Understanding fintech continuance: perspectives from self-efficacy and ECT-IS theories

Wen-Lung Shiau and Ye Yuan

Department of Business Administration, Zhejiang University of Technology, Hangzhou, China

Xiaodie Pu

Nottingham University Business School China, University of Nottingham Ningbo China, Ningbo, China

Soumya Ray

Institute of Service Science, National Tsing Hua University, Hsinchu, Taiwan, and

Charlie C. Chen

Department of Computer Information Systems, Appalachian State University, Boone, North Carolina, USA

Abstract

Purpose – The purpose of this study is to clarify theory and identify factors that could explain the level of fintech continuance intentions with an expectation confirmation model that integrates self-efficacy theory.

Design/methodology/approach – With data collected from 753 fintech users, this study applies partial least square structural equation modeling to compare and select the research model with the most predictive power.

Findings – The results show that financial self-efficacy, technological self-efficacy and confirmation positively affect perceived usefulness. Among these factors, financial self-efficacy and technological self-efficacy have both direct and indirect effects through confirmation on perceived usefulness. Perceived usefulness and confirmation are positively related to satisfaction. Finally, perceived usefulness and satisfaction positively influence fintech continuance intentions.

Originality/value – To the best of our knowledge, this is one of the earliest studies that investigates the effect of domain-specific self-efficacy on fintech continuance intentions, which enriches the existing research on fintech and deepens our understanding of users' fintech continuance intentions. We distinguish between financial self-efficacy and technological self-efficacy and specify the relationship between self-efficacy and continuance intentions. Moreover, this study highlights the importance of assessing a model's predictive power using the PLSpredict technique and provides a reference for model selection.

Keywords Fintech, Self-efficacy, Continuance intention, Mediation, PLSpredict

Paper type Research paper

1. Introduction

The use of fintech, through improving and automating the delivery of financial services in technological innovations (Kuo-Chuen and Teo, 2015), is challenging traditional business models and altering various aspects of the financial system. Fintech can enhance customers' experiences with financial services by increasing transparency, cutting costs, eliminating middlemen and making financial information accessible (Lee and Shin, 2018; Zavolokina *et al.*, 2016). With its great business value, fintech has been gaining traction in the financial industry. The total investment in fintech topped $8.3 billion the second quarter of 2019, which was an increase of 24% compared with the previous quarter (CB Insights, 2019). Fintech

helps to create more diverse financial landscapes where customers can engage with a wide variety of innovative financial services such as payment technology, crowd funding, wealth management, insurance and block chain (Demertzis *et al.*, 2018; Imerman and Fabozzi, 2020). As an important part of fintech trends, the concept of wealth management has seen considerable technological innovation and disruption in recent years, as the process generates investment advice and portfolio allocations for clients based on their investment preferences and characteristics by using sophisticated software with lower fees(Lee and Shin, 2018). The use of fintech in wealth management is growing in popularity not only with digitally native demographics but also with older wealthier clients because online/digital solutions have less limitations than in-person meetings with their financial advisors. Therefore, fintech is critical for wealth management (Imerman and Fabozzi, 2020).

Despite the great potential of fintech in wealth management, its value could not be sustained without continually serving its users. Customers' continued-use intentions have been emphasized to be a more critical factor to the success of information systems (IS) than their initial adoption (Zheng *et al.*, 2013; Zhou, 2013; Zhou *et al.*, 2018). The repeated and continued use of fintech is not only imperative for building customer commitment and loyalty but also essential for securing the return of investments in fintech (Bitner *et al.*, 2002). Losing existing customers indicates the in-vain spending of money on acquiring customers (e.g. marketing and sales). It is reported that customer retention costs five times less than new customer acquisition (Bhattacherjee, 2001a; Nataraj and Rajendran, 2018). Although fintech has been deployed by financial institutions for a wide spectrum of wealth management services, there is no clear understanding in the extant research about the factors driving customers' continuance intentions towards these services (Ryu, 2018). Particularly, the use of fintech for wealth management depends not only on the technological features of these innovations but also on the contextual factors of the financial services and wealth management, which play a significant role in affecting customers' perceptions of these services.

This study aims to fill this research gap by investigating customers' continuance intentions to use fintech for wealth management. The expectation confirmation theory of information system continuance (ECT-IS) is one of the most popular theoretical frameworks used to understand users' continuance intentions. This framework posits that a user's continuance intention to use an IS depends on three post-acceptance variables: the user's *satisfaction*, the user's *confirmation* of expectations, and post-usage *perceived usefulness* (Bhattacherjee, 2001a). Despite the considerable explanatory power of this framework, it might be too generalized to take into account the factors specific to the phenomenon under investigation. Most studies based on ECT-IS theory have either incorporated additional variables to increase the overall explanatory power of the research or integrated ECT-IS theory with other theories to strengthen the theoretical foundation of the research model. Yuan *et al.* (2016), for example, analysed users' continuance intentions in mobile banking by adding the variables of perceived task-technology fit, perceived ease of use and perceived risk to ECT-IS and verified the positive and negative relationships among these variables. Zhou *et al.* (2018) integrated the technology acceptance model(TAM)and expectation confirmation theory (ECT) to identify the antecedents of e-finance continuance intention. These previous studies mainly considered the factors that influence perceived usefulness. However, little attention has been paid to the antecedents of the construct "confirmation", which plays a crucial role in the factors influencing users' satisfaction and continuance intentions. Furthermore, ECT-IS has been criticized for overlooking the role of users' intrinsic motivation in IS usage, which might also be a key user belief that affects users' continuance intentions (Cheng, 2014; Nascimento *et al.*, 2018; Thong *et al.*, 2006). Therefore, this research integrates ECT-IS with self-efficacy theory to take into account the impact of users' intrinsic motivations on their intentions to continuously use fintech for wealth management.

In the context of using fintech for wealth management, users will assess their own ability to manage the new *technological* components, as well as their competence in *financial* management (Asebedo and Payne, 2019). This is in line with self-efficacy theory, which contends that individuals' behaviour and motivation are affected by their self-beliefs in their own capabilities (Bandura, 1986). Self-efficacy has been considered one of the factors that directly or indirectly influences users' continuance intentions in the financial service context (Choi, 2018; Kim *et al.*, 2016; Li *et al.*, 2012). Therefore, this study integrates self-efficacy and ECT-IS theories to understand the process leading to users' continuance intentions to use fintech for wealth management. This study offers important theoretical contributions, as it integrates two theories, distinguishes the domain-specific self-efficacies related to fintech for wealth management, applies PLSpredict to select the best fintech continuance intention model, and confirms the mediating role of confirmation between the effects of self-efficacy and perceived usefulness. Understanding the direct and indirect factors affecting users' fintech continuance intentions can yield valuable implications for companies to use in securing the long-term success of fintech services.

The remainder of the study is structured as follows. Section 2 presents the theoretical background based on the previous literature. Section 3 details the research model and hypotheses. Section 4 describes the research methodology, which is followed by the data analysis and results in Section 5. Section 6 presents a discussion of our results. Finally, Section 7 provides the conclusion with implications, limitations and future research.

2. Theoretical background
2.1 Expectation confirmation theory of IS continuance (ECT-IS continuance)
Expectation confirmation theory has been used extensively in the marketing domain to measure consumers' satisfaction and post–purchase behaviours. Bhattacherjee (2001a) compared users' continuance intentions with consumers' repurchase decisions and extended ECT to build ECT-IS continuance. According to ECT-IS, an individual's continuance intention of IS usage is dependent on three variables: the users' level of satisfaction with IS, the extent of the users' confirmation of expectations and the perceived usefulness. Drawing from the IS literature, ECT-IS continuance has been adapted and extended to explain users' IS continuance intention in different contexts (Chiu *et al.*, 2005; McKinney *et al.*, 2002; Oghuma *et al.*, 2016; Shiau and Luo, 2013). We analyse previous research on the ECT-IS (see Table 1) and show that constructs and findings depend on the context and objective of each study.

2.2 Self-efficacy
According to Bandura (1986), human behaviour and motivation are affected by individuals' self-beliefs about their capabilities. Self-efficacy is defined as a person's judgement of his/her own ability to execute the course of action required to attain his/her desired performance (Bandura, 1991). Compeau and Higgins (1995) argued that self-efficacy does not measure the things that people have done in the past but rather makes judgements about what they could do in the future. Moreover, it involves the individual's perception of how he or she will be able to complete a task but not his or her existing skillset (Chen *et al.*, 2011). Social cognitive theory states that an accurate evaluation of personal efficacy has considerable functional value (Bandura, 1977), and it also determines how much effort people will make and how long they will persist in the face of obstacles (Bandura, 1982). Furthermore, in previous studies, self-efficacy has been considered one of the factors that directly or indirectly influences users' continuance intentions in the financial service context (Choi, 2018; Kim *et al.*, 2016; Li *et al.*, 2012). Self-efficacy is flexible and can be applied to different contexts (Schneider and Chein, 2003), such as electronic-based services and web-based IS use (Hasan, 2006; Hsu and Chiu, 2004; Yi and Hwang, 2003). Although some studies have directly used self-efficacy, it is not a measurable concept at a general level since abilities are domain specific. Therefore, Cassar

Author	Research area	Constructs	Findings
Shiau and Luo (2013)	Social network	Confirmation, habit, user involvement, perceived enjoyment, satisfaction, intention to use	The continuance intention of blog use was predicted collectively by user involvement, satisfaction, and perceived enjoyment
Chiu *et al.* (2005)	E-learning	Perceived usability, usability disconfirmation, perceived quality, quality disconfirmation, perceived value, value disconfirmation, satisfaction, E-learning continuance intention	Users' continuance intention is determined by satisfaction, which in turn is jointly determined by perceived usability, perceived quality, perceived value, and usability disconfirmation
Oghuma *et al.* (2016)	Mobile instant messaging	Service quality, confirmation, usefulness, enjoyment, user interface, security, satisfaction, continuance intention	Perceived service quality and perceived usability significantly affect user satisfaction and continuance intention. Perceived service quality also influences confirmation, which in turn affects perceived usability
Nascimento *et al.* (2018)	Wearable technology	Habit, perceived usefulness, confirmation, perceived usability, satisfaction, perceived enjoyment, continuance intention	Confirmation, perceived usefulness, and satisfaction enhance the continuance intention, and habit is the most important feature to explain the continuance intention of smartwatches
Ayanso *et al.* (2015)	E-health	Perceived usefulness, confirmation, perceived risk, satisfaction, EMR systems continuous intention	Perceived usefulness and perceived risk impact satisfaction, which in turn influences physicians' continuous intentions. Perceived risk also has a direct influence on physicians' continuous intentions
Yuan *et al.* (2016)	Mobile banking	Perceived task-technology fit, perceived ease of use, confirmation, perceived usefulness, perceived risk, satisfaction, continuance intention	Satisfaction, perceived usefulness, perceived task-technology fit, and perceived risk are the main predictors of continuance intention, satisfaction, in turn, is determined by confirmation, perceived usefulness and perceived risk Perceived usefulness is affected by confirmation, perceived ease of use and perceived task-technology fit
Zhou *et al.* (2018)	E-finance	Reputation, website quality, familiarity, situational normality, perceived ease of use, perceived usefulness, confirmation, satisfaction, continuance intention, trust	Website quality, familiarity and situational normality can influence perceived ease of use and perceived usefulness. PEOU and PU, together with reputation, are positively associated with confirmation which further leads to satisfaction

Table 1.
ECT-IS related research

and Friedman (2009) recommended the use of domain-specific self-efficacy rather than general self-efficacy because domain-specific self-efficacy has been shown to have greater predictive power when describing a specific phenomenon (Betz and Hackett, 1983; Cassar and Friedman, 2009; Gist, 1987). Domain-specific self-efficacy has been developed in a wide variety of research contexts (Chen, 2017; Shim *et al.*, 2019; Yeşilyurt *et al.*, 2016). The studies related to domain-specific self-efficacy are summarized in Table 2. Considering the

Author	Kind of self-efficacy	Definition	Research area	Findings (significant)
Holden and Rada (2011)	Technological self-efficacy (TSE)	Users' confidence toward successfully and purposefully using the technology itself	Educational technology acceptance	TSE→redefined perceived ease of use + usability
Compeau and Higgins (1995)	Computer self-efficacy (CSE)	A judgment of one's capability to use a computer	End-user computing behavior	CSE→outcome expectations-performance CSE→affect CSE→anxiety CSE→usage
Ma and Liu (2005)	Internet self-efficacy (ISE)	The estimate of one's capability to perform internet tasks	Acceptance of web-based electronic medical records	ISE→perceived ease of use ISE→perceived usefulness ISE→behavioral intention
Hong et al. (2014)	Smartphone self-efficacy (SSE)	The ability to operate specific functions on a smartphone, such as downloading and implementing software onto the smartphone as well as the ability to overcome any technological barriers	English vocabulary learning	SSE→English learning anxiety (negative) SSE→judgment of over-confidence (negative)
Forbes and Kara (2010)	Investing self-efficacy	Participants' level of agreement with a single statement about their capability of achieving their long-term financial goals	Investment competency	Confidence→Investment self-efficacy Investment knowledge self-efficacy
Serido et al. (2013)	Financial self-efficacy (FSE)	Sense of one's ability to perform responsible financial behaviors	Financial capability	FSE→financial behavior FSE→financial well-being

Table 2.
Domain-specific self-efficacy

characteristics of fintech services for wealth management, people must measure both their financial management capability and their ability to use technology. Before making a decision on wealth management, people always forecast the processes and the results based on their own ability. When a customer considers if he or she could choose the appropriate wealth management portfolio and achieve his financial goal, he or she is measuring his or her financial self-efficacy; in addition, a customer is demonstrating his or her level of technological self-efficacy when he or she considers his or her ability to complete a task on a smartphone. Therefore, self-efficacy in the fintech context involves two domain-specific self-efficacies: financial self-efficacy and technological self-efficacy.

3. Research model and hypotheses

Fintech refers to the innovative financial services or products delivered via new technology (Kuo-Chuen and Teo, 2015). Several researchers have described fintech as an emerging innovative and disruptive financial services sector that uses information technology (IT) to enhance the efficiency of the financial system (Kim *et al.*, 2016; Lee and Kim, 2015; Ryu, 2018; Shim and Shin, 2016). Due to the special characteristics of fintech for wealth management, in addition to the use of IT, we must consider the internal motivations of users. To better understand fintech continuance intentions for wealth management, we integrate the ECT-IS and self-efficacy theories to understand the effects of self-efficacy on continuance intention. Self-efficacy may serve as an important factor affecting users' cognition, emotion and intention towards fintech use. In this study, fintech involves two aspects of self-efficacy, namely, financial self-efficacy and technological self-efficacy.

3.1 Financial self-efficacy and technological self-efficacy
Individuals with high financial self-efficacy judge themselves to be capable of controlling and managing their financial situation (Asebedo and Payne, 2019). Specifically, people with higher financial self-efficacy are more likely to engage in a particular financial task or behaviour (e.g. engage in positive financial behaviours) and are more emotionally resilient under adversity (e.g. feel less financial stress). Gecas (1989) found that people with high self-efficacy are more likely to initiate actions and be optimistic about outcomes. This attitude is likely to result in accomplishment and more favourable personal financial outcomes (Farrell *et al.*, 2016). In the context of fintech and considering wealth management, individuals with high financial self-efficacy perceive opportunities rather than threats, including potentially valuable options. They are more resilient when facing financial difficulties and are better able to handle pressure from negative events. Hence, fintech is more useful for people with high financial self-efficacy who are confident in their ability to manage their finances because they can perceive a greater positive value. Therefore, we hypothesize the following:

H1. Financial self-efficacy positively affects users' perceived usefulness of fintech.

Self-efficacy has been found to impact personal outcome expectations and performance (Huang *et al.*, 2008). Specifically, self-efficacy is strongly related to goals. Individuals with high self-efficacy set higher goals for themselves and, more importantly, are more committed to achieving those goals compared to individuals with low self-efficacy (Wood *et al.*, 1990; Wood and Bandura, 1989a, b). Individuals with high financial self-efficacy tend to persevere when faced with difficulties, to invest greater effort into achieving goals and to achieve greater levels of performance (Bandura, 1986). When users' perceived performance achieves or exceeds their expectations, their expectations are confirmed. The higher the users' financial self-efficacy is, the more likely it is that their perceived performance will exceed their

initial expectations, thereby leading to a positive relationship between financial self-efficacy and confirmation. Thus, we propose the following hypothesis:

H2. Financial self-efficacy positively affects users' confirmation of fintech use.

Many studies have confirmed a positive effect of technological self-efficacy on innovative product usage (Burkhardt and Brass, 1990; Dwivedi *et al.*, 2009; Hernández *et al.*, 2011). Teo (2009) showed that computer self-efficacy has a greater impact on perceived usefulness than on perceived ease of use. Moreover, self-efficacy in using mobile banking was found to be a key predictor of perceived usefulness (Alalwan *et al.*, 2016). Furthermore, Chen *et al.* (2011) confirmed that smartphone self-efficacy plays a positive role in perceived usefulness. Unconstrained by space, the popularization of smartphones has boosted the use of fintech. Hence, technological self-efficacy mainly involves users' perceptions of smartphones. Users can accomplish wealth management through smartphone apps on a P2P platform or with mobile banking. Therefore, users with high technological self-efficacy can perceive more usefulness in fintech use. Accordingly, we propose the following hypothesis:

H3. Technological (smartphone) self-efficacy positively affects users' perceived usefulness of fintech.

Researchers have found that a high level of self-efficacy can stimulate a person to invest a greater effort in achieving the expected results, that is, to realize confirmation. Likewise, the study of Chen *et al.* (2010) on Internet shopping showed that Internet self-efficacy can determine the effect on confirmation. Fagan *et al.* (2004) stated that technological self-efficacy reduced individuals' anxiety about using technological innovations. People with higher technological self-efficacy are more likely to adapt to technological innovations than those with lower technological self-efficacy (Compeau and Higgins, 1995). With regard to using smartphones for wealth management, users with high technological self-efficacy believe that they can download and operate applications for wealth management (Hong *et al.*, 2014). These beliefs may help generate positive behaviour and thus achieve the expected performance. Therefore, for those users who consider themselves to have a stronger capability in performing a specific smartphone task, perceived performance will exceed expectations in actual applications. Hence, we postulate the following hypothesis:

H4. Technological (smartphone) self-efficacy positively affects users' confirmation of fintech use.

3.2 Confirmation, perceived usefulness and satisfaction
As a significant predictor of perceived usefulness in ECT-IS, confirmation leads to an increased perception of usefulness (Chiu *et al.*, 2005; Nascimento *et al.*, 2018; Thong *et al.*, 2006). Because of the uncertainty of IS use expectations, users' initial perceived usefulness may not be stable, and the perceived usefulness of IS use could be adjusted by confirmation experience (Bhattacherjee, 2001b). Hence, users' confirmation of expectations has a positive effect on perceived value, which in turn enhances customers' satisfaction and continuance intention (Bhattacherjee, 2001a; Fu *et al.*, 2018). When applying ECT-IS continuance to smartphone banking services, Yuan *et al.* (2016) confirmed the significant effects of confirmation on perceived usefulness in the mobile banking context. Furthermore, the results of Susanto *et al.* (2016) revealed that users' postadoption confirmation of smartphone banking services has a significant impact on the perceived usefulness of these services. Similarly, the confirmation of fintech use has a positive effect on its perceived usefulness. Thus, we propose the following hypothesis:

H5. Confirmation positively affects users' perceived usefulness of fintech use.

Users' perceived usefulness and confirmation of postadoption expectations are the two determinants of users' satisfaction (Bhattacherjee, 2001a). Bhattacherjee (2001a) aimed to examine how cognitive beliefs and affects influence an individual's intention of online banking continuance usage and suggested that users' postadoption perceived usefulness is one of the key factors affecting their satisfaction. Furthermore, the direct effect of perceived usefulness on satisfaction has been confirmed in many studies drawing on the ECT model (Susanto *et al.*, 2016; Yuan *et al.*, 2016). In the context of mobile banking, Yuan *et al.* (2016) confirmed that perceived usefulness is validated as the determinant of satisfaction. Furthermore, Susanto *et al.* (2016) provided extensive discussions about the significant impact of perceived usefulness on users' satisfaction with smartphone banking services. Therefore, we propose the following hypothesis:

H6. Perceived usefulness positively affects users' satisfaction with fintech use.

Confirmation is the extent to which the actual use experience confirms one's initial expectation (Oghuma *et al.*, 2016). Previous research found that confirmation is positively related to satisfaction (Bhattacherjee, 2001a; Limayem *et al.*, 2007; Venkatesh and Goyal, 2010). When the initial expectation is confirmed or even exceeded, this confirmation will lead to user satisfaction (Thong *et al.*, 2006; Venkatesh and Goyal, 2010). In the context of fintech, confirmation is users' perception of the congruence between the expectation of fintech use and its actual performance. Hence, if users' original expectations for wealth management are confirmed, they will be satisfied with fintech use. Users will update their initial expectations simultaneously with their continued usage of fintech. If fintech outperforms their initial expectations, then their postadoption expectations are confirmed. The level of satisfaction is affected by the level of confirmation (Yuan *et al.*, 2016). We propose the following hypothesis:

H7. Confirmation positively affects satisfaction with fintech use.

3.3 Fintech continuance intention

Representing users' perceptions of the expected benefits of using IS (Davis, 1989), perceived usefulness is an important predictor of behavioural intention in many contexts, including the Internet of Things services, information systems and mobile commerce (Al-Momani *et al.*, 2018; Yuan *et al.*, 2016). Not only did Bhattacherjee's (2001a) study establish a positive effect of users' perceived usefulness on their satisfaction, but subsequent studies have also reinforced that relationship (Limayem *et al.*, 2007; Nascimento *et al.*, 2018; Venkatesh *et al.*, 2011). Therefore, the more usefulness that users derive from fintech, the more likely they are to continue using fintech for their investments. Thus, the following hypothesis is formulated:

H8. Perceived usefulness positively affects fintech continuance intention.

As an important predictor of intention, affection (as an attitude) has been widely studied in many fields. In the context of IS, it is expected that satisfaction will reinforce users' intentions to continue using the system (Limayem *et al.*, 2007). Based on ECT-IS, users' satisfaction with IS use positively affects their continuance intention towards the same IS (Bhattacherjee, 2001a; Brown *et al.*, 2014). Many studies have confirmed this relationship (Ayanso *et al.*, 2015; Chiang, 2013; Nascimento *et al.*, 2018; Zhou, 2013). A study on mobile payment showed that satisfaction is positively related to continuance intention (Ayanso *et al.*, 2015). Moreover, in the study of Zhou *et al.* (2018), the positive effect of satisfaction on users' e-finance continuance intention was confirmed. Thus, the following hypothesis is proposed:

H9. Satisfaction positively affects fintech continuance intention.

3.4 Mediating effect of confirmation

Financial self-efficacy may play an important role in supporting users' perceived usefulness through their confirmation of fintech use. Financial self-efficacy has a significant relationship with positive financial behaviour (Farrell *et al.*, 2016; Shim *et al.*, 2012; Yazid *et al.*, 2017). Joo and Grable (2004) noted that positive financial behaviours have the strongest overall effect on financial satisfaction through the confirmation of expected results. Furthermore, financial self-efficacy increases one's level of confidence in one's ability to execute certain financial behaviours (Stajkovic and Luthans, 1998). Users will be more confident if they consider themselves to have greater competency in performing a financial task. Individuals with high financial self-efficacy judge themselves capable of controlling and managing their financial situation (Asebedo and Payne, 2019), and their perceived performance will exceed expectations in actual applications. The better the users perceive their performance to be, the stronger the confirmation of their expectations. At the same time, the positive effect of confirmation on perceived usefulness has been confirmed in a study of smartphone app continuance intention. For example, in research on the continued usage of on-demand ride services/ride-hailing applications by riders, confirmation has been shown to have a positive influence on perceived usefulness (Malik and Rao, 2019). In summary, financial self-efficacy affects confirmation, which in turn affects the perceived usefulness of fintech. Thus, we propose the following hypothesis:

H10. Confirmation mediates the effect of financial self-efficacy on the perceived usefulness of fintech under the full model.

Technological self-efficacy in smartphone usage focuses on what an individual believes he or she can accomplish with a smartphone, for example, the belief that one can download apps, use apps, and use the different functions provided by smartphones (Hong *et al.*, 2014; Teo and Pok, 2003; Verkasalo *et al.*, 2010). Furthermore, according to the social cognitive theory of self-regulation, people with greater self-efficacy are more likely to engage in a particular task or behaviour. Generally, users select the tasks that they are interested in to contribute to Zhang and Su (2019). These beliefs may reduce anxiety, which can help generate positive behaviour and thus achieve the expected performance. In other words, users' expectations are confirmed. Confirmation is positively related to users' perceptions of usefulness. To take a study of accommodation apps as an example, the confirmation of service expectations has a significant positive impact on perceived usefulness (Kim *et al.*, 2019). In summary, technological self-efficacy has positive effects on confirmation, which consequently affects the perceived usefulness of fintech. Therefore, we propose the following hypothesis:
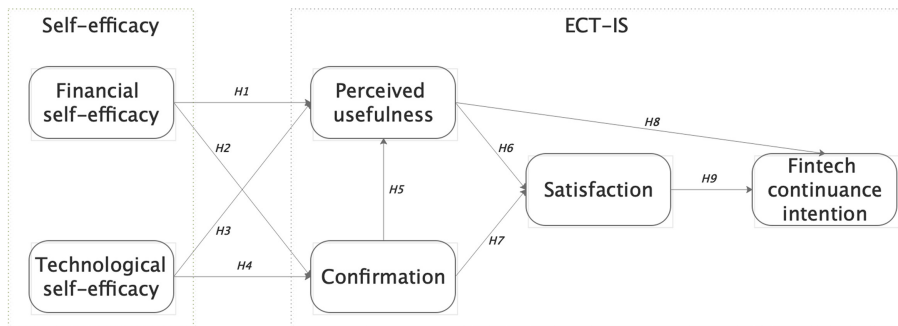
H11. Confirmation mediates the effect of technological self-efficacy on the perceived usefulness of fintech under the full model.

Based on the fintech context and the abovementioned theories, the hypotheses specified above define the research model. Accordingly, the conceptual model that we intend to examine is shown in Figure 1. We add two types of self-efficacy that are related to the fintech context to ECT-IS theory as the antecedents of confirmation and perceived usefulness, which in turn directly and indirectly affect users' fintech continuance intentions.

4. Research methodology

4.1 Instrument and measurement items

This study integrates self-efficacy and ECT-IS theories to explain and predict IS continuance behaviour. All the operational definitions of the constructs and the scale items were adapted from prior studies. According to the criteria proposed by Jarvis *et al.* (2003), all the constructs

Figure 1.
Research model

Note(s): *H10*. Confirmation mediates the effect of financial self–efficacy on perceived usefulness under the full model

H11. Confirmation mediates the effect of technological self–efficacy on perceived usefulness under the full model

should be modelled as reflective constructs. A seven-point Likert scale ranging from "strongly disagree" (1) to "strongly agree" (7) was used to measure all items. The Appendix presents the operational definitions and scale items of these constructs.

4.2 Sample and data collection
The subjects were fintech users who had experience with wealth management. The content validity of the questionnaire was confirmed by a pilot test to assess logical consistency, ease of understanding, the sequence of items, and task relevance. The pilot test involved ten respondents who had experience using fintech for wealth management. The respondents were asked to provide any comments on the questionnaire content and structure. Based on the feedback of the respondents, the length of the questionnaire was deemed acceptable, but several suggestions were made concerning the wording of several items. A few ambiguous questions were identified, and we ultimately rephrased these questions to ensure content validity.

IBM SPSS Statistics 25.0 was used to analyse the samples and provide descriptive results. Furthermore, partial least squares structural equation modeling (PLS-SEM) was used to analyse our research model. Compared with covariance-based structural equation modeling (CB-SEM), which has minimal demands in terms of measurement scale, sample size and residual distributions (Chin *et al.*, 2003), PLS-SEM relaxes normal distributional assumptions (Hair *et al.*, 2019; Khan *et al.*, 2019; Shiau *et al.*, 2019; Shiau and Chau, 2016). Our model is complex and includes many constructs, indicators and model relationships, which means that it is more appropriate to use the PLS-SEM method (Gefen *et al.*, 2011). Moreover, this study adopts a prediction perspective for the analysis, and PLS-SEM maximizes the variance of endogenous variables explained by exogenous variables (Hair *et al.*, 2016). The predictive focus is appropriate for meeting the objectives of the study. The above reasons support our decision that PLS is an appropriate method for this study. According to the recommendation of Anderson and Gerbing (1988), a two-stage process was employed for the data analysis: the measurement model and structural model assessment. The measurement model assessment examines reliability and validity, while the structural model assessment allows hypothesis testing by examining the relationships among constructs.

Empirical data were obtained using an online survey; this method has several advantages over traditional paper-based surveys, such as rapid response time, cost efficiency, and an absence of geographical boundaries (Bhattacherjee, 2001a, 2001b; Tan and Teo, 2000).

Before the main survey, a pretest was conducted on the website Wenjuanxing, which is the earliest established and largest platform for online surveys in China, to ensure the reliability and validity of the instruments. Respondents who had experience in wealth management were invited to read the explanation of the research goals and the privacy guarantee and then respond to the entire questionnaire. We collected 200 respondents for the pretest, among which 73 were men (36.5%) and 127 were women (63.5%). The factor loadings of all items in the pretest exceeded 0.5 (Wixom and Watson, 2007), the composite reliabilities were between 0.881 and 0.928, and the Cronbach's alpha values ranged from 0.832 to 0.897. The metric used to evaluate a construct's convergent validity is the average variance extracted (AVE), and this value ranged from 0.598 to 0.764 for the constructs, which means that they all exceeded 0.5. The results of the pretest ensured the reliability and validity of this instrument.

5. Data analysis and results

5.1 Descriptive statistics
The main survey was distributed online in 2019, and we received 978 responses on Wenjuanxing within three months. After eliminating the responses with incomplete or invalid data, a total of 753 valid responses were retained for data analysis. Of the 753 participants, 400 were men (53.1%), and 353 were women (46.9%). The majority of respondents were aged between 20 and 39 (83.7%), and most had more than one year of wealth management experience via fintech (80.5%). Table 3 shows the respondents' demographics.

5.2 Nonresponse bias
Nonresponse bias refers to a situation in which people who do not respond to a questionnaire may bias the research results. Our nonresponse approach follows the procedure suggested by Armstrong and Overton (1977), who suggested that late respondents are more likely to resemble non-respondents than to resemble early respondents. This study addressed this issue by comparing the gender and age variables of the early respondents to those of the later respondents. A total of 446 respondents who completed the survey during the early stage were considered the earlier respondents, leaving 307 respondents who completed the survey during the later stage to be considered the later respondents. A chi-square test of the early and late respondents shows that they did not differ significantly ($p > 0.05$) in either gender or age. We, therefore, excluded the possibility of nonresponse bias.

5.3 Common method bias
When all data are collected from the same source, they may have common method bias, which may threaten the validity of the research. Since our questionnaires were collected online, the samples were not limited to a certain region or a certain group. Nevertheless, we still used Harman's one-factor test to identify any potential common method bias (Podsakoff and Organ, 1986). The threat of common method bias is high if a single factor accounts for more than 50% of the variance (Mattila and Enz, 2002). A principal component factor analysis was performed. The combined five factors accounted for 55.46% of the total variance; the first (largest) factor accounted for 28.95% (the variances explained ranged from 4.29% to 28.95%), and no general factor accounted for more than 50% of the variance. Moreover, we also used the marker variable method to test for common method bias (Chin et al., 2012). The results of the data analysis showed that the marker variables had no significant influence on perceived usefulness, confirmation, satisfaction, or fintech continuance intention. Therefore, common method bias was not a critical issue in this study.

Measure	Items	Frequency	Percentage (%)
Gender	Male	400	53.1
	Female	353	46.9
Age	<20 years old	21	2.8
	20–29 years old	283	37.6
	30–39 years old	347	46.1
	40–49 years old	73	9.7
	>50 years old	29	3.8
Education	High school (below)	18	2.4
	College	655	87
	Master(above)	80	10.6
Time of using fintech	6 months (below)	30	4
	6 months – 1 year	117	15.5
	1–2 years	159	21.1
	2–3 years	198	26.3
	3–5 years	140	18.6
	5 years over	109	14.5
Frequency of using fintech	Daily	139	18.1
	2–3 times/week	277	36.8
	Weekly	143	19
	Monthly	126	16.7
	Every 3 months	43	5.7
	Every 6 months or less	28	3.7

Table 3.
Descriptive statistics of
respondents'
characteristics
(N = 753)

5.4 Measurement model

To validate the measurement model, reliability, convergent validity, and discriminant validity were assessed. We use Jöreskog's (1971) composite reliability and Cronbach's alpha to assess the internal consistency reliability. In this research, the composite reliabilities were between 0.826 and 0.867, and all the Cronbach's alpha values fell between 0.719 and 0.802. Convergent validity was assessed using the AVE for each construct. The results in Table 4 show that the factor loadings of all the items exceeded 0.5 (Wixom and Watson, 2007) and were significant. The AVE value of each construct exceeded 0.5, which indicated that the construct explained at least 50% of the variance of its items (Chin *et al.*, 2003).

To evaluate the discriminant validity, both the Fornell–Larcker and the heterotrait–monotrait (HTMT) ratio of correlation were examined. As shown in Table 5, a construct's correlations with other constructs were all smaller than the square root of the construct's AVE (Fornell and Larcker, 1981; Hair *et al.*, 2011, 2016). Therefore, the results confirmed the model's discriminant validity.

Henseler *et al.* (2014) proposed the heterotrait–monotrait (HTMT) ratio of the correlations (Voorhees *et al.*, 2016). The threshold value for this ratio should be defined based on the study context (Franke and Sarstedt, 2019). Henseler *et al.* (2014) suggested 0.90 as a threshold value for structural models with constructs. In this research, the values ranged from 0.152 to 0.837, which indicated that discriminate validity was established for all constructs of the model, as shown in Table 6.

Construct	Item	Item mean	Standard deviation	Standardized item loading	T-statistic	Cronbach's alpha	Composite reliability	AVE
Financial self-efficacy	FS1	5.83	1.028	0.660	20.428	0.776	0.848	0.528
	FS2	5.46	1.014	0.805	49.851			
	FS3	5.44	1.062	0.775	38.665			
	FS4	5.56	1.041	0.664	24.359			
	FS5	5.52	1.088	0.719	27.655			
Confirmation	CON1	5.21	0.990	0.785	44.625	0.795	0.867	0.619
	CON2	5.22	1.036	0.774	42.143			
	CON3	5.25	1.033	0.821	57.104			
	CON4	5.42	1.038	0.766	43.842			
Fintech continuance intention	FCI1	5.73	0.913	0.729	27.180	0.802	0.864	0.561
	FCI2	5.46	0.901	0.645	20.529			
	FCI3	5.92	0.889	0.829	60.149			
	FCI4	5.98	0.901	0.792	42.431			
	FCI5	5.99	0.907	0.737	27.285			
Satisfaction	SAT1	5.31	1.041	0.823	62.504	0.772	0.856	0.599
	SAT2	5.22	1.039	0.801	49.875			
	SAT3	5.14	1.080	0.813	53.086			
	SAT4	5.88	1.004	0.646	20.082			
Technological self-efficacy	TSE1	6.35	0.915	0.822	33.720	0.787	0.859	0.604
	TSE2	6.49	0.832	0.816	29.376			
	TSE3	6.36	0.783	0.729	19.599			
	TSE4	6.05	0.909	0.735	18.607			
Perceived usefulness	PU1	5.59	1.016	0.739	32.810	0.719	0.826	0.543
	PU2	5.77	0.967	0.763	37.286			
	PU3	5.71	0.948	0.745	34.348			
	PU4	6.00	0.885	0.698	27.174			

Table 4.
Scale properties of the measurement model

5.5 PLSpredict for model assessment

To understand users' fintech continuance intentions, this study integrated self-efficacy theory and ECT-IS theory and initially proposed four models. In terms of explanatory power, there was no significant difference between these four models. Thus, this study further applied PLSpredict to determine which research model provided a better prognosis (Shmueli *et al.*, 2016). A set of four potential models that differed from each other in their specific paths formed the competing models (Figure 2).

Most researchers interpret the coefficient of determination (R^2), which assesses the in-sample model fit of the dependent constructs' composite scores, by using the model estimates to predict the case values of the total sample. As seen in Figure 2, Models 1, 2, 3 and 4 explain 34.7, 34.7, 34.6 and 34.5% of the variance explanation of fintech continuance intention, respectively. There are no significant differences between the four models. Furthermore, the R^2 value only assesses a model's explanatory power and provides no indication of its out-of-sample predictive power in the sense of its ability to predict the values of new cases not included in the estimation process (Shmueli *et al.*, 2019). Shmueli *et al.* (2016) suggested that

	1	2	3	4	5	6
1. Perceived usefulness	0.737					
2. Confirmation	0.516	0.787				
3. Fintech continuance intention	0.520	0.449	0.749			
4. Financial self-efficacy	0.416	0.392	0.358	0.727		
5. Satisfaction	0.490	0.659	0.493	0.409	0.774	
6. Technological self-efficacy	0.269	0.142	0.246	0.157	0.118	0.777

Table 5.
Discriminant validity:
Fornell-Larcker
criterion

	1	2	3	4	5
1. Perceived usefulness					
2. Confirmation	0.678				
3. Fintech continuance intention	0.680	0.560			
4. Financial self-efficacy	0.554	0.487	0.459		
5. Satisfaction	0.657	0.837	0.629	0.518	
6. Technological self-efficacy	0.341	0.168	0.292	0.203	0.152

Table 6.
Discriminant validity:
Heterotrsait–
monotrait (HTMT)
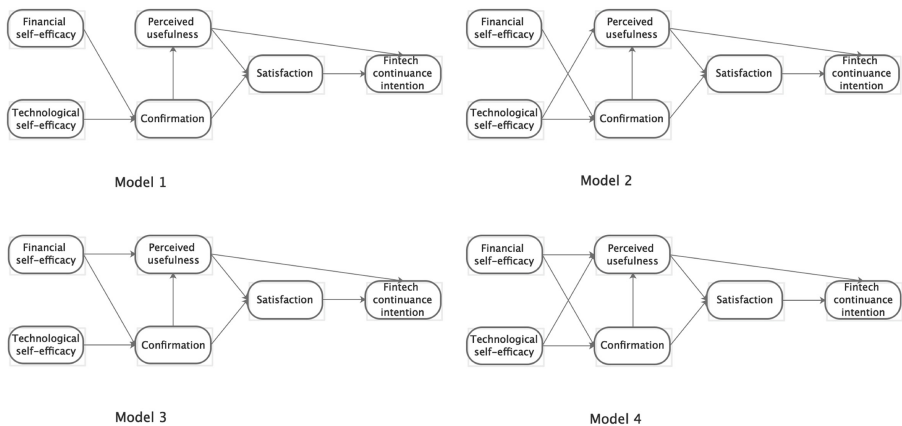
Figure 2.
The four competing
models

the model's out-of-sample predictive power should be considered. The PLSpredict procedure generates holdout sample-based predictions and executes k-fold cross-validation.

The current study applied PLSpredict repeatedly across ten folds to calculate the predictive error metrics. To illustrate the interpretation, we focused our analysis on the model's key target construct, fintech continuance intention, but we also reported the prediction statistics for all the other endogenous constructs' indicators. As shown in Table 7, first, all the endogenous constructs' indicators outperform the most naïve benchmark, as all the indicators yield Q^2 values above 0. Regarding the prediction errors, the results indicate that Model 4 produces predictions of continuance intention better than the other three models. Specifically, the majority of the indicators of Model 4 yield lower prediction errors in terms of root mean square error (RMSE), mean absolute error (MAE) and mean absolute percentage error (MAPE). The majority of the Q^2 values for the indicators of Model 4 are larger than zero and outperform those generated for the other three models. Therefore, Model 4 has the most prediction power in the horizontal comparison of the four models.

Looking at the predictive metrics of the mediators, we further note that four models do not differ in their predictive power of confirmation and satisfaction. Instead, the major difference lies in how well the models predict perceived usefulness before continuance intention. Thus, the results suggest that the predictive power of Model 4 lies largely in being able to predict how useful fintech will be to given consumers.

Additionally, comparing the errors from the PLS model analysis with the naïve LM (linear regression model) benchmark, as shown in Table 8, we find that the PLS analysis produces lower prediction errors because the majority of the Q^2 values of the indicators of the PLS model outperform those generated for the linear model (Q^2 values > 0) in Model 4. The majority of the values of RMSE, MAE and MAPE are smaller than those of the LM in Model 4. Thus, Model 4 is efficient in explaining users' continuance intention towards wealth management via fintech.

5.6 Structural model

Before assessing structural relationships, collinearity was examined to ensure that it did not bias the regression results. Variance inflation factor (VIF) values close to three and lower are recommended. The inner VIF values in this study were all lower than 3, so collinearity was not a critical issue in this study.

To test the hypotheses, we examined the structural model using a bootstrapping technique specifying 5,000 subsamples. In structural model analysis, it is important to determine the significance and association of each hypothesized path and the variance explained. The results are shown in Figure 3.

The model explains 34.5% of the variance for fintech continuance intention, 46.5% of the variance for satisfaction, 35.0% of the variance for perceived usefulness and 16.0% of the variance for confirmation. Financial self-efficacy has significantly positive effects on perceived usefulness ($\beta = 0.232$, $p < 0.001$) and confirmation ($\beta = 0.379$, $p < 0.001$). Technological self-efficacy has significantly positive effects on perceived usefulness ($\beta = 0.176$, $p < 0\,0.001$) and confirmation ($\beta = 0.083$, $p < 0.05$). Confirmation has significantly positive effects on perceived usefulness ($\beta = 0.400$, $p < 0.001$). Perceived usefulness has significantly positive effects on satisfaction ($\beta = 0.204$, $p < 0.001$), and confirmation has significantly positive effects on satisfaction ($\beta = 0.554$, $p < 0.001$). Perceived usefulness has significantly positive effects on fintech continuance intention ($\beta = 0.366$, $p < 0.001$), and satisfaction has significantly positive effects on fintech continuance intention ($\beta = 0.313$, $p < 0.001$). Therefore, all the hypotheses are supported.

	RMSE				MAE				MAPE				Q²_predict			
	M4	M3	M2	M1	M4	M3	M2	M1	M4	M3	M2	M1	M4	M3	M2	M1
CON1	0.940	0.941	0.940	0.940	0.747	0.748	0.748	0.748	15.445	15.448	15.449	15.449	0.099	0.098	0.099	0.099
CON2	0.993	0.993	0.993	0.993	0.801	0.801	0.801	0.801	17.228	17.225	17.215	17.218	0.082	0.082	0.083	0.083
CON3	0.992	0.993	0.992	0.993	0.787	0.787	0.787	0.787	17.616	17.622	17.605	17.618	0.078	0.077	0.078	0.077
CON4	0.977	0.978	0.977	0.977	0.782	0.782	0.782	0.781	16.606	16.604	16.592	16.585	0.114	0.114	0.116	0.115
FCI1	0.874	0.879	0.881	0.887	0.680	0.685	0.693	0.701	13.837	13.949	14.092	14.259	0.084	0.074	0.069	0.056
FCI2	0.874	0.876	0.880	0.882	0.727	0.731	0.737	0.742	14.466	14.536	14.649	14.746	0.061	0.057	0.049	0.043
FCI3	0.847	0.853	0.853	0.861	0.658	0.661	0.656	0.659	12.129	12.202	12.128	12.195	0.094	0.082	0.081	0.064
FCI4	0.858	0.864	0.866	0.873	0.640	0.643	0.638	0.638	12.742	12.807	12.733	12.758	0.093	0.081	0.078	0.063
FCI5	0.878	0.882	0.881	0.887	0.665	0.667	0.660	0.659	12.456	12.500	12.392	12.388	0.065	0.055	0.058	0.046
SAT1	0.983	0.982	0.988	0.987	0.796	0.794	0.801	0.799	16.993	16.940	17.103	17.051	0.109	0.113	0.101	0.105
SAT2	0.989	0.987	0.992	0.991	0.797	0.795	0.800	0.797	16.884	16.825	16.954	16.890	0.097	0.100	0.091	0.093
SAT3	1.031	1.030	1.034	1.033	0.825	0.823	0.826	0.824	18.343	18.309	18.391	18.345	0.089	0.092	0.084	0.086
SAT4	0.968	0.970	0.968	0.972	0.721	0.722	0.719	0.722	14.869	14.903	14.849	14.906	0.072	0.067	0.071	0.065
PU1	0.950	0.954	0.967	0.972	0.772	0.776	0.797	0.812	15.288	15.424	15.815	16.148	0.128	0.120	0.096	0.087
PU2	0.910	0.920	0.918	0.929	0.731	0.743	0.740	0.754	13.936	14.183	14.189	14.462	0.116	0.096	0.100	0.079
PU3	0.886	0.893	0.900	0.907	0.692	0.699	0.714	0.728	13.765	13.925	14.226	14.517	0.127	0.114	0.100	0.086
PU4	0.850	0.858	0.852	0.860	0.666	0.668	0.661	0.653	12.289	12.340	12.230	12.135	0.079	0.063	0.075	0.058

Note(s): CON: confirmation; PU: perceived usefulness; SAT: satisfaction; FCI: Fintech continuance intention; PU: perceived usefulness; SAT: satisfaction; FCI: Fintech continuance intention; RMSE: root mean square error; MAE: mean absolute error; MAPE: mean absolute percentage error. The smaller the values of RMSE, MAE and MAPE metric, the better the predict power of the model; values of Q^2 metric larger than zero are meaningful The values in italics are the smallest RMSE, MAE, MAPE and the largest Q^2 of the four competing models.

Table 7.
PLSpredict assessment among four models

Understanding fintech continuance

1675

	PLS				LM				(PLS - LM)			
	RMSE	MAE	MAPE	Q^2	RMSE	MAE	MAPE	Q^2	RMSE	MAE	MAPE	Q^2
CON1	0.940	0.747	15.445	0.099	0.947	0.752	15.558	0.085	-0.007	-0.005	-0.113	0.014
CON2	0.993	0.801	17.228	0.082	0.996	0.804	17.257	0.078	-0.002	-0.003	-0.030	0.004
CON3	0.992	0.787	17.616	0.078	0.997	0.790	17.652	0.068	-0.005	-0.003	-0.036	0.010
CON4	0.977	0.782	16.606	0.114	0.973	0.771	16.312	0.121	0.004	0.011	0.294	-0.007
FCI1	0.874	0.680	13.837	0.084	0.873	0.669	13.531	0.086	0.001	0.011	0.307	-0.002
FCI2	0.874	0.727	14.466	0.061	0.878	0.715	14.257	0.053	-0.004	0.013	0.210	0.008
FCI3	0.847	0.658	12.129	0.094	0.843	0.661	12.108	0.103	0.004	-0.003	0.021	-0.009
FCI4	0.858	0.640	12.742	0.093	0.859	0.650	12.876	0.090	-0.001	-0.010	-0.134	0.003
FCI5	0.878	0.665	12.456	0.065	0.878	0.675	12.591	0.066	0.000	-0.010	-0.135	-0.001
SAT1	0.983	0.796	16.993	0.109	0.976	0.779	16.581	0.122	0.007	0.017	0.412	-0.013
SAT2	0.989	0.797	16.884	0.097	0.985	0.789	16.671	0.103	0.004	0.008	0.213	-0.007
SAT3	1.031	0.825	18.343	0.089	1.036	0.825	18.334	0.081	-0.005	0.000	0.009	0.009
SAT4	0.968	0.721	14.869	0.072	0.962	0.725	14.881	0.084	0.006	-0.005	-0.012	-0.012
PU1	0.950	0.772	15.288	0.128	0.958	0.778	15.401	0.113	-0.008	-0.006	-0.113	0.015
PU2	0.910	0.731	13.936	0.116	0.917	0.736	14.041	0.103	-0.007	-0.005	-0.105	0.013
PU3	0.886	0.692	13.765	0.127	0.889	0.695	13.786	0.122	-0.002	-0.003	-0.021	0.004
PU4	0.850	0.666	12.289	0.079	0.852	0.670	12.336	0.075	-0.002	-0.004	-0.046	0.004

Note(s): CON: confirmation; PU: perceived usefulness; SAT: satisfaction; FCI: Fintech continuance intention; RMSE: root mean square error; MAE: mean absolute error; MAPE: mean absolute percentage error.RMSE, MAE and MAPE metric in PLS must produce smaller values than that of LM, thus generating negative values in PLS-LM; Q^2 metric in PLS must produce larger values than that of LM, thus generating positive values in PLS-LM The values in italics are the negative values of RMSE, MAE, MAPE and positive values of Q^2 in PLS-LM.

Table 8.
PLSpredict
Assessment PLS
vs. LM

5.7 Analysis of mediation

We proposed H10 and H11, which suggest that confirmation mediates the effect of financial self-efficacy and technological self-efficacy on perceived usefulness, respectively. To elucidate the mediation effect, we followed the formal mediation test proposed by Zhao *et al.* (2010). As shown in Table 9, first, the indirect effect of financial self-efficacy on perceived usefulness ($a \times b$) is significant($\beta = 0.151$, $t = 7.439$). Second, the direct effect of financial self-efficacy on perceived usefulness (c) is significant ($\beta = 0.232$, $t = 6.528$). Third, the direct effect and indirect effect operate in the same direction ($a \times b \times c$ is positive). Therefore, complementary partial mediation was confirmed. Similarly, the indirect effect of technological self-efficacy on perceived usefulness ($a \times b$) is significant ($\beta = 0.033$, $t = 2.183$), and the direct effect of technological self-efficacy on perceived usefulness (c) is significant ($\beta = 0.176$, $t = 5.231$). As with the analysis above, the direct effect and indirect effect operate in the same direction ($a \times b \times c$ is positive). Therefore, the study supports H10 and H11; self-efficacy's effect on perceived usefulness is partially mediated by confirmation.

6. Discussion

This study aims to help fintech companies and financial institutions understand how financial self-efficacy and technological self-efficacy influence users' fintech continuance intentions by integrating self-efficacy and ECT-IS theory. Consistent with previous studies (Bhattacherjee, 2001a; Susanto *et al.*, 2016; Yuan *et al.*, 2016), our findings show that users' fintech continuance intentions are significantly positively affected by their perceived usefulness and satisfaction. Users are likely to continue to use fintech for wealth management when their financial performance is improved. If fintech increases users' productivity and enhances their effectiveness in managing personal finances, it is reasonable that users will continue using fintech for their wealth management.

Another critical factor in determining continuance intentions is satisfaction (Bhattacherjee, 2001a; Shiau *et al.*, 2011). As an emotional reaction to fintech use and an affective state, satisfaction is realistic, unbiased and less susceptible to change (Bhattacherjee, 2001a). Even though there is always some uncertainty attached to using fintech for wealth management, users may adapt to the impact of these uncertainties by considering the reliability of their satisfaction during the continuance decision process. Therefore, if fintech users feel content with the wealth management process and the results, this satisfaction will probably encourage them to continue using fintech.

Furthermore, in line with Nascimento *et al.*'s (2018) research, which revealed that the effects of perceived usefulness and satisfaction on wearable technology continuance intention were consistent, there is no significant difference in our research between the path coefficient of perceived usefulness and that of satisfaction on the effect of fintech continuance intention, meaning that users measure their perceived performance, productivity, and
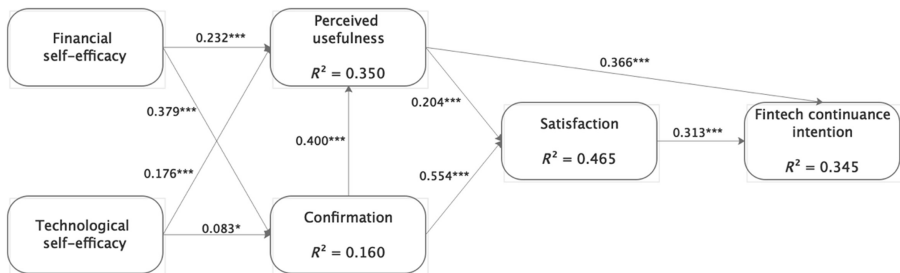
Figure 3.
Results of the structural model

Note(s): *$p < 0.05$; ***$p < 0.001$

Effect	Std β	t-value
Direct effects		
Financial self-efficacy → confirmation	0.379	10.840***
Confirmation → perceived usefulness	0.400	10.304***
Financial self-efficacy → perceived usefulness	0.232	6.528***
Technological self-efficacy → confirmation	0.083	2.190*
Technological self-efficacy → perceived usefulness	0.176	5.231***
Indirect effects		
Financial self-efficacy → confirmation → perceived usefulness	0.151	7.439***
Technological self-efficacy → confirmation → perceived usefulness	0.033	2.183*
Note(s): *$p < 0.05$; ***$p < 0.001$		

Table 9.
Structural model
assessment for direct
and indirect effects

effectiveness from using fintech without appreciable difference from their sense of satisfaction or from their level of emotional reaction when considering their continuance usage of fintech for wealth management. Therefore, from both cognitive and emotional perspectives, the perceived usefulness of fintech and users' satisfaction are important explanations of users' continuance intentions.

Concerning satisfaction, our research shows that users' perception of fintech performance and the confirmation of their expectations influence their level of satisfaction. Satisfaction is an emotional state that represents the affective reaction to an overall evaluation. If users experience higher efficiency in the process of using fintech, they might feel comfortable with the time and effort saved. Moreover, satisfaction is a positive behavioural outcome of perceived quality (Ivanaj *et al.*, 2019); if users' economic situation improves due to wealth management by fintech, then the high level of services provided by fintech and the profits obtained by users will be consistent with or even exceed their expectations, and users might feel pleased with the benefits. Furthermore, as shown in our results, the path coefficient of confirmation on satisfaction is larger than that of perceived usefulness on satisfaction, which is different from the outcomes of certain previous research results. In the study of e-learning continuance intention, Lee (2010) confirmed that perceived usefulness has a much greater impact than confirmation on satisfaction. Nascimento *et al.* (2018) believed that there is no significant difference in the influence of the perceived usefulness of smart watches on satisfaction and confirmation. Therefore, we argue that certain differences between the users of fintech and the users of general information systems unrelated to financial management should be given more attention. Users of fintech treat the confirmation of their expectations as being more salient than the instrumentality of fintech in forming emotional reactions and intentions about fintech continuance (Bhattacherjee, 2001a).

Our results show that perceived usefulness is positively impacted by financial self-efficacy, technological self-efficacy and confirmation. Self-efficacy reflects a form of self-evaluation regarding one's ability to perform certain behaviours to attain certain goals (Jin *et al.*, 2013). In general, people with high financial self-efficacy think that they are capable of managing their finances, and they are more willing to believe that the financial tools they chose can help them manage their wealth. By making wealth management via fintech, users with high financial self-efficacy can perceive higher financial performance that matches their financial confidence. Likewise, the belief in one's ability to handle smartphones and software for wealth management via fintech can positively influence the perceived usefulness of these tools. The use of smartphones for wealth management can be better predicted by the beliefs that users hold about their technological capabilities. The higher the sense of technological self-efficacy held by the users is, the more likely they are to generate positive behaviours to complete their wealth management tasks by smartphone, and the more likely it is that they will perceive high efficiency from fintech use. Previous research has also shown that the greater the sense of technological self-efficacy that users have is, the more useful they will perceive technology to be (Chen *et al.*, 2011; Teo, 2009).

Furthermore, consistent with Bhattacherjee (2001a), confirmation has significantly positive effects on perceived usefulness, suggesting that users' perception of fintech may also be adjusted by the extent of the confirmation. Fintech confirmation is a cognitive belief representing the extent to which actual use can help form users' expectations of fintech. Users have certain expectations for the services provided by fintech, such as personalized wealth management solutions, financial products with higher yields and lower levels of risk, accurate and detailed explanations of financial products, flexible deposits and withdrawal mechanisms, convenient customer services, and so on. More efficient communication should be built for fintech companies to understand their users' expectations. When these expectations are confirmed during the use of fintech, they will believe that fintech can indeed help improve their financial benefits.

The study also found that users' confirmation is significantly affected by their financial self-efficacy and technological self-efficacy. Users measure the process and the results of fintech use and compare these results to what they expected. A higher level of self-efficacy induces the confirmation of fintech use. These findings are consistent with the results of previous studies (Hong *et al.*, 2014; Shim *et al.*, 2012). People with high financial self-efficacy are more likely to make reasonable investment decisions that may reduce financial risks and lead to the expected financial results, meaning that their expectation is more likely to be confirmed. This finding is similar to the result of Farrell *et al.* (2016), who reported that financial self-efficacy within the personal finance behaviour context influences personal finance outcomes.

Similarly, people with high technological self-efficacy think that they are capable of operating the process of wealth management by fintech. They believe that they can view information and purchase financial products, participate in activities, check wealth management records and withdraw cash, which are in line with their expectations for using fintech. Furthermore, the effect of financial self-efficacy on confirmation is much greater than that of technological self-efficacy. The key factor of confirmation regarding wealth management by fintech is the actual performance, namely, the financial outcome, which is perceived to be better by users with higher financial self-efficacy. If the services provided by fintech are perceived as of high quality and the operating process is smooth, users will have a certain level of confirmation. Furthermore, if their financial results meet their expectations, the level of confirmation will further increase.

Finally, confirmation's mediating role between financial self-efficacy and perceived usefulness and between technological self-efficacy and perceived usefulness are confirmed. Users with high financial self-efficacy are more likely to generate positive financial actions and purchase suitable wealth management products, which may lead to positive financial outcomes. When financial outcomes reach or exceed users' expectations, users will feel a sense of confirmation, which will reinforce fintech's role in improving wealth management performance and enhancing users' perceptions of the usefulness of fintech. Regarding users' technological self-efficacy, the more confident the users are in their ability to use a smartphone for wealth management, the more likely they are to obtain a sense of confirmation of the operating process, which will encourage them to perceive increased productivity and effectiveness, namely, that fintech is more useful. As a result, financial self-efficacy and technological self-efficacy are considered to be crucial factors in fintech continuance intention. Specifically, on the one hand, users' financial self-efficacy and technological self-efficacy directly affect their perceived usefulness of fintech. On the other hand, confirmation partially mediates the effect of financial self-efficacy and technological self-efficacy on perceived usefulness. Additionally, the significant direct effect points to the possible existence of some omitted second mediator that can be pursued in future research (Zhao *et al.*, 2010). Despite the possibility that a second mediator may be omitted, the partial mediation of confirmation between the effect of self-efficacy and perceived usefulness is confirmed. Therefore, fintech companies and financial institutions should understand their users' level of financial self-efficacy and technological self-efficacy and look for ways to improve their feelings of confirmation and thus their perception of fintech's usefulness and their fintech continuance intention.

Recognizing the importance of self-efficacy, we suggest that users' intrinsic motivations should not be ignored in studies of IS/IT acceptance and continuance use, whether in fintech or in other innovative technologies. Specific internal factors should be considered according to specific research contexts.

7. Conclusion
This study focused on individual wealth management and integrated self-efficacy theory and ECT-IS theory to understand users' continuance intention regarding fintech use for wealth

management. Emphasizing the importance of predictive power as well as explanatory power, the PLSpredict technique was used to select the model with the greatest predictive power from the four competing models. This research model explains 52% of the satisfaction and 35% of thee fintech continuance intention. The results show that users' perceived usefulness and confirmation are predicted primarily by financial self-efficacy, followed by the influence of technological self-efficacy. Therefore, in addition to realizing the importance of confirmation, perceived usefulness and satisfaction, as mentioned in previous studies of general information system continuance intention, practitioners who provide fintech services for wealth management should also consider users' intrinsic factors, namely, their financial self-efficacy and technological self-efficacy, and provide fintech users with rational wealth management products and services. Doing so could increase users' satisfaction and users' continuance intentions, which in turn would strengthen the competitiveness of fintech companies.

7.1 Implications for research and practice
This study has several theoretical implications. First, this study integrates self-efficacy theory and ECT-IS theory to understand users' fintech continuance intention for wealth management. It extends continuance intention to the field of fintech, which has received little attention in previous studies. Previous studies have not precisely examined the relationship between self-efficacy and continuance intention in the context of fintech use for wealth management. Thus, our results will enrich existing research on fintech and improve the understanding of users' fintech continuance intention.

Second, according to the characteristics of fintech, this study distinguishes two fintech-related domain-specific self-efficacies: financial self-efficacy and technological self-efficacy. The wealth management area of fintech involves not only the acceptance and use of technology but also a level of confidence in personal financial management competence. We emphasize the importance of specific forms of self-efficacy in different contexts rather than overall self-efficacy, which can serve as a reference for future research and increase accuracy. Furthermore, the theoretical and empirical validation of the effects of financial self-efficacy and technological self-efficacy is also a significant research contribution of this study.

Third, this study highlights the importance of assessing a model's predictive power using the PLSpredict technique (Shmueli *et al.*, 2016). Compared with studies that assess only a model's explanatory power, an assessment of the models' out-of-sample predictive power was conducted in this study to identify a reasonable model that could explain the fintech phenomenon under investigation and predict the content of another sample in the foreseeable future. Our results showed that the model adopting self-efficacy as an antecedent of perceived usefulness and confirmation has the best predictive power compared to others in the fintech context. In particular, technological self-efficacy proved to be a valuable predictor of perceived usefulness, despite being the least important causal explanation of perceived usefulness. Our ability to predict usefulness greatly ameliorated our ability to predict continuance intentions. The PLSpredict technique allowed us to balance explanatory and predictive utility in our model.

For practice, this study has two implications. First, this study highlighted the importance of the financial self-efficacy of fintech users for wealth management. Despite the omitted second mediator, this research confirmed the indirect effect of financial self-efficacy and technological self-efficacy on perceived usefulness through the mediation of confirmation. Financial self-efficacy can not only directly affect users' perceived usefulness but also indirectly affect their perceptions of usefulness through the confirmation of fintech use expectations. In wealth management, users are more focused on the outcomes and returns. A good technical experience can moderately improve their sense of confirmation, perceived

usefulness, satisfaction and continuance intention, but good financial results have a more significant effect. Therefore, fintech companies and financial institutions should segment users based on their financial self-efficacies and design separate services for each segment to provide diversified customized wealth-management schemes. Moreover, users with high financial self-efficacy should be given more attention because they are more likely to perceive the usefulness of fintech. At the same time, it is necessary to provide wealth management knowledge and updated information about markets and institutions to improve users' confidence in wealth management. Furthermore, in considering some social problems caused by the failure of wealth management, we suggest that the government set up an intelligence database of people's financial behaviour. Then, according to these wealth management records, users could better understand their own financial management ability and establish reasonable financial self-efficacy. As another key factor of fintech, the use of technology plays an important role in the process of wealth management by fintech. Given the importance of technological self-efficacy in helping Model 4 become the best predictive model, we emphasize the predictive importance of technological self-efficacy. The use of smartphones and software, in general, is not difficult for most people when they are processing wealth management by fintech. Thus, the widespread use of smartphones increases users' fintech continuance intention.

Second, this paper shows that the confirmation of fintech use expectations is a significant predictor of satisfaction and the key factor that affects users' continuance intention. As the rational decision process that users go through prior to setting up their use affects their satisfaction and subsequent intentions, confirmation influences users' fintech continuance intentions in two indirect ways: by impacting users' satisfaction and by influencing users' perceptions of fintech usefulness. To improve users' sense of confirmation, we suggest that fintech companies and financial institutions guide users to establish appropriate fintech expectations, since high expectations may lead to disconfirmation and low expectations, and low perceived usefulness may reduce the users' motivations to continue. Even though it is a challenging task to understand the optimal level of users' expectations, this understanding remains a crucial aspect of fintech.

7.2 Limitations and future research directions
This study attempts to understand users' fintech continuance intention for wealth management from a self-efficacy perspective. Despite the previously mentioned contributions, this study has several limitations, which offer opportunities for future research.

First, the respondents of this study were limited based on their experience with having engaged in wealth management by fintech. Therefore, our findings might not be applied to all financial applications (e.g. Bitcoin, crowdfunding, Internet insurance). Generalizing the results to other wealth management situations of fintech should be done with caution.

Second, we focused on the direct and indirect effects of financial self-efficacy and technological self-efficacy on confirmation and perceived usefulness, as they significantly influence fintech continuance intention. Future research might study the direct and indirect effects of domain-specific self-efficacies on fintech continuance intention.

Third, this study used cross-sectional data. In the future, longitudinal research could be designed to test causal hypotheses regarding financial self-efficacy, technological self-efficacy and other key factors involved in fintech uses.

Finally, as our samples were from fintech users in China, the results of this study must be cautiously interpreted. Nonetheless, the findings have provided insights into the behaviour of fintech users in different settings. Future studies should consider national characteristics and take the culture factor into account to explain the issue of fintech usage across different nations at the individual level.

References

Al-Momani, A.M., Mahmoud, M.A. and Ahmad, M.S. (2018), "Factors that influence the acceptance of internet of things services by customers of telecommunication companies in Jordan", *Journal of Organizational and End User Computing*, Vol. 30 No. 4, pp. 51-63.

Alalwan, A.A., Dwivedi, Y.K., Rana, N.P. and Williams, M.D. (2016), "Consumer adoption of mobile banking in Jordan", *Journal of Enterprise Information Management*, Vol. 29 No. 1, pp. 118-139.

Anderson, J.C. and Gerbing, D.W. (1988), "Structural equation modeling in practice: a review and recommended two-step approach", *Psychological Bulletin*, Vol. 103 No. 3, pp. 411-423.

Armstrong, J.S. and Overton, T.S. (1977), "Estimating nonresponse bias in mail surveys", *Journal of Marketing Research*, Vol. 14 No. 3, pp. 396-402.

Asebedo, S. and Payne, P. (2019), "Market volatility and financial satisfaction: the role of financial self-efficacy", *Journal of Behavioral Finance*, Vol. 20 No. 1, pp. 42-52.

Ayanso, A., Herath, T.C. and O'Brien, N. (2015), "Understanding continuance intentions of physicians with electronic medical records (EMR): an expectancy-confirmation perspective", *Decision Support Systems*, Vol. 77, pp. 112-122.

Bandura, A. (1977), "Self-efficacy: toward a unifying theory of behavioral change", *Psychological Review*, Vol. 84 No. 2, pp. 191-215.

Bandura, A. (1982), "Self-efficacy mechanism in human agency", *American Psychologist*, Vol. 37 No. 2, pp. 122-147.

Bandura, A. (1986), "The explanatory and predictive scope of self-efficacy theory", *Journal of Social and Clinical Psychology*, Vol. 4 No. 3, pp. 359-373.

Bandura, A. (1991), "Social cognitive theory of self-regulation", *Organizational Behavior and Human Decision Processes*, Vol. 50 No. 2, pp. 248-287.

Betz, N.E. and Hackett, G. (1983), "The relationship of mathematics self-efficacy expectations to the selection of science-based college majors", *Journal of Vocational Behavior*, Vol. 23 No. 3, pp. 329-345.

Bhattacherjee, A. (2001a), "Understanding information systems continuance", *MIS Quarterly*, Vol. 25 No. 3, pp. 351-370.

Bhattacherjee, A. (2001b), "An empirical analysis of the antecedents of electronic commerce service continuance", *Decision Support Systems*, Vol. 32 No. 2, pp. 201-214.

Bitner, M.J., Ostrom, A.L. and Meuter, M.L. (2002), "Implementing successful self-service technologies", *Academy of Management Executive*, Vol. 16 No. 4, pp. 96-108.

Brown, S.A., Venkatesh, V. and Goyal, S. (2014), "Expectation confirmation in information systems research: a test of six competing models", *MIS Quarterly*, Vol. 38 No. 3, pp. 729-756.

Burkhardt, M.E. and Brass, D.J. (1990), "Changing patterns or patterns of change: the effects of a change in technology on social network structure and power", *Administrative Science Quarterly*, Vol. 35 No. 1, pp. 104-127.

Cassar, G. and Friedman, H. (2009), "Does self-efficacy affect entrepreneurial investment?", *Strategic Entrepreneurship Journal*, Vol. 3 No. 3, pp. 241-260.

CB Insights (2019), *Global Fintech Report Q2 2019*, available at: https://www.cbinsights.com/reports/CB-Insights_Fintech-Report-Q2-2019.pdf (accessed 12 December 2019).

Chen, I.-S. (2017), "Computer self-efficacy, learning performance, and the mediating role of learning engagement", *Computers in Human Behavior*, Vol. 72, pp. 362-370.

Chen, Y.-Y., Huang, H.-L., Hsu, Y.-C., Tseng, H.-C. and Lee, Y.-C. (2010), "Confirmation of expectations and satisfaction with the Internet shopping: the role of Internet self-efficacy", *Computer and Information Science*, Vol. 3 No. 3, pp. 14-22.

Chen, K., Chen, J.V. and Yen, D.C. (2011), "Dimensions of self-efficacy in the study of smart phone acceptance", *Computer Standards and Interfaces*, Vol. 33 No. 4, pp. 422-431.

Cheng, Y.-M. (2014), "Extending the expectation-confirmation model with quality and flow to explore nurses' continued blended e-learning intention", *Information Technology and People*, Vol. 27 No. 3, pp. 230-258.

Chiang, H.-S. (2013), "Continuous usage of social networking sites: the effect of innovation and gratification attributes", *Online Information Review*, Vol. 37 No. 6, pp. 851-871.

Chin, W.W., Marcolin, B. and Newsted, P.R. (2003), "A partial least squares latent variable modeling approach for measuring interaction effects: results from a Monte Carlo simulation study and an electronic-mail emotion/adoption study", *Information Systems Research*, Vol. 14 No. 2, pp. 189-217.

Chin, W.W., Thatcher, J.B. and Wright, R.T. (2012), "Assessing common method bias: problems with the ULMC technique", *MIS Quarterly*, Vol. 36 No. 3, pp. 1003-1019.

Chiu, C.-M., Hsu, M.-H., Sun, S.-Y., Lin, T.-C. and Sun, P.-C. (2005), "Usability, quality, value and e-learning continuance decisions", *Computers and Education*, Vol. 45 No. 4, pp. 399-416.

Choi, S. (2018), "What promotes smartphone-based mobile commerce? Mobile-specific and self-service characteristics", *Internet Research*, Vol. 28 No. 1, pp. 105-122.

Compeau, D.R. and Higgins, C.A. (1995), "Computer self-efficacy: development of a measure and initial test", *MIS Quarterly*, Vol. 19 No. 2, pp. 189-211.

Davis, F.D. (1989), "Perceived usefulness, perceived ease of use, and user acceptance of information technology", *MIS Quarterly*, Vol. 13 No. 3, pp. 319-340.

Demertzis, M., Merler, S. and Wolff, G.B. (2018), "Capital markets union and the fintech opportunity", *Journal of Financial Regulation*, Vol. 4 No. 1, pp. 157-165.

Dwivedi, Y.K., Lal, B. and Williams, M.D. (2009), "Managing consumer adoption of broadband: examining drivers and barriers", *Industrial Management and Data Systems*, Vol. 109 No. 3, pp. 357-369.

Fagan, M.H., Neill, S. and Wooldridge, B.R. (2004), "An empirical investigation into the relationship between computer self-efficacy, anxiety, experience, support and usage", *Journal of Computer Information Systems*, Vol. 44 No. 2, pp. 95-104.

Farrell, L., Fry, T.R.L. and Risse, L. (2016), "The significance of financial self-efficacy in explaining women's personal finance behaviour", *Journal of Economic Psychology*, Vol. 54, pp. 85-99.

Forbes, J. and Kara, S.M. (2010), "Confidence mediates how investment knowledge influences investing self-efficacy", *Journal of Economic Psychology*, Vol. 31 No. 3, pp. 435-443.

Fornell, C. and Larcker, D.F. (1981), "Evaluating structural equation models with unobservable variables and measurement error", *Journal of Marketing Research*, Vol. 18 No. 1, pp. 39-50.

Franke, G. and Sarstedt, M. (2019), "Heuristics versus statistics in discriminant validity testing: a comparison of four procedures", *Internet Research*, Vol. 29 No. 3, pp. 430-447.

Fu, X., Zhang, J. and Chan, F.T.S. (2018), "Determinants of loyalty to public transit: a model integrating satisfaction-loyalty theory and expectation-confirmation theory", *Transportation Research Part A: Policy and Practice*, Vol. 113, pp. 476-490.

Gecas, V. (1989), "The social psychology of self-efficacy", *Annual Review of Sociology*, Vol. 15 No. 1, pp. 291-316.

Gefen, D., Rigdon, E.E. and Straub, D. (2011), "An update and extension to SEM guidelines for administrative and social science research", *MIS Quarterly*, Vol. 35 No. 2, pp. 3-14.

Gist, M.E. (1987), "Self-efficacy: implications for organizational behavior and human resource management", *Academy of Management Review*, Vol. 12 No. 3, pp. 472-485.

Hair, J.F., Ringle, C.M. and Sarstedt, M. (2011), "PLS-SEM: indeed a silver bullet", *Journal of Marketing Theory and Practice*, Vol. 19 No. 2, pp. 139-152.

Hair, J.F., Hult, G.T.M., Ringle, C.M. and Sarstedt, M. (2016), *A Primer on Partial Least Squares Structural Equation Modeling (PLS-SEM)*, Sage, Thousand Oaks.

Hair, J.F., Risher, J.J., Sarstedt, M. and Ringle, C.M. (2019), "When to use and how to report the results of PLS-SEM", *European Business Review*, Vol. 31 No. 1, pp. 2-24.

Hasan, B. (2006), "Delineating the effects of general and system-specific computer self-efficacy beliefs on IS acceptance", *Information and Management*, Vol. 43 No. 5, pp. 565-571.

Henseler, J., Ringle, C.M. and Sarstedt, M. (2014), "A new criterion for assessing discriminant validity in variance-based structural equation modeling", *Journal of the Academy of Marketing Science*, Vol. 43 No. 1, pp. 115-135.

Hernández, B., Jiménez, J. and Martín, M.J. (2011), "Age, gender and income: do they really moderate online shopping behaviour?", *Online Information Review*, Vol. 35 No. 1, pp. 113-133.

Holden, H. and Rada, R. (2011), "Understanding the influence of perceived usability and technology self-efficacy on teachers' technology acceptance", *Journal of Research on Technology in Education*, Vol. 43 No. 4, pp. 343-367.

Hong, J.-C., Hwang, M.-Y., Tai, K.-H. and Chen, Y.-L. (2014), "Using calibration to enhance students' self-confidence in English vocabulary learning relevant to their judgment of over-confidence and predicted by smartphone self-efficacy and English learning anxiety", *Computers and Education*, Vol. 72, pp. 313-322.

Hsu, M.-H. and Chiu, C.-M. (2004), "Predicting electronic service continuance with a decomposed theory of planned behaviour", *Behaviour and Information Technology*, Vol. 23 No. 5, pp. 359-373.

Huang, C.-C., Lin, T.-C. and Wang, J.-W. (2008), "Understanding knowledge management system usage antecedents: an integration of social cognitive theory and task technology fit", *Information and Management*, Vol. 45 No. 6, pp. 410-417.

Imerman, M.B. and Fabozzi, F.J. (2020), "Cashing in on innovation: a taxonomy of FinTech", *Journal of Asset Management*, Vol. 21 No. 3, pp. 167-177.

Ivanaj, S., Nganmini, G.B. and Antoine, A. (2019), "Measuring e-learners' perceptions of service quality", *Journal of Organizational and End User Computing*, Vol. 31 No. 2, pp. 83-104.

Jarvis, C.B., Mackenzie, S.B. and Podsakoff, P.M. (2003), "A critical review of construct indicators and measurement model misspecification in marketing and consumer research", *Journal of Consumer Research*, Vol. 30 No. 2, pp. 199-218.

Jöreskog, K.G. (1971), "Simultaneous factor analysis in several populations", *Psychometrika*, Vol. 36 No. 4, pp. 409-426.

Jin, X.L., Zhou, Z., Lee, M.K.O. and Cheung, C.M.K. (2013), "Why users keep answering questions in online question answering communities: a theoretical and empirical investigation", *International Journal of Information Management*, Vol. 33 No. 1, pp. 93-104.

Joo, S.H. and Grable, J.E. (2004), "An exploratory framework of the determinants of financial satisfaction", *Journal of Family and Economic Issues*, Vol. 25 No. 1, pp. 25-50.

Khan, G.F., Sarstedt, M., Shiau, W.-L., Hair, J.F., Ringle, C.M. and Fritze, M.P. (2019), "Methodological research on partial least squares structural equation modeling (PLS-SEM): an analysis based on social network approaches", *Internet Research*, Vol. 29 No. 3, pp. 407-429.

Kim, Y., Choi, J., Park, Y.-J. and JiyoungYeon (2016), "The adoption of mobile payment services for 'Fintech'", *International Journal of Applied Engineering Research*, Vol. 11 No. 2, pp. 1058-1061.

Kim, S.H., Bae, J.H. and Jeon, H.M. (2019), "Continuous intention on accommodation apps: integrated value-based adoption and expectation-confirmation model analysis", *Sustainability*, Vol. 11 No. 6, pp. 1-17.

Kuo-Chuen, D.L. and Teo, E.G.S. (2015), "Emergence of FinTech and the LASIC principles", *Journal of Financial Perspectives*, Vol. 3 No. 3, pp. 24-36.

Lee, M.C. (2010), "Explaining and predicting users' continuance intention toward e-learning: an extension of the expectation-confirmation model", *Computers and Education*, Vol. 54 No. 2, pp. 506-516.

Lee, T. and Kim, H. (2015), "An exploratory study on fintech industry in Korea: crowdfunding case", in *Proceedings in International Conference on Innovative Engineering Technologies*, Bangkok, pp. 58-64.

Lee, I. and Shin, Y.J. (2018), "Fintech: ecosystem, business models, investment decisions, and challenges", *Business Horizons*, Vol. 61 No. 1, pp. 35-46.

Li, M., Dong, Z.Y. and Chen, X. (2012), "Factors influencing consumption experience of mobile commerce: a study from experiential view", *Internet Research*, Vol. 22 No. 2, pp. 120-141.

Limayem, M., Hirt, S.G. and Christy, M.K.C. (2007), "How habit limits the predictive power of intention: the case of information systems continuance", *MIS Quarterly*, Vol. 31 No. 4, pp. 705-737.

Ma, Q. and Liu, L. (2005), "The role of internet self-efficacy in the acceptance of web-based electronic medical records", *Journal of Organizational and End User Computing*, Vol. 17 No. 1, pp. 38-57.

Malik, G. and Rao, A.S. (2019), "Extended expectation-confirmation model to predict continued usage of ODR/ride hailing apps: role of perceived value and self-efficacy", *Information Technology and Tourism*, Vol. 21 No. 4, pp. 461-482.

Mattila, A.S. and Enz, C.A. (2002), "The role of emotions in service encounters", *Journal of Service Research*, Vol. 4 No. 4, pp. 267-277.

McKinney, V., Yoon, K. and Zahedi, F.M. (2002), "The measurement of Web-customer satisfaction: an expectation and disconfirmation approach", *Information Systems Research*, Vol. 13 No. 3, pp. 296-315.

Montford, W. and Goldsmith, R.E. (2016), "How gender and financial self-efficacy influence investment risk taking", *International Journal of Consumer Studies*, Vol. 40 No. 1, pp. 101-106.

Nascimento, B., Oliveira, T. and Tam, C. (2018), "Wearable technology: what explains continuance intention in smartwatches?", *Journal of Retailing and Consumer Services*, Vol. 43, pp. 157-169.

Nataraj, B. and Rajendran, R. (2018), "Impact of relationship quality on customer retention – a study with reference to retail banking in India", *International Journal of Business and Information*, Vol. 13 No. 1, pp. 93-117.

Oghuma, A.P., Libaque-Saenz, C.F., Wong, S.F. and Chang, Y. (2016), "An expectation-confirmation model of continuance intention to use mobile instant messaging", *Telematics and Informatics*, Vol. 33 No. 1, pp. 34-47.

Podsakoff, P.M. and Organ, D.W. (1986), "Self-reports in organizational research: problems and prospects", *Journal of Management*, Vol. 12 No. 4, pp. 531-544.

Ryu, H.-S. (2018), "What makes users willing or hesitant to use Fintech?: the moderating effect of user type", *Industrial Management and Data Systems*, Vol. 118 No. 3, pp. 541-569.

Schneider, W. and Chein, J.M. (2003), "Controlled and automatic processing: behavior, theory, and biological mechanisms", *Cognitive Science*, Vol. 27 No. 3, pp. 525-559.

Serido, J., Shim, S. and Tang, C. (2013), "A developmental model of financial capability: a framework for promoting a successful transition to adulthood", *International Journal of Behavioral Development*, Vol. 37 No. 4, pp. 287-297.

Shiau, W.L. and Chau, P.Y.K. (2016), "Understanding behavioral intention to use a cloud computing classroom: a multiple model comparison approach", *Information and Management*, Vol. 53 No. 3, pp. 355-365.

Shiau, W.-L. and Luo, M.M. (2013), "Continuance intention of blog users: the impact of perceived enjoyment, habit, user involvement and blogging time", *Behaviour and Information Technology*, Vol. 32 No. 6, pp. 570-583.

Shiau, W.-L., Huang, L.-C. and Shih, C.-H. (2011), "Understanding continuance intention of blog users: a perspective of flow and expectation confirmation theory", *Journal of Convergence Information Technology*, Vol. 6 No. 4, pp. 306-317.

Shiau, W.L., Sarstedt, M. and Hair, J.F. (2019), "Internet research using partial least squares structural equation modeling (PLS-SEM)", *Internet Research*, Vol. 29 No. 3, pp. 398-406.

Shim, Y. and Shin, D.-H. (2016), "Analyzing China's fintech industry from the perspective of actor-network theory", *Telecommunications Policy*, Vol. 40 No. 2, pp. 168-181.

Shim, S., Serido, J. and Tang, C. (2012), "The ant and the grasshopper revisited: the present psychological benefits of saving and future oriented financial behaviors", *Journal of Economic Psychology*, Vol. 33 No. 1, pp. 155-165.

Shim, S., Serido, J. and Lee, S.-K. (2019), "Problem-solving orientations, financial self-efficacy, and student-loan repayment stress", *Journal of Consumer Affairs*, Vol. 53 No. 3, pp. 1273-1296.

Shmueli, G., Ray, S., Velasquez Estrada, J.M. and Chatla, S.B. (2016), "The elephant in the room: predictive performance of PLS models", *Journal of Business Research*, Vol. 69 No. 10, pp. 4552-4564.

Shmueli, G., Sarstedt, M., Hair, J.F., Cheah, J., Ting, H., Vaithilingam, S. and Ringle, C.M. (2019), "Predictive model assessment in PLS-SEM: guidelines for using PLSpredict", *European Journal of Marketing*, Vol. 53 No. 11, pp. 2322-2347.

Stajkovic, A.D. and Luthans, F. (1998), "Self-efficacy and work-related performance: a meta-analysis", *Psychological Bulletin*, Vol. 124 No. 2, pp. 240-261.

Susanto, A., Chang, Y. and Ha, Y. (2016), "Determinants of continuance intention to use the smartphone banking services: an extension to the expectation-confirmation model", *Industrial Management and Data Systems*, Vol. 116 No. 3, pp. 508-525.

Tan, M. and Teo, T.S.H. (2000), "Factors influencing the adoption of Internet banking", *Journal of the Association for Information Systems*, Vol. 1 No. 1, pp. 1-42.

Teo, T. (2009), "Modelling technology acceptance in education: a study of pre-service teachers", *Computers and Education*, Vol. 52 No. 2, pp. 302-312.

Teo, T.S.H. and Pok, S.H. (2003), "Adoption of WAP-enabled mobile phones among Internet users", *The International Journal of Management Science*, Vol. 31 No. 6, pp. 483-498.

Thong, J.Y.L., Hong, S.-J. and Tam, K.Y. (2006), "The effects of post-adoption beliefs on the expectation-confirmation model for information technology continuance", *International Journal of Human-Computer Studies*, Vol. 64 No. 9, pp. 799-810.

Venkatesh, V. and Goyal, S. (2010), "Expectation disconfirmation and technology adoption: polynomial modeling and response surface analysis", *MIS Quarterly*, Vol. 34 No. 2, pp. 281-303.

Venkatesh, V., Thong, J.Y.L., Chan, F.K.Y., Hu, P.J.H. and Brown, S.A. (2011), "Extending the two-stage information systems continuance model: incorporating UTAUT predictors and the role of context", *Information Systems Journal*, Vol. 21 No. 6, pp. 527-555.

Verkasalo, H., López-Nicolás, C., Molina-Castillo, F.J. and Bouwman, H. (2010), "Analysis of users and non-users of smartphone applications", *Telematics and Informatics*, Vol. 27 No. 3, pp. 242-255.

Voorhees, C.M., Brady, M.K., Calantone, R. and Ramirez, E. (2016), "Discriminant validity testing in marketing: an analysis, causes for concern, and proposed remedies", *Journal of the Academy of Marketing Science*, Vol. 44 No. 1, pp. 119-134.

Wixom, B.H. and Watson, H.J. (2007), "An empirical investigation of the factors affecting data warehousing success", *MIS Quarterly*, Vol. 25 No. 1, pp. 17-41.

Wood, R. and Bandura, A. (1989a), "Impact of conceptions of ability on self-regulatory mechanisms and complex decision making", *Journal of Personality and Social Psychology*, Vol. 56 No. 3, pp. 407-415.

Wood, R. and Bandura, A. (1989b), "Social cognitive theory of organizational management", *Academy of Management Review*, Vol. 14 No. 3, pp. 361-384.

Wood, R., Bandura, A. and Bailey, T. (1990), "Mechanisms governing organizational performance in complex decision-making environments", *Organizational Behavior and Human Decision Processes*, Vol. 46 No. 2, pp. 181-201.

Yazid, Z.A., Ismail, S., Taib, N.M., Bakri, M.H., Daud, S., Faique, F.A. and Idris, N.H. (2017), "Testing the financial attitude as a mediator for the relationship between financial self-efficacy with

financial behavior", *Journal of Computational and Theoretical Nanoscience*, Vol. 23 No. 8, pp. 8009-8012.

Yeşilyurt, E., Ulaş, A.H. and Akan, D. (2016), "Teacher self-efficacy, academic self-efficacy, and computer self-efficacy as predictors of attitude toward applying computer-supported education", *Computers in Human Behavior*, Vol. 64, pp. 591-601.

Yi, M.Y. and Hwang, Y. (2003), "Predicting the use of web-based information systems: self-efficacy, enjoyment, learning goal orientation, and the technology acceptance model", *International Journal of Human-Computer Studies*, Vol. 59 No. 4, pp. 431-449.

Yuan, S., Liu, Y., Yao, R. and Liu, J. (2016), "An investigation of users' continuance intention towards mobile banking in China", *Information Development*, Vol. 32, No. 1, pp. 20-34.

Zavolokina, L., Dolata, M. and Schwabe, G. (2016), "Fintech - what' s in a name ", in *Proceedings in International Conference on Information Systems*, pp. 1-19.

Zhang, X. and Su, J. (2019), "A combined fuzzy DEMATEL and TOPSIS approach for estimating participants in knowledge-intensive crowdsourcing", *Computers and Industrial Engineering*, Vol. 137, (forthcoming), doi: 10.1016/j.cie.2019.106085.

Zhao, X., Lynch, J.G. and Chen, Q. (2010), "Reconsidering Baron and Kenny: Myths and truths about mediation analysis", *Journal of Consumer Research*, Vol. 37 No. 2, pp. 197-206.

Zheng, Y., Zhao, K. and Stylianou, A. (2013), "The impacts of information quality and system quality on users' continuance intention in information-exchange virtual communities: an empirical investigation", *Decision Support Systems*, Vol. 56 No. 1, pp. 513-524.

Zhou, T. (2013), "An empirical examination of continuance intention of mobile payment services", *Decision Support Systems*, Vol. 54 No. 2, pp. 1085-1091.

Zhou, W., Tsiga, Z., Li, B., Zheng, S. and Jiang, S. (2018), "What influence users' e-finance continuance intention? The moderating role of trust", *Industrial Management and Data Systems*, Vol. 118 No. 8, pp. 1647-1670.

Appendix

Constructs	Items	Adapted from
Financial self-efficacy The belief in one's capability in achieving one's ultimate financial goals (Forbes and Kara 2010)	FSE1 I am fully capable of making personal investment decisions FSE2 I am confident in my ability to make personal investment decisions FSE3 I feel I am qualified for the task of making personal investment decisions FSE4 Using investment information available is well within the scope of my abilities FSE5 My past experiences increase my confidence that I will be able to successfully make personal investment decisions	Montford and Goldsmith (2016)
Technological self-efficacy (smartphone) The belief in one's ability to operate specific functions on a smartphone, such as downloading and implementing software onto the smartphone (Hong et al. 2014)	TSE1 I am able to figure out how to use the interface of a smartphone on my own TSE2 I am able to figure out how to download smartphone applications on my own TSE3 I am able to figure out how to use apps on my own TSE4 I am able to figure out how to use the different functions provided by smartphones on my own	Hong *et al.* (2014)
Confirmation Users' perception of the congruence between the expectation of Fintech use and its actual performance (Bhattacherjee, 2001a)	CON1 My experience with using Fintech was better than what I expected CON2 The service level provided by Fintech was better than what I expected CON3 My experience of investing using Fintech was better than what I expected CON4 Overall, most of my expectations from using Fintech were confirmed	Bhattacherjee (2001a)
Perceived usefulness Users' perception of the expected benefits of Fintech use (Bhattacherjee 2001a)	PU1 Using Fintech improves my performance in managing personal finances PU2 Using Fintech increases my productivity in managing personal finances PU3 Using Fintech enhances my effectiveness in managing personal finances PU4 Overall, Fintech is useful in managing personal finances	Bhattacherjee (2001a)

Table A1.
Operational definitions and scale items of constructs

(*continued*)

Constructs	Items	Adapted from
Satisfaction Users' affect with (feelings about) prior Fintech use (Bhattacherjee, 2001a)	*I feel that my overall experience of Fintech use is* SAT1 Very satisfied SAT2 Very pleased SAT3 Very contented SAT4 Absolutely terrible (reverse coded)	Bhattacherjee (2001a)
Fintech continuance intention Users' intention to continue investing by Fintech (Bhattacherjee, 2001a)	FCI1 I intend to continue investing using Fintech rather than discontinue its use FCI2 My intentions are to continue investing using Fintech than use any alternative means (traditional banking) FCI3 I plan to continue investing using the Fintech FCI4 I will continue investing using Fintech FCI5 If I could, I would like to discontinue my investment using Fintech (reverse coded)	Bhattacherjee (2001a)

Note(s): FSE: financial self-efficacy; TSE: technological self-efficacy; CON: confirmation; PU: perceived usefulness; SAT: satisfaction; FCI: Fintech continuance intention

Table A1.

Corresponding author
Xiaodie Pu can be contacted at: Jenny.Pu@nottingham.edu.cn