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**Article**

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## AN EMPIRICAL INVESTIGATION OF E-BANKING IN THE KURDISTAN REGION OF IRAQ: THE MODERATING EFFECT OF ATTITUDE

YADGAR TAHA M. HAMAKHAN<sup>1</sup>

### Abstract

The banking industry is one of the most important industries in developing countries, thus it plays a major role in the financial industry. Moreover, e-banking has simplified financial transactions. This study investigates the effect of individual factors on user behaviour and the moderating effect of attitude on the relationship between individual factors and user behaviour based on the Unified Theory of Acceptance and Use of Technology. A model suggests a second-order components research framework that improves current explanations of electronic banking channel services acceptance and sheds light on the role of attitude on the acceptance of electronic banking channel services which is the most important key concern. Data were collected using an online questionnaire with 476 valid responses from academic staff who work at the University of Sulaimani; the model has been tested using the Partial Least Squares-Structural Equation Modeling approach. The results show that individual factors have a positive effect on user behaviour and also show that attitude has a negative effect on the relationship between individual factors and user behaviour as a moderator.

**JEL classification:** G210

**Keywords:** Attitude, Individual Factors (IF), Acceptance, UTAUT, The Kurdistan Region of Iraq (KRI), Hawala

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## INTRODUCTION

The banking industry is one of the most important industries in developing countries, thus it plays a major role in the financial industry, growth economics and sustainable development, particularly in the case of Electronic Banking service in the Kurdistan Region of Iraq (KRI), in order to move the society from cash and shift it to electronic "paperless" transactions which are more reliable and convenient besides which can be seen in developed countries and government policy should support this system by providing E-government service (Baabdullah et al., 2019; Torres et al., 2017; Marakarkandy et al., 2017). The two factors of Information Technology (IT) and Information Communications Technology (ICT) can affect E-banking service rapidly (Wang et al., 2017) which is still run in traditional ways in the KRI (Riffai et al., 2011).

With regards to the term of E-banking based on the literature review, Electronic Banking services can be defined as a new kind of reform in banking industry services, thus it has changed massively the electronic business and government environments in very recent decades (Sohail & Shanmugham, 2002; Huang et al., 2011; Hoehle et al., 2012; M. Hama Khan, 2019; Khan, 2018).

According to Fishbein and Ajzen (1975) attitude is defined as the individual's feelings about performing a behaviour and the authors considered that behavioural intentions are a function of an individual's attitude toward the behaviour and subjective norms surrounding the performance of the behaviour, an individual's (accept, agree, like) or (reject, refuse, dislike) feelings about new Information and Communication Technology (ICT) (Wang et al., 2017).

The purpose of this study is to investigate a nominated second-order components research model, based on a systematic relevant literature review from the author's PhD thesis (160 articles) and highlights the role of attitude on the acceptance of Electronic Banking services. Further, attitude is used 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

E-banking has simplified financial transactions through different technological platforms, whether it is an automated teller machine (ATM), computer, mobile phone or tablet in order to access information on a customer's account via electronic service (online service) (Harris et al., 2016; Butt & Aftab, 2013), instead of a visit to a brick-and-mortar banking branch (offline service) (Daniel, 1999; Lee & Lee, 2000). The necessity of E-Banking services with the new generation's lifestyle today is reached by different levels of technology innovations (Khan, 2018; Chawla & Joshi, 2017; Aljanabi & Dileep, 2012; Rahomee et al., 2014; Aljanabi & nor azila, 2015a, 2015b; Alkhaffaf & Abdulqadir, 2016; Mohd Noor & Abdulqadir, 2016; Aljanabi & Dileep, 2013). E-banking provides self-service technologies in an electronic environment (Shih & Fang, 2004; Hoehle et al., 2016). Moreover, it is quite obvious that an E-banking system goes up against the traditional banking system (offline banking) (Floh & Treiblmaier, 2006; Kingshott et al., 2018) for many reasons, such as cost (Luarn & Lin, 2004; Abrahão et al., 2016), time (Hanafizadeh & Khedmatgozar, 2012), knowledge of IT (Mallat et al., 2009; Luo et al., 2010) geographic expanse, pollution, traffic jams, parking problems, saving trees (paperless transactions), for better management (Claro & Rosa, 2016), attracting more customers (Mann & Sahni, 2012) through different communication channels such as social media, mass media (Tran & Corner, 2016), e-service (Al-Qeisi & Hegazy, 2015) and financial performance of community banks (Acharya et al., 2008).

Nowadays Hawala plays a major part in the financial market place in the KRI and affects the banking sector (Passas, 2005a, 2005b), even in the future because it is not just a habit, it has become a trusted and easy way for people. Hawala is a local traditional transaction system (Schramm & Taube, 2003) for money transfer between the KRI and other countries, no matter whether for business or for other purposes based on using the Jordan, Iran or United Arab Emirates banking sectors. Most of the foreign exchangers offices use Hawala instead of using the KRG banking sector (Bunt, 2008; Liargovas & Repousis, 2011). The Hawala system is cheaper, faster and more trustworthy compared to the banking system in the KRI because of past performance of the KRI banking system (Faith, 2011; Ismail, 2007). Besides that, people have had a good experience with the Hawala system in the past which is

why people trust Hawala more than the banking system. Unfortunately, no official statistics exist regarding the level of Hawala activity, but according to a USAID report (2008) Hawala transactions account for substantially more than half the currency in circulation held outside the banking sector. Anecdotal evidence suggests that the volume of Hawala transactions easily exceeds the equivalent of US \$3 billion annually just in the KRI.

According to the USA embassy website in Iraq and their report on Hawala, there are 2,000 financial institutions that use Hawala and exchange their currency via their Hawala system. The problem is that Hawala is used in the region for both legitimate and illegitimate reasons, also there are no investigations or fines there, which means there is no fully financial monetary system to prohibit illegitimate situations because many of Hawaladars became licensed from the government. That is why there is financial chaos in the region, commonly known as financial corruption (Soudj in, 2015). Money laundering is an important problem in the region even in Iraq generally as it is linked to the Hawala system (Shanmugam, 2004; Goede, 2003; Schneider, 2010; Veul et al., 2016).

Venkatesh et al., (2003) presented the Unified Theory of Acceptance and Use of Technology UTAUT 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). With regards to the theoretical perspective, UTAUT can be a good foundation for this study (Abu Shanab & Pearson, 2007), in order to test the intention to accept E-banking service (Tan & Lau, 2016; Alalwan et al., 2018), UTAUT provided a refined view of how the determinants of intention and behaviour evolve over time (Venkatesh

et al., 2003).

In short, 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 attain gain in job performance (Venkatesh et al., 2003; Zhang et al., 2018). In contrast, Yaseen and El Qirem (2018) found that Performance expectancy and hedonic motivation are not significant predictors.

**Effort Expectancy** is defined as the degree of ease associated with the use of the system (Venkatesh et al., 2003; Warsame & Ireri, 2018; Wang et al., 2017).

**Social Influence** is defined as the degree to which an individual perceives the importance of the beliefs of others on whether he or she should use the new system (Venkatesh et al., 2003; Yaseen & El Qirem, 2018).

**Facilitating Conditions** are 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). In contrast, Al-Qeisi and Hegazy (2015) found that facilitating conditions were not strong determinants of usage behaviour.

Individual level technology adoption is one of the most mature streams of IS research (Venkatesh et al., 2007) thus in this research Individual Factors are rated as Second-order (higher-order components) contained from four sub-dimensional indicators (lower-order components) which are performance expectancy, effort expectancy, and facilitating conditions. With regard to the UTAUT 1 and 2 (Venkatesh et al., 2012). Table 1 presents a summary of the main findings of selected empirical studies based on UTAUT.

**Table 1: Summary of the main findings of selected empirical studies based on UTAUT**

Authors & year	Finding	Sample	Country
Baabdullah et al. (2019)	The main factors – performance expectancy, price value, facilitating conditions, hedonic motivation, habit, system quality and service quality – were found to have a significant impact on actual user behaviour.	320 Customers	Saudi Arabia
Farah et al. (2018)	Most of the predictors of intention, including perceived value, performance expectancy, habit, social influence, effort expectancy, hedonic motivation (except for facilitating condition, perceived risk and trust), are significant. All predictors of user behaviour are significant.	490 respondents	Pakistan



<b>Alalwan et al. (2018)</b>	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
<b>Alalwan et al. (2017)</b>	Behavioural intention is significantly and positively influenced by performance expectancy, effort expectancy, hedonic motivation, price value and trust.	343 participants	Jordan
<b>Maruping et al. (2017)</b>	Found two determinants of behavioural expectation and theorize how these determinants influence BE in concert with four key moderators from UTAUT.	321 users of a new IT.	USA
<b>Torres et al. (2017)</b>	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 participants	Colombia
<b>Abrahão et al. (2016)</b>	A guide to participants in the payments market to develop a service for mobile payments with good performance, ease to use, security and promoting the action of the social circle of the individual at a fair price, in other words, that meets needs and expectations of today's mobile phone users.	605 respondents	Brazil
<b>Bhatiasevi (2016)</b>	Performance expectancy, effort expectancy, social influence, perceived credibility, perceived convenience, and behavioural intention to use mobile banking posited a positive relationship. Contrary to previous studies, the hypotheses tested perceived that financial cost and facilitation conditions in the adoption of mobile banking were not supported.	272 Customers	Thailand
<b>Baptista and Oliveira (2015)</b>	Performance expectancy, hedonic motivation, and habit were found to be the most significant antecedents of behaviour intention. To explain the mobile banking use behaviour the habit and culture moderator effects on behaviour intention over user behaviour were the most important drivers.	252 Users	Mozambique
<b>Al-Qeisi et al. (2014)</b>	The technical, general content and appearance dimensions of a website are most important for users. These dimensions are significantly related to userbehaviour directly and indirectly.	216 users	UK

Source: Own elaboration

From the above discussion, the researcher hypothesised as:

H1. Individual Factors have a positive effect on User Behaviour.

## MODERATING EFFECT OF ATTITUDE

According to the (TAM), attitude is a function of perceived ease of use and perceived usefulness (Davis, 1989; Davis et al., 1989). In other words, attitude can be an outcome of positive or negative feeling towards using a new system or technology such as E-banking service (Karjaluo et al., 2002; Davis, 1989). Davis (1989) found that attitude plays a critical role in the intention to use a new technology. Also, Davis (1989) described attitude as a degree of evaluative effect that an individual associates

with using the target system. Attitude toward using technology is defined as an individual's overall affective reaction to using a system (Venkatesh et al., 2003). There are numerous factors beyond accepting this system safely and effectively. Attitude could be the most significant factor in achieving success for bankers (M. Hama Khan, 2019; Khan, 2018). Customers are always free and right to accept what they want whether they are in the KRI or somewhere else based on their attitude (Cheng et al., 2006; Muñoz-Leiva et al., 2017). Fen Lin (2011) found that the relationship between perceived competence and attitude is greater for potential customers than for repeat customers.

With regards to the factors, a group of factors can effect an individual's attitudes to intend to accept an E-banking system such as self-service technologies, attitude can effect social pressures on intention to accept

E-banking service (Chaouali & El Hedhli, 2019; Chauhan et al., 2019) saw demographic characteristics (Chawla & Joshi, 2017, 2018), subjective norm (Ting et al., 2016), word of mouth impact (Mehrad & Mohammadi, 2016), electronic service (Ayo et al., 2016), etc.

With regards to the theories, attitude has been employed in three main theories related to consumer behaviour, namely (Theory of Reasoned Action (TRA) by Fishbein and Ajzen (1975), (Theory of Planned Behaviour

(TPB) by Ajzen (1991) and (Technology Acceptance Model (TAM) (Davis, 1989, Davis et al., 1989). From these theories and literature review, this researcher understood that attitude was not used as a moderator, that is why the researcher has decided to use attitude as a moderator in this research (Khan, 2018; M. Hama Khan, 2019). Table 2 presents a summary of the main findings of selected empirical studies related to attitude.

**Table 2: Summary of the main findings of selected empirical studies related to Attitude**

Authors & year	Finding	Sample	Country
Chaouali and El Hedhli (2019)	Attitudes toward automated teller machines (ATMs) and online banking significantly predict attitude toward mobile banking.	1250 clients	France
Giovanis et al. (2019)	Perceived risk negatively affects attitude formation and inhibits willingness to use MB services.	931 potential users	Greece
Chauhan et al. (2019)	The significant positive influence of perceived usefulness, ease of use, attitude on consumer's intention to adopt internet banking.	487 consumers	India
Geo et al. (2017)	The results showed the positive effect of perceived behavioural control (PBC) and attitudes (ATT) toward m-banking adoption intentions.	189 Customers	Pakistan
Chawla and Joshi (2017)	Perceived trust, perceived ease of use (PEOU), perceived lifestyle compatibility, perceived efficiency and perceived convenience significantly impacted user attitude. However, user attitude was not found to differ significantly between demographic variables.	367 Users	India
F. Muñoz-Leiva et al. (2017)	The results obtained in this study demonstrate how attitude determines mainly the intended use of mobile apps, discarding usefulness and risk as factors that directly improve its use.	103 regular users	Spain
Ting et al. (2016)	The findings showed that attitude, subjective norms and perceived behavioural control are positively predicted by their respective belief factors	311 Users	Malaysia
Mehrad and Mohammadi (2016)	The results revealed that "Word of Mouth" was found to be the main factor affecting users attitudes toward the use of mobile banking.	384 Users	Iran
Mansour, Eljelly and Abdullah (2016)	The study found that the customers' attitude toward various bank technologies is not the same and is influenced by different factors. The results revealed that bank customers who are users of ATMs are influenced by its convenience, ease of use and service quality, whereas credibility was not seen as a significant driver. Mobile users were found to be influenced more by the benefits and ease of use and service quality, whereas internet customers were influenced by the benefits and ease of use and credibility of the systems.	132 Customers	Sudan
Butt and Aftab (2013)	The results of this research suggested that attitude towards Halal banking positively influences perceived e-service quality and overall e-satisfaction with the online services of Islamic banks.	292 Users	Pakistan

Source: Own elaboration

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

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

### RESEARCH MODEL AND HYPOTHESIS

In this research, the framework is extended from TAM & UTAUT. Moreover, the research model uses the three latent variables (Individual Factors as an independent variable, Attitude as a moderator and User Behaviour as dependent variable) because it has higher-order constructs and reflective-formative types. The second-order components (Individual Factors) is based on four subdimensions (lower-order components) which are performance expectancy, effort expectancy, and facilitating conditions. Individual Factors are more concentrated when it is second-order and conceptually is more reliable, besides second-order components reduce the number of paths in the model in which 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 modeling (PLS-SEM) approach by SmartPLS (V. 3.2.8) (Aljanabi, 2017; Aljanabi et al., 2018, 2019). Figure 1 shows the framework.

### RESEARCH METHOD

#### DATA COLLECTION AND SAMPLE SELECTION

The data sample collected from academic staff at the University of Sulaimani which is located in Sulaimani city in the KRI was done via electronic questionnaires in the local language, in order to make it more clear for the participants, which are the (Kurdish\Sorani). The data have been collected on Google Forms (Alaarij et al., 2017a, 2017b). The length of time given to respondents to complete this survey was 2 months. A total of 476 usable questionnaires were collected, since the questionnaires were electronic, there was no incomplete questionnaire.

### RESULTS AND DISCUSSION

According to Hair et al., (2017) the model should test through two stages which are the measurement model and the structural model (Henseler et al., 2009). It is also necessary to extend a (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). In this research the hypothesis was tested by using the one-tailed test instead of the two-tailed test, in order to minimize the type II error (Latan et al., 2016).The Demographic Information were

Table 3: Demographic Information

1. Age		Value	Count	Percent
N	Valid	476		
	Missing	0		
Labelled Values	1	18-40	366	76.9%
	2	41-60	104	21.8%
	3	61-80	6	1.3%
2. Gender		Value	Count	Percent
Valid Values	1	Male	186	39.1%
	2	Female	290	60.9%
3. Education		Value	Count	Percent
Valid Values	1	Diploma	2	0.4%
	2	Undergraduate	34	7.1%
	3	Postgraduate	440	92.4%
4. OBA		Value	Count	Percent
Valid Values	1	Yes	428	89.9%
	2	No	48	10.1%
5. EBA		Value	Count	Percent
Valid Values	1	Yes	446	93.7%
	2	No	30	6.3%

6. BAM		Value	Count	Percent
Valid Values	1	1-15	208	43.7%
	2	16-30	94	19.7%
	3	31-50	174	36.6%
7. UBE		Value	Count	Percent
Valid Values	1	1-10	336	70.6%
	2	>10	140	29.4%

Note: OBA: Do you have an online bank account?, EBA: Have you ever accessed 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?.

Source: Own elaboration

calculated for the sample (N=476) by SPSS V.24. Table 3 shows the demographic information of the respondents. A majority of the respondents (60.9%) are females in the age group (76.9%) of 18-40 years with postgraduate (92.4%) degree and they have bank accounts (89.9%).

## INDICATOR RELIABILITY

According to Hair et al., (2017) indicator reliability is the first test to assess the evaluation of measurement models in PLS-SEM, for the purpose of testing the inner validity and reliability for the model. The measurement model is intended to assess the validity (convergent and discriminant) and reliability of each indicator forming latent constructs. After a PLS Algorithm has been run,

first of all, the average variance extracted (AVE) must be checked. A general rule of thumb for AVE is ( $\geq +.5$ ) (Hair et al., 2017, p. 138). In reflective models, outer loading must be checked. Outer loadings represent the absolute contribution of the indicator to the definition of its latent variable (David Garson, 2016, p. 60). The rule of thumb for outer loadings between 0.40 and 0.70 is acceptable (Hair et al., 2017, p.131), hence, some indicators below 0.4 such as (SI14, SI15, SI16, FC21, FC23R, A57R) have been removed. According to Hulland (1999, p. 198) in social science studies, it is possible to have outer loadings ( $<0.70$ ). Table 4 shows the Evaluation of Measurement Model. Figure 1 shows evaluation of measurement model.

Table 4: Evaluation of Measurement Model with Attitude as a Moderator

Indicators/ Items	Code	FL <sup>a</sup>	Cronbach's Alpha <sup>b</sup>	Rho_A	CR <sup>d</sup>	AVE <sub>c</sub>
PE	PE1	0.813	<b>0.906</b>	<b>0.911</b>	<b>0.93</b>	<b>0.681</b>
	PE2	0.83				
	PE3	0.808				
	PE4	0.905				
	PE5	0.75				
	PE6	0.839				
EE	EE7	0.889	<b>0.954</b>	<b>0.954</b>	<b>0.96</b>	<b>0.812</b>
	EE8	0.917				
	EE9	0.936				
	EE10	0.883				
	EE11	0.882				
	EE12	0.898				
SI	SI13	0.845	<b>0.824</b>	<b>0.824</b>	<b>0.9</b>	<b>0.742</b>
	SI17	0.916				
	SI18	0.82				
FC	FC19	0.907	<b>0.847</b>	<b>0.853</b>	<b>0.91</b>	<b>0.767</b>



	FC20	0.899				
	FC22	0.818				
<b>IF</b>	PE1	0.766	<b>0.942</b>	<b>0.949</b>	<b>0.95</b>	<b>0.505</b>
	PE2	0.76				
	PE3	0.614				
	PE4	0.756				
	PE5	0.616				
	PE6	0.742				
	EE7	0.801				
	EE8	0.803				
	EE9	0.838				
	EE10	0.778				
	EE11	0.77				
	EE12	0.779				
	SI13	0.572				
	SI17	0.553				
	SI18	0.56				
	FC19	0.672				
	FC20	0.698				
	FC22	0.608				
<b>A * IF</b>	<b>IF * A</b>	1.811	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>
<b>A</b>	A52	0.943	<b>0.917</b>	<b>0.959</b>	<b>0.94</b>	<b>0.765</b>
	A53	0.547				
	A54	0.941				
	A55	0.93				
	A56	0.941				
<b>UB</b>	UB64	0.933	<b>0.912</b>	<b>0.937</b>	<b>0.94</b>	<b>0.755</b>
	UB65	0.936				
	UB66	0.934				
	UB67	0.901				
	UB68 Group	0.588				

Note: FL: Factor Loading, PE: Performance Expectancy, EE: Effort Expectancy, SI: Social Influence, FC: Facilitating Conditions, IF: Individual Factors, A \* IF: Attitude \* Individual Factors, A: Attitude, and UB: User Behaviour.

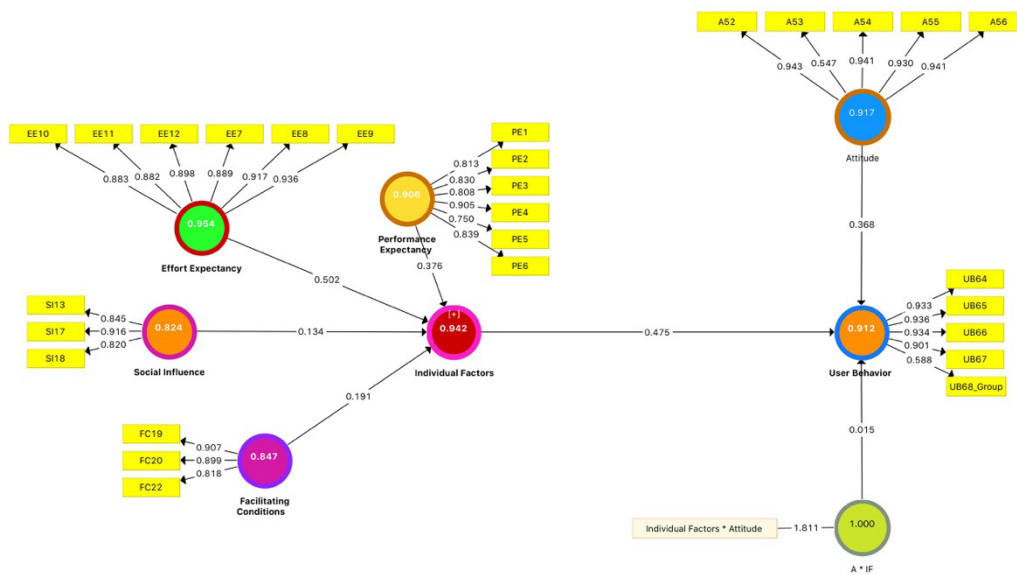
Source: Own elaboration

## DISCRIMINANT VALIDITY MEASUREMENT

Discriminant validity is defined as the extent to which a construct is truly distinct from other constructs by empirical standards (Hair et al., 2017). The function (PLS Algorithm) run in order to get each of the cross loadings, (Fornell & Larcker Criterion) and the heterotrait-monotrait ratio (HTMT). This approach gives opportunities to researchers to be able to test each indicator that has strong loadings on the same factor and with multiple factors based on PLS-SEM (Henseler et al., 2014). According to Hair et al. (2017, p.138), "an indicator's outer loading on the associated

construct should be greater than any of its cross-loadings (i.e., its correlation) on other constructs". This study has calculated the discriminant validity of the first approach which is cross loading. All constructs met the criteria for discriminant validity. Table 5 shows Indicator Items Cross loading.

Figure 1: Evaluation of Measurement Model



Source: Own elaboration

Table 5: Indicator Items Cross loading

Construct	A * IF	A	EE	FC	IF	PE	SI	UB
A52	-0.48	<b>0.943</b>	0.536	0.307	0.502	0.39	0.19	0.614
A53	-0.446	<b>0.547</b>	0.226	0.38	0.401	0.42	0.461	0.258
A54	-0.454	<b>0.941</b>	0.565	0.314	0.503	0.35	0.195	0.604
A55	-0.488	<b>0.93</b>	0.601	0.361	0.563	0.416	0.264	0.575
A56	-0.508	<b>0.941</b>	0.633	0.337	0.578	0.427	0.246	0.607
EE10	-0.495	0.572	<b>0.883</b>	0.463	<b>0.778</b>	0.529	0.355	0.614
EE10	-0.495	0.572	<b>0.883</b>	0.463	<b>0.778</b>	0.529	0.355	0.614
EE11	-0.539	0.542	<b>0.882</b>	0.457	<b>0.77</b>	0.507	0.36	0.658
EE11	-0.539	0.542	<b>0.882</b>	0.457	<b>0.77</b>	0.507	0.36	0.658
EE12	-0.541	0.557	<b>0.898</b>	0.458	<b>0.779</b>	0.514	0.347	0.599
EE12	-0.541	0.557	<b>0.898</b>	0.458	<b>0.779</b>	0.514	0.347	0.599
EE7	-0.49	0.502	<b>0.889</b>	0.437	<b>0.801</b>	0.597	0.353	0.546
EE7	-0.49	0.502	<b>0.889</b>	0.437	<b>0.801</b>	0.597	0.353	0.546
EE8	-0.541	0.57	<b>0.917</b>	0.505	<b>0.803</b>	0.52	0.382	0.559
EE8	-0.541	0.57	<b>0.917</b>	0.505	<b>0.803</b>	0.52	0.382	0.559
EE9	-0.53	0.551	<b>0.936</b>	0.503	<b>0.838</b>	0.609	0.328	0.615
EE9	-0.53	0.551	<b>0.936</b>	0.503	<b>0.838</b>	0.609	0.328	0.615
FC19	-0.458	0.385	0.525	<b>0.907</b>	<b>0.672</b>	0.443	0.499	0.486
FC19	-0.458	0.385	0.525	<b>0.907</b>	<b>0.672</b>	0.443	0.499	0.486
FC20	-0.409	0.34	0.504	<b>0.899</b>	<b>0.698</b>	0.558	0.459	0.54
FC20	-0.409	0.34	0.504	<b>0.899</b>	<b>0.698</b>	0.558	0.459	0.54
FC22	-0.42	0.242	0.332	<b>0.818</b>	<b>0.608</b>	0.536	0.659	0.274
FC22	-0.42	0.242	0.332	<b>0.818</b>	<b>0.608</b>	0.536	0.659	0.274
IF * A	1	-0.532	-0.58	-0.489	-0.632	-0.52	-0.387	-0.469
PE1	-0.456	0.455	0.655	0.43	<b>0.766</b>	<b>0.813</b>	0.329	0.599
PE1	-0.456	0.455	0.655	0.43	<b>0.766</b>	<b>0.813</b>	0.329	0.599

PE2	-0.493	0.474	0.644	0.434	<b>0.76</b>	<b>0.83</b>	0.278	0.593
PE2	-0.493	0.474	0.644	0.434	<b>0.76</b>	<b>0.83</b>	0.278	0.593
PE3	-0.383	0.223	0.298	0.468	<b>0.614</b>	<b>0.808</b>	0.568	0.24
PE3	-0.383	0.223	0.298	0.468	<b>0.614</b>	<b>0.808</b>	0.568	0.24
PE4	-0.508	0.4	0.518	0.521	<b>0.756</b>	<b>0.905</b>	0.432	0.439
PE4	-0.508	0.4	0.518	0.521	<b>0.756</b>	<b>0.905</b>	0.432	0.439
PE5	-0.27	0.204	0.306	0.528	<b>0.616</b>	<b>0.75</b>	0.625	0.275
PE5	-0.27	0.204	0.306	0.528	<b>0.616</b>	<b>0.75</b>	0.625	0.275
PE6	-0.433	0.376	0.512	0.521	<b>0.742</b>	<b>0.839</b>	0.54	0.454
PE6	-0.433	0.376	0.512	0.521	<b>0.742</b>	<b>0.839</b>	0.54	0.454
SI13	-0.352	0.208	0.331	0.513	<b>0.572</b>	0.526	<b>0.845</b>	0.198
SI13	-0.352	0.208	0.331	0.513	<b>0.572</b>	0.526	<b>0.845</b>	0.198
SI17	-0.291	0.181	0.29	0.572	<b>0.553</b>	0.468	<b>0.916</b>	0.217
SI17	-0.291	0.181	0.29	0.572	<b>0.553</b>	0.468	<b>0.916</b>	0.217
SI18	-0.354	0.316	0.392	0.486	<b>0.56</b>	0.416	<b>0.82</b>	0.299
SI18	-0.354	0.316	0.392	0.486	<b>0.56</b>	0.416	<b>0.82</b>	0.299
UB64	-0.43	0.581	0.615	0.481	0.635	0.515	0.279	<b>0.933</b>
UB65	-0.466	0.643	0.607	0.446	0.613	0.486	0.281	<b>0.936</b>
UB66	-0.424	0.562	0.625	0.426	0.618	0.507	0.219	<b>0.934</b>
UB67	-0.459	0.608	0.606	0.381	0.569	0.427	0.215	<b>0.901</b>
UB68 Group	-0.208	0.269	0.398	0.485	0.476	0.409	0.205	<b>0.588</b>

Source: Own elaboration

### (FORNELL AND LARCKER CRITERION)

The Fornell and Larcker Criterion is the second measurement that can compare the correlations of the latent variable with the square root of the AVE values of (0.50), the square root of the AVE of each construct should be higher than its highest correlation with any other construct. In other words, the outer of the indicator loadings should be higher than all its cross loadings with other constructs (Hair et al., 2017, p.139). All constructs met the criteria for discriminant validity. Table 6 shows

Discriminant Validity (Fornell & Larcker Criterion).

### THE HETEROTRAIT-MONOTRAIT RATIO (HTMT)

The heterotrait-monotrait ratio (HTMT) is the third measurement in order to test discriminant validity. According to G. David Garson (2016, p.70), the HTMT ratio should be below 1.0, which means the heterotrait correlations should be smaller than monotrait correlations. On the other hand, Henseler et al. (2015, p.121) proposed

Table 6: Discriminant Validity (Fornell and Larcker Criterion)

Construct	A * IF	A	EE	FC	IF	PE	SI	UB
A * IF	1							
A	-0.532	<b>0.875</b>						
EE	-0.58	0.609	<b>0.901</b>					
FC	-0.489	0.371	0.522	<b>0.876</b>				
IF	-0.632	0.58	0.882	0.754	<b>0.711</b>			
PE	-0.52	0.441	0.607	0.584	0.865	<b>0.825</b>		
SI	-0.387	0.273	0.393	0.609	0.653	0.547	<b>0.861</b>	
UB	-0.469	0.629	0.663	0.501	0.672	0.539	0.276	<b>0.869</b>

Source: Own elaboration

Table 7: Discriminant Validity (HTMT)

Construct	A * IF	A	EE	FC	IF	PE	SI	UB
A * IF								
A	0.573							
EE	0.594	0.633						
FC	0.533	0.444	0.576					
IF	0.644	0.615	0.887	0.872				
PE	0.54	0.499	0.637	0.672	0.946			
SI	0.425	0.36	0.443	0.737	0.809	0.648		
UB	0.484	0.659	0.711	0.579	0.7	0.585	0.321	

Source: Own elaboration

0.90 as an acceptable value for the HTMT. Hair et al. (2017, 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. In this study, there is a lack of discriminant validity between (PE and IF) that its disattenuated correlation is higher than 0.90. Table 7 shows Discriminant validity.

## EVALUATION OF THE STRUCTURAL MODEL IN PLS-SEM

According to Hair et al. (2017) the second step is an evaluation of the structure of the model. The most important 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.

## TESTING COLLINEARITY STATISTICS (INNER VIF)

According to Hair et al. (2017) testing collinearity is the first test in order to evaluate the structural model. Hair et al. (2011) defined Collinearity as a potential issue in the structural model and that variance inflation factor (VIF), the rule of thumb for the VIF is the value of 5 or above usually can be a problem. The term VIF is derived from its square root (VIF) being the degree to which the standard error has been increased due to the presence of collinearity. Table 8 shows the results of the structural model for this study that was done by using SmartPLS

(V3.2.8).

## $R^2$ SQUARE ( $R^2$ ) VALUE

In order to get  $F^2$  Effect Size, scholars need to get the  $R^2$  value first based on the application of PLS-SEM. The  $R^2$  value is the most important approach to evaluate the structural model that can measure the coefficient of determination  $R^2$  Square value. According to Hair et al. (2017, 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 to 1. On the other hand, Falk and Miller (1992) propose an R-squared value of 0.10 as a minimum acceptable level and Chin (1998), suggested that the values of  $R^2$  that are above 0.67 are considered high, while values ranging from 0.33 to 0.67 are moderate, whereas values between 0.19 to 0.33 are weak and any  $R^2$  values less than 0.19 are unacceptable. Nevertheless, (Henseler et al., 2009; Hair et al., 2018) 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. Table 8 shows the results.

## $F^2$ VALUES

Another important measurement to evaluate the structural model is  $F^2$  Square value. According to Chin (1998, p. 317),  $F^2$  values of 0,02, 0,15 and 0,35 determine if latent exogenous variables have a small, medium or large effect-size (Cohen, 1988).  $F^2$  the value indicates an exogenous construct's small, medium, or large effect, respectively, on an endogenous construct (Hair et al.,



**Table 8: Structural model results**

Construct	VIF	R Square	R Square Adjusted	F <sup>2</sup> Square	Q <sup>2</sup>
A * IF	1.787	-	-	0.001	-
A	1.618	-	-	0.181	-
EE	1.699	-	-	837.21	-
FC	1.973	-	-	104.143	-
IF	1.933	<b>1</b>	<b>1</b>	0.253	<b>0.485</b>
PE	2.03	-	-	392.292	-
SI	1.745	-	-	58.207	-
UB	-	<b>0.538</b>	<b>0.535 (Moderate)</b>	-	<b>0.389</b>

Source: Own elaboration

2017, p. 216). Table 8 shows the results.

## PLSPREDICT

According to Shmueli et al. (2016) scholars need to assess the PLSpredict approach instead of reporting model fit, which is a set of procedures for prediction with PLS path models and the evaluation of their predictive performance. Recently the PLS-SEM domain was rapidly extended and updated, therefore researchers need to be aware of any progress on the application of the PLS-SEM domain (Hair et al., 2019; Sharma et al., 2019; Evermann et al., 2016). In this study, PLSpredict has been assessed by running PLSpredict in SmartPLS V3.2.8 with K=10. Shmueli et al. (2019) have recommended that setting (k=10). 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 nonnormal (non-symmetrically distributed) the mean absolute error (MAE) prediction metric has been taken according to Shmueli et al. (2019). The results show that there 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 9 illustrates the results of this study that have been achieved based on Shmueli et al. (2019) suggested recommendation setting in the application of the PLSpredict approach by SmartPLS (V 3.2.8).

**Table 9: PLSpredict assessment of manifest variables (original model)**

Item	PLS-SEM		LM	PLS-SEM - LM
	MAE	Q <sup>2</sup> predict	MAE	MAE
PE5	0.634	0.408	0	0.634
SI13	0.606	0.371	0	0.606
PE4	0.404	0.556	0	0.404
EE11	0.458	0.58	0	0.458
EE10	0.444	0.594	0	0.444
PE6	0.382	0.55	0	0.382
PE3	0.634	0.396	0	0.634
EE9	0.405	0.678	0	0.405
SI18	0.467	0.316	0	0.467
PE1	0.481	0.512	0	0.481
EE7	0.425	0.621	0	0.425
FC22	0.651	0.404	0	0.651
PE2	0.488	0.507	0	0.488
FC19	0.513	0.457	0	0.513

SI17	0.659	0.338	0	0.659
EE8	0.413	0.627	0	0.413
FC20	0.501	0.486	0	0.501
EE12	0.428	0.591	0	0.428
UB67	0.536	0.415	0.453	0.083
UB64	0.632	0.452	0.507	0.125
UB65	0.539	0.476	0.459	0.08
UB68 Group	0.786	0.175	0.636	0.15
UB66	0.6	0.422	0.502	0.098

Note: \*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.

Source: Own elaboration

## HYPOTHESIS TESTING: BOOTSTRAPPING DIRECT EFFECT RESULTS

Hypothesis testing has been obtained for the structural model for this study by a Bootstrapping procedure by using the one-tailed test rather than the two-tailed in order to minimize the type II error (Latan et al., 2018), with 5000 samples and Bias- Corrected and Accelerated (BCa) in SmartPLS V 3.2.8 which is shown in Table 10 and 11. Bootstrapping is a resampling approach that draws random samples (with replacement) from the data and uses these samples to estimate the path model multiple times under slightly changed data constellations (Hair et al., 2017, p.191). Chin (1998) suggested that since PLS-SEM is a nonparametric approach, as a result, scholars need to assess the bootstrapping procedure to achieve statistical significance. In short, P-value and t-value can be achieved among other results which are very important to determine whether the path coefficient is significant or not by running the Bootstrapping function in SmartPLS. A p-value is equal to the probability of obtaining a t-value at least as extreme as the one that is 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., 2017, 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. From the Bootstrapping result of the structural model, the following hypothesis can be derived:

H1. Individual Factors have a positive effect on User Behaviour.

H1a. Attitude will not moderate the relationship between Individual Factors and User Behaviour.

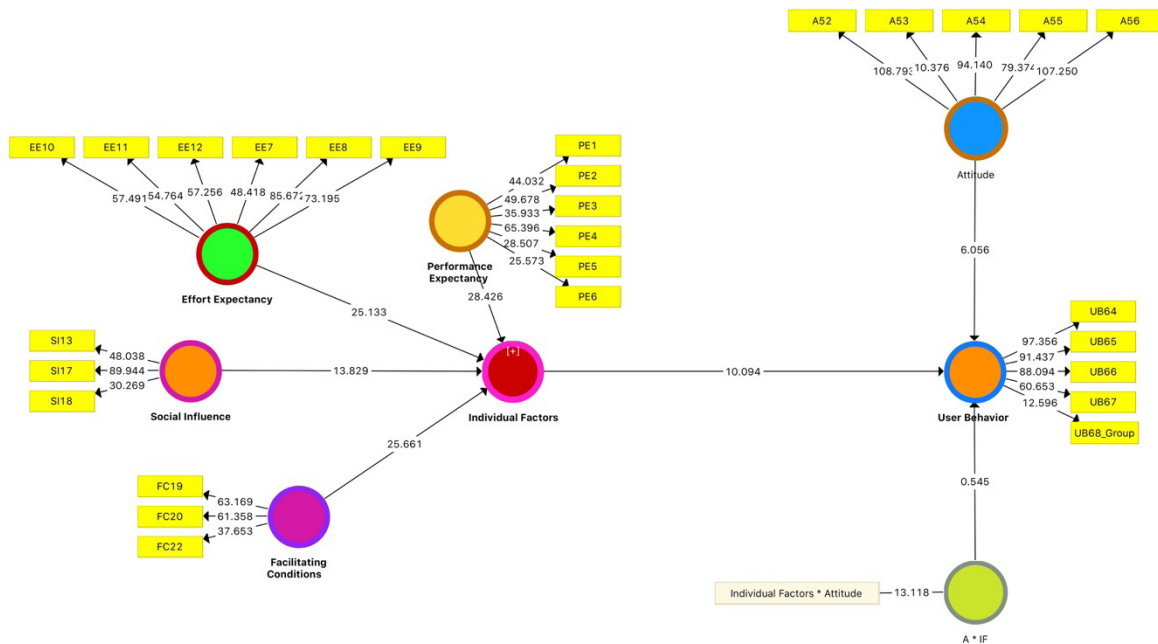
The final measurement is moderation analysis, which is like multigroup analysis (Henseler & Chin, 2010; Henseler et al., 2012; Hair et al., 2017, p.246; Becker et al., 2018; Alaaraj et al., 2016, 2018). Hair et al. (2017, p.246) described Moderation as “a situation in which the relationship between two constructs is not constant but depends on the values of a third variable, referred to as a moderator variable”. Further, the Moderator variable can affect the relationship between the independent variables and dependent variables directly. In this study, the structural model has been tested one time, the structural model has been tested with the moderator (Attitude) by using SmartPLS V3.2.8 to run a moderation analysis. Rigdon et al. (2010) proposed bootstrapping with 5000 samples and Bias-Corrected and Accelerated (BCa) to analysis moderators, meanwhile, accordingly (Chin et al., 2003; Hair et al., 2019) suggested the two-stage approach to moderator analysis. Table 10 shows the analysis results of second-order components which is IF which has been done with the repeated-indicators approach. Table 11 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 evaluation of the structural model. Figure 3 shows a simple slope analysis (Attitude \* Individual Factors).

## IMPLICATIONS

### THEORETICAL IMPLICATIONS

According to the bunched studies that have been cited on the UTAUT, this research extended the UTAUT by adding Attitude as a moderator and used four of UTAUT’s constructors as lower constructors for this research in

Figure 2: Evaluation of Structural Model



Source: Own elaboration

order to obtain the second order, namely Individual Factors thus to investigate the effect of Individual Factors on accepting E-banking in the KRI and the effect of Attitude as a moderator in this research. In this study, to get more concrete theoretically, on the other hand, to reduce the number of hypotheses in the path. Individual Factors were built as second-order components, besides, in this study we highlight the effect of Attitude that increased as a moderator in the research framework to understand the acceptance factors of E-banking services as a new technology service in the KRI. To the best of this researcher’s knowledge, this study is the first empirical study in the KRI on E-banking, and provides a foundation for other studies in the future. Besides, it increases good literature in the absence of the existing literatures of E-banking.

**PRACTICAL IMPLICATIONS**

With regard to the Managerial and the practical implications, this study shed light on the moderation effect

of (attitude) on the direct effects of Individual factors on User Behaviour. The results showed that attitude has an insignificant and negative Moderator role on the relationship in the framework. The study results reveal that attitude is not an issue effecting customer decisions in order to accept E-banking; there are several important managerial and practical implications that can be derived from the results of the current study; it is assured that the results have great empirical evidence and it is very important for bank managers, bankers and strategic decision makers that are willing to employ E-Banking services. Therefore, this study recommend that bank managers should concentrate on increasing the level of other factors, for example by training or publishing some videos on the bank’s website or sending such through personal email to its customers, in order to increase knowledge about how to learn to use E-banking channel services safely, specifically with the older generation, rather than losing money and time by travelling to bank branches (Alaarj et al., 2017a, 2017b).

Table 10: Analysis of Second-order variables

Second-order components	Lower-order components	Std Beta	Std Error	{t-value}^A	P Values	Decision	5% lower bounds	5% upper bounds
IF	PE	0.376	0.013	28.426	0.000	Supported	0.355	0.398
IF	EE	0.504	0.02	25.133	0.000	Supported	0.473	0.538
IF	SI	0.133	0.01	13.829	0.000	Supported	0.116	0.148
IF	FC	0.191	0.007	25.661	0.000	Supported	0.179	0.203

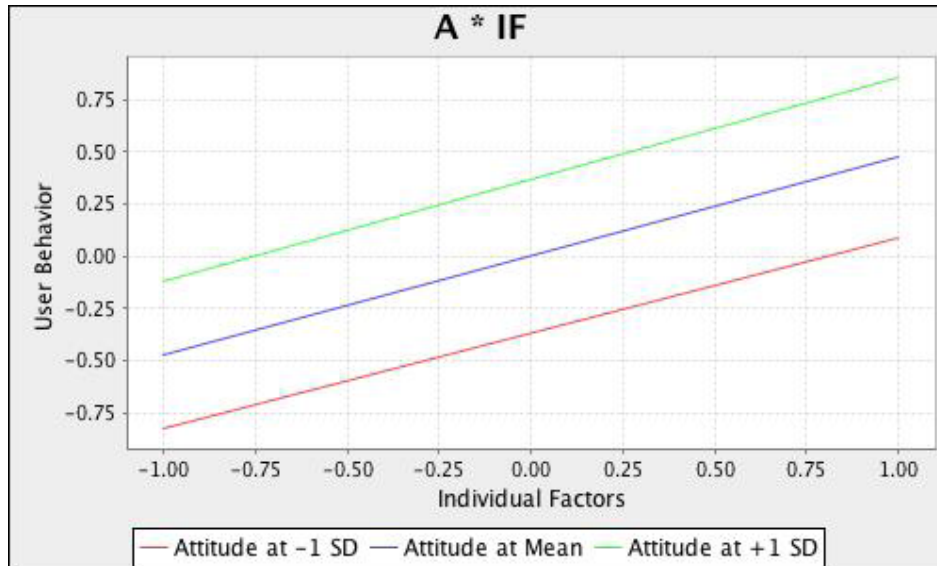
Source: Own elaboration

**Table 11: Direct Relationship for Hypothesis testing with Attitude as a moderator**

Hypothesis	Relationship	Std Beta	Std Error	{t-value} <sup>^</sup>	P Values	Decision	5% lower bounds	5% upper bounds
H1	IF->UB	0.476	0.047	10.094	0.000	Supported	0.397	0.551
H1a	A * IF->UB	0.013	0.028	0.545	0.293	Rejected	-0.035	0.055

Source: Own elaboration

**Figure 3: Simple Slope analysis (Attitude \* Individual Factors)**



Source: Own elaboration

It is recommended that banks need to offer greater services with respect to E-banking. On the other hand, the result suggests that banks should have more marketing strategy guidelines, such as free of charge, increasing numbers and accessibility of ATMs, simplicity, using social media for sharing and increasing its experience rather than only for advertising (YouTube channel services, Facebook, Twitter, Instagram, etc.), 24/7 Customer Services (Call Centers) via free Skype services or cost-free phone numbers, Kurdish Language and lower rates on loans or mortgages can change customers' attitude toward acceptance. Attitude is not a key concern affecting the customer's decision to accept E-banking. On the other hand, this study recommends the banks always understand customer complaints and what goes against customers' attitude through Research and Development (R&D) and (Strength, Weakness, Opportunities and Threats) SWOT analysis. From the above discussion, this study recommends bank managers emphasize that there is not a need to concerning attitude in order to accept E-banking services. E-banking is a key concern affecting economic growth, it leads to a sustainable economy and sustainable environmental future in the KRI.

**LIMITATIONS AND FUTURE RESEARCH DIRECTIONS**

There are several limitations in this study that can be addressed and recommended for future studies. This research only tested attitude as a moderator, many other factors are beyond the domain of this study that can act as a moderator, such as (Culture, Word of mouth, Speed, Subject Norms, Religion etc.) (Khan, 2018; M. Hama Khan, 2019).UTAUT and TAM are the only two theories that the research framework is based on, other theories can be used in order to build the research frameworks as a base, such as (TRA, TPB, DTPB, IDT, UTAUT 2, etc.) (Khan, 2018; M. Hama Khan, 2019).There are conceptual limitations which mean there is no possibility to test every single potential hypothesis that can be drawn in the research framework. Moreover, further study must conceptualize and concentrate on specific channels of E-banking services such as Internet banking or ATMs since there are a limited number of ATMs in the KRI and there is no official number on it, except there is a report from the International Monetary Fund in (2018) that there are 611 ATMs in Iraq which is not a big number of ATMs



compared to other developing countries. 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 which is a mutual difficulty in the methodology for scholars thus it is considered a popular issue among scholars, as a result, it cannot be generalised to E-banking in the KRI thus further research should collect data from each city in the KRI.

## CONCLUSIONS AND FUTURE RESEARCH

The electronic banking system plays a major role in the financial industry. Moreover, it has simplified financial transactions thus, this article investigated E-banking services based on the unified theory of acceptance and use of technology (UTAUT) in the KRI, in order to investigate the moderating effect of attitude. This study proposed a conceptual model with (Individual Factor) as the independent variable, (User Behaviour) as the dependent variable, and (Attitude) as the moderating variable. (Individual Factor) is conceptualised as a second-

order construct with four sub-dimension indicators, namely, (Performance Expectancy, Effort Expectancy, Social Influence, and Facilitating Condition). The study was done in two steps, the first steps was a systematic literature review related to E-banking services that the researcher prepared for this article based on empirical articles from different sources on E-banking, in order to have a robust theoretical framework for this study and to help researchers for future researches by using different methodologies and theories in order to build a stronger research framework. The second step was investigating the research model empirically, and employed PLS-SEM methods. The results showed that Individual Factors have a positive indirect impact on User Behaviour, but attitude has a negative effect on the relationship between Individual Factors and User Behaviour as a moderator (Giovanis et al., 2019; Chawla & Joshi, 2017). Finally, the findings of this study are supportive for researchers, bank managerial and bank practitioners in order to provide a better quality of both offline and online banking services in the KRI.

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