International Journal of Engineering & Technology, 7 (2.29) (2018) 73-78

International Journal of Engineering & Technology

Website: www.sciencepubco.com/index.php/IJET

Research paper

Development of research continuous usage intention of e-commerce. A systematic review of literature from 2009 to 2015

Ahmad Ali Harasis[1], Muhamamd Imran Qureshi[2*], Amran Rasli[3]

[1]Faculty of Business, Business Management Department, Middle East University, Jordan
[2]Malaysian Institute of Industrial Technology, Universiti Kuala Lumpur, Malaysia.
[3]Faculty of Management, Universiti Teknologi Malaysia
**Corresponding author E-mail: muhammadimranq@unikl.edu.my*

Abstract

This paper systematically reviews the literature on the continuous usage intentions from 2009 to 2015. From the review of literature on continuance usage intentions, some models have been put forward to explain the continuity of the e-Commerce. However, each model is extensively different from one another. Over the years, a considerable development in the literature of Continuous intentions. However, there is still a necessity to present a more comprehensive and integrative model for the continuance usage intention of e-commerce users than the models in existence at the moment. The Expectation Confirmation Model (ECM) has been widely accepted in general. In addition, many researchers stated that ECM model can be employed to look into e-commerce better than other existing models and theories.

Keywords: *Expectation Confirmation Model (ECM); Systematic literature review; continuance usage intention; e-commerce*

1. Introduction

Over the past few years, the growth of information technology has become the main factor for many organisations to take advantage on the most advanced technology and the latest innovation to attain competitive advantage. Most advanced technology is widely used to solve their organisational problems and to accelerate economic growth (Abubakar and Tasmin, 2012; Abu Shanab *et al*., 2010). The most important outcome of information technology is the Internet, which has proven to be the most significant product of the century (Mitchell *et al*., 2011). The Internet has been used on a large scale particularly in many industries for financial transaction, electronic payment, e-commerce service, and other banking activities to benefit the customers (Lee, 2009; Mitchell *et al*., 2011). Nevertheless, some people are still reluctant to continue using online comenrece (Yaghoubi, 2010) and typically refuse to use technology. Just like other banks in this world, Jordanian banks are also facing similar challenge. The present study reviewed the literature on e-commerce continuance usage.

2. Review of Literature on Continuance Usage

Recently, huge amount of research has been conducted to identify the determinants of the continuance usage intentions of the customers in the context of online banking services. This is due to the dynamic nature of e-commerce that provide benefits to both customers and service providers with ease of use. Recent developments in IT led EC/IS and marketing scholars to continue studying determinants of e-commerce continuance usage. Some studies continued to study determinants of initial adoption of e-commerce, while more recent studies addressed the determinants of continuance usage of e-commerce (e.g., Chung and Kwon, 2009; Yu and Fang, 2009; Kang et al., 2012; Laforet and Li, 2005; Gu et al., 2009; Shen et al., 2010). Existing studies on continuance usage of e-commerce are analytically reviewed in Table 1.

Table 1: theories on Continuous usage intentions

Author(s)	Theoretical Underpinning
Al-Maghrabi and Dennis (2010)	ECM, and TAM
Liao et al. (2009)	TAM, ECM, and the Cognitive Model (COG)
Mouakket (2013)	ECM
Stone and Baker-Eveleth (2013)	ECM and TAM
Liang and Yeh (2011)	Theory of reasoned action (TRA) and technology acceptance model (TAM)
Shiau and Chau (2011)	ECT and TAM
Pahlevani (2015)	ECM, DTPB
Cheng (2014)	ECM, Flow theory, and Updated DeLone and McLean IS success model
Lin (2011)	Innovation diffusion theory and knowledge-based trust
Adapa (2011)	Integrated technology model of consumer adoption and diffusion of innovations model
Al-Maghrabi and Dennis (2011)	ECM, and TAM
Al-Maghrabi et al. (2011)	ECM, and TAM
Maduku (2013)	TAM
Bataineh et al. (2015)	ECT, TAM, TPB, IDT and UTAUT
Doong and Lai (2008)	Expectation disconfirmation theory (EDT)
Lankton et al. (2010)	ECM
Mohamed et al. (2014)	TAM and ECT
Li and Liu (2014)	IS Continuance Model by Bhattacherjee
Chong (2013)	ECM and TAM
Kang and Lee (2015)	Social cognitive theory (SCT) and IS continuance literature

Copyright © 2018 Authors. This is an open access article distributed under the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

Gu et al. (2009)	TAM
Chou and Hsu (2015)	Social exchange theory and IS use theory
Kim et al. (2014)	social capital theory
Zhou (2014)	Perceived usefulness and flow theory
Tang et al. (2015)	Integrated TAM
Deng et al. (2010)	Expectation disconfirmation theory (EDT)
Alraimi et al. (2015)	ECM
Tsai et al. (2014)	TAM and ECT
Sun et al. (2014)	Bhattacherjee's IS continuance theory, Flow theory, Social capital theory, and the unified theory of acceptance and use of technology (UTAUT)
Oghuma et al. (2015)	ECM
Hsu et al. (2015)	ECM
Wen et al. (2011)	ECM, TAM
Bhattacherjee and Barfar, (2011)	ECM
Chang and Zhu (2012)	ECM
Hung and Jen (2012)	ECM
Ho (2010a)	TAM, ECM, COGM, and SDM
Lee and Kwon (2011)	ECM

This section presents literature review on the continuance usage intention among IS users. The literature is systematically reviewed from 2009 up to 2015, which is the end of this research. This literature looks into the continuance usage intention of IS in general and e-commerce in particular, and it is collected. Table 1 indicates that it is important to notify that many studies investigated the importance and necessity of continuance usage intention for future studies, e.g. (1-3).

From the review of literature on continuance usage intentions, some models have been put forward to explain the continuity of the e-commerce . However, each model is extensively different from one another (4). In addition, many studies used single or mixed models and theories, e.g. (5-11). On top of that, there is still a necessity to present a more comprehensive and integrative model for the continuance usage intention of e-commerce users than the models in existence at the moment (4, 12-15). In this regard, Bhattacherjee and Barfar (16) illustrated that among the models and theories which examined the continuance usage intention of IT, the Expectation Confirmation Model (ECM) has been widely accepted in general. In addition, many researchers stated that ECM model can be employed to look into e-commerce better than other existing models and theories, e.g. (1, 17-22).

Hence, in the same way, many studies concentrated on user satisfaction, and many influential constructs have been brought into the original ECM to extend the model, and in order to explain the power in the continuance usage intention. However, several researchers argued that ECM is more popular and a stronger model as compared to others, e.g (8, 9, 14, 23-29).

Meanwhile, several researchers (12-15, 23, 30-32) also stated that the original ECM model is not comprehensive enough; so there is a need to further develop it, for a clearer comprehension of the continuance usage intention. In addition, this further met the essential requirements, as incorporating the ECM with other factors is important to be considered as the alternative theoretical perspectives to provide improved explanation on the IT continuance usage intention (2, 16).

On the other hand, TAM is also widely used framework for the continuance usage of online services in the recent researches. The original TAM is made up of three key components: perceived ease of use, perceived usefulness, and computer usage. However, researchers argued that TAM has some limitation. For example the basic assumptions of the TAM are rationality of the individuals in making systematic decisions about the adaption of new technologies (Ajzen, 1991). This limits the generalization of TAM in the context where customer's decision about continuance usage based on the emotional motives like satisfaction and personality traits (Chen and Lin 2009, Santhanamery and Ramayah, 2015).

Another stream of researchers, Ho (2010a), Wen et al. (2011), Tsai et al. (2014) and Chong (2013) combines the TAM and ECT to form more comprehensive model, that can integrate the cognitive factors and emotional factors (e.g Perceived ease of use, Perceived usefulness and satisfaction etc.)

2.1. The Technology Continuous Theory

Liao, Palvia (33) presented a new theory called the Technology Continuous Theory (TCT) that explains the continuance intention of the users on IS. As discussed in Chapter 1, three well-known models in the field of information system and technology were combined together to create this theory. These models are the Cognitive Model (COG) by Oliver (34), Expectation Confirmation Model (ECM) by Bhattacherjee (35) and Technology Acceptance Model (TAM) by Davis (36). According to Liao, Palvia (33), all the constructs suggested in COG, ECM and TAM were included in TCT, attitude and satisfaction confirmation, perceived usefulness and perceived ease of use are the other constructs in the TCT theory.

2.2. Technology Acceptance Model

TAM (36) was precisely created to model user acceptance of an IS with the purpose of recognising the behavioural intentions to use the system. TAM was associated to both Theory of Reasoned Action (TRA) (Fishbein and Ajzen, 1975), Theory of Planned Behaviour (TPB) (Ajzen, 1991). Four internal variables related to the actual technology usage were tested by TAM. These internal variables were the attitude toward use, ease of use (PEU), Perceived Usefulness (PU) and behavioural intention to use.

The constructs of TRA are belief, attitude, intention and behaviour, which was rooted in the study of social psychology. TRA theorized that behavioural intention is ascertained by the outlook of an individual and the influence exerted on this individual by persons that holds in high esteem. Although researchers assert that the TRA has been successfully used to forecast an individual's intention in various technological subjects (Ajzen and Fishbein, 1980; Grandón et al., 2011; Korzaan, 2003), the TRA is said to be a poor predictor of actual behaviour in situations where the subjects under study have no conscious control over behavioural performance or where the available information is incomplete (Ajzen, 1991; Ajzen and Fishbein, 1980). The ultimate limitation of this theory is derived from the assumption that behaviour is within the conscious control of an individual. In other words, the theory only applies to behaviour that is consciously considered in advance.

According to Ajzen (1991), Theory of Planned Behaviour (TPB) is an extension of the TRA where a concept is added to incorporate the difficulty or ease of performing a behaviour. Perceived Behavioural Control (PBC) has been developed as a powerful predictor of intention, outperforming attitudes and subjective norms. Ajzen's reason for extending the TRA was that it was limited to behaviours in which people do not have complete conscious control (Ajzen, 1991). it has been observed that it is improbable that monolithic belief structures (found in the TPB) denoting various dimensions will be consistently linked to the antecedents of intention (Teo and Pok, 2003). On top of that, the TPB needs to have a unique operationalization in each setting where it is used (Mathieson, 1991). Moreover, according to (Taylor and Todd, 1995), the TPB model still needs individuals who are motivated to perform certain behaviours.

The Technology Acceptance Model (TAM), which evolved from the TRA, is well-known as a model that is directed at the behaviours and attitudes of individuals toward technology (Davis, 1989). Although several researchers have tested the TAM, modified its parts, and replicated it according to various situations and settings, only minor alterations have been made to the original TAM. The original TAM is made up of three key components: perceived ease of use, perceived usefulness, and computer usage. Davis saw "usage" as an indicator of technology acceptance and conducted a study to develop a validated tool for perceived ease of use and perceived usefulness. The Technology Acceptance Model (TAM) is depicted in Figure 1.

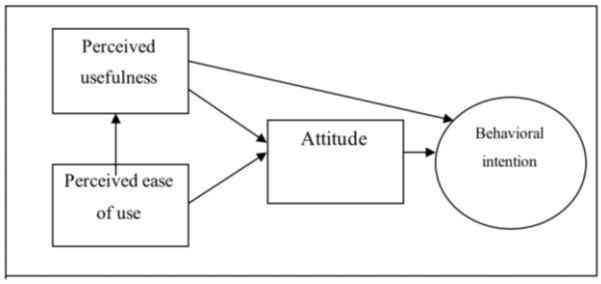


Fig. 1: Technology Acceptance Model (Source: Davis (36))

Legris, Ingham (37) did a review of the literature on TAM and decided that although the TAM is a useful model, it has to be incorporated into a wider perspective. Their review covered a total of 80 articles that had been published in six journals from 1980 to 2001. The results showed the changing shape and coverage of the TAM, and Legris, Ingham (37) concluded that conflicting and contradictory results began to appear once the model was increasingly tested. In addition, Ma and Liu (38), did a meta-analysis of 26 studies and established that powerful and significant relationships existed between perceived usefulness and acceptance, and perceived usefulness (PU) and perceived ease of use (PEOU). However, there was a weak connection between perceived ease of use and acceptance, and its significance did not get through the fail-safe test.

Tsai et al. (39) indicated that users' continuance usage intention is jointly determined by satisfaction level, perceived compatibility and perceived usefulness. Moreover other studies indicate that TAM factors, ease of use, usefulness and attitude have a direct influence on the usage of e-commerce (40-45).

2.3. Cognitive Model

Cognitive Model (COG) by Oliver (34), explained and predicted the user behavior in information system acceptance and continuance. This model was employed to develop the ECM and was extensively applied to evaluate consumer satisfaction and post-purchase behavior. The COG defines satisfaction as a function of expectation and disconfirmation, and expectation is an attitude antecedent. The COG clearly describes the cognitive process of how these variables affect the sustainability of a product or service during different adoption stages. Cognitive Model (COG) is depicted in Figure 2.

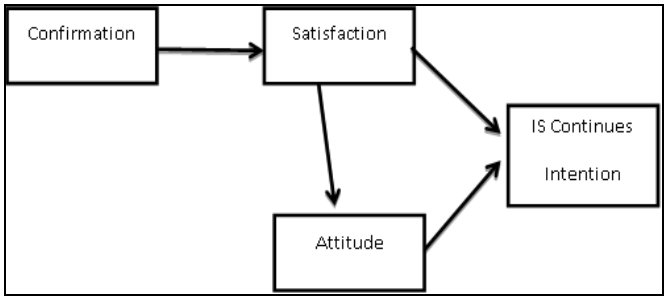


Fig. 2: Cognitive Model (COG)
Source: Oliver (34)

In this model satisfaction is postulated as an antecedent to post-exposure attitude, and there are three important constructs in this model, confirmation, satisfaction, and attitude. This model was mixed with two other models the Technology Acceptance Model (TAM) and the Expectation Confirmation Model (ECM), in order to develop an enhanced model of IS continuance which is the technology acceptance model (TCT) (33).

2.4. Expectation Confirmation Model

Bhattacherjee (2001b) introduced the Expectation Confirmation Model (ECM). This model was adapted from Oliver's Expectation-Confirmation Theory (ECT) which involved a customer behaviour model usually used to identify and predict satisfaction and repurchase intentions. According to Bhattacherjee (2001b), user satisfaction was affected by two major determinants: post-adoption expectations regarding the IS and discrepancies between pre-adoption expectations and actual performance of the IS. Users' IS continuance intention was determined primarily by their satisfaction with prior use. ECT expectation confirmation theory theorizes that user satisfaction was determined by expectation of the IS and confirmation of expectation following actual use. ECM was shown in Figure 3.

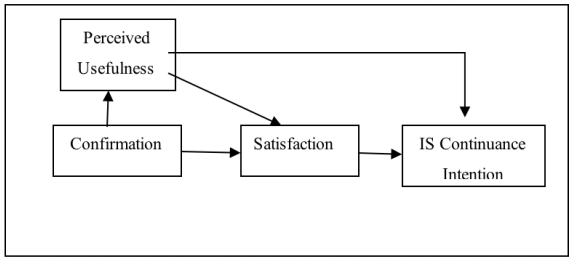


Fig. 3: Expectation Confirmation Model Source: Bhattacherjee (35)

As posited by Bhattacherjee (2001b), the process by which consumers reached repurchase intentions in an ECT framework was as follows. Prior to making any purchase, consumers initially formed an initial expectation of a specific product or service. They then accepted and used that product or service and after a period of initial consumption, they formed perceptions about its performance. After this period of initial consumption, they assessed its perceived performance vis-à-vis their original expectation and determined the extent to which their expectation was confirmed. Based on their confirmation level and expectations on which that confirmation was based, users then decided on their satisfaction level. Finally, satisfied consumers formed a repurchase intention while dissatisfied consumers discontinued its use. Expectation provided the baseline level, against which confirmation was assessed by users to determine their evaluative response or (Bhattacherjee, 2001b). ECM replaced pre-consumption expectations with post-consumption expectations and postulates that satisfaction was a function of expectations and confirmation (Liao et al., 2009).

2.5. Variables of Technology Continuance Theory

As mentioned before that Technology Continuance Theory (TCT) was presented by Liao, Palvia (33) as a new theory on predicting the users' continuance intention towards a technology. It was a mixture of three most well-known theories in the research of technology and information system: Technology Acceptance Model (TAM) by Davis (36), Expectation Confirmation Model (ECM) by Bhattacherjee (35) and Cognitive Model (COG) by Oliver (34).

Researchers have strived for more than a decade to come up hypothetical models that include TAM and ECM to describe and forecast the acceptance and continuance behavior of users with regard to information system (IS). Developed for the study of continuance behavior, the cognitive model is a blending of several variables from TAM and ECM. The TCT can be utilized at the various usage phases' i.e. initial, short-term and long-term usage. TCT is a substantially enhanced model when compared to the TAM, ECM and COG in terms of the width of applicability and explanatory power (33).

Liao, Palvia (33) delves into the generation of an improved model for continuance in relation to ISs that can be applied throughout the usage phases. Initially, an analysis of the TAM, ECM and COG models was conducted. These models differ in their convictions on the fundamental concepts that influence the behavior of users. The analysis revealed disparities among the three models in terms of explanatory power, benefits and setbacks. Moreover, COG, ECM and TAM have excellent explanatory power in the continuous intention area (46). The new Technology Continuance

Theory (TCT) was created through the merging of six concepts procured from the three models TAM, ECM and COG (33).
A fundamental characteristic of the TCT is its composition, which is a merging of the attitude, satisfaction concepts into a singular continuance model as shown in Figure 2.5. The established concepts of perceived usefulness and perceived ease of use were included in the TCT to serve as first-level antecedents. Experiments conducted to investigate the effectiveness of models confirmed the superiority of the TCT. It holds the advantage over the other models both quantitatively and qualitatively with regard to the different phases of new technology usage (33).
In addition, Liao, Palvia (33) indicated a study of three hypothetical models to clarify the disparities in user usage behavior throughout the various phases of IS utilization. The result of the study revealed that the determining factors and thought processes related to a user's decision regarding usage are influenced by usage experience. The outcome prospects are the major antecedents of first-time user attitude and satisfaction, which accordingly considerably affects intention to use and the continuous to use. In the circumstance of short-term users, the intention to carry on is swayed by user satisfaction, which is a straightforward operation of the confirmation between expectations and perceived performance. While it is apparent that satisfaction has a fleeting effect on behavioral intention, this occurrence can still lead to a rejection or a willingness to proceed with a short-term usage of the system. The ultimate and long-term accomplishment of the IS are dependent on the outlook of the user. Attitude hypothetically traces its roots to the post-expectations of adopters which are the outcomes procured from cognitive dissonance and assimilation (33).

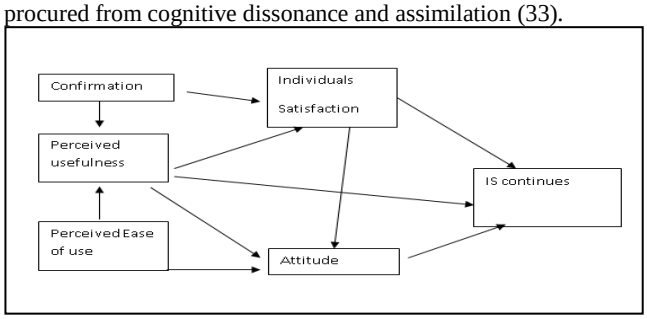


Fig. 4: Technology Continuance Theory (TCT) Source: Liao, Palvia (33)

The rationale behind the usage of the TCT model in this study was because TAM, ECM and COG had very different theories regarding the constructs explanations that governed user behaviour. The six constructs in the three models were filtered and combined to propose the new Technology Continuance Theory (TCT) as shown in Figure 2.4. Liao, Palvia (33) stated that the major contribution of TCT is to integrate two central constructs, attitude and satisfaction, into one continuance model and was applicable for users at different stages of the adoption life cycle, i.e., initial, short-term and long-term users. TCT was a major improvement over TAM, ECM and COG models in terms of breadth of applicability and explanatory power. From the above models namely TAM, ECM and COG and the Technology Contentious Theory TCT, the researcher was able to define the main variables that will be used in the research framework for this study.

3. Findings

The summary of previous studies on models and theories that been used in the TCT theory is illustrated in Table 2.

Table 2: Models Used in Technology Continuous Theory

Authors	Study Title/ Purpose	Participants and Instrument
(36)	Perceived usefulness, perceived ease of use and user acceptance of information technology	152 questionnaires among graduates
Al-Gahtani (2011)	Modelling the electronic transactions acceptance using an extended technology acceptance model	The questionnaire was conducted among Saudi 128 students
Al-Rfou (45)	The usage of Internet Banking Evidence from Jordan	75 Questionnaires among bank customers in Jordan
Ali El-Qirem (44)	Critical factors influencing e-commerce Service adoption in Jordanian commercial banks: a proposed model	Sample of 3000 Jordanian bank customers via questionnaire
Khrais (43)	The adoption of online banking: a Jordanian perspective	100 online banking customers in Jordan via questionnaire
Al-Ajam and Nor (47)	Influencing factors on behavioural intention to adopt Internet banking service	1286 respondents through a survey
Lim et al. (41)	Adoption of online banking in Manila: what the commercial banks should learn to be competitive	250 online banking users and non-users from Manila via questionnaire
Tsai et al. (39)	The influences of system usability and user satisfaction on continued Internet banking services usage intention: empirical evidence from Taiwan	304 customers from a particular industry in Taiwan via questionnaire
Lee (2010)	Explaining and predicting users' continuance intention toward e-learning: An extension of the expectation–confirmation model	363 students on e-learning via questionnaire
(33)	Information technology adoption behaviour life cycle: Toward a Technology Continuance Theory (TCT)	626 students from Cyber University via online questionnaires
(35)	Understanding information systems continuance: an expectation-confirmation model.	Online banking users
(48)	What drives purchase intention for paid mobile apps?–An expectation confirmation model with perceived value	A survey of 507 respondents concerning their app usage perceptions
(49)	Explaining the e-government usage using expectation confirmation model: the case of electronic tax filing in Malaysia	Collected data from 116 taxpayers in Penang, Malaysia via surveys

Table 2 shows the systematic review of literature based on the TAM, ECM, COG and TCT in the context of continuous intention. For example, Liao et al. (2009) used TCT, TAM, ECM and COG on 626 students via online questionnaires to test continuous intention on IS acceptance and continuance. Hsu and Lin (2015) used continuance intention, satisfaction, perceived usefulness and confirmation to test the TCT theory. Table 2.3 indicated that most of the studies used TAM, ECM and COG and TCT and discussed the factors that been used in these aforementioned models and theory (49) (48) (35) (33) Lee, 2010; Tsai et al., (47). Upon further review, the researcher found that these factors have a significant relationship, and they affect the continuance usage of e-commerce , which make the TCT theory factors, ease of use, usefulness, confirmation, attitude and satisfaction to be strongly related and have a significant relationship. Moreover, some other studies indicated that there are positive relationships between system quality, information quality, service quality, internet self-efficacy, perceived usefulness, intrinsic, user satisfaction, and continuous intention to use in e-learning system in jordan (Almahamid and Abu Rub, 2011), also The result of Alsamydai, et al., (2012) study indicated that the factors relating to E-commerce service quality, personal factors and perceived usefulness have an influence on consumer satisfaction and continuation in dealing with E-commerce services. However, the aforementioned studies are fragmented and do not assess the interplay of these constructs collectively. Thus, this study is timely, i.e. to develop a model that integrates the aforementioned constructs to improve the continuance usage of e-commerce in Jordan.

4. Conclusions

Earlier technology acceptance theories and models namely Theory of Reasoned Action (TRA) (50), Theory of Planned Behaviour (TPB) (51), and Technology Acceptance Theory (TAM) (36) were bound by certain limitations. For example, the constructs of TRA are belief, attitude, intention, and behaviour – rooted from the study of social psychology. TRA theorises that behavioural intention is ascertained by the outlook of an individual and the influence exerted on this individual. Although researchers assert that the TRA has successfully been used to forecast an individual intention in various technological subjects (52-54), the TRA is perceived as a poor predictor of actual behaviour in situations where the subjects under study have no conscious control over behavioural performance or where the available information is incomplete (51, 52).

The ultimate limitation of TRA is derived from the assumption that behaviour is within the conscious control of an individual. In other words, the theory only applies to behaviour that is consciously considered in advance. According to Ajzen (51), Theory of Planned Behaviour (TPB) is an extension of the TRA where a concept is added to incorporate the difficulty or ease of performing a behaviour. The reason for extending the TRA was due to behavioural limitation where individuals do not have a complete control over their consciousness (51). Moreover, it has been observed that it is improbable that monolithic belief structures (found in the TPB) denoting various dimensions will be consistently lined to the antecedents of intention (55). On top of that, the TPB must have a unique operationalization in each setting being used (56). Moreover, according to Taylor and Todd (57), the TPB model insists the need of individuals who are motivated to perform certain behaviours.

Next, the Technology Acceptance Model (TAM), which was evolved from the TRA, is primarily known as a model that is directed at the behaviour and attitude of individuals towards technology (36). Although (44, 45) have modified, and replicated the TAM according to various settings, only minor alterations have been made to the original TAM. The original TAM is made up of three key components: perceived ease of use, perceived usefulness, and computer usage. Davis (1989) defined "usage" as an indicator of technology acceptance and conducted a study to develop validate a tool for perceived ease of use and perceived usefulness.

The Cognitive Model (COG) by Oliver (34) was proposed to explain and predict the user behaviour in information system acceptance and continuance. This model was initially employed to develop the Expectation-Confirmation Model (ECM) and has been extensively applied to evaluate consumer satisfaction and post-purchase behaviour. The COG defines satisfaction as a function of expectation and disconfirmation, while expectation is an attitude antecedent (Oliver, 1980). The COG clearly describes the cognitive process of how these variables affect ultimate success and sustainability of a product or service during different adoption stages.

Bhattacherjee (35) proposed the Expectation-Confirmation Model (ECM) which is now known as one of the most popular models to explain the satisfaction and continuance usage behaviour among information system users. The ECM posits that an individual intention to continue IT usage is dependent on three variables: (i) the user's level of satisfaction with IT; (ii) the extent of user's confirmation of expectations; and (iii) the post adoption expectations in the form of perceived usefulness. The ECM is broadly applied to examine the continuance usage among information system users rather than just explaining satisfaction. Moreover, and more importantly, ECM describes confirmation as "the congruence between expectation and actual performance" (Bhattacherjee, 2001a, p. 359), and assumes that the influence of perceived performance is already explained by confirmation.

Alternatively, the TCT was presented by Liao, Palvia (33) as a new theory on predicting the user's continuance usage towards a technology. Upon review, the researchers discovered that TCT is a mixture of three most well-known theories in the research of technology and information system, namely Technology Acceptance Model (TAM) by Davis (36), Expectation Confirmation Model (ECM) by Bhattacherjee (35), and Cognitive Model (COG) by Oliver (34). TCT is a three-level model with information system continuance usage as its final dependent variable. It combines two central constructs, namely attitude and satisfaction, and three first-level antecedents which are confirmation, perceived usefulness, and perceived ease of use. It is a substantially enhanced model in comparison to the TAM, ECM, and COG in terms of the width of applicability and explanatory power (33).

Moreover, COG, ECM, and TAM have excellent explanatory power in the continuous intention area (46). According to a study by Liao, Palvia (33), TAM, COG, and ECM have different explanatory powers with relative strengths and weaknesses. For example, with regards to explanatory power, the Cognitive Model was deemed as superior to the other two, and the Expectation Confirmation Model performed better than the Technology Acceptance Model. The six constructs in the three models were synthesised to propose the new Technology Continuance Theory (TCT). The main theoretical contribution of TCT is that it combines the two central constructs of attitude and satisfaction into one continuance model (Liao, Palvia (33).

It also retains the well-established constructs of perceived usefulness and perceived ease of use as first-level antecedents. The superiority of TCT over other models is demonstrated by empirical means. When considering the adoption of various stages of lifecycle, the TCT represents a substantial improvement over the TAM, ECM, and COG models quantitatively and qualitatively. Quantitatively, TCT provides higher explanatory power for not only behavioural intention, but also for attitude and satisfaction. Qualitatively, a major theoretical contribution of TCT is that it combines two central constructs: attitude and satisfaction into one continuance model. In order to support and assist customers in their use of e-commerce, the factors influencing customers to use e-commerce services need to be determined.

References

[1] Sun Y, Liu L, Peng X, Dong Y, Barnes SJ. Understanding Chinese users' continuance intention toward online social networks: an integrative theoretical model. Electronic Markets. 2014;24(1):57-66.

[2] Bhattacherjee A, Lin C-P. A unified model of IT continuance: three complementary perspectives and crossover effects. European Journal of Information Systems. 2014.

[3] Iglesias-Pradas S, Pascual-Miguel F, HernáNdez-GarcíA Á, Chaparro-PeláEz J. Barriers and drivers for non-shoppers in B2C e-commerce: A latent class exploratory analysis. Computers in Human Behavior. 2013;29(2):314-22.

[4] Ho CH. Continuance Intention of E-Learning Platform: Toward an Integrated Model. International Journal of Electronic Business Management. 2010;8(3):206-15.

[5] Hayashi A, Chen C, Ryan T, Wu J. The role of social presence and moderating role of computer self efficacy in predicting the continuance usage of e-learning systems. Journal of Information Systems Education. 2004;15:139-54.

[6] Roca JC, Chiu CM, Martínez FJ. Understanding e-learning continuance intention: An extension of the Technology Acceptance Model. International Journal of Human-Computer Studies. 2006;64(8):683-96.

[7] Khalifa M, Liu V. Online consumer retention: contingent effects of online shopping habit and online shopping experience. European Journal of Information Systems. 2007;16(6):780-92.

[8] Qin M. Consumer Behavior towards Continued Use of Online Shopping: An Extend Expectation Disconfirmation Model. Integration and Innovation Orient to E-Society Volume 1. 2007:400-7.

[9] Premkumar G, Bhattacherjee A. Explaining information technology usage: A test of competing models. Omega. 2008;36(1):64-75.

[10] Yue-Yang C, Hui-Ling H, Wei-Neng H, Shih-Fu S, editors. Confirmation of Expectations and Satisfaction with an On-Line Service: The Role of Internet Self-Efficacy. New Trends in Information and Service Science, 2009 NISS '09 International Conference on; 2009 June 30 2009-July 2 2009.

[11] Hung MC, Yang ST, Hsieh TC. An Examination of the Determinants of Mobile Shopping Continuance. International Journal of Electronic Business. 2012;10(1):29-37.
[12] Yuan S, Liu Y, Yao R, Liu J. An investigation of users' continuance intention towards mobile banking in China. Information Development. 2014:0266666914522140.
[13] Luqman A, Razak RC, Ismail M. A Review on Mobile Commerce Continuance Intention Studies and its Underlying Model. 2014.
[14] Hsu M-H, Chang C-M, Chuang L-W. Understanding the determinants of online repeat purchase intention and moderating role of habit: The case of online group-buying in Taiwan. International Journal of Information Management. 2015;35(1):45-56.
[15] Min Q, Shenghua X, editors. An Extended Expectation Confirmation Model for Information Systems Continuance2007: IEEE.
[16] Bhattacherjee A, Barfar A. Information Technology Continuance Research: Current State and Future Directions. Asia Pacific Journal of Information Systems. 2011;21(2).
[17] Mohamed N, Hussein R, Hidayah Ahmad Zamzuri N, Haghshenas H. Insights into individual's online shopping continuance intention. Industrial Management & Data Systems. 2014;114(9):1453-76.
[18] Al-Maghrabi T, Dennis C, Vaux Halliday S. Antecedents of continuance intentions towards e-shopping: the case of Saudi Arabia. Journal of Enterprise Information Management. 2011;24(1):85-111.
[19] Lee Y, Kwon O. Intimacy, Familiarity and Continuance Intention: An Extended Expectation-Confirmation Model in Web-Based Services. Electronic Commerce Research and Applications. 2010.
[20] O. Pappas I, G. Pateli A, N. Giannakos M, Chrissikopoulos V. Moderating effects of online shopping experience on customer satisfaction and repurchase intentions. International Journal of Retail & Distribution Management. 2014;42(3):187-204.
[21] Karami M, Hozhabri AA, Asgharizadeh E, Md Nor K, Khan S-U-R, Hajizadeh Gashti MA, editors. Elements affect online repurchase intentions of Malaysia's online shoppers. e-Commerce in Developing Countries: With Focus on e-Trust (ECDC), 2014 8th International Conference on; 2014: IEEE.
[22] Hozhabri A, Raeesi R, Nor KM, Salimianrizi H, Tayebiniya J, editors. Online re-purchase intention: Testing expectation confirmation model ECM on online shopping context in Iran. e-Commerce in Developing Countries: With Focus on e-Trust (ECDC), 2014 8th International Conference on; 2014: IEEE.
[23] Chong AY-L. Understanding mobile commerce continuance intentions: an empirical analysis of Chinese consumers. The Journal of Computer Information Systems. 2013;53(4):p22-30.
[24] Gwebu KL, Wang J, Guo L. Continued usage intention of multifunctional friend networking services: A test of a dual-process model using Facebook. Decision Support Systems. 2014;67:66-77.
[25] Kang YS, Hong S, Lee H. Exploring continued online service usage behavior: The roles of self-image congruity and regret. Computers in Human Behavior. 2009;25(1):111-22.
[26] Lee M-C. Explaining and predicting users' continuance intention toward e-learning: An extension of the expectation-confirmation model. Computers & Education. 2010;54(2):506-16.
[27] Lankton NK, Wilson EV, Mao E. Antecedents and determinants of information technology habit. Information & Management. 2010;47(5):300-7.
[28] Kim B. An empirical investigation of mobile data service continuance: Incorporating the theory of planned behavior into the expectation–confirmation model. Expert Systems with Applications. 2010;37(10):7033-9.
[29] Kim B, Kang M, Jo H. Determinants of Postadoption Behaviors of Mobile Communications Applications: A Dual-Model Perspective. International Journal of Human-Computer Interaction. 2014;30(7):547-59.
[30] Ho CH. Continuance Intention of E-Learning Platform: Toward an Integrated Model. International Journal of Electronic Business. 2010;8(3):206-15.
[31] Kang YS, Lee H. Understanding the role of an IT artifact in online service continuance: An extended perspective of user satisfaction. Computers in human behavior. 2010;26(3):353-64.
[32] Guinea AOD, Markus ML. Why break the habit of a lifetime? Rethinking the roles of intention, habit, and emotion in continuing information technology use. Mis Quarterly. 2009;33(3):433-44.
[33] Liao C, Palvia P, Chen J-L. Information technology adoption behavior life cycle: Toward a Technology Continuance Theory (TCT). International Journal of Information Management. 2009;29(4):309-20.
[34] Oliver RL. A cognitive model of the antecedents and consequences of satisfaction decisions. Journal of marketing research. 1980:460-9.
[35] Bhattacherjee A. Understanding information systems continuance: an expectation-confirmation model. MIS quarterly. 2001:351-70.
[36] Davis. Perceived usefulness, perceived ease of use, and user acceptance of information technology. MIS quarterly. 1989:319-40.
[37] Legris P, Ingham J, Collerette P. Why do people use information technology? A critical review of the technology acceptance model. Information & management. 2003;40(3):191-204.
[38] Ma Q, Liu L. The technology acceptance model: a meta-analysis of empirical findings. Journal of Organizational and End User Computing (JOEUC). 2004;16(1):59-72.
[39] Tsai H-T, Chien J-L, Tsai M-T. The influences of system usability and user satisfaction on continued Internet banking services usage intention: empirical evidence from Taiwan. Electronic Commerce Research. 2014;14(2).
[40] Montazemi AR, Saremi HQ, editors. Factors Affecting Internet Banking Pre-Usage Expectation Formation. System Sciences (HICSS), 2013 46th Hawaii International Conference on; 2013: IEEE.
[41] Lim EC, Filiz K, KIRAN E, Alfiero S, Secinaro S, Venuti F, et al. Adoption of online banking in Manila: What the commercial banks should learn to be competitive. 2012.
[42] Al-Ajam AS, Nor KM. Internet Banking Adoption: Integrating Technology Acceptance Model and Trust. European Journal of Business and Management. 2013;5(3):207-15.
[43] Khrais LT. The adoption of online banking: A Jordanian perspective. European Journal of Business and management. 2012;4(16):163-71.
[44] Ali El-Qirem I. Critical Factors Influencing E-Banking Service Adoption in Jordanian Commercial Banks: A Proposed Model. International Business Research. 2013;6(3).
[45] Al-Rfou AN. The Usage of Internet Banking Evidence from Jordan. Asian Economic and Financial Review. 2013;3(5):614-23.
[46] Ho C-H. Continuance intention of e-learning platform: Toward an integrated model. International Journal of Electronic BusinessManagement. 2010;8(3):206.
[47] Al-Ajam AS, Nor KM. Customers' Adoption of Internet Banking Service: An Empirical Examination of the Theory of Planned Behavior in Yemen. International Journal of Business & Commerce. 2013;2(5).
[48] Hsu C-L, Lin JC-C. What drives purchase intention for paid mobile apps?–An expectation confirmation model with perceived value. Electronic Commerce Research and Applications. 2015;14(1):46-57.
[49] Santhanamery T, Ramayah T. Explaining the e-Government Usage Using Expectation Confirmation Model: The Case of Electronic Tax Filing in Malaysia. Government e-Strategic Planning and Management: Springer; 2014. p. 287-304.
[50] Fishbein M, Ajzen I. Belief, attitude, intention and behavior: An introduction to theory and research1975.
[51] Ajzen I. The theory of planned behavior. Organizational behavior and human decision processes. 1991;50(2):179-211.
[52] Ajzen I, Fishbein M. Understanding attitudes and predicting social. Behaviour Englewood Cliffs, NJ: Prentice-Hall. 1980.
[53] Grandón EE, Nasco SA, Mykytyn Jr PP. Comparing theories to explain e-commerce adoption. Journal of Business Research. 2011;64(3):292-8.
[54] Korzaan ML. Going with the flow: Predicting online purchase intentions. Journal of Computer Information Systems. 2003;43(4):25-31.
[55] Teo TS, Pok SH. Adoption of WAP-enabled mobile phones among Internet users. Omega. 2003;31(6):483-98.
[56] Mathieson K. Predicting user intentions: comparing the technology acceptance model with the theory of planned behavior. Information systems research. 1991;2(3):173-91.
[57] Taylor, Todd. Understanding information technology usage: a test of competing models. Information systems research. 1995;6(2):144-76.