical implications

This study addresses more than a few issues of potential applicability for management to foster users’ continuance usage of the mobile commerce service. In the first sense, the study supported the findings that confirmation is a strong determinant of users’ perceptions of usefulness and satisfaction, which in turn promote continued use. In fact, confirmation is the realisation of users’ expectations of a technology (i.e., a product or service) that derives from actually experiencing that technology beforehand. In order for the marketing campaigns by m-commerce providers to persuade customers to participate in m-shopping, they must communicate its benefits and advantages compared to traditional forms of commerce to users, which is crucial for users to realise the expectation, increase satisfaction and perception about the benefits of m-commerce, leading to the decision to continue using it. On the other hand, the effect of users’ adaptation and their satisfaction with the adaptation are confirmed to be positive factors resulting in CI to use m-shopping. This suggests that business management should certainly guide the users of their m-apps on how to adapt to the settings of a new form of online commerce at the start, and make sure that users are appreciating the adaptation. As users perform more adaptation actions, they tend to adapt with the new m-shopping service, engage and will continue to enjoy shopping with it. Moreover, m-commerce managers should figure out that the ultimate success of user adaptation is only realised when users conduct the adaptation in both m-shopping platform (seller side) as well as their own shopping procedures (buyer side). Managers must encourage such practices to use interactive feedback systems for the success of the business, improvement of customer support to facilitate more users to adapt to the service. Finally, the influence of trust on CI via user satisfaction and adaptation will persuade m-commerce managers to focus on improving user trust to promote continuance usage. Management should consider providing sophisticated intelligent systems (such as access protection and data encryption), employing reliable compulsory procedures for financial data and personal identification provision in conjunction with other advanced tools to maintain the risk-free transactions and responsible relationships among all parties. These measures are constructive in providing more trustworthy m-commerce transactions in the users’ minds.

7. Conclusions

This study extends the ECM model by providing evidence on the factors that lead to users’ CI to use mobile shopping, which has appeared as one of the top business models in a fast-changing online economy. The findings show that perceived usefulness, satisfaction and adaptation are the three eminent factors influencing the intention to continue using their purchases. Confirmation significantly affects usefulness and satisfaction. Trust contributes to adaptation while perceived usefulness impacts on satisfaction, adaptation, trust and CI. To secure a market advantage, managers must learn ways of retaining users on their platform; in other words, they need to ensure that users will continue to use their services after experiencing and adapting to the services. The empirical result of this study would certainly guide mobile commerce businesses in the country as well as other emerging economies maintaining users in the competitive online market.
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References
Afshan, S., & Sharif, A. (2016). Acceptance of mobile banking framework in Pakistan. Telematics and Informatics, 33(2), 370–387. https://doi.org/10.1016/j.teli.2015.09.005
Agarwal, R., & Prasad, J. (1997). The role of innovation characteristics and perceived voluntariness in the acceptance of information technologies. Decision Sciences, 28(3), 557–582. https://doi.org/10.1111/j.1540-5915.1997.tb01322.x.
Ambalov, I. A. (2018). A meta-analysis of IT continuance: An evaluation of the expectation-confirmation model. Telematics and Informatics, 35(6), 1561–1571. https://doi.org/10.1016/j.teli.2018.03.016
Anderson, J. C., & Gerbing, D. W. (1988). Structural equation modeling in practice: A review and recommended two-step approach. Psychological Bulletin, 103(3), 411. https://doi.org/10.1037/0033-2909.103.3.411
Ashraf, M., Ahmad, J., Hamyon, A. A., Sheik, M. R., & Sharif, W. (2020). Effects of post-adoption beliefs on customers’ online product recommendation continuance usage: An extended expectation-confirmation model. Cogent Business & Management, 7(1), 1735693. https://doi.org/10.1080/23311975.2020.1735693
Baggozi, R. P., & Yi, Y. (1988). On the evaluation of structural equation models. Journal of the Academy of Marketing Science, 16(1), 74–94. https://doi.org/10.1007/BF02723327
Barki, H., Tihon, R., & Boffo, C. (2007). Information system-use-related activity: An expanded behavioral conceptualization of individual-level information system use. Information Systems Research, 18(2), 173–192. https://doi.org/10.1287/isre.1070.0122
Beaudry, A., & Pinsonneault, A. (2005). Understanding user responses to information technology: A coping model of user adaptation. MIS Quarterly, 29(3), 493–524. https://doi.org/10.2307/25148693
Bhattacherjee, A. (2001b). Understanding information systems continuance: An expectation-confirmation model. MIS Quarterly, 25(3), 351–370. https://doi.org/10.2307/2560921
Bhattacherjee, A. (2001c). Understanding information systems continuance: An expectation-confirmation model. MIS Quarterly, 25(3), 351–370. https://doi.org/10.2307/2560921
Bhattacherjee, A., & Barfor, A. (2011). Information technology continuance research: Current state and future directions. Asia Pacific Journal of Information Systems, 21(2), 1–18.
Bhattacherjee, A., & Harris, M. (2009). Individual adoption of information technology. Journal of Computer Information Systems, 50(1), 37–45. https://doi.org/10.1080/088741709.11645360
Bhattacherjee, A., & Lin, C.-P. (2015). A unified model of IT continuance: Three complementary perspectives and crossover effects. European Journal of Information Systems, 24(4), 364–373. https://doi.org/10.1057/ejis.2013.36
Boakye, K. G., McGinnis, T., Prybutok, V. R., & Paswan, A. K. (2014). Development of a service continuance model with IT service antecedents. Journal of Retailing and Consumer Services, 21(5), 717–724. https://doi.org/10.1016/j.jretconserv.2014.05.004
Bölen, M. C., & Özen, Ü. (2020). Understanding the factors affecting consumers’ continuance intention in mobile shopping: The case of private shopping clubs. International Journal of Mobile Communications, 18 (1), 101–129. https://doi.org/10.1108/IMC-2020-104423
Brislin, R. W. (1970). Back-Translation for Cross-Cultural Research. Journal of Cross-Cultural Psychology, 1(3), 185–216. https://doi.org/10.1177/002202217010301001
Byrne, B. M. (2010). Multivariate applications series. 2nd ed., Structural equation modeling with AMOS: Basic concepts, applications, and programming. Routledge/Taylor & Francis Group. https://doi.org/10.4324/9780203805534
Cao, A., Yu, L., Liu, Z., Gong, M., & Adee, L. (2018). Understanding mobile payment users’ continuance intention: A trust transfer perspective. Internet Research, 28(2), 456–476. https://doi.org/10.1108/IR-11-2016-0359
Cenfetelli, R. T., Berbasat, I., & Al-Natour, S. (2008). Addressing the what and how of online services: Positioning supporting-services functionality and service quality for business-to-consumer success. Information Systems Research, 19(2), 161–181. https://doi.org/10.1287/isre.1070.0163
Chen, S. C., & Dhillon, G. S. (2003). Interpreting Dimensions of Consumer Trust in E-Commerce. Information Technology and Management, 4(2), 303–318. https://doi.org/10.1023/A:1022962631249
Chen, S.-C., Yen, D. C., & Hwang, M. I. (2012). Factors influencing the continuance intention to the usage of Web 2.0: An empirical study. Computers in Human Behavior, 28(3), 933–941. https://doi.org/10.1016/j.chb.2011.12.014
Chong, A. Y.-L., Chan, F. T. S., & Ooi, K.-B. (2012). Predicting consumer decisions to adopt mobile commerce: Cross country empirical examination between China and Malaysia. Decision Support Systems, 53(1), 34–43. https://doi.org/10.1016/j.dss.2011.12.001
Cooper, R. B., & Zmud, R. W. (1990). Information technology implementation research: A technological diffusion approach. Management Science, 36(2), 123–139. https://doi.org/10.1287/mnsc.36.2.123
Copolla, D. (2020). Mobile commerce in the United States - Statistics & Facts. Retrieved 15 May 2021 from https://www.statista.com/statistics/249855/mobile-retail-commerce-revenue-in-the-united-states/
Corbitt, B. J., Thanasankit, T., & Yi, H. (2003). Trust and e-commerce: A study of consumer perceptions.
Electronic Commerce Research and Applications, 2(3), 203–215. https://doi.org/10.1016/j.s1567-4223(03)00024-3

Davis, F. D., Bagozzi, R. P., & Warshaw, P. R. (1989). User acceptance of computer technology: A comparison of two theoretical models. Management Science, 35(8), 982–1003. https://doi.org/10.1287/mnsc.35.8.982

Davis, F. D., & Venkatesh, V. (2004). Toward preprototype user acceptance testing of new information systems: Implications for software project management. IEEE Transactions on Engineering Management, 51(1), 31–46. https://doi.org/10.1109 TEM.2003.822468

DeLone, W. H., & McLean, E. R. (2003). The DeLone and McLean model of information systems success: A ten-year update. Journal of Management Information Systems, 19(4), 9–30. https://doi.org/10.1080/0742122031045748

DeLone, W. H., & McLean, E. R. (2016). Information systems success measurement. Foundations and Trends in Information Systems, 2(1), 1–116. https://doi.org/10.1561/2900000005

DeSanctis, G., & Poole, M. S. (1994). Capturing the complexity in advanced technology use: Adaptive structuration theory. Organization Science, 5(2), 121–147. https://doi.org/10.1287/orsc.5.2.121

Duc, V. N. (2020). Retail in Vietnam - an accelerated shift towards omnichannel retailing. Retrieved 20 December 2020 from https://www2.2elloite.vn/en/pages/consumer-business/articles/vietnam-consumer-retail-2020.html

Faber, R., & de Reuver, M. (2019). Consumer studies on digital platforms adoption and continuance: A structured literature overview. https://aisel.aisnet.org/ eciis2019_rp/121

Fornell, C., & Larcker, D. F. (1981). Evaluating Structural Equation Models with Unobservable Variables and Measurement Error. Journal of Marketing Research, 18(1), 39–50. https://doi.org/10.1177/002224378101800104

Gao, L., Waechter, K. A., & Bai, X. (2015). Understanding consumers’ continuance intention towards mobile purchase: A theoretical framework and empirical study—A case of China. Computers in Human Behavior, 53, 249–262. https://doi.org/10.1016/j.chb.2015.07.014

Gefen, D., Karahanna, E., & Straub, D. W. (2003). Trust and TAM in Online Shopping: An Integrated Model. MIS Quarterly, 27(1), 51–90. https://doi.org/10.2307/30036519

Goodhue, D. L., & Thompson, R. L. (1995). Task-technology fit and individual performance. MIS Quarterly, 19(2), 213–236. https://doi.org/10.2307/249689

Grayson, K., & Ambler, T. (1999). The Dark Side of Long-Term Relationships in Marketing Services. Journal of Marketing Research, 36(1), 132–141. https://doi.org/10.1177/002224379903600011

Größ, M. (2016). Impediments to mobile shopping continued usage intention: A trust-risk-relationship. Journal of Retailing and Consumer Services, 33, 109–119. https://doi.org/10.1016/j.jretconserv.2016.08.013

Hair, J., Anderson, R., Babin, B., & Black, W. (2010). Multivariate data analysis: A global perspective. Pearson Upper Saddle River.

Holmes, A., Byrne, A., & Rowley, J. (2014). Mobile shopping behaviour: Insights into attitudes, shopping process involvement and location. International Journal of Retail & Distribution Management, 42(1), 25–39. https://doi.org/10.1108/IJRDM-10-2012-0096

Hong, S., Thong, J. Y., & Tam, K. Y. (2006). Understanding continued information technology usage behavior: A comparison of three models in the context of mobile internet. Decision Support Systems, 42(3), 1819–1834. https://doi.org/10.1016/j.dss.2006.03.009

Hoppe, F., & Baijal, A. (2019). e-Conomy SEA 2019. Google & Temasek/Boain & Company. Retrieved 20 Setember 2020 from https://www.bain.com/insights/e-conomy-sea-2019

Hsiao, C.-H., Chang, J.-J., & Tang, K.-Y. (2016). Exploring the influential factors in continuance usage of mobile social Apps: Satisfaction, habit, and customer value perspectives. Telematics and Informatics, 33(2), 342–355. https://doi.org/10.1016/j.tele.2015.08.014

Hu, L. T., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional versus new alternatives. Structural Equation Modeling: A Multidisciplinary Journal, 6(1), 1–55. https://doi.org/10.1080/10705519909540118

Hung, M.-C., Yang, S., & Hsieh, T.-C. (2012). An examination of the determinants of mobile shopping continuance. Int. J. Electron. Bus. Manag, 10(1), 29–37.

IDEA. (2020). Vietnam E-commerce and Digital Economy White Paper 2020. Retrieved 15 May 2021 from http://ideagov.vn/

Jasperson, J. S., Carter, P. E., & Zmud, R. W. (2005). A comprehensive conceptualization of post-adoption behaviors associated with information technology enabled work systems. MIS Quarterly, 29(3), 525–557. https://doi.org/10.2307/2514894

Jocevski, M., Ghezzí, A., & Arvidsson, N. (2020). Exploring the growth challenge of mobile payment platforms: A business model perspective. Electronic Commerce Research and Applications, 40, 100908. https://doi.org/10.1016/j.elerap.2019.100908

Joia, L. A., & Altieri, D. (2013). Antecedents of continued use intention of e-hailing apps from the passengers’ perspective. The Journal of High Technology Management Research, 29(2), 204–215. https://doi.org/10.1016/j.jhitech.2018.09.006

JP Morgan. (2020). E-commerce Payments Trends Report: Vietnam. Retrieved 30 April 2021 from https://www.jpmorgan.com/merchant-services/insights/reports/vietnam-2020

Karahanna, E., Straub, D. W., & Chervany, N. L. (1999). Information Technology Adoption Across Time: A Cross-Sectional Comparison of Pre-Adoption and Post-Adoption Beliefs. MIS Quarterly, 23(2), 183–213. https://doi.org/10.2307/249751

Kim, Y., & Peterson, R. A. (2017). A Meta-analysis of Online Trust Relationships in E-commerce. Journal of Interactive Marketing, 38, 44–54. https://doi.org/10.1016/j.intmar.2017.01.001

Kline, R. B. (2015). Principles and practice of structural equation modeling. Guilford publications.

Ko, E., Kim, E. Y., & Lee, E. K. (2009). Modeling consumer adoption of mobile shopping for fashion products in Korea. Psychology & Marketing, 26(7), 669–687. https://doi.org/10.1002/mar.20294

Kwon, T. H., & Zmud, R. W. (1987). Unifying the fragmented models of information systems implementation. In R. J. Boland Jr., & R. A. Hirschheim (Eds.), Critical issues in information systems research (pp. 227–251). John Wiley and Sons.

Lee, Y., & Kwon, O. (2011). Intimacy, familiarity and continuance intention: An extended expectation–confirmation model in web-based services. Electronic Commerce Research and Applications, 10(3), 342–357. https://doi.org/10.1016/j.elerap.2010.11.005

Leonard-Barton, D. A. (1988). Implementation as mutual adaptation of technology and organization. Research
Policy, 17(5), 251–267. https://doi.org/10.1142/9789814295505_0019
Li, H., & Liu, Y. (2014). Understanding post-adoption behaviors of e-service users in the context of online travel services. Information & Management, 51(8), 1043–1052. https://doi.org/10.1016/j.im.2014.07.004
Liang, T.-P., Ling, Y.-L., Yeh, Y.-H., & Lin, B. (2013). Contextual factors and continuance intention of mobile services. International Journal of Mobile Communications, 11(6), 313–329. https://doi.org/10.1506/ijmc.2013.055746
Liébana-Cabanillas, F., Marinković, V., & Kalinic, Z. (2017). A SEM-neural network approach for predicting antecedents of m-commerce acceptance. International Journal of Information Management, 37(2), 14–24. https://doi.org/10.1016/j.ijinfomgt.2016.10.008
Lin, H.-F. (2011). Examining the factors influencing knowledge management system adoption and continuation intention. Knowledge Management Research & Practice, 11(6), 389–404. https://doi.org/10.1057/kmrp.2012.24
Lin, H.-H., & Wang, Y.-S. (2006). An examination of the determinants of customer loyalty in mobile commerce contexts. Information & Management, 43(3), 271–282. https://doi.org/10.1016/j.im.2005.08.001
Lu, H. P., & Yu-Jen, S. P. (2009). Factors affecting purchase intention on mobile shopping web sites. Internet Research, 19(4), 442–458. https://doi.org/10.1108/10662240910981399
Lu, J. (2014). Are personal innovativeness and social influence critical to continue with mobile commerce? Internet Research, 24(2), 2. https://doi.org/10.1108/IR-05-2012-0100
Marinkovic, V., Bordevic, A., & Kalnic, Z. (2020). The moderating effects of gender on customer satisfaction and continuance intention in mobile commerce: A UTAUT-based perspective. Technology Analysis & Strategic Management, 32(3), 306–318. https://doi.org/10.1080/09537332.2019.1655537
Mayer, R. C., Davis, J. H., & Schoorman, F. D. (1995). An integrative model of organizational trust. Academy of Management Review, 20(3), 709–734. https://doi.org/10.5465/amr.1995.9508080335
Morgan, R. M., & Hunt, S. D. (1994). The Commitment-Trust Theory of Relationship Marketing. Journal of Marketing, 58(3), 20–38. https://doi.org/10.1177/002224379405800302
Mou, J., Shin, D.-H., & Cohen, J. (2017). Understanding trust and perceived usefulness in the consumer acceptance of e-service: A longitudinal investigation. Behaviour & Information Technology, 36(2), 125–139. https://doi.org/10.1080/0144929X.2016.1203024
Muhammad, S. S., Dey, B., Alwi, S., & Babu, M. M. (2020). Examining the underlying attitudinal components driving technology adoption, adaptation behaviour and outcome in entirety. In N. P. Rana, E. L. Slade, G. P. Sahu, H. Kizgin, N. Singh, B. Dey, A. Gutierrez, & Y. K. Dwivedi (Eds.), Digital and social media marketing (pp. 197–226). Springer.
Nabavi, A., Taghavi-Fard, M. T., Hanfazadeh, P., & Taghva, M. R. (2016). Information technology continuance intention: A systematic literature review. International Journal of E-Business Research (IJEKR), 12 (1), 58–95. https://doi.org/10.4018/IJEKR.2016101004
Nafea, I., & Younas, M. (2014). Improving the performance and reliability of mobile commerce in developing countries. In I. Awan, M. Younas, X. Franch, & C. Quer (Eds.), Mobile web information systems (pp. 114–125). Cham.

Nan, D., Kim, Y., Park, M. H., & Kim, J. H. (2020). What Motivates Users to Keep Using Social Mobile Payments? Sustainability, 12(17), 6878. https://doi.org/10.3390/su12176878
Nunnally, J. C., & Bernstein, L. H. (1994). Psychometric theory. McGraw-Hill.
Oliver, R. L. (1980). A Cognitive Model of the Antecedents and Consequences of Satisfaction Decisions. Journal of Marketing Research, 17(4), 460–469. https://doi.org/10.1177/002224378001700405
Ozok, A. A., & Wei, J. (2010). An empirical comparison of consumer usability preferences in online shopping using stationary and mobile devices: Results from a college student population. Electronic Commerce Research, 10(2), 111–137. https://doi.org/10.1007/s10660-010-9048-y
Pavlou, P. A. (2003). Consumer acceptance of electronic commerce: Integrating trust and risk with the technology acceptance model. International Journal of Electronic Commerce, 7(3), 101–134. https://doi.org/10.1080/10864452.2013.11044275
Qaldat, S. A., Vello, E. G., Li, W., Dakhan, S. A., Hong Thuy, T. T., & Merani, S. H. (2021). Effects of perceived service quality, website quality, and reputation on purchase intention: The mediating and moderating roles of trust and perceived risk in online shopping. Cogent Business & Management, 8(1), 1869363. https://doi.org/10.1080/23311975.2020.1869363
Qureshi, I., Fang, Y., Ramsey, E., McCole, P., Ibbotson, P., & Compeau, D. (2009). Understanding online customer repurchasing intention and the mediating role of trust – An empirical investigation in two developed countries. European Journal of Information Systems, 18(3), 205–222. https://doi.org/10.1057/ejis.2009.15
Rice, R. E., & Rogers, E. M. (1980). Reinvention in the Innovation Process. Knowledge, I(6), 499–514. https://doi.org/10.17705/107554/708001004042
Roca, J. C., & Gagné, M. (2008). Understanding e-learning continuance intention in the workplace: A self-determination theory perspective. Computers in Human Behavior, 24(4), 1585–1604. https://doi.org/10.1016/j.chb.2007.06.001
Rogers, E. M. (1983). (3 ed). Diffusions of innovations. The Free Press A Division of Macmillan Publishing Co.
Rosenberg, L. J., & Czepiel, J. A. (1984). A marketing approach for customer retention. Journal of Consumer Marketing, 1(2), 45–51. https://doi.org/10.1108/07356208410080804
Roussou, D. M., Sitkin, S. B., Burt, R. S., & Camerer, C. (1998). Not so different after all: A cross-discipline view of trust. Academy of Management Review, 23(3), 393–404. https://doi.org/10.5465/amr.1998.926617
Soeerd, K. A., & Abdinour-Helm, S. (2008). Examining the effects of information system characteristics and perceived usefulness on post adoption usage of information systems. Information & Management, 45(6), 376–386. https://doi.org/10.1016/j.im.2008.06.002
Sarkar, S., Chauhan, S., & Khare, A. (2020). A meta-analysis of antecedents and consequences of trust in mobile commerce. International Journal of Information Management, 50, 286–301. https://doi.org/10.1016/j.ijinfomgt.2019.08.008
Schmitz, K. W., Teng, J. T., & Webb, K. J. (2016). Capturing the Complexity of Malleable IT Use: Adaptive Structuration Theory for Individuals. MIS Quarterly, 40(3), 663–686. https://doi.org/10.25300/MISQ/2016/40.3.07
Shalik, A. A., & Karjaluoto, H. (2015). Making the most of information technology & systems usage: A literature review, framework and future research agenda.
Computers in Human Behavior, 49, 541–566. https://doi.org/10.1016/j.chb.2015.03.059
Shao, Z., Zhang, L., Li, X., & Guo, Y. (2018). Antecedents of trust and continuance intention in mobile payment platforms: The moderating effect of gender. Electronic Commerce Research and Applications, 33, 100823. https://doi.org/10.1016/j.elerap.2018.100823
Sreelakshmi, C., & Prathap, S. K. (2020). Continuance adoption of mobile-based payments in Covid-19 context: An integrated framework of health belief model and expectation confirmation model. International Journal of Pervasive Computing and Communications, 16(4), 351–369. https://doi.org/10.1108/IJPCC-06-2020-0069
Susanto, A., Chang, Y., & Ha, Y. (2016). Determinants of continuance intention to use the smartphone banking services: An extension to the expectation-confirmation model. Industrial Management & Data Systems, 116(3), 508–525. https://doi.org/10.1108/IMDS-05-2015-0195
Tam, C., Santos, D., & Oliveira, T. (2018). Exploring the influential factors of continuance intention to use mobile Apps: Extending the expectation confirmation model. Information Systems Frontiers, 22(1), 243–257. https://doi.org/10.1007/s10796-018-9864-5
Tyre, M. J., & Orlikowski, W. J. (1994). Windows of opportunity: Temporal patterns of technological adaptation in organizations. Organization Science, 5(1), 98–118. https://doi.org/10.1287/orsc.5.1.98
Venkatesh, V., & Davis, F. D. (2000). A theoretical extension of the technology acceptance model: Four longitudinal field studies. Management Science, 46(2), 186–204. https://doi.org/10.1287/mnsc.46.2.186.11926
Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003). User acceptance of information technology: Toward a unified view. MIS Quarterly, 27(3), 425–478. https://doi.org/10.2307/30036540
Venkatesh, V., Thong, J. Y., Chan, F. K., Hu, P. J. H., & Brown, S. A. (2011). Extending the two-stage information systems continuance model: Incorporating UTAUT predictors and the role of context. Information Systems Journal, 21(6), 527–555. https://doi.org/10.1111/j.1365-2575.2011.00373.x
Wang, L., Luo, X., Yang, X., & Qiao, Z. (2019). Easy come or easy go? Empirical evidence on switching behaviors in mobile payment applications. Information & Management, 56(7), 103150. https://doi.org/10.1016/j.im.2019.02.005
Wang, M.-M., & Wang, J.-J. (2019). Understanding Solvers’ Continuance Intention in Crowdsourcing Contest Platform: An Extension of Expectation-Confirmation Model. Journal of Theoretical and Applied Electronic Commerce Research, 14(3), 17–33. https://doi.org/10.4067/S0718-18762019000300103
Wang, R. J.-H., Malthouse, E. C., & Krishnamurthi, L. (2013). On the Go: How Mobile Shopping Affects Customer Purchase Behavior. Journal of Retailing, 91(2), 217–234. https://doi.org/10.1016/j.jretai.2015.01.002
Wang, Y., Min, Q., & Han, S. (2016). Understanding the effects of trust and risk on individual behavior toward social media platforms: A meta-analysis of the empirical evidence. Computers in Human Behavior, 56, 34–44. https://doi.org/10.1016/j.chb.2015.11.011
Wei, T. T., Mathandanan, G., Yee-Loong Chong, A., Ooi, K. B., & Arumugam, S. (2009). What drives Malaysian m-commerce adoption? An empirical analysis. Industrial Management & Data Systems, 109(3), 370–388. https://doi.org/10.1108/02635570910939399
Weng, G. S., Zailani, S., Iranmanesh, M., & Hyun, S. S. (2017). Mobile taxi booking application service’s continuance usage intention by users. Transportation Research Part D: Transport and Environment, 57, 207–216. https://doi.org/10.1016/j.trd.2017.07.023
Wu, K., Zhao, Y., Zhu, Q., Tan, X., & Zheng, H. (2021). A meta-analysis of the impact of trust on technology acceptance model: Investigation of moderating influence of subject and context type. International Journal of Information Management, 31(6), 572–581. https://doi.org/10.1016/j.ijinfomgt.2021.03.004
Wu, Y., Choi, B., Guo, X., & Chang, K.-T.-T. (2017). Understanding user adaptation toward a new IT system in organizations: A social network perspective. Journal of the Association for Information Systems, 18(11), 787–813. https://doi.org/10.17707/1jais.00473
Yang, K. (2010). Determinants of US consumer mobile shopping services adoption: Implications for designing mobile shopping services. Journal of Consumer Marketing, 27(3), 262–270. https://doi.org/10.1108/07363761011038338
Zhao, Y., & Baco, F. (2020). What factors determining customer continuously using food delivery apps during 2019 novel coronavirus pandemic period? International Journal of Hospitality Management, 91, 102683. https://doi.org/10.1016/j.ijhm.2020.102683
Zhou, T. (2013). An empirical examination of continuance intention of mobile payment services. Decision Support Systems, 54(2), 1085–1091. https://doi.org/10.1016/j.dss.2012.10.034
Appendix A
Measurement scales and items

| Constructs                  | Measured items                                                                 | Sources |
|-----------------------------|-------------------------------------------------------------------------------|---------|
| Continuance intention      | CI1: I intend to continue using mobile shopping applications for my shopping needs. | (Bhattacherjee, 2001b; Bhattacherjee & Lin, 2015; Gao et al., 2015) |
|                             | CI2: My intention is to continue to use m-commerce rather than any other means of shopping in the future. |         |
|                             | CI3: I intend to continue to use the mobile shopping service.                   |         |
| Trust                       | TR1: I believe that m-shopping providers keep customers’ interests in mind.     | (Gefen et al., 2003; Susanto et al., 2016) |
|                             | TR2: The information provided by the m-shopping apps is reliable.              |         |
|                             | TR3: The other parties involved in m-shopping are completely honest in their dealings with one another. |         |
|                             | TR4: Overall, I believe that m-shopping is trustworthy.                        |         |
| Satisfaction                | SA1: I feel that it was a wise decision to choose to use m-shopping.           | (Bhattacherjee, 2001b; Zhou, 2013) |
|                             | SA2: M-shopping provides me with a satisfactory experience.                    |         |
|                             | SA3: The method of m-shopping meets my expectations.                           |         |
|                             | SA4: Overall, I am satisfied when using m-shopping.                            |         |
| Perceived Usefulness        | PU1: I am able to complete my shopping more quickly because I am using mobile shopping. | (Davis et al., 1989; Liébana-Cabanillas et al., 2017) |
|                             | PU2: Using m-commerce increases the benefits I receive.                       |         |
|                             | PU3: Merely using my mobile phone to shop improves my efficiency in the store. |         |
|                             | PU4: When it comes to my shopping needs, I find that m-shopping is extremely convenient. |         |
| Confirmation                | CON1: M-shopping exceeded my expectations in terms of ease of use and convenience for me. | (Bhattacherjee, 2001b; Susanto et al., 2016) |
|                             | CON2: Service provided by the m-commerce provider exceeded my expectations in terms of both quality and timeliness. |         |

(Continued)
| Constructs                      | Measured items                                                                 | Sources                                                                 |
|--------------------------------|--------------------------------------------------------------------------------|-------------------------------------------------------------------------|
| CON3                           | Overall, the majority of my expectations regarding the use of m-commerce were met. |                                                                        |
| Adaptation to m-shopping       | ADP1: I spent time and energy attempting to use functions of m-shopping apps to do shopping. | (Barki et al., 2007; Y. Wu et al., 2017)                                |
|                                | ADP2: I suggested modifications for m-shopping to fit my shopping style.         |                                                                        |
|                                | ADP3: I have adjusted my shopping style to accommodate m-shopping.                |                                                                        |
|                                | ADP4: Overall, I have adapted to m-shopping so that my shopping process is in harmony with how the m-shopping works. |                                                                        |