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A SHORT REVIEW OF THE ELECTRONIC BANKING SYSTEM

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ABSTRACT

The necessity of E-Banking services with the new generation's lifestyle today is reached at different levels of technology innovations. This paper aims at directing and contributing to E-Banking by exploring and analysing the current situation of commencement on E-Banking and its acceptance confidently. This paper presents an intensive summary review of a doctorate research by the author about E-Banking acceptance in the Kurdistan Region of Iraq in which 38 studies among 110 published papers were selected on E-Banking between 2002-2016. The studies seek to draw reliable conclusions from their data to identify the influenced factors on the acceptance and adopting of E-Banking system. To analyse the capacity and results of these studies, an analysis was conducted on the most influenced factors, powerful acceptance theories employed in these studies, the sample unit, respondent size and the location of the investigation. The results showed that the factors of security, perceived ease of use and trust had the higher frequencies among the others. The most used model in these studies was TAM model with a great satisfaction results by the researchers and bank institutions. The respondents of these studies were between 44 and 3000 and the major sample unit is bank customers and the majority of studies were from Iran, which are 13 studies. It was found that other theories (UTAUT and UTAUT 2) were less attractive to researchers in their studies. Therefore, the most results are based on the outcomes of TAM models. However, there are limitations of the outcomes by this study for reviewing limited papers, some shortcomings in constructing the links between the E-Banking channels with the influenced factors and there is supremacy of the higher frequency of using TAM on the results. Further works are recommended to study security, perceived ease, and trust using (UTAUT and UTAUT 2) in the countries with large population strata.
Keywords: E-Banking, TAM, UTAUT, Bank customers, acceptance, adoption, security, perceived ease of use, trust

INTRODUCTION

There are considerable developments in banking systems all around the world as a response to the changes in people's current lifestyle. One of the major changes is introducing the new technology into the system and accepting it, which is called E-Banking.

Electronic banking (E-Banking) is a new kind of reform in banking services that plays an essential role in achieving electronic government. This system was first implemented in the United States in1995 (*FFEC*, 2003), developed quickly among other business units as a wave to bring convenience and economy for customers and

such new challenges for officials as security, inaccessibility to networks due to faults, maintenance cost, updating databases, as well as planning and executing modern economic policies.

Therefore, E-Banking includes all banking services based on the implementation of an electronic system. (*Azad et al*, 2013a). It has become an important phenomenon in the banking industry and it will continue as more progress is made in information technology. The financial industry thus is gradually experiencing transformation from cash-based system to a "paperless" system, which is more convenient, and reliable (*Gbadeyan and Akinyoseye-Gbonda*, 2011).

However, the rapid development of the market for electronic devices and tools led the researchers to create various definitions for E-Banking. Although, they do not differ in the principle, they are based on the research topic and area of investigations.

This wide range of applicability of E-Banking suggests an inclusive definition to cover all concerns in the system. It is an alternative method to the traditional banking system through a process of running an electronic media by banks to conduct all possible services between them and their customers. This is to allow to perform financial transactions inside and outside their institutions through the internet, wireless network, automated teller machines (ATM) using a debit card, a direct deposit, a direct payment, computers, mobile phones, telephones or digital televisions. The services include: access to their accounts, to take control of their money, to pay their bills and transfer money from one account to another account rather than by cash or checks.

Despite such advantages, for individuals in countries with the E-Banking system, the acceptance and adoption of the system is not easy or guaranteed just because they are in possession of the electronic equipment or availability of secure access to the networks. There are numbers of factors which have their impact on the acceptance of the system like attitude, trust, security, usage of use, and accordingly, this paper looks for understanding the available factors and investigating to reveal the obscure factors behind the apathetic willing towards this system through a systematic Literature review.

LITERATURE REVIEW

There is a very rapid increase in research about accepting and adopting E-Banking all around the world. E-Banking is still offering the competitive advantages such as cost reduction; better user service; fewer hours and less paper work; and faster and updated information.

The system is not relying entirely on the services by Internet technology and their ability to speed up the banking process. The cooperation between bank institutions and researchers produced a large accumulation of studies which hastened the links between the bank duties and the customers through different styles of studies like empirical study, questionnaires and data collections from different groups of people and from different countries. The researchers have sought the ways to develop E-Banking system by analysing the advantages of the system, utilizing the services by bank institutions for attracting the customer's interest to persuade their demands to achieve their

acceptance. The studies aimed at introducing several factors and analysing their impacts on accepting and adopting the system; some of them are related to the psychological factors and others to the security and economic stability. The diversity of the factors are based on the situation of a particular bank in a particular country, as the stage of adoption or acceptance of this electronic system governs the style of the study and its outcome is to develop or progress the system actively. The idea of E-banking can be understood as a combination of four fields: information technology, finance, marketing and service management (*Hanafizadeh et al.* 2013).

These researches are categorized under non- empirical and empirical researches (*Alavi and Carlson*, 1992); non-empirical researches are those based on the author's critical view for other outcomes and analysis by means of literature review, principles, and comparisons of two methods of analysis or another type of contribution. Empirical researches are focusing on the analysis of data observations through different techniques such as field survey, questionnaires, case studies and interviews. Both methods supported their approaches and results by applying the most predominated theories and models like TRA, TAM and UTAUT, which were followed successfully.

To review these studies, it is more convenient to classify them as follows:

The advantage and services of the E-Banking system

Howcroft et al. (2002) have categorized the retail banking services into four groups: current account, insurance-based, credit-based and investment-based services. Whereas, *Chou and Chou* (2000) shaped the online banking in five basic services: viewing account balances and transaction histories, paying bills, transferring funds between accounts, requesting credit card advances and ordering cheques.

Thornton and White (2001) and *Black et al.* (2002) focused on the influence by the variety of distribution channels in expanding the banking services. They compared the outcome from seven distribution channels of ATM, credit card, cheque, human teller, telephone and Internet. They reached an agreement that consumers' channel options in banking services were determined by consumer, product, channel and organizational characteristics, in which the consumer channel and the alternate choice rather than the classical method have their particular interaction with the banking system. They understood that the usage of different channels by the users is affected by their knowledge, computers, Internet availability, technology and convenience.

Studies on bank facilities and customer's view point towards using the system

The important step towards the implementation of E-Banking system is studying the costumer's acceptance and adopting the system confidently. Thus, a large number of researches were conducted or still under further studies to study the most influenced factors on the adoption and acceptance of this system despite their proved advantages. These factors include attitude, age, race, religion, security risk, trust, awareness, quality, satisfaction, efficiency, convenience, technology service accessibility, perceived usefulness, perceived ease of use, cost, fee, household income, education reliability, compatibility, size of the bank, etc.

For western countries and the USA, the major challenge of studies in adopting this system was concentrated on the factors of ease of use or learning technology, trust, privacy and security (*Sathye.* 1999, *Moutinho and Smith* (2000), *Lymperopoulos and Chaniotakis* (2004), *Floh and Treiblmaier* (2006), *Poon* (2007), *Sanchez-Franco* (2009), *Aderonke and Charles K* (2010), *Faroughian, et al.* (2012), *Ma and Zhao* (2012), *Capece and Campisi* (2013), *Johnson* (2014), *Rodrigues et al.* (2016), *Hoehle et al.* (2017), etc.

The analyses of these studies are discussed in the next section showing the factors concerned and their frequency, unit of analysis, results and recommendations.

The most influential factors in the developing and developed countries

The acceptance and adoption of this system are more complicated for several countries in the world which are surrounded by special circumstances. There are obstacles coming from the peace statute internally and on the border with other neighbors, demography, geography, economic stability, settlement of citizens, security, people's incomes, traditions and religious concepts.

Fitzergerald (2004) analyzes numbers of studies to discover recent and possible customers' awareness on online banking. He has concluded that there is common awareness concerning online banking with disregard to demographic, geographic or psycho graphic characteristics. He disputed that among the major 'non-adoption' areas are the security factor and lack of knowledge of online banking.

Most of the Iranian studies were about customers' adoption of Internet banking services (*Mirza at al.,* 2009), factors affecting the adoption of mobile banking (*Hanafizadeh et al.,* 2012), developing an understanding of Iranian customer's attitude and adoption of Internet banking services (*Mirza et al.* 2009), an investigation of the level of user's acceptance of electronic banking among some customers of banks in Iran (*Abadi and Nematizadeh*, 2012). An investigation on important factors influencing electronic banking for developing exports in Iran are for example infrastructure, advanced services, methods, information knowledge and design (*Azad et al.* 2013b) and word of mouth impact on the adoption (*Mehrad and Mohammadi*, 2016). In Jordan, despite of the fact that it is considered as a low-income country, the researches have helped increase the interest of its citizens to use this system since 2000. (*Alalwan et al.*, 2015). In studies conducted to examine the main factors predicting the Jordanian customers' intention and adoption of telebanking, *Al-Rfou* (2013) emphasizes the use of e-banking from the viewpoint of electronic services staff and the phase which impacts it, such as the acceptance of the system by clients, and how clients can be persuaded to make the most of the financial activity by using e-banking. *Salhieh et al.* (2011) proposed and validated a framework that can be used for assessing the level of banks' readiness to provide e-banking services in Jordan. *Al-Somali et al.* (2008) examined the factors that encourage customers to adopt online banking in Saudi Arabia. They found that the quality of the Internet connection, the awareness of online banking and its benefits, the social influence and computer self-efficacy had significant effects on the perceived usefulness (PU) and perceived ease of use (PEOU) of online banking acceptance. Education, trust and resistance to change also have a significant impact on the attitude towards the likelihood of adopting online banking.

In Malaysia, *Ernovianti et al.* (2012) found that the objective of utilizing Internet banking was led by self-efficiency and some connection between effectiveness, user-friendliness, trust, and self-efficiency. In Singapore, *Liao and Cheung* (2002) studied the most influenced factors in the developing countries. They found that the important quality features of E-retail banking to produce a noticeable willingness to use this system by the individuals were coming from the customer's potential anticipation about accuracy, security, transaction time, user-friendliness, user involvement, convenience and willingness to use by consumers. In Yemen, *Al-Ajam and Nor* (2015) believed that a proportional advantage, user-friendliness and trust in E-Banking influenced the attitude of people to accept the system. In Canada, *Montazemi and Qahri-Saremi* (2013) concluded that trust was a more apparent factor compared to assumed effectiveness and user-friendliness in shaping clients at the primary stage of accepting E-Banking exploitation. In Nigeria, an empirical study was conducted by *Aderonke and Charles* (2010) and they investigated the level of users' acceptance of the electronic banking services supported by suggesting the factors that determine users' behavioral intentions to use electronic banking systems in Nigeria. The results of this research showed that ATM still remained the most widely used form of the e-Banking service. Banks' customers are considered to be the active users of the E-banking system because it is convenient, easy to use, time-saving and appropriate for their transaction needs. Also, the network security and the security of the system in terms of privacy are the major concerns of the users and constitute a hindrance to intending users.

The applied theories and models

Several models and theories have been developed as a dual effort between researchers and bankers to shape the progress of technology applications to their advantages by analysing the most important factors that have influences on the consumer's acceptance and adoption of new technologies. These models have been designed for a particular institution or the study of the factors concerned. However, there are several theories and models in literature which have been employed to explain the relationships between the factors affecting the acceptance and adoption dominancy and user's attitude and willingness as shown in Appendix (1). Among them, there are three very well-known models which are the following: Technology Acceptance Model (TAM) by (*Davis* in 1989, *Davis et al.* (1989)*, Poon* (2007), *Aderonke A and Charles K.* (2010), *Ahmad et al.* (2011), *Jalal et al.* (2011), *Johar and Awalluddin* (2011)*, Abadi and Nematizadeh* (2012), *Ahmadi and Afrouzi* (2012), *Moga, et al.* (2012), *Raida and Néji.* (2013), *El-Qirem* (2013), *Sanayei and Saneian* (2013), *Alikhani and Davarzani.* (2014), *Mansour et al.* (2016), *Rodrigues et al.* (2016), etc.…) which is the adaptation of the Theory of Reason Action (TRA), which was proposed by Fishbein and Ajzen in 1975 (*Ahmad et al.* 2011*, Ahmadi and Afrouzi.* 2012, *Rodrigues et al.* 2016, etc.…) and Unified Theory of Acceptance and Use of Technology (UTAUT) developed by *Venkatesh et al. in* 2003. This theory is used very widely for its simplicity, parsimony and robustness *(Oshlyansky et al.* 2007, *AbuShanab et al.,* 2010, *Yuen et al.,* 2010, *Foon and Fah,* 2011, *Venkatesh et al.* 2012, *El-Qirem* 2013, *Tarhini et al.,* 2014). The list of the theories used in these reviewed papers is given in *Appendix 1.*

Selection of studies used for the acceptance and adoption of E-Banking

The purpose is to solve the system of E-Banking thoroughly or consider any aspect in the system. According to (*Venkatesh and Brown*, 2001) E-banking should be accepted, trusted, adopted and used. However, the operation of E-Banking in some courtiers is still out of the system where there are many factors beyond the initiation of this technology. The factors are numerous but the most effective factors are scattered in literature and utterly specified to the country where the studies were conducted.

In this paper, thirty-eight studies are reviewed in which the acceptance and adoption of E-banking system service were investigated by using different theories, data sample, sample size, diameters and other details. *Appendix 1 and 2* include summaries of the used models, unit of samples and brief results.

RESEARCH METHODOLOGY

The aim of this study is to review and analyse literature which is related to the acceptance and adoption of the E-banking system service.

The methodology of this work was built upon five stages. The first stage was to find out the required area where the lack of investigations dominate the empirical research on the electronic banking system. This was obtained through using some important keywords (like E-banking, TAM, UTAUT, acceptance, adoption, security, perceived ease of use, trust) in a massive search in some databases and google scholar. Then, the second stage was to construct a framework for research in two parts, one for reviewing the relative papers and the second was for concentrating on the statistical analysis usage (Searching Engines, Theories, Factors, Samples, Size, and Locations).

At the third stage, the review was concentrated on the keywords in the empirical researches and the length of some publications were solved by paying a good attention to the parameters which have major influences on the system as long as adoption and acceptance are related. The fourth stage became ready from the preceding stages, working on charting and plotting the relationships of the main parameters with their frequencies. All data were tabulated with sufficient information like author, country, number, and type of samples, theory, parameters, and outcomes by the authors.

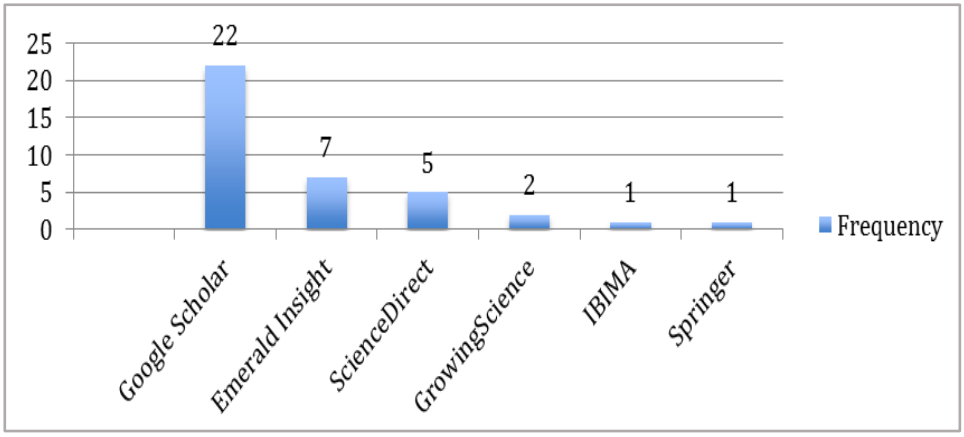
At the fifth stage, main conclusions were drawn which were based on the third and fourth stages, as the frequencies gave clear tendencies towards the impacts of particular parameters on the adoption and acceptance of this system.

According to *Venkatesh and Brown* (2001) E-banking should be accepted, trusted, adopted and used. However, the operating of E-Banking in some courtiers is still out of the system where there are many factors beyond the initiation of this technology. The factors are numerous but the most effective factors are scattered in literature and utterly specified to the country where the studies were conducted.

A strict search for the much related studies in this area has been carried out in Google scholar and other databases such as Emerald Insight, Science Direct and other sources. A total of 110 studies have been reviewed carefully, then only 38 studies have been considered in this paper written between 2002-2016.Those studies

were selected and in which the acceptance and adoption of E-banking system were the investigation priority considered. They include different theories and models, data, sample size, geography and more details as shown in *Figure 1*.

Figure 1



Research objectives:

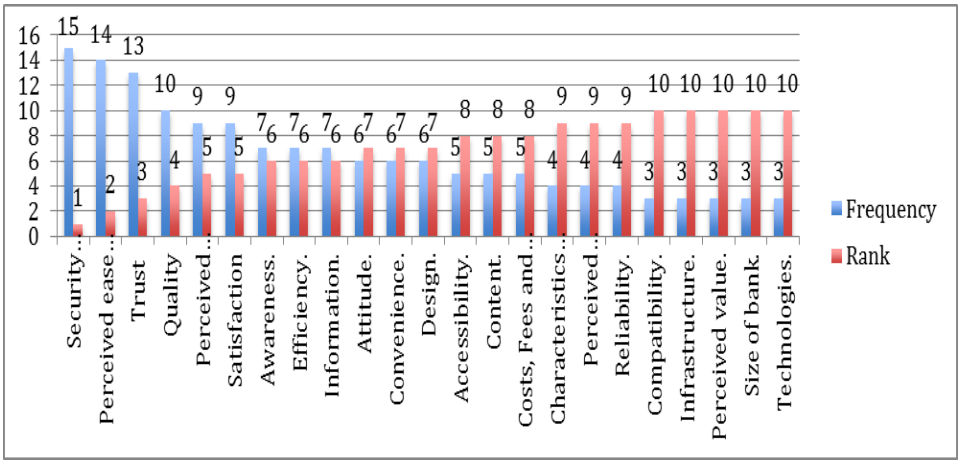
- To study the impact of factors (security, perceived ease of use and trust) that play significant roles in the acceptance and adoption of the E-Banking system.
- To analyse the results of the most related studies of the most influenced factors.
- To identify the factors and circumstances which are surrounding the developing countries to adopt this system from those studies that have been conducted by authors from these countries.
- To give conclusions and recommendation for further studies to the developing countries on how to create a better chance for acceptance and adoption in the future.

RESULTS AND DISCUSSION

The most influential factors in the studies reviewed were the ones which affect the acceptance or adoption of the E-banking system service analysed in terms of their frequency and ranks as shown in *Figure 2*. It was found that the security, perceived ease of use, trust and quality were the top factors which have their noticeable impacts, it means that these factors have been used by a total of 38 studies to understand the acceptance or adoption of the E-banking system service. On the other hand, the least used factors that have been perceived are value, size of the bank and technologies investigated for the same purpose. The definitions of the corresponding factors in this study are given in *Appendix 3*.

Figure 2

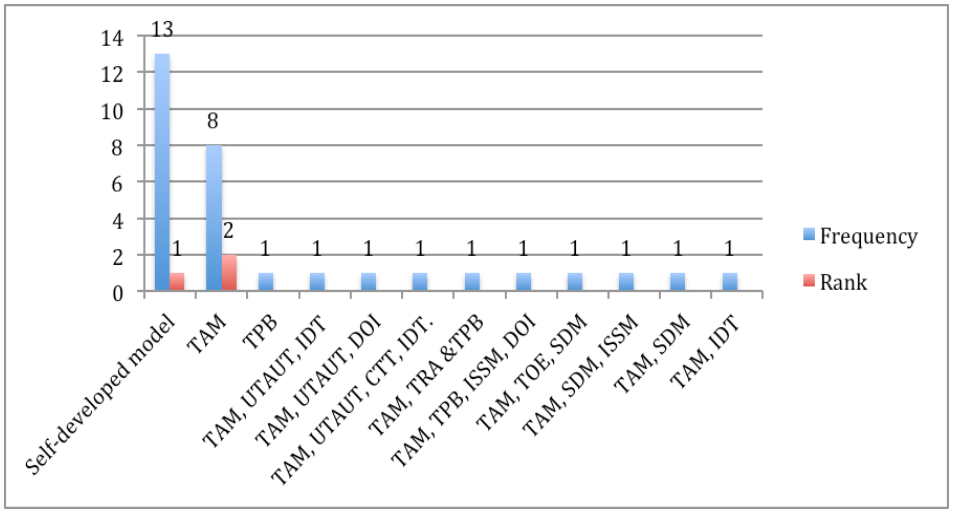
Frequency and ranking of factors



In *Figure 3*, the most and the least used theories have been shown in these studies. There are 13 studies which used a self-developed model, the rest of 38 studies used models based on social psychology or adoption of new technological theories, out of which 8 studies used TAM, 1 study for each of the rest of the theories has been used in the rest of the studies, which is shown in *figure 3*.

Figure 3

Acceptance or adoption theories

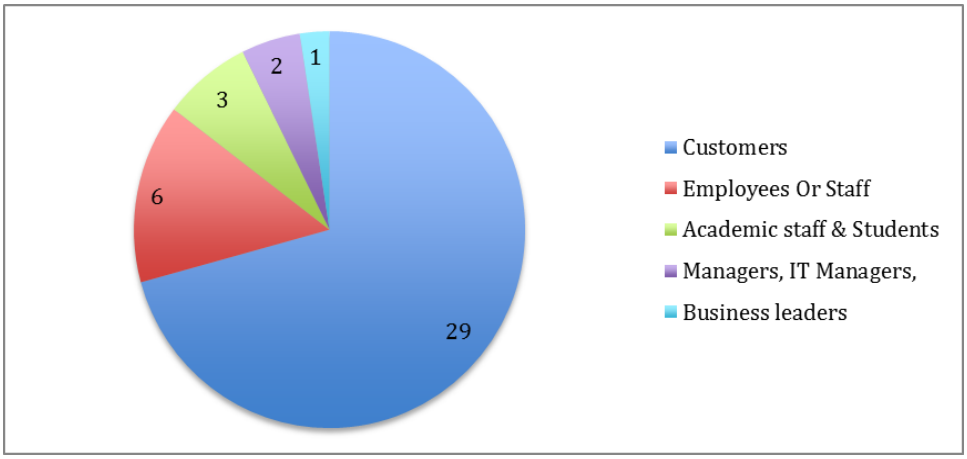


The most powerful acceptance theory ever is Technology Acceptance Model (TAM) compared to other theories that are mostly used and cited for user's acceptance of new technology, as shown in Figure 3. Technology Acceptance Model (TAM) is used in these studies to determine the best practice and user's acceptance of IT/IS, which means studying the expectation of human behavior, Information Communication Technology (ICT), the user's attitude towards and acceptance of a new information system, which is an important tool in measuring the successful adoption of the information system and realizing the reason for acceptance and rejection of new technologies in organizational settings (*Davis* 1989, *Davis et al.* 1989).

It has been found that the most dominant sample unit that have been concerned in 38 studies are the customers of E-banking in 29 studies, employees or staffs of E-banking come next in 6 studies, academic staff and students are the third sample unit in 3 studies, managers or IT managers is the fourth sample unit in 2 studies and business leaders is the fifth sample unit only in 1 study (*Figure 4*).

Figure 4

Sample unit of 38 studies

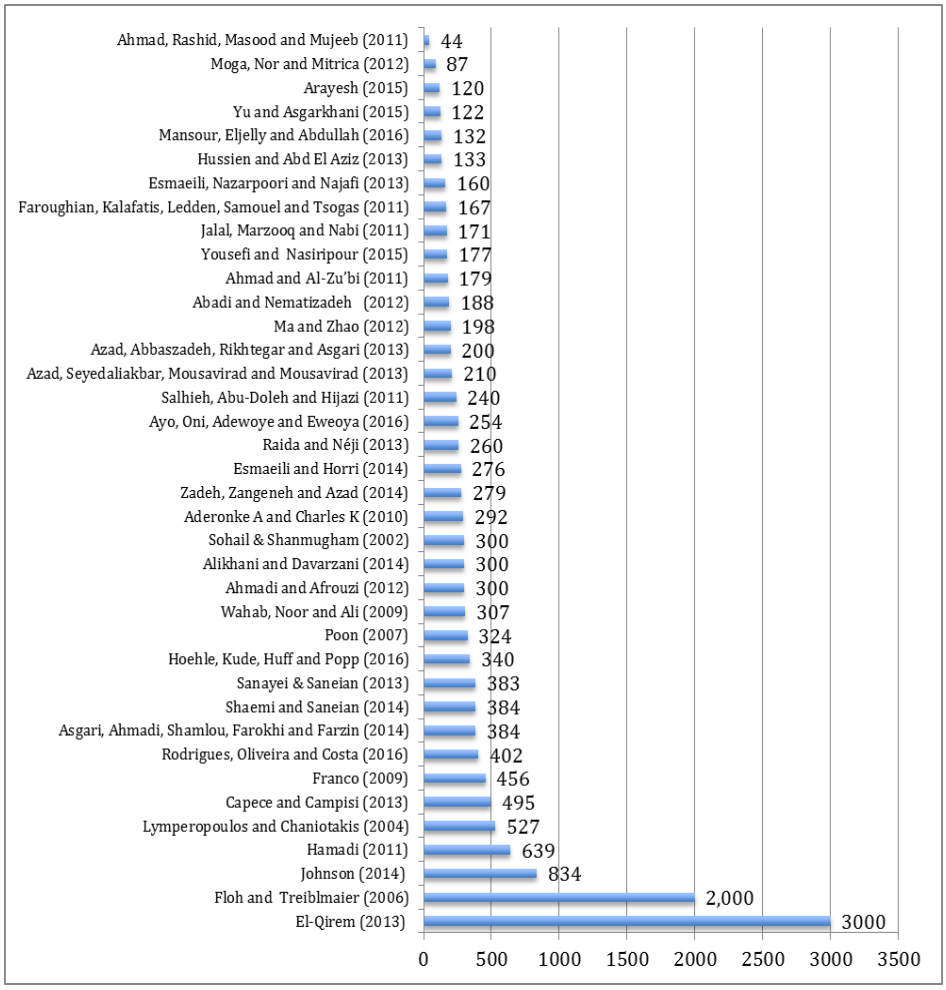


The size of samples is shown in *Figure 5* regardless to the underlying factors and employed theory through the numbers of the respondents, which have been considered in the individual study. The numbers are located between 44 and 3000 respondents and the average of a typical study is 401 respondents.

The studies for adopting the E-Banking system in a developing country are given a significant consideration in this study. The location of each study is considered as the place where a survey or data were carried out as given in *Appendix 2*. In the second appendix, a brief of the reviewed papers' results is explained. From the 38 studies, 13 studies are from Iran, 3 studies are from Jordan and Malaysia respectively, 2 studies are from New Zealand and Nigeria and data collection for each of the rest of studies were located in the rest of the countries, which is shown in *Figure 6*.

Figure 5

The respondents of 38 studies

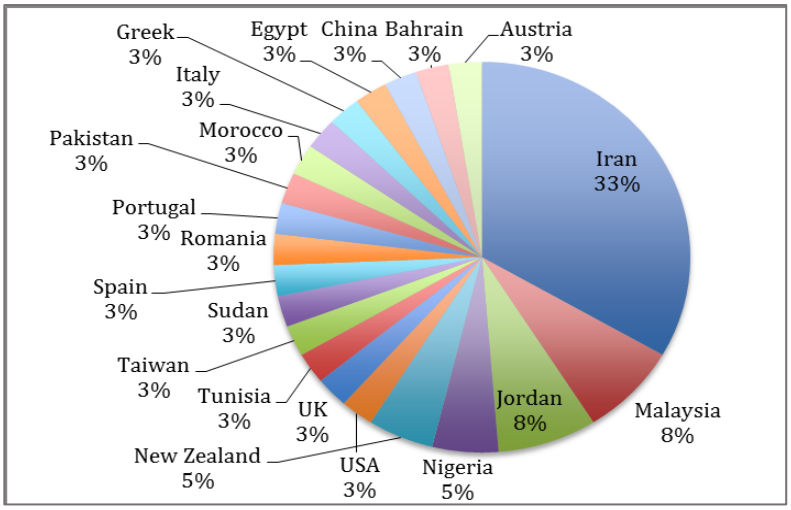


LIMITATION

It is obvious to review and analyse the literature related to E-Banking; a more extensive study should be accounted for each factor which has influences on the adoption of the system. Despite the fact that the results and conclusions are limited to these 38 studies in this paper, the decisions are rather general and are not precisely given. There are some shortcomings in connecting the E-Banking channels with the influential factors for the developed countries. Also, TAM is taken as the top of the well-known models, which is still one of the widely used theories. It was found that other theories (UTAUT and UTAUT 2) had less interest for researchers in their studies. Therefore, the most results are based on the outcomes of TAM models.

Figure 6

The locations of data collection



CONCLUSION

A total of 38 relevant papers among 110 papers published between 2002 and 2016 has been considered in this study. This paper is conducted to review and analyse the main influential factors on the acceptance and adoption of the E-Banking system along with confessing the limits of results and suggesting significant recommendations for further studies. In literature selected search engine and other sources of publishers and journals were used. After examining these papers in details, the analysis was concentrated on four main aspects in terms of a frequency analysis, which have their influence on the acceptance and adoption of this system in different countries worldwide. These aspects are: the most influential factors, powerful acceptance theories employed in these studies, the sample unit, respondent size and the location of the investigation.

The results showed that factors of security, perceived ease of use and trust were the most influential factors in banking regarding the customers' confidence in accepting and using the service for both the developed and developing countries. It has been found that these studies mostly depend on TAM model to explain the high intention to accept and adopt the E-Banking. The employment of TAM was significant compared to TAR and UTAUT. The numbers of respondents of these studies are between 44 and 3000 respondents and the average is 401 respondents.

Bank customers are the majority of the sample size of this study due to the direct relationship between banks and customers. It is believed that the accurate results were obtained by the researchers. Thus, this kind of relationship can provide a better result of the degree of the acceptance of E-banking.

However, the sample units of these studies are large and heterogeneous. However, apart from the main factors, there are tens of other factors which can be identified to have their particular influence on the adoption of this system. The decisions were definitely depending on the existing circumstances of those countries where the study was conducted.

RECOMMENDATIONS

This review study directs the attention for further works and recommendations to improve and extend the scope of researches as follows:

There is no decisive criteria index of any factors as a limit to be achieved in the process of acceptance and adoption of this system in the developing countries. All studies concerned very special cases and the results were suited for them. Therefore, it could be great to conduct these kind of studies even with conditional circumstances.

The comparison studies for results by TAM and UTAUT models are missing in literature, so the results for the most influential factors with higher frequencies in this study (security, perceived ease and trust) need further investigation by assessing their results from comparisons between these models. Moreover, the outcome by these models would need to be analysed according to the source of data, sample units and population strata.

Almost all the developing countries in the Middle East and east of Asia have a strong religious background and they have big families and accordingly the age of a large proportion of their populations is between 18 and 35. Consequently, they have their major influence on the acceptance and adoption of this system. Therefore, exclusive studies are needed for the influence of security, perceived ease of use and trust on the different groups of people or population strata using TAM and UTAUT. This can designate the accurate results in accepting and adopting this system for each of population strata and groups.

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APPENDICES

Appendix 1

Summary of the applied theory, unit of samples and results

Authors & year	Theories	Unit of analysis (Questionnaire)	Results
Yu and Asgarkhani (2015), Arayesh (2015), Ahmadi and Afrouzi (2012), Ahmad and Al-Zu'bi (2011), Hamadi (2011), Hussien and Abd El Aziz (2013), Azad, Abbaszadeh, Rikhtegar and Asgari (2013), Azad, Seyedaliakbar, Mousavirad and Mousavirad (2013), Zadeh, Zangeneh and Azad (2014), Johnson (2014), Lymperopoulos and Chaniotakis (2004), Sanchez-Franco (2009), Esmaeili and Horri (2014).	(SDM) Self-developed model.	Data collections were based on questionnaires with different populations (customers 11, teachers 1, Bank employees 1).	Those studies built an own perspective model based on some variables which is each of them from different theories, the reason is related to the locations of studies because of different situations existing over there (such as Customers perspectives and culture, Technology environment, Level of intention to use E-banking). Those variables (such as Trust, Technical and Legal factors, security, accessibility, speed, fees, charges, positive Word of mouth (WOM), Service quality), were introduced to understand the level of acceptance or adoption of E-banking.
Yousefi and Nasiripour (2015)	CTT, TAM, TOE	177 electronic service customers in number of banks in the city of Karaj, Iran.	Trust and features of banks such as reputation, size and dependence on government, have had the greatest effect on customer's trust in e-banking services.
Esmaeili, Nazarpoori and Najafi (2013)	Customer loyalty formation.	160 electronic customers of Mellat Bank.	Satisfaction, reputation & trust are the most influential components affecting customer loyalty formation.
Floh and Treiblmaier (2006)	Customer loyalty, TAM, UTAUT, CTT.	2,000 customers of an Austrian online bank were questioned.	Loyalty is therefore significantly affected by satisfaction and trust. Additionally, effects of Web site quality on service quality, satisfaction and trust were observed, as well as a significant effect of service quality on overall satisfaction.
Wahab, Noor and Ali (2009)	(CRM)Customer Relationship Management) performance.	307 academic staff of three universities in the northern state of Malaysia.	The relationship between perceived trust and electronic banking adoption is fully mediated by the customer relationship management performance.
Faroughian, Kalafatis, Ledden, Samouel and Tsogas (2011)	Information system security manager (ISSM), PRT, DOI	A postal survey of 167 UK-based SME organisations.	Performance risk and financial risk are found to be significant determinants of benefits, while psychological risk impacts on perceptions of sacrifices.
Hoehle, Kude, Huff and Popp (2017)	SDM, TTF	340 consumers in New Zealand.	The results confirmed that all the weights associated with the service channel fit (SCF) were statistically significant.
Aderonke A and Charles K (2010), Jalal, Marzooq and Nabi (2011), Abadi and Nematizadeh (2012), Moga, Nor and Mitrica (2012), Raida and Néji (2013), Alikhani and Davarzani (2014), Mansour, Eljelly and Abdullah (2016), Rodrigues, Oliveira and Costa (2016).	TAM	Data collections were based on questionnaires with different populations (customers 7, Business Leaders 1).	TAM is still the most widely used theory for E-banking with other External Variables (such as Security, Technical resources, Trust, etc.) have been used to determine whether TAM has significant effect or not on the intention to use E-banking.

El-Qirem (2013)	TAM & UTAUT	3000 of all bank account holders who make use of E-Banking in Jordan.	The result showed that the model was accepted, and account essential factor influence E-Banking services adoption in the Jordanian commercial banks.
Sanayei & Saneian (2013)	TAM, IDT	383 customers of Mellat bank, Shiraz Branch in Iran.	Both traditional and website bank characteristics influence the customers' significant influence on the trust in electronic banking. Also, the coordinator role of traditional service quality in relation to traditional characteristics with trust in electronic banking was rejected.
Salhieh, Abu-Doleh and Hijazi (2011)	TAM, SDM	The population of the study includes 18 commercial and Islamic banks in Jordan. In total, 60 questionnaires were distributed to managers in five departments in the banks, also, 30 questionnaires were distributed to IT managers in the bank, finally 150 questionnaires were distributed to ten customers from each bank.	This study used three branchesds to propose a framework that can assesses E-Banking readiness: perceptions of bankers, perceptions of customers, and IT infrastructure in banks.
Asgari, Ahmadi, Shamlou, Farokhi and Farzin (2014)	TAM, SDM, ISSM	384 people were considered among all customers of Hekmat Iranian bank.	The result concluded that variables of completing the banking services, security, privacy and accountability and designing website will have a significant positive impact on e-loyalty and finally recommendations are presented according to the research findings.
Shaemi and Saneian (2014)	TAM, TOE, SDM	384 customers of Shiraz Mellat bank branches.	The result showed that both traditional characteristics of bank and website characteristics rather have positive effects on customers' trust in electronic banking, which increase word of mouth advertising positively.
Ayo, Oni, Adewoye and Eweoya (2016)	TAM, TPB, ISSM, DOI	254 e-banking users.	The result reveals that perceived e-service quality has a strong influence on customer satisfaction and use of e-banking,
Ahmad, Rashid, Masood and Mujeeb (2011)	TAM, TRA &TPB	40 staff members and 4 customers as a sample.	Customers are not ready to adopt new technology that is why their satisfaction level with E-Banking is low. Internet speed and government policies are not supportive for E-Banking in Pakistan. Due to the lack of trust in technology and low computer literacy rate, customers hesitate to adopt new technology. In order to promote IT culture in Pakistan, the government has to reduce the Internet rate to promote the benefits of E-Banking in thje media so that more users get facilitation from E-Banking services.

Sohail & Shanmugham (2002)	TAM, UTAUT, CTT, IDT.	300 Students who were pursuing their studies and staff at two leading universities in Malaysia.	There are no significant differences between the age and educational qualifications of the electronic and conventional banking users, some differences exist on other demographic variables. Further analysis reveals that accessibility of Internet, awareness of e-banking, and customers' reluctance to change are the factors that significantly affect the usage of e-banking in Malaysia. The cost of computers and Internet access, and security concerns of e-banking do not significantly influence the usage of E-Banking in Malaysia.
Ma and Zhao (2012)	TAM, UTAUT, DOI	198 volunteers of Chinese E-banking users.	The link between website quality and E-banking customer satisfaction in Chinese e-banking industry was significant.
Poon (2007)	TAM, UTAUT, IDT	324 usable responses (bank customer).	Privacy and security are the major sources of dissatisfaction, which have momentously impacted users' satisfaction. Meanwhile, accessibility, convenience, design and content are sources of satisfaction. Besides, the speed, product features availability, and reasonable service fees and charges, as well as the bank's operation management factor are critical to the success of the e-banks.
Capece and Campisi (2013)	TPB	495 real users of E-Banking services in Italy.	The results show that the proposed model has good explanatory power and confirms its robustness in predicting customers' intentions to use such services.

Appendix 2

Summary of researches per countries and Results

Authors & year	Country	Summary of result
Floh and Treiblmaier (2006)	Austria	Loyalty is therefore significantly affected by satisfaction and trust. Additionally, effects of Website quality on service quality, satisfaction and trust were observed, as well as there was a significant effect of service quality on overall satisfaction.
Jalal, Marzooq and Nabi (2011)	Bahrain	Security and privacy factors play an important part in determining the users' acceptance of e-banking services with respect to different segmentation of age group, income level and level of education.
Ma and Zhao (2012)	China	The link between website quality and E-banking customer satisfaction in Chinese e-banking industry was significant.
Hussien and Abd El Aziz (2013)	Egypt	Service quality has significant effect on customer satisfaction. Bank could be considered a success story that provides a guide line for decision makers in banks that are less fortunate in providing high service quality, thus help them address their customers' needs better.
Lymperopoulos and Chaniotakis (2004)	Greek	The result provided evidence of the relationship that exists among the perceptions, the personal characteristics of the respondents and the organizational characteristics of their banks.
Abadi and Nematizadeh (2012), Ahmadi and Afrouzi (2012), Azad, Abbaszadeh, Rikhtegar and Asgari (2013), Azad, Seyedaliakbar, Mousavirad and Mousavirad (2013), Esmaeili, Nazarpoori and Najafi (2013), Sanayei & Saneian (2013), Zadeh, Zangeneh and Azad (2014), Asgari, Ahmadi, Shamlou, Farokhi and Farzin (2014), Esmaeili and Horri (2014), Alikhani and Davarzani (2014), Shaemi and Saneian (2014), Yousefi and Nasiripour (2015), Arayesh (2015).	Iran	Iran is considered to be a developing country and E-banking has left the acceptance step to adoption step, that is why in those studies consider some factors (such as advanced services, attitude, compatibility with internet technology, consistency, contextual, convenient, cost control, culture, customer awareness, customer loyalty formation, design, easy to use, enjoyable, facilities, feasibility, habit, information knowledge, infrastructure, internet knowledge, methods, perceived usefulness, perceived value, reputation, satisfaction, security, self-efficiency computer, service quality, the role of government and trust) influenced positively the adoption of electronic banking in Iran.
Capece and Campisi (2013)	Italy	The results show that the proposed model has good explanatory power and confirms its robustness in predicting customers' intentions to use such services.
Salhieh, Abu-Doleh and Hijazi (2011), Ahmad and Al-Zu'bi (2011), El-Qirem (2013).	Jordan	Technological aspects and IT employees' skills are paramount concerns, accessibility, convenience, security, privacy, content, design, speed, fees and charges affected the adoption of E-banking in Jordan as a developing country.
Sohail & Shanmugham (2002), Poon (2007), Wahab, Noor and Ali (2009).	Malaysia	There are no significant differences between the age and educational qualifications of the electronic and conventional banking users, some differences exist on other demographic variables. Further analysis reveals that accessibility of Internet, awareness of E-banking, and customers' reluctance to change are the factors that significantly affected the usage of e-banking in Malaysia. The cost of computers and Internet access, and security concerns of E-banking did not significantly influence the usage of E-Banking in Malaysia in 2002 but privacy and security were the major sources of dissatisfaction, which have momentously impacted users' satisfaction in 2007. The relationship between perceived trust and electronic

		banking adoption is fully mediated by the customer relationship management performance.
Hamadi (2011)	Morocco	The research results showed a positive and significant link between the electronic quality and satisfaction, also it showed a significant positive influence of e-satisfaction on commitment, but one the other hand the results reveal that a high or low need for personal interaction does not modify these relationships for Moroccan e-banking users.
Hoehle, Kude, Huff and Popp (2017)	New Zealand	The results confirmed that all the weights associated with the service channel fit (SCF) were statistically significant.
Aderonke A and Charles K (2010), Ayo, Oni, Adewoye and Eweoya (2016).	Nigeria	Banks' customers who are considered the active users of e-Banking system because it is convenient, easy to use, time saving and appropriate for their transaction needs. Also, the network security and the security of the system in terms of privacy are the major concerns for the users and constitute hindrance to intending users, perceived e-service quality has a strong influence on customer satisfaction and use of e-banking.
Ahmad, Rashid, Masood and Mujeeb (2011)	Pakistan	Customers are not ready to adopt new technology that is why their satisfaction level with E-Banking is low. Internet speed and government policies are not supportive for E-Banking in Pakistan. Due to the lack of trust in technology and low computer literacy rate, customers hesitate to adopt new technology. : In order to promote IT culture in Pakistan, the government has to reduce the Internet rate, to promote the benefits of E-Banking on media so that more users get facilitation from E-Banking services.
Rodrigues, Oliveira and Costa (2016)	Portugal	Ease-of-use and enjoyments are interrelated, and both have influence on e-banking usage. Also a theoretical ground of the conceptual model was presented, and two empirical studies were discussed, aimed to analyse the ease of-use and enjoyment influence on bank customers.
Moga, Nor and Mitrica (2012)	Romania	Compatibility, technical resources and self-efficacy have significant effects on the intention of the managers to use E-Banking, the results of the study have also shown that the other three factors, namely perceived usefulness, accessibility and oberservability did not have significant effects on the intention to use e-banking among companies in Romania.
Sanchez-Franco (2009)	Spain	Moderating role of customer involvement. The influence of online satisfaction on commitment was significantly stronger for highly involved users; conversely, the effect of satisfaction on trust was weaker. However, customer trust had a stronger effect on commitment for customers with high purchase involvement, and a weaker effect for highly ego involved customers.
Mansour, Eljelly and Abdullah (2016)	Sudan	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.
Yu and Asgarkhani (2015)	Taiwan and New Zealand	The results indicated that,first of all, not all trusts' precursors considered by the authors have significant influence on generating consumers' trust and, secondly 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.
Raida and Néji (2013)	Tunisia	The results showed that all hypotheses positively influenced the intention of use. It means the TAM model in the context of the use of technology among professionals was successful.

Faroughian, Kalafatis, Ledden, Samouel and Tsogas (2011)	UK	Performance risk and financial risk are found to be significant determinants of benefits, while psychological risk impacts on perceptions of sacrifices. Also evidence was provided of the different impact of the benefits and sacrifices components of value on satisfaction, and the existence of both direct and indirect (through satisfaction) impact of these components on word-of-mouth and intention to switch. This is the first documented empirical investigation of the impact of perceptions of risk in the study of perceptions of value within the domain of b2b marketing and consequently offers new insights into the subject matter.
Johnson (2014)	USA	The results showed that when consumers have a high opt-out belief, the effect of firm commitment to privacy on perceived value is reduced, the effect of trust in technology on perceived value is increased and the negative effect of information ambiguity of perceived value is attenuated. The findings on the moderating effect of consumer opt-out belief are consistent with the predictions of research on idiocentric/allocentric personality traits.

Appendix 3

Summary of the Definition of Factors

Factor	Definition	Reference
Perceived Value	The consumer's overall assessment of the utility of a product is based on perceptions of what is received and what is given. What is received varies across consumers (i.e., some may want volume, others high quality, still others convenience) and what is given varies (i.e., some are concerned only with money spent, others with time and effort), value represents a trade-off of the salient give and get components.	Zeithaml (1988)
Perceived Usefulness	The degree to which a person believes that using a particular system would enhance his or her job performance.	Davis et al. (1989)
Perceived Ease of Use	Refers to the degree to which a person believes that using a particular system would be free from effort.	Davis (1989)
Perceived Credibility	The degree to which a user feels the certainty and pleasant consequences of using an electronic application service, when there is no financial risk, physical risk, functional risk, social risk, time-loss risk, opportunity cost risk, and information risk.	Jacoby and Kaplan (1972)
Electronic Quality	It includes five dimensions including ease of usage, designing website, ordering, responding and trust. Service quality is also defined as a customer's belief or attitude concerning the rate of service superiority in the bank environment	Al-Hawari et al. (2009)
Customer Satisfaction	It can be described as customers' evaluations of a product or service with regard to their needs and expectations	Bai et al. (2008)
Security	It is defined as the protection of data against accidental or international disclosure to unauthorized persons, or unauthorized modifications or destruction	Mirza, et al. (2009)
Compatibility	The degree to which an innovation is perceived as being consistent with the existing values, needs and past experiences of potential adopters.	Moore (1991)
Attitude	An individual's positive or negative feelings about performing the target behaviour.	Fishbein and Ajzen (1975)
Awareness	The degree to which consumers' are aware of electronic banking channels.	Lee, et al. (2007)
Accessibility& Convenience	Allowing customers to access their bank accounts from any location, at any time of the day.	Tan and Thompson (2000)
Trust	The willingness to make oneself vulnerable to actions taken by the trusted party based on the feeling of confidence or assurance.	Gefen,2002.
Efficiency	Refers to the ability of the customer to get to the web site, find their desired product and information associated with it and to check it out with minimal effort	Parasuraman et al. (2005)
Privacy	Refers to the degree to which customers believe the site is safe from intrusion and personal information is protected	Parasuraman et al. (2005)
Information Ambiguity	Concerned with consumer perception of the lack of clarity of information about the focal product or service.	Johnson (2014)
Information Quality	Identified as one of the main dimensions of website quality.	Ma and Zhao (2012)
Design	An important aspect of website quality.	Ma and Zhao (2012)
Content	A source of satisfaction.	Poon (2007)
Content	An important dimension that may affect users' intention to adopt e-banking systems.	Ahmad and Al-Zu'bi (2011)
Fees and Charges.	One of the attributes that determines consumer's decision on using e-banking system is fees and charges.	Poon (2007)
Characteristics	Such as cost reduction, income increase and customer satisfaction which have motivated several organizations to benefit from competitive advantage resulting from electronic commerce.	Shaemi and Saneian (2014)
Reliability	Refers to the extent to which a user believes that he or she can rely on the E-banking service provided and feel satisfied with it.	Lee & Lin (2005)
Size	The size of the company is the rescue way in which the customer can make a choice in the trust of firm and the electronic commerce environment.	Shaemi and Saneian (2014)