The effect of individual factors on user behaviour and the moderating role of trust: an empirical investigation of consumers' acceptance of electronic banking in the Kurdistan Region of Iraq

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Abstract

The popularity of self-service technologies, particularly in the banking industry, more precisely with electronic banking channel services, has undergone a major change as individuals' lifestyles develop. This change has affected individuals' decisions about accepting any new Information Technology, and Information Communications Technology services that are electronically mediated, for example, E-Banking channel services. This study investigates the effect of Individual Factors on User Behaviour, and the moderating role of Trust in the relationship between Individual Factors, and User Behaviour based on the Unified Theory of Acceptance and Use of Technology. This research proposes a model, with a second-order components research framework. It improves current explanations of the acceptance of electronic banking channel services. Furthermore, this study highlights the role of trust on the acceptance of electronic banking channel services, which is the most crucial consideration in customers' decisions to accept electronic banking channels services. Thus, trust is the spine of the system in the Kurdistan Region of Iraq. Data were collected using an online questionnaire that received 476 valid responses from academic staff who work at the University of Sulaimani. The model tested data using the Partial Least Squares-Structural Equation Modelling approach. The results show that Individual Factors have a positive effect on User Behaviour. Besides, results show that trust moderates the relationship between Individual Factors and User Behaviour.

Keywords: Cash society, Offline banking, Technology acceptance model, Decision makers, PLSpredict

Introduction

The Kurdistan Region of Iraq (KRI) has developed in multiple sectors over the past two decades. Specifically, in Information Technology (IT), Information Communications Technology (ICT) (Wang et al. 2017) and the financial industry. The banking industry, however, still operates in a traditional way in the KRI. Nonetheless, the lack of

transparency and the existence of corruption in all sectors, particularly in the financial sector, has prevented the growth of Electronic Banking services in the Kurdistan Region, and is one of the weak points of the government system. However, the Kurdistan Region Government (KRG) wants to have an Electronic Government. E-Banking still does not operate in the KRI and unfortunately, Kurdish society is still a cash society.

The banking system in the Kurdistan region of Iraq operates in traditional ways (Riffai et al. 2011), with no challenging features existing to meet the requirement of this century. The central bank of the Kurdistan region of Iraq has two offices in the KRI, which are located in Erbil, and Sulaymaniyah; however, none of them has a branch that customers can use or belongs to the central bank of Iraq, which is located in Baghdad, and is controlled by the Iraqi government. The two offices are responsible all financial procedures, for example, distributing government employees' salaries and other banking activities in the KRI.

E-Banking is essential, for the KRI, for customers, and Banks nowadays; however, this is the first time that research has been done on it's' use in the KRI. The acceptance of E-Banking service in the KRI can be a new area for research; however, E-Banking itself is not a new topic as many studies have been carried out on it, using different theories. For example, The Technology Acceptance Model (TAM 1, 2, and 3, Theory of Reasoned Action (TRA), Theory of Planned Behaviour (TPB), Unified Theory of Acceptance, and Use of Technology (UTAUT 1, and 2), and a self-designed model used by most of the researchers. (Hama Khan 2019; Khan 2018; Hamakhan 2020).

Electronic banking services are a new kind of reform in banking services and play an essential role in establishing electronic government, and e-commerce (Sohail and Shanmugham 2002; Huang et al. 2011). Electronic banking includes all banking services based on the implementation of the electronic system. E-Banking has become a crucial phenomenon in the banking industry, and it will continue as more progress is made in information technology. Thus, the financial industry is gradually experiencing a transformation from a cash-based system to a "paperless" system, which is more convenient and reliable.

In addition, customers' satisfaction with banking services depends on there trust; whether the banking service is offline, or online (Kingshott et al. 2018). Trust affects the commitment and loyalty that E-Banking can attract significantly (López-Miguens and Vázquez 2017), whether the bank is local, national, or foreign branded in the country (Kingshott et al. 2018).

E-Banking is defined as the automated delivery of new and traditional banking products and services directly to customers through electronic and interactive communication channels. According to Hoehle et al. (2012), E-Banking has four channels. These are Automated Teller Machines (ATMs) (Dabholkar 1996), Telephone banking services (Ahmad and Buttle 2002), Internet banking (Tan and Thompson 2000; Bhattacherjee 2001; Pikkarainen et al. 2004; George 2018), and Mobile banking (Hoehle and Lehmann 2008; Tam and Oliveira 2017; Chawla and Joshi 2018).

This paper aims to examine the proposed second-order components research model and highlights the role of trust in the acceptance of Electronic Banking channel services. This is the key concern that affects consumers' willingness to accept Electronic Banking channels services, and trust is the spine of the system in the Kurdistan Region of

Iraq. Moreover, it brings up trust as a moderator in the relationship between individual factors, and user behaviour based on the Unified Theory of Acceptance and Use of Technology.

Literature review, and research hypothesis

Beyond the significant references of TAM 1 introduced by Davis et al. (1989) and Davis (1989) as an extension of TRA (Fishbein and Ajzen 1975), TAM 2 (Venkatesh and Davis 2000; Venkatesh 2000), TAM 3 (Venkatesh and Bala 2008), UTAUT 1 (Venkatesh et al. 2003), and UTAUT 2 (Venkatesh et al. 2012), which are related to accepting new technology, researchers are still citing, and extending them in it's researches' model. The most widely used theories can be TAM 1, 2, and 3, and UTAUT 1, and 2 in order to determine the factors that can influence the user's decision about accepting particular new technology, for instance, E-Banking services. Thus, users can establish a barrier to highly successful of E-Banking services. However, the operations of E-Banking services in the KR are still out of the system, where many factors beyond the initiation of this technology. Venkatesh et al. (2004) created a differentiation among acceptance, adoption, and usage decisions. The authors described acceptance as the people's initial decision to interact with the technology. Furthermore, adoption occurs after having some direct experience with the technology, and after the decision to accept the technology is made. Usage decisions refer to judgments about continuing to use the technology subsequent to significant direct experience with it, and where an individual has acquired significant knowledge of the technology (Chao et al. 2021).

According to Venkatesh and Brown (2001), E-Banking should be accepted, trusted, adopted, and used. In order to shed light on each step, a bunch of studies tested each step by employing different theories. Giovanis et al. (2019) investigated, which of four well-established theoretical models (i.e., TAM) (Munoz-Leiva et al. 2017; Alalwan et al. 2018a, b), the theory of planned behaviour (Lee 2008; Yadav et al. 2015), UTAUT (Cao and Niu 2019), the decomposed theory of planned behaviour (DTPB) best explains potential users' behavioural intentions (Shareef et al. 2018) to adopt mobile banking (MB) services. Moreover, other factors affect each of the steps, respectively, action by the technological leadership, e-trust (Salem et al. 2019), e-loyalty (Esterik-Plasmeijer and Raaij 2017; Berraies et al. 2016), customers' value, for online personalization, customers' concern, for privacy, and the propensity of technology adoption (Rahi et al. 2019). The best prediction of the use of new technologies may require the testing of the principal factors in order to learn about the customers' satisfaction (Thakur 2014; Sharma and Sharma 2019), customer loyalty (Shankar and Jebarajakirthy 2019), word-of-mouth (WOM) (Sampaio et al. 2017) intention, and adoption (Alalwan et al. 2018a, b; Siyal et al. 2019; Chauhan et al. 2019), how customer use the system (Baabdullah et al. 2019a, b), and focusing on the role of users' commitment (Yuan et al. 2019), which is called self-service technologies (Chaouali and El-Hedhli 2019). Table 1 presents a summary of the main findings of selected empirical studies based on TAM.

Moreover, Venkatesh et al. (2003) presented the Unified Theory of Acceptance, and Use of Technology UTAUT 1 as the integration of eight different models of acceptance and use of technology. UTAUT is a definitive model that synthesizes, what is known and provides a foundation to guide future research in this area (Venkatesh et al. 2003).

Table 1 Summary of the main findings of selected empirical studies based on TAM

References	Finding	Sample	Country or region
Chong et al. (2010)	Perceived usefulness, trust, and government support all positively associated with the intention to use online banking. Contrary to the technology acceptance model, perceived ease of use was found to be not significant in this study	103 Customers	Vietnam
Liébana-Cabanillas et al. (2016)	Ease of access, ease of use, trust, and usefulness had a positive effect on satisfaction with electronic banking	946 Users	Spain
Alalwan et al. (2018a)	Perceived usefulness, perceived enjoyment, trust, and innovativeness are statistically supported to have a significant impact on the Saudi customer intention to adopt mobile internet	357 Customers	Saudi Arabia
Kumar et al. (2018)	Perceived usefulness and perceived ease of use significantly affect user satisfaction, and intention to continually use M-wallets	250 Students	India
Chauhan et al. (2019)	The significant positive influence of perceived usefulness, and ease of use on consumer's intention to adopt internet banking	487 Consumers	India
Baabdullah et al. (2019a)	The impact of perceived privacy, perceived security, perceived usefulness on the customers' continued intention to use mobile banking	320 Customers	Saudi Arabia
Saji and Paul (2018)	The results confirm the usefulness of TAM in predicting mobile banking adoption behaviour	214 Customers	India
Chawla and Joshi (2017)	Perceived trust, PEOU, perceived lifestyle compatibility, and perceived efficiency were found to positively, and significantly affect user intention. User intention was found to significantly vary across demographic groups based on gender and household income	367 Customers	India
Kumar et al. (2017)	Perceived usefulness and perceived ease of use, social influence and trust propensity are the underlying factors in respect of the behavioural intention to use mobile banking services	144 Students	India
Lee (2008)	The intention to use online banking is adversely affected mainly by the security/privacy risk, as well as financial risk and is positively affected mainly by perceived benefit, attitude, and perceived usefulness	368 Users	Taiwan
Akturan and Tezcan (2012)	Perceived usefulness, perceived social risk, perceived performance risk, and perceived benefit directly affect attitudes towards mobile banking, and that attitude is the major determinant of mobile banking adoption intention	435 Students	Turkey
Kesharwani and Bisht (2012)	Perceived risk has a negative impact on behavioural intention of internet banking adoption, and trust has a negative impact on perceived risk. A well-designed web site was found to be helpful in facilitating easier use and minimizing perceived risk concerns regarding internet banking usage	619 Students	India

Table 1 (continued)

References	Finding	Sample	Country or region
George and Kumar (2013)	The constructs PEOU and PU have a positive effect on customer satisfaction, and PR has a negative effect on customer satisfaction. A profile analysis of the respondents revealed that young males, well-educated employees with a moderately high level of monthly income are the major users of IB	406 Users	India
Bashir and Madhavaiah (2014)	Perceived usefulness (PU), ease of use, trust, self-efficacy, and social influence have a significant positive influence on young consumers' intention to use Internet banking	155 Users	India
Yadav et al. (2015)	Perceived usefulness, attitude, subjective norm, and perceived behavioural control significantly influences the consumer's intention to adopt internet banking, whereas perceived risk failed to show any significant influence over the intention to adopt internet banking	210 Consumers	India
Lin et al. (2015)	These results are expected to help banks understand the critical factors influencing Internet banking usage and to contribute to the creation of competitive promotional campaigns	350 Users	Vietnam
Bashir and Madhavaiah (2015)	Perceived usefulness, perceived ease of use, perceived enjoyment, perceived image, social influence, and trust in Internet banking have a significant positive effect on behavioural intention. Further, it is found that perceived risk exerts a significant negative effect on consumers' intention to use Internet banking	420 Students	India
Ooi and Tan (2016)	Offered several important managerial implications, which can be generalized to the mobile studies of other transportation, hotel, banking, and tourism industries	459 Users	Malaysia
Tam and Oliveira (2016a)	TTF and usage are important precedents of individual performance. The authors found statistically significant differences in path usage to performance impact, for the age subsample and no statistically significant differences, for the gender subsample	256 Individuals	Portugal
Marakarkandy et al. (2017)	Subjective norm, image, banks initiative, internet banking self-efficacy, internet usage efficacy, trust, perceived risk, and government support on internet banking adoption	300 Users	India
Roy et al. (2017)	External risk and internal risk inhibit customer acceptance of Internet banking. More importantly, neural network analysis reveals that perceived ease of use and external risk are two important factors determining how well Internet banking is accepted by customers	270 Users	India

Table 1 (continued)

References	Finding	Sample	Country or region
Rodrigues et al. (2016)	The findings contribute overall to a better understanding of gamification in E-Banking (with the extension of Technology Acceptance Model theories, and the new variable gamification), providing important practical implications, for software development, and marketing practices	183 Customers	Portugal
Sinha and Mukherjee (2016)	The results established that factors namely trust on technology, trust on the bank, perceived ease of use, perceived usefulness, complexity are the factors that influence customer significantly to use off branch E-Banking in India whereas factors. For example, perceived risk was insignificant. Studies establish the importance of these factors in order of trust in technology, perceived ease of use, perceived usefulness, trust on the bank, and complexity, where trust on the technology is the most important factor	422 Customers	India

Furthermore, from a theoretical perspective, UTAUT provided a refined view of how the determinants of intention and behaviour evolve (Venkatesh et al. 2003).

Venkatesh et al. (2003) found that the influence of performance expectancy on behavioural intention will be moderated by gender, and age (Mahmoud 2019; Aboobucker and Bao 2018), such that the effect will be stronger, for men, and particularly, for younger men. The influence of effort expectancy on behavioural intention will be moderated by gender, age, and experience, such that the effect will be stronger, for women, particularly younger women, and particularly at early stages of the experience. The impact of social influence on behavioural intention will be moderated by gender, age, voluntariness, and experience, such that the effect will be more reliable, for women, particularly older women, particularly in mandatory settings in the early stages of the experience. The influence of facilitating conditions on usage will be moderated by age, and experience, such that the effect will be more reliable, for older workers, particularly, with increasing experience.

UTAUT is another extension of the TAM that integrates constructs, including performance expectancy, effort expectancy, and Facilitating Conditions.

Performance expectancy is defined as the degree to which an individual believes that using the system will help him/her to improve job performance (Venkatesh et al. 2003; Zhang et al. 2018).

Effort expectancy is defined as the degree of ease associated with the use of the system (Venkatesh et al. 2003; Warsame and Ireri 2018).

Social influence is defined as the degree to which an individual perceives the importance of the beliefs of others that he or she should use the new system (Venkatesh et al. 2003; Yaseen and El Qirem 2018).

Facilitating conditions is defined as the degree to, which an individual believes that an organisational, and technical infrastructure exists to support the use of the

system (Venkatesh et al. 2003). Individual-level technology adoption is one of the most mature streams of IS research (Venkatesh et al. 2007). Thus, in this study, Individual Factors is crated as second-order (higher-order components) contained from four sub-dimension indicators (lower-order components), which are including: performance expectancy, effort expectancy, and Facilitating Conditions (Venkatesh and Zhang 2010; Venkatesh et al. 2008, 2011a, b, 2016). In terms of the UTAUT 1, and 2. Table 2 presents a summary of the main findings of selected empirical studies based on UTAUT.

From the above discussion, the researcher hypothesised as follows:

H1   Individual Factors have a positive effect on User Behaviour.

Moderating effect of trust

According to Pavlou and Fygenson (2006) Trust is defined as the belief that the trustee will act cooperatively to fulfil the trustor's expectations without exploiting it's vulnerabilities. Johnson (2007) defines trust in technology as consumers' expectations of technically competent, reliable, and dependable performance.

Trust is one of the crucial and influence indicators in this field and reinforces aspects to be considered by banks, and mobile device developers to expand mobile banking adoption (Malaquias and Hwang 2019), trust is considered a barrier key of acceptance, and adoption for any new technology. Besides, trust can facilitate the adoption of mobile banking services in a cross-cultural context (Hama Khan 2019; Khan 2018). Many studies conducted have investigated trust using different theories, and in different countries as the researcher reviewed trust in the literature review in this study, and there is enough literature about it (Chaouali et al. 2016; Afshan and Sharif 2015; Jan and Abdullah 2014; Zhou 2012; Hanafizadeh et al. 2012; Huang et al. 2011; Yap et al. 2010; Luo et al. 2010; Alaarj et al. 2016; Alaaraj et al. 2018).

In this study, trust is a moderator variable, for examining the user's behaviour concerning the acceptance of new technology, which is E-Banking in the KRI. Thus, trust is the most influential factor in determining success in E-Banking services (López-Miguens and Vázquez 2017).

Yiga and Cha (2016) introduced perceived trustworthiness as one of the beliefs that may significantly influence Internet banking adoption. On the other hand, trust is an influential factor that can create the most significant e-competitive advantage for E-Banking (Hammoud et al. 2018; Namahoot and Laohavichien 2018). Banks are affected by electronic lifestyle (Hussain et al. 2018; Chawla and Joshi 2019), whether IT (Salhieh et al. 2011), or ICT (Wang et al. 2017), and trust is considered an external factor in the electronic business environment. Making mistakes leads to a lack of trust, or initial trust (Susanto et al. 2013; Kaabachi et al. 2017) in electronic payment. Customers are afraid to make mistakes while they are making payments even when they use an ATM or different E-Banking services. Trust is a service for non-banking organisations. However, it is more crucial for the Banks, and more than just a service, particularly in E-Banking services, according to a banking and financial institutions interview summary by USAID (2008). In that report of (Economic Development

Table 2 Summary of the main findings of selected empirical studies based on UTAUT

References	Finding	Sample	Country or region
AbuShanab and Pearson (2007)	Performance expectancy, effort expectancy, and social influence were significant and explained a significant amount of the variance in predicting a customer's intention to adopt Internet Banking	869 Customers	Jordan
Martins et al. (2013)	The result supported some relationships of UTAUT. For example, performance expectancy, effort expectancy, and social influence, moreover, the role of risk as a stronger predictor of intention. To explain the usage behaviour of Internet banking the most important factor is the behavioural intention to use Internet banking	249 Students	Portugal
Bhatiasevi (2016)	Performance expectancy, effort expectancy, social influence, perceived credibility, perceived convenience, and behavioural intention to use mobile banking posited a positive relationship	272 Customers	Thailand
Tan and Lau (2016)	PE as the strongest predictor, followed by EE, perceived risk, and social influence, and the result supported a partial mediating effect of PE on the relationship between EE, and intention to adopt mobile banking	347 Students	Malaysia
Wang et al. (2017)	Personalization leads to increased performance expectancy and decreased effort expectancy, which in turn lead to increasing intention to continue to use E-Banking services. In addition, compatibility with previous E-Banking experience, and personalization produces an interactive effect on both performance expectancy and effort expectancy	181 Customers	China
Alalwan et al. (2018b)	Behavioural intention is significantly influenced by performance expectancy, effort expectancy, hedonic motivation, price value, and perceived risk; however, social influence does not have a significant impact on behavioural intention	348 Customers	Jordan
Al-Qeisi et al. (2014)	The technical, general content and appearance dimensions of a website are most important, for users. These dimensions are significantly related to usage behaviour directly and indirectly	216 Users	UK
Baptista and Oliveira (2015)	Performance expectancy, hedonic motivation, and habit were found to be the most significant antecedents of behavioural intention	252 Users	Portugal
Abrahão et al. (2016)	The result showed as a guide to participants in the payments market to develop a service, for mobile payments of excellent performance, easy to use, secure and promotes the action of the social circle of the individual at a fair price	605 Users	Brazil

Table 2 (continued)

References	Finding	Sample	Country or region
Sánchez-Torres et al. (2018)	Trust, performance expectancy and effort expectancy had a positive impact on the use of financial websites in Colombia, while government support did not have a significant impact	600 Users	Colombia
Boonsiritomachai and Pitchay-adejanant (2017)	The hedonic motivation of mobile banking users was identified as the most important factor motivating customers to adopt mobile banking, whereas mobile banking system security had a negative relationship with hedonic motivation	480 Users	Thailand
Alalwan et al. (2017)	The results mainly showed that behavioural intention is significantly, and positively influenced by performance expectancy, effort expectancy, hedonic motivation, price value, and trust	343 Users	Jordan
Cao and Niu (2019)	Results found that the relationship between the context and Alipay user adoption is mediated by performance expectancy and effort expectancy. While the relationship between the ubiquity, and Alipay user adoption is only mediated by the performance expectancy	614 Users	China
Baabdullah et al. (2019b)	The main results based on structural equation modelling analyses supported the impact of perceived privacy, perceived security, perceived usefulness, and TTF on the customers' continued intention to use mobile banking	434 Users	Saudi Arabia

Assessment Kurdistan Region 2008) of banking sector issues, lack of trust in the banking system by both customers, and bankers got 88 cumulative scores (out of 100) in the Kurdistan Region, which can be considered as offline trust. This result was obtained from interviews with bankers and clients.

The trust in Banks can be divided into two types: trust in the offline, or physical bank (Chaouali et al. 2016), and trust in the online, or E-Banking services. Usually, offline trust is the basis, for the online trust since customers will not use the online services of a bank whose physical services they do not trust (but may be prepared to use the online services of a bank they do trust). It means customers' experience with a bank can let customers accept the E-Banking services of the bank (Chaouali et al. 2016; Shen et al. 2020).

According to McKnight et al. (2002), trust can include three beliefs (Competence, Benevolence, and Integrity). Competence includes the ability of the trustee to do, what the truster needs, capability, and positive judgment. The authors measured perceptions of how well the vendor did it's job, or how knowledgeable the vendor was (expertise/competence). Benevolence includes the trustee caring, and it's motivation to act in the truster's interests, favourable motives, and not acting opportunistically, or manipulatively. Here the authors focused on the vendor acting in the customer's best interest, trying to help, and being genuinely concerned. Integrity includes trustee

honesty and promise-keeping. Here the authors captured perceptions of vendor, honesty, truthfulness, sincerity, and keeping commitments (reliability/dependability) (Arcand et al. 2017). In order to generate competence among Banks, in terms of the E-Banking services activity, there is a need to build trust. Thus, it is fundamental to reduce risk perceptions (Faroughian et al. 2011; Wen et al. 2019) of E-Banking services (Zhao et al. 2010a, b). Table 3- presents a summary of the main findings of selected empirical studies related to Trust.

From the above discussion, the researcher hypothesised the moderating effect as:

H1a   Trust will moderate the relationship between Individual Factors and User Behaviour.

Research model and hypothesis

According to Dahlberg et al. (2008), the framework is used to classify past research, to analyse research findings of classified studies, and to propose meaningful questions, for future research, for each factor.

In this study, the research model is based on TAM and UTAUT. Besides, the framework was constituted by reflective-formative types of higher-order constructions, which consisted of three latent variables named (Individual Factors as an independent variable, Trust as a moderator, and User Behaviour as dependent variable). Individual Factors (second-order components) included four sub-dimensions (lower-order components), which are performance expectancy, effort expectancy, social influence, and Facilitating Conditions. Individual Factors was more concreated when it was second-order, and conceptually more reliable, besides second-order components that reduce the number of paths in the model, where there is only one path from the Independent Variable to the Dependent Variable (Sarstedt et al. 2019). To empirically test the model, the researcher applied a partial least square structural equation modelling (PLS-SEM) approach by SmartPLS (V. 3.2.8) (Ringle et al. 2015). Figure 1 shows the evaluation of the measurement model.

Research method

Data collection and sample selection

The data sample collected through electronic questionnaires in the local language (Kurdish\Sorani), in order to make it clearer, for the participants. The participants are from the academic staff at the University of Sulaimani, which is located in Sulaimani city in the KRI. Respondents were given two months to complete the survey. The data accessed on Google Forms was than downloaded in Microsoft Excel. A total of 476 usable questionnaires were collected. Since the questionnaires were electronic, they were handed out by email and there were no incomplete questionnaires. After the data downloaded in a Microsoft Excel file, they were coded. Thereby, the data were analysed by two pieces of software: SPSS (V.26), and SmartPLS (V 3.3.2) via some steps, which show in the next section.

Table 3　Summary of the main findings of selected empirical studies related to trust

| References	Finding	Sample	Country or region
Hamidi and Safareyeh (2018)	Trust had a negative impact on the customer relationship and satisfaction	243 Customers	Iran
Haider et al. (2018)	Females had found a lack of IT knowledge and trust; therefore, its intention is significantly impacted by perceived credibility	243 Participants	Pakistan
Farah et al. (2018)	Facilitating condition, perceived risk, and trust had an insignificant impact on mobile banking	490 Respondents	Pakistan
Barkhordari et al. (2017)	Security and trust had a positive impact on using e-payment systems. The results insisted on technical, and transaction procedures access to security guidelines being the most influential factors on the perceived trust of customers	246 Respondents	Iran
Butt and Aftab (2013)	E-trust mediated the relationship between e-satisfaction and e-loyalty	292 Participants	Pakistan
Oliveira et al. (2014)	Facilitating conditions and behavioural intentions directly influence M-Banking adoption. Initial trust, performance expectancy, technology characteristics, and task technology fit have a total effects behavioural intention	194 Individuals	Portugal
Sikdar et al. (2015)	Trust and Ease of Use are relatively weaker and insignificant contributors toward overall customer satisfaction	280 Customers	India
Malaquias and Hwang (2015)	The result showed that the relationship between trust and risk perception is negative; moreover, the relationship between trust and age is negative; the rest of the relationships are positive	1077 Customers	Brazil

Table 3 (continued)

References	Finding	Sample	Country or region
Yu and Asgarkhani (2015)	The empirical results indicated that, first, not all trusts precursors the authors' considered have a significant influence on generating consumers' trust, and, second that influential weights of these precursors on building consumer trust vary across consumers, and cultures. Meanwhile, all factors on the E-Banking side hold greatly significant influence on consumers' trust in both NZ and Taiwan cases	510, and 122 Customers	Taiwan, and New Zealand (NZ)
Koksal (2016)	Perceived compatibility, trialability, perceived usefulness, ease of use, perceived credibility, and trust positively, and significantly discriminate high-mobile banking adopters from low adopters. Moreover, it found that perceived self-efficacy separates customers through its willingness to adopt mobile banking	776 Customers	Lebanon
Szopiński (2016)	The results showed that the factors, which mostly determine the employment of online banking are the use of the Internet, taking advantage of other banking products as well as trust in commercial banks. The banking products that have the biggest influence on the use of online banking are mortgages, and credit cards	8663 Households	Poland
Malaquias and Hwang (2016)	The results showed that disclosure of MB security on bank websites has a positive relationship with trust in MB, but this relationship is significant only, for the respondents that have already visited the website of it's banks to obtain information about MB security	307 Students	Brazilian

Table 3 (continued)

References	Finding	Sample	Country or region
Boateng et al. (2016)	The findings showed that websites' social feature, trust, compatibility with lifestyle, and online customer services have a significant effect on customers' intentions to adopt Internet banking. However, ease of use did not have a significant relationship to customers' intentions to adopt Internet banking	600 Customers	Ghana
Alalwan et al. (2017)	The results mainly showed that behavioural intention is significantly, and positively influenced by performance expectancy, effort expectancy, hedonic motivation, price value, and trust	343 Customers	Jordan
Arcand et al. (2017)	Trust is associated with security/privacy, and practice (regarded as utilitarian factors), while commitment/satisfaction is driven by enjoyment and sociality (dimensions more hedonic by nature)	375 Customers	Canada
Aboobucker and Bao (2018)	The findings showed perceived trust, and website usability were the possible obstructing factors that highly concerned Internet banking customers	186 Customers	Sri Lanka
Yuan et al. (2019)	The results confirmed the contributive, and mediating effects of trust, and commitment to continuous IB service usage intention. The study contributed to the literature by highlighting the role of trust, and commitment in predicting IB service continuous usage, and the finding provided useful implications, for bank management in retaining online customers	173 Students	USA

Results and discussions

Since the research model in this study is a complex one, comprising reflective-formative types of second-order components (Mode B) (Sarstedt et al. 2019), and because of the characteristics of the research model, as presented in Fig. 1, the author decided to use PLS path modelling. The data in this research are so-called nonparametric, or scattered data. For example, CB-SEM is unable to give accurate,

Fig. 1 The evaluation of the measurement model
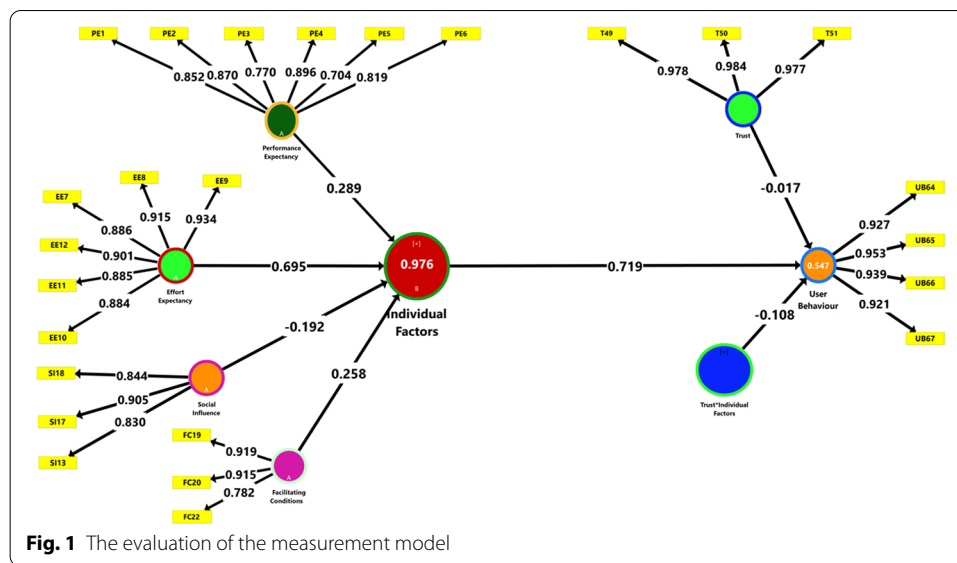
and decisive results (Jöreskog and Wold 1982), which is an appropriate approach, for this study, and allows second-order components (Hair et al. 2017a, b).

Furthermore, in this study, the research model passed through both stages, which are the measurement model and the structural model. Besides, the author followed (extended) the repeated indicators approach to analyse the higher-order constructs, measurement models, and the structural model since the sample size is sufficiently large (Sarstedt et al. 2019). Following on (Hamakhan 2020) in this study, the hypothesis direction is clear, which is more appropriate in order to minimise the type II error. Thus, the hypothesis is tested by using the one-tailed test instead of the two-tailed test.

The Demographic Information was calculated, for the sample (n = 476) used by the staff of the University of Sulaimani, for this study by SPSS V.26. The sample characteristics reveal that most of the respondents were young participants (n = 366, 76.9%). The majority of the respondents were female (n = 290, 60.9%) with (n = 440, 92.4%) holding a postgraduate degree. Most of the respondents had an online bank account (n = 428, 89.9%) and accessed there bank account (n = 446, 93.7%). Most of the respondents used there bank account (1–15) times a month (n = 208, 43.7%). The majority of the respondents had been using electronic banking (1–10) years (n = 336, 70.6%). Table 4 shows the demographic information of the respondents.

According to Hair et al. (2017a, b), PLS-SEM should come up with two steps, which are called the measurement model and the structural model. For the first step (Measurement Model), some tests must be found by PLS Algorithm, which was done in this study by SmartPLS (V 3.3.2) through running the function (PLS Algorithm), by outer loading (Factor Loading), Cronbach's Alpha, average variance extracted (AVE), composite reliability (CR) and rho_A, Discriminant Validity Measurement, the heterotrait-monotrait ratio (HTMT), in order to determine the inner validity, and reliability based on the PLS-SEM method (Henseler et al. 2009).

Table 4 Demographic information

Demographic variables group		Category	Frequency	Percentage (%)
Age	1	18–40	366	76.9
	2	41–60	104	21.8
	3	61–80	6	1.3
Gender	1	Male	186	39.1
	2	Female	290	60.9
Education	1	Diploma	2	0.4
	2	Undergraduate	34	7.1
	3	Postgraduate	440	92.4
OBA	1	Yes	428	89.9
	2	No	48	10.1
EBA	1	Yes	446	93.7
	2	No	30	6.3
BAM	1	1–15	208	43.7
	2	16–30	94	19.7
	3	31–50	174	36.6
UBE	1	1–10	336	70.6
	2	> 10	140	29.4

OBA, Do you have an online bank account?; EBA, Have you ever access your Electronic Bank account?; BAM, How many times do you usually use your bank account in months?; UEB, How long have you been using Electronic Banking?

Indicator reliability

The first test is indicator reliability, which should be done by researchers to assess the evaluation of measurement models in PLS-SEM, and for the purpose of testing the inner validity, and reliability, of the model in this study. According to Hair et al. (2017a, b), the measurement model is intended to assess the validity (convergent, and discriminant), and reliability of each indicator forming latent constructs. After the PLS Algorithm run, first, the average variance extracted (AVE) must be checked. A general rule of thumb, for AVE is ($\geq +0.5$) (Hair et al. 2017a, b, p. 138). In reflective models, outer loading must be checked. Outer loadings represent the absolute contribution of the indicator to the definition of it's latent variable (David Garson 2016, p. 60). The rule of thumb, for outer loadings above 0.708 is acceptable (Hair et al. 2019a, b); hence, some indicators below 0.708. For example, (SI14, SI15, SI16, FC21, FC23R, T46, T47R, T48 & UB68_Group) removed. According to Hulland (1999, p. 198), in social science studies, it is possible to have outer loadings (< 0.70) particularly, since the newly developed scales are used. According to Hair et al. (2017a, b, p. 136), Cronbach's alpha is a traditional method of judging criterion inner reliability based on the PLS-SEM method, which can provide an evaluation of the reliability based on the intercorrelations of the observed indicator variables. A general rule of thumb, for Cronbach's alpha is (> 0.7) (Hair et al. 2017a). Composite reliability is another measurement of the inner reliability based on the PLS-SEM method. The rule of thumb, for composite reliability is (> 0.7) (Gefen et al. 2000). According to Hair et al. (2017a, b, 2019a, b), rho_A is the most crucial inner reliability measurement based on the PLS-SEM method, the rule of thumb, for rho_A is (> 0.7). All the results are acceptable. Table 5 shows the outer loadings, Cronbach's Alpha, rho_A, composite reliability (CR, and average variance extracted (AVE) values.

Table 5 Evaluation of measurement model with trust as a moderator (measurement model indicator reliability)

Indicators/items	Code	FL	Cronbach's Alpha	rho_A	CR	AVE
PE	PE1	0.852	0.906	0.933	0.925	0.674
	PE2	0.870				
	PE3	0.770				
	PE4	0.896				
	PE5	0.704				
	PE6	0.819				
EE	EE7	0.886	0.954	0.954	0.963	0.812
	EE8	0.915				
	EE9	0.934				
	EE10	0.884				
	EE11	0.885				
	EE12	0.901				
SI	SI13	0.830	0.824	0.830	0.895	0.740
	SI17	0.905				
	SI18	0.844				
FC	FC19	0.919	0.847	0.889	0.906	0.764
	FC20	0.915				
	FC22	0.782				
T	T49	0.978	0.979	0.992	0.986	0.960
	T50	0.984				
	T51	0.977				
UB	UB64	0.927	0.952	0.953	0.965	0.874
	UB65	0.953				
	UB66	0.939				
	UB67	0.921				

FL, factor loading; PE, performance expectancy; EE, effort expectancy; SI, social influence; FC, facilitating conditions; IF, individual factors; T*IF, trust*individual factors; IF*T, individual*trust; T, trust; UB, user behaviour

Discriminant validity measurement

The heterotrait-monotrait ratio (HTMT) is the measurement used to test discriminant validity. According to Hair et al. (2017a, b), Discriminant validity is defined as the extent to which a construct is truly distinct from other constructs by empirical standards. Besides, Hair et al. (2017a, b, p. 140) proposed that there is a true correlation between two constructs if they were well measured, and disattenuated correlation can be referred to that true correlation. A disattenuated correlation between two constructs higher than 0.90 shows a lack of discriminant validity. HTMT does not apply to relationships between Lower-order component LOCs, and the Higher-order component HOC. The repeated measures approach assumes they are highly correlated. Correlation values of relationships between LOCs, and the HOC are used to measure the contribution of the individual LOCs to calculating the contribution of the individual LOCs in calculating the HOC construct score. Thus, it did not present it (Sarstedt et al. 2019).

Evaluation of the structural model in PLS-SEM

Based on the PLS-SEM method, from the time when the researcher confirmed that the construct measures are reliable, and valid, which was the first step (Measurement Model), than the second step is an evaluation of the structure of the model. The most

crucial evaluation metrics, for the structural model are Collinearity Statistics (Inner VIF), R^2 value (explained variance), F^2 value, Q^2 (predictive relevance), F^2, and Q^2 Effect Size, and the size, and statistical significance of the structural path coefficients (Hair et al. 2017a, b).

Testing collinearity statistics (inner VIF)

Testing collinearity is the first test that should be done by the researcher for the evaluation of the structural model in the PLS-SEM domain. Hair et al. (2011) defined Collinearity as a potential issue in the structural model and stated that if the variance inflation factor (VIF), the rule of thumb, for the VIF, is the value of 5, or above, usually, it can be a problem. The term VIF, which is derived from it's square root, is the degree to which the standard error increased due to the presence of collinearity. Table 6 shows the results of the structural model. In this study, the results, for all variables are below 5, which is acceptable.

R^2 value (R^2) adjusted

In order to obtain F^2 Effect size, scholars required to obtain R^2 value first based on the application of PLS-SEM. The R^2 value is the most crucial approach to evaluating the structural model that can measure the coefficient of determination R^2 Square value. According to Hair et al. (2017a, b, p. 209), the coefficient of determination R^2 Square is a measure of the model's predictive power, and is calculated as the squared correlation between a specific endogenous construct's actual, and predicted values, and the rule of thumb, for the R^2 value is between 0, and 1. On the other hand, Falk and Miller (1992) propose an R^2 value of 0.10 as a minimum acceptable level, while values ranging from 0.33 to 0.67 are moderate, whereas values between 0.19 and 0.33 are weak, and any R^2 value less than 0.19 are unacceptable. Nevertheless (Henseler et al. 2009; Hair et al. 2017a, 2019a, b) suggested the rule of thumb for the R^2 values of 0.75, 0.50, and 0.25 can be considered substantial, moderate, and weak. This is presented in Table 6.

F^2 value

F^2 Square value is another most crucial measurement to evaluate the structural model that should be found by scholars based on the application of PLS-SEM, $F^{2'}$s value indicates an exogenous construct's small, medium, or large effect, respectively, on an

Table 6 Structural model results

Construct	VIF	R^2	R^2 adjusted	F^2	Q^2
PE	2,024	–	–	1.740	–
EE	1,79	–	–	11.407	–
SI	1,659	–	–	0.938	–
FC	1,915	–	–	1.474	–
IF	1,043	0.976	0.976	1.094	0.450
T	1,069	–	–	0.001	–
T*IF	1,069	–	–	0.018	–
UB	–	0.547	0.545	–	0.463

endogenous construct (Hair et al. 2017a, b, p. 216). Results indicated that the Individual Factors (IF) to User Behaviour (UB) is large, which is (1.094). This is presented in Table 6.

Predictive relevance Q²

Following the previous other tests, there is another step, for the researcher to find Predictive Relevance Q^2, which is the most crucial evaluation metric based on the application of PLS-SEM to evaluate the structural model. In this study, Q^2 value is obtained by using the blindfolding function with omission distance 7 (D=7). Since my data sample is (N=476), normally D values between 5, and 10, D should not be an integer when the number of observations used in the model estimation is divided by the omission distance. The blindfolding procedure is usually applied to endogenous constructs that have a reflective measurement model specification as well as to endogenous single item constructs (Hair et al. 2017a, b, p. 212). On the other hand, Q^2 value of 0, and below are suggested as a lack of predictive relevance. Hair et al. (2019a, b) suggested that Q^2 values larger than zero are meaningful. Nevertheless, Q^2 values higher than 0, 0.25, and 0.50 depict small, medium, and large predictive relevance of the PLS-path model. According to Henseler et al. (2009). Q^2 values can be as: 0.35 (Large), 0.15 (Medium), and 0.02 (Small). Table 6 shows the results of this study, where all endogenous variables are larger than 0, which is acceptable considering that predictive relevance is based on the rule of thumb.

PLSpredict

Before the final step, scholars are required to assess the PLSpredict approach instead of reporting a model fit proposed by Shmueli et al. (2016), which is a set of procedures, for prediction with PLS path models, and the evaluation of it's predictive performance. Recently the PLS-SEM domain has been rapidly extended and updated; therefore, researchers are required to be aware of any progress on the application of PLS-SEM domain (Hair et al. 2019a, b; Sharma et al. 2019; Evermann and Tate 2016). However, the data are not out-of-sample in this study, in contrast, Shmueli et al. (2016) proposed a PLSpredict, for the out-of-sample by estimating the model with predictive analytic, which are the mean absolute error (MAE), the mean absolute percentage error (MAPE), and the root mean squared error (RMSE). In this study, PLSpredict is assessed by running PLSpredict with K=10. Shmueli et al. (2019) recommended that setting (k=10). The PLSpredict procedure generates k-fold cross-validation. A fold is a subgroup of the total sample, and k is the number of subgroups. Since the data, for this study is non-normal (non-symmetrically distributed), the mean absolute error (MAE) prediction metric is taken according to Shmueli et al. (2019). The results show that the model lacks predictive power, based on Shmueli et al. (2019) rule of thumb when "PLS-SEM < LM for none of the indicators. If the PLS-SEM analysis (compared to the LM) yields lower prediction errors in terms of the MAE (or the RMSE), for none of the indicators, this indicates that the model lacks predictive power". Table 7 illustrates the results of this study that was achieved based on Shmueli et al. (2019) who suggested a recommendation setting in the application of the PLSpredict approach.

Table 7 PLSpredict assessment of manifest variables (original model)

Item	PLS-SEM		LM	PLS-SEM-LM*
	MAE	Q²_predict	MAE	MAE
PE4	0.505	0.452	0	0.505*
SI13	0.718	0.112	0	0.718*
PE1	0.377	0.568	0	0.377*
FC20	0.579	0.441	0	0.579*
EE9	0.253	0.828	0	0.253*
EE12	0.307	0.709	0	0.307*
EE8	0.290	0.737	0	0.29*
PE2	0.383	0.581	0	0.383*
SI18	0.553	0.114	0	0.553*
EE10	0.320	0.695	0	0.32*
EE11	0.333	0.679	0	0.333*
SI17	0.797	0.086	0	0.797*
EE7	0.304	0.720	0	0.304*
FC19	0.601	0.408	0	0.601*
PE3	0.746	0.189	0	0.746*
PE5	0.767	0.186	0	0.767*
PE6	0.503	0.391	0	0.503*
FC22	0.764	0.206	0	0.764*
UB67	0.527	0.369	0.476	0.051*
UB64	0.604	0.441	0.535	0.069*
UB65	0.529	0.401	0.499	0.03*
UB66	0.561	0.441	0.507	0.054*

*PLS-SEM < LM for none of the indicators. If the PLS-SEM analysis (compared to the LM) yields lower prediction errors in terms of the MAE (or the RMSE) for none of the indicators, this indicates that **the model lacks predictive power**

**PLS-SEM < LM for a minority of the indicators. If the minority of the dependent construct's indicators produces lower PLS-SEM prediction errors compared to the naïve LM benchmark, this indicates that the model has a low predictive power

***PLS-SEM < LM for a majority of the indicators. If the majority (or the same number) of indicators in the PLS-SEM analysis yields smaller prediction errors compared to the LM, this indicates a medium predictive power

****PLS-SEM < LM for all indicators. If all indicators in the PLS-SEM analysis have lower MAE (or RMSE) values compared to the na.ve LM benchmark, the model has high predictive power

Table 8 Analysis of second-order variables

Second-order components	Lower-order components	Std Beta	Std Error	*t*-value[a]	*P* values	Decision	5% Lower bounds	95% Upper bounds
IF	PE	0.286	0.079	3.650	0.000***	Supported	0.158	0.416
IF	EE	0.692	0.063	11.106	0.000***	Supported	0.587	0.794
IF	SI	− 0.188	0.072	2.649	0.004**	Supported	− 0.305	− 0.070
IF	FC	0.254	0.073	3.533	0.000***	Supported	0.130	0.369

***$P < 0.001$, **$P < 0.01$, *$P < 0.05$

Hypothesis testing: bootstrapping direct effect results

The final step illustrates the path coefficients and the path diagram for the structural model. Hypothesis testing is obtained, for the structural model, for this study by the Bootstrapping procedure using the one-tailed test, rather than the two-tailed, with 5000 samples, Mode B (Sarstedt et al. 2019), and Bias-Corrected, and Accelerated

Table 9 Direct relationship for hypothesis testing with trust as a moderator

Hypothesis	Relationship	Std Beta	Std Error	t-value[a]	P values	Decision	5% Lower bounds	95% Upper bounds
H1	IF → UB	0.730	0.030	23.825	0.000***	Supported	0.678	0.777
H1a	T*IF → UB	− 0.100	0.039	2.807	0.003**	Supported	− 0.163	− 0.036

***$P < 0.001$, **$P < 0.01$, *$P < 0.05$

(BCa), as presented in Tables 8, and 9. Testing the hypothesis using the one-tailed test is more appropriate when the hypothesis direction is clear to minimise the type II error (Hamakhan 2020). Bootstrapping is a resampling approach that draws random samples (with replacement) from the data. It uses these samples to estimate the path model multiple times under slightly changed data constellations (Hair et al. 2017a, b, p. 191). In short, p value, and t-value are achieved, among other results, which are crucial to determining, whether the path coefficient is significant, or not by running the Bootstrapping function. A p value is equal to the probability of obtaining a t-value at least as extreme as the one observed, conditional on the null hypothesis being supported. In other words, the p value is the probability of erroneously rejecting a true null hypothesis (i.e., assuming a significant path coefficient when in fact it is not significant) (Hair et al. 2017a, b, p. 206), the rule of thumb, for p value is (***$p < 0.001$, **$p < 0.01$, *$p < 0.05$), and for empirical t-value is above 1.96. As presented in Table 8, the following four lower-order components influenced Individual Factors significantly: PE ($\beta = 0.286$, $t = 3.650$), EE ($\beta = 0.692$, $t = 11.106$), SI ($\beta = -0.188$, $t = 2.649$), and FC ($\beta = 0.254$, $t = 3.533$).

From the Bootstrapping result of the structural model, the following hypothesis can be derived:

H1   (IF) has a positive effect on User Behaviour. IF → UB ($\beta = 0.730$, t $= 23.825$, $p < 0.00$).

H1a   Trust will moderate the relationship between Individual Factors, and User Behaviour. T*IF → UB ($\beta = -0.100$, t $= 2.807$, $p < 0.05$).

The last test is testing moderation in this study. Since the Moderator analysis is similar to multigroup analysis, scholars are required to decide whether to test a model as a moderator model, or not. In addition, the moderator analysis is something completely different, which requires different analyses, and interpretation of results (Henseler and Chin 2010; Henseler et al. 2012; Hair et al. 2017a, b, p. 246; Becker, Ringle and Sarstedt 2018; Kou et al. 2014). Hair et al. (2017a, b, p. 246) described Moderation as "a situation, in which the relationship between two constructs is not constant; however, depends on the values of a third variable, referred to as a moderator variable". Furthermore, the Moderator variable can affect the relationship between the independent and dependent variables directly. In this study, the structural model tested once with the moderator (Trust). Rigdon et al. (2010) proposed bootstrapping with 5000 samples, and Bias-Corrected, and Accelerated (BCa) to analyse moderators;

Fig. 2 The evaluation of the structural model

Fig. 3 Simple slope analysis (Trust*Individual Factors)
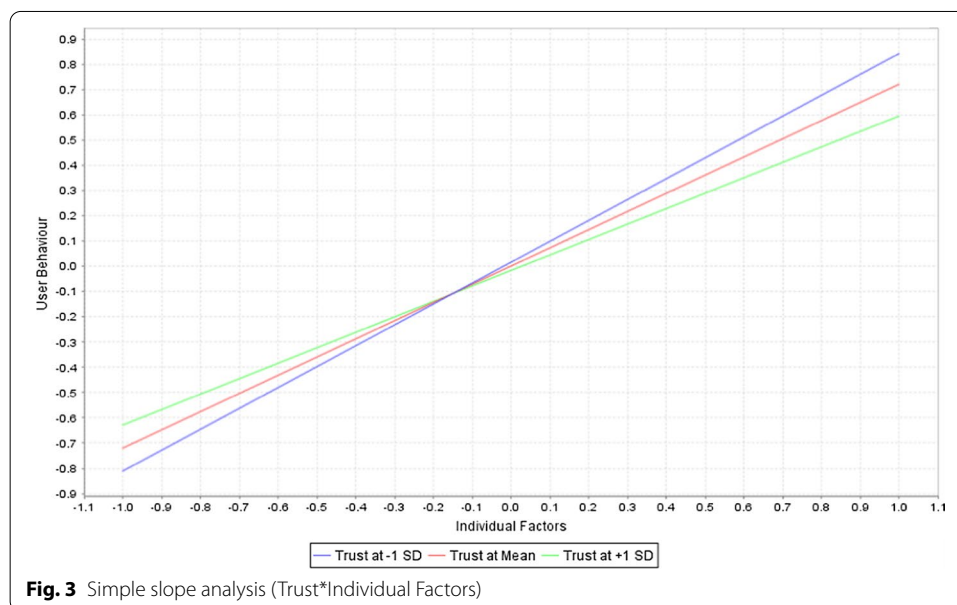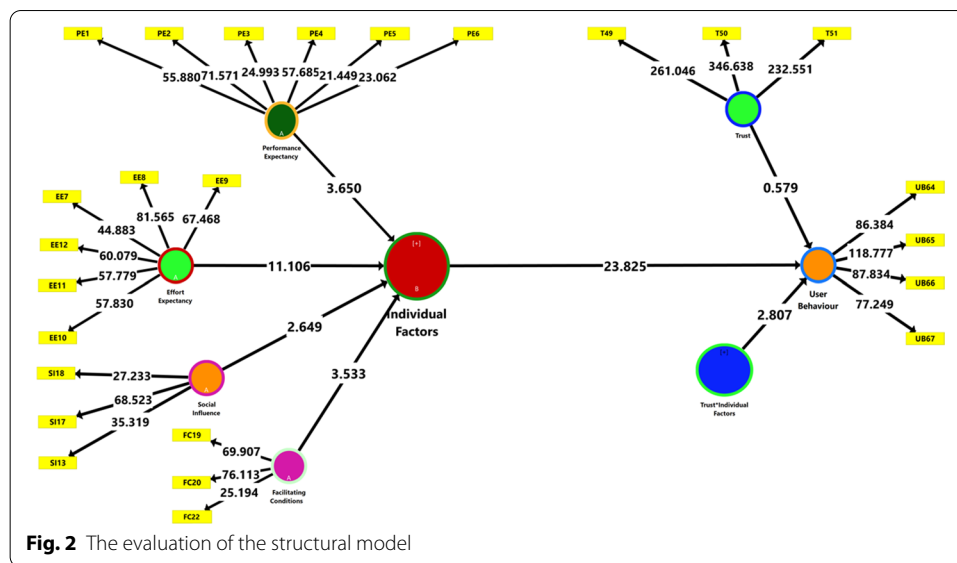
meanwhile, accordingly (Chin et al. 2003; Hair et al. 2019a, b) suggested the two-stage approach to moderator analysis. Table 9 shows the Direct Relationship, for Hypothesis testing included (Std Beta, Std Erro, *t*-value, *p* value, 5% lower bounds, and 95% upper bounds). Figure 2 shows the evaluation of the structural model. Figure 3 shows a simple slope analysis (Trust*Individual Factors).

Implications

Academic implications

Regarding academic implications, UTAUT, which is combined from other models, is the most cited fundamental, and guidance model for research in ICT (Wang et al.

2017), and IT services (Haider et al. 2018; Salhieh et al. 2011). It is a significant theo-retical framework that can be used to elaborate on the acceptance of any new tech-nology service. This study, turning more concrete from theoretical, aims to reduce the number of hypotheses in the path. Individual Factors built as second-order com-ponents highlight the effect of Trust that it increased as a moderator in the research framework aimed at understanding, and the acceptance factors of E-Banking ser-vices as a new technology service in the KRI. Since this is the first empirical study tested in the KRI, it provides a foundation for future studies, and it creates a valu-able contribution to the existing literature of E-Banking. Furthermore, researchers should test more factors in order to create a more significant impact on this area. Moreover, the findings show the requirement to employ Trust as a moderator and recommend even more factors with UTAUT in the future researches (Hamakhan 2020; Hama Khan 2019; Khan 2018).

Practical implications

Several significant practical and managerial implications can be addressed from the results of this research, which are useful for banks' managers, bankers, and strate-gic decision-makers willing to employ E-Banking services. Moreover, this research suggests that bank managers should consider becoming more trustworthy and reli-able via different methods. For example, training, or publishing some videos on the Bank's website or sending personal emails to it's customers, in order to increase there knowledge about how to learn about and use E-Banking channel services safely. Particularly, it is crucial to approach different generations and to avoid there losing cost and time by travelling to banks' branches (Wang et al. 2020; Nazaritehrani and Mashali 2020). It is true that a previous study proved that Trust should be earned by providing the highest quality traditional banking services (for example, ATM, Internet Banking, Mobile Banking, and Application Banking) at the physical bank's branches (offline banking) (Chaouali et al. 2016; Alhassany and Faisal 2018; Chen et al. 2017), to build a reputation and a respectable image and consequently attract existing, and potential customers into the system. Trust is one of the key aspects that can reach out to more customers and convince them. In such a way, it can give those who have it a significant competitive advantage. In short, the results suggest that Banks should pay more attention to marketing strategy and guidelines. For example, increasing the number and accessibility of ATMs, and making them free, simplicity, using social media for sharing and improves experience rather than only advertising (YouTube channel services, Facebook, Twitter, Instagram, and so on), 24/7 Customer Services (Call Centers) via free Skype services or cost-free phone numbers, Kurdish Language, and lower rates of interest for Loans or Mortgages can increase Trust. Finally, this study recommends that banks be always ready to tap there customers complaints and opinions through Research, and Development (R&D), and (Strength, Weakness, Opportunities, and Threats) SWOT analyses. This study emphatically recommends Banks mangers to develop strong Trust in order to gain acceptance of E-Banking services. E-Banking is a key concern affecting economic growth and con-tributes to a sustainable economy and a sustainable environmental future in the KRI.

Limitation

There are several limitations to this research that should be addressed in future studies. First, this study only tested Trust as a moderator and many other factors beyond the domain of this study that can also work as moderators. For example, (Attitude, Security, Privacy, and so on) (Hama Khan 2019; Khan 2018). Second, UTAUT is the only theory that the research framework is based on. Other theories can be used as bases to build the research frameworks on, for example, TRA, TPB, TAM 1, 2, and 3, UTAUT 2, and so on (Hamakhan 2020; Hama Khan 2019; Khan 2018). Third, the data are non-normally distributed, which is not suitable for a Covariance Based Structural Equation Modelling approach (CB-SEM), and the sample size is not large. The reliability between independent latent variables and dependent latent variables, depending on the sample size. Thus, it probably leads to an increase in the reliability between all latent variables. Finally, the data were collected from the academic university staff only at the University of Sulaimani through an online questionnaire, which is considered a self-reporting bias. This is a general problem in the methodology's researches for scholars.

Conclusions and future research

This study has two stages: the first stage provides a systematic review of the relevant literature, which consists of 103 empirical studies from various journals about E-Banking and it's channels. The literature review builds a robust theoretical research framework for this study. It helps researchers in there future work by using different methodologies and theories in order to build a more robust research framework. The review provides an overview of the E-Banking services that explains how researchers can combine the different points of view and results fitting together as part of the big picture. The review mainly focuses on those factors that can influence the acceptance and adopting of new information technology. None of those studies has as yet used Trust as a moderator in it's research frameworks. In this study, one of the key contributions is that Trust is recruited as a moderator in the research framework. The research framework in this study contributes by providing new insights into the relationship between the Individual Factors to User Behaviour moderated by Trust, since, undoubtedly, there is a lack of trust in the KRI. Besides, this is the first study in the KRI in English, which is why it will serve as a valuable basis for future studies.

The second stage provides an empirical examination of the research framework model by using PLS-SEM methods, in order to test the research framework based on PLS-SEM by using SmartPLS. The empirical results show that Individual Factors have a positive impact on User Behaviour, and that Trust has a positive effect on the relation between Individual Factors, and User Behaviour as a moderator.

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