

Factors Influencing Adoption of Electronic Payment System: Case Study on Iraq

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Abstract: The primary purpose of this research is to explore the perceptions of Iraq's citizen for e-Commerce and the factors that affect security aspect of electronic payment systems. This research also attempts to identify the barriers that hamper the diffusion of electronic payment systems which are often underestimated in developing countries. This research contributes to the body of knowledge in the area of e-Commerce with particular interest on Iraq. The findings of this research are limited by the sample surveyed and the geographical limits, however, the findings reached carry many implications for policy-makers in Iraq.

Key words: Electronic Payment System (EPS), security, e-Payment, e-Commerce, findings, barriers

INTRODUCTION

Now a days, innovations in electronic technology are driving changes in every industry from automobiles to accounting. The extensive use and commercialisation of the internet have created a dynamic electronic commerce world. One of the most visible changes-one that impacts everyone is the transition from cash to electronic forms of payment for worldwide exchanges of products and services. As electronic payments reduce the necessity for a physical entity like money and increase payment freedom and flexibility, we can expect an explosion in new services. For example, without electronic payment, e-Commerce, one of the fastest growing sectors in the world today in which products and services are purchased online-would be virtually impossible. e-Commerce is built upon Electronic Payment Systems (EPS) and with the increasing volume of e-Commerce, EPS is becoming more crucial for both businesses and consumers (Kim *et al.*, 2010a, b). Although, EPS have improved significantly over the last decade, security issues were still matter of concern for users back in the 2000s and such concerns still exist. In other words, security is as crucial for the success of EPS. According to Reichheld and Schefter (2000), security is vital in transactional relationships, especially those containing high risk such as online transactions (Reichheld and Schefter, 2000). Thus, identifying and comprehending the factors affecting security is essential for practitioners who deal with EPS.

Security characteristic of EPS are the main ones that always concern people of all countries about using EPS for online banking. The lack of perceived security has

been identified as one of the most vital factors slowing the development of e-Commerce (Centeno, 2002). However, e-Commerce lacks these two mandatory elements in its nature, thus, it is problematic to establish and retain trust for this particular system. This is why it is particularly important to have secure EPS and inspect technical protections that are developed to reduce the risk of e-Commerce before addressing the issue of user trust. Iraq as a developing country is one of those territories that the rate of security of electronic payment systems from people is almost indistinctive.

The lack of development and implementation of EPS in Iraq comes from different points and dimensions. This research will fill this gap and go beyond the use of EPS. The security rate of EPS is one of those significant gaps that could be filled through conducting an adequate and comprehensive research about it. Therefore, the security is influenced by implementation measures such as privacy, transaction integrity, authentication, confidentiality and non-repudiation.

MATERIALS AND METHODS

Electronic banking: Electronic banking is considered the strategic tool which is used by the banks to obtain a competitive advantage inside and outside the Iraqi borders. According to Kamakodi and Khan (2008), the importance of e-Banking is in six different aspects higher profits, customer service, improve operational efficiency, distribution and access, product innovation and settlement efficient payment (Kamakodi and Khan, 2008). Different scholars have different e-Banking concept. This is because e-Banking involve a variety of services offered

throughout the electronic devices by using the internet. It is considered one of the most recent delivery channels for banking services which is used in transactions in B2B and B2C. e-Banking is a e-Connection between the banks and the clients for the preparation and the management and controlling of the financial transactions Burr (1996). Moreover, e-Banking also mean the usage of ICT by banks in order to offer services and to improve the management of customer's relationships in a more quickly and most satisfying way (Insley *et al.*, 2003).

Salehi and Alipour (2010) states that the electronic banking system allows clients to include finance an individual or a business for account access, business transactions or to get information about financial services and products by using mobile or public phone. Moreover, e-Banking offers lower cost per transaction compared to the conventional methods cost. In conclusion, the definition is widely accepted for electronic banking following the report of Basel Committee which is on Banking Supervision, 1998 which states such as electronic banking and minor value banking services and products by using electronic channels. Some examples of e-Banking services and products are granting account management, deposit taking, the provision of financial advice, provision of electronic payment products and electronic bill payment and other services.

Although, the implementation of e-Banking can bring numerous benefits, electronic banking still facing some implementation challenges. According to Andoh-Baidoo and Osatuyi (2009). The implementation of e-Banking has some challenges which include inadequate telecommunication, insufficient supply of electricity, internet surfing cost, customer's literacy, trust/security issues with online banking and lack of knowledge about online banking benefits (Andoh-Baidoo and Osatuyi, 2009). As identified by Roca *et al.* (2009) e-Banking challenges are categorized in three categories: managerial, technological and business related challenges.

Technological challenges: This category challenges are associated with security concerns, infrastructure, software and website and technology cost.

Managerial challenges: This category challenges are associated with organizational and people issues and receiving the support of top management.

Business challenges: This category challenges are associated with customer service concerns, old habits

of customers and legal matters issues. In addition, Roca *et al.* (2009) recognize e-Commerce key challenges which include: technology cost, lack of knowledge, managing e-Commerce's changing situation, budgeting and issues associated with linking backend systems (Roca *et al.*, 2009).

Electronic payment system: The most popular definition of e-Commerce is based on the online perspective of the conducted business. e-Commerce provides the capability of buying and selling products, information and services on the internet and other online environments. As for any trading activity, the issue of safe and reliable money exchange between transacting parties is essential. In an e-Commerce environment, payments take the form of money exchange in an electronic form and are therefore called electronic payments. Electronic payments are an integral part of e-Commerce and are one of its most critical aspects. Generally, defined electronic payment is a form of a financial exchange that takes place between the buyer and seller facilitated by means of electronic communications. An e-Commerce electronic payment is a financial exchange that takes place in an online environment (Kalakota and Whinston, 1997).

Electronic Payment Systems (EPS) are summoned to facilitate the most important action after the customer's decision to pay for a product or service to deliver payments from customers to vendors in a most effective, efficient and problem-free way. The role of e-Commerce electronic payment systems is pivotal for future of e-Commerce whose further growth depends on the timely development of EPS. The development of new types of e-Commerce purchasing relationships and business models has created the need for new ways of money exchange and new EPS. For instance, online auctions (Ribbers and Heck, 2004) has spurred the necessity for person-to-person payment systems to allow online money exchange between individuals. Certain types of information products and services require small payments and micropayments. Businesses would like to sell information content that costs very little, accumulating revenues with high turnover. e-Commerce EPS can be designed for selling specific types of products, for example, for trading copyrighted online content such as music. Another unforeseen earlier requirement is conducting e-Commerce using wireless mobile devices such as mobile phones or Personal Digital Assistants (PDA). The need for paying with mobile devices has urged the development of payment systems for mobile electronic commerce (Laudon and Traver, 2013).

In addition, e-Commerce provides the possibility to enhance current payment systems or substitute them with online variants. The need for online payments was first addressed by using extant payment methods of the offline world for online payments. For example, credit cards, originally intended as an offline credit instrument have become the major payment instrument for ecommerce. As e-Commerce and online purchasing grows, the weaknesses of credit and debit cards and cheques are becoming more apparent. Abrazhevich (2001) divided EPS into two groups. From his points of view these are two “account-based” and “token-based” systems which respectively correspond to electronic currency and credit-debit systems (Abrazhevich, 2001).

Security in electronic payment system: The purpose of this study is to evaluate the customer’s security in an electronic payment which leads to use an EPI for the purposes of finalizing an online purchase (merchant, financial institutions, payment service providers, etc.). According to Yousafzai *et al.* this definition captures two discrete but non-separable aspects of trust in the context of online purchasing. Firstly, it involves the traditional view of trust in a specific party or parties, i.e., the organisations involved in the transaction process and secondly, it implicitly encompasses trust in the integrity of the payment instrument. Two of the dimensions of trust proposed by McKnight and Chervany (2001) have particular import in this study. One of the dimensions ‘institution-based trust’ represents the beliefs held by an individual that the necessary conditions (structures and situations) are in place to be able to confidently anticipate a trusting outcome from an endeavour. It represents an environment in which “one feels safe, assured and comfortable (not distressed or fearful) about the prospect of depending on another”. This trust in control mechanisms (control trust), refers to embedded protocols, policies and procedures in e-Commerce that help to reduce the risk of opportunistic behaviours among consumers and web retailers. The other dimension of trust that can lead to a person’s trusting intention is that of ‘trusting beliefs’ which embodies the perception of the competence, integrity and benevolence of (in this case) the payment instrument. Their third trust dimension, namely, a person’s ‘disposition to trust’ is not considered by McKnight and Chervany (2001) model. While the institutions have the ability to influence their customer’s trusting beliefs (trust in the payment security mechanisms) as well as their institution-based trust (perception of trustworthiness in the EPI), this aspect of trust cannot be influenced by the merchant or the EPI

itself in any direct way to help encourage customers develop confidence in the instrument and to believe that it is safe to use it. Various attributes that impact on the level of trust in an online environment have been identified over recent years. In particular, Hoffman *et al.* (1999) focus on security and privacy as the key drivers of online trust with others also asserting that only after security and privacy have been addressed will a consumer consider other web features to determine the extent to which they can trust and feel safe transacting with the web merchant.

However while perceived security is a subjective belief, the mechanisms that serve as the antecedents are built upon the self-assessment of various objective technological solutions (Chellappa and Pavlou, 2002). Therefore, the perceptions of security are influenced by implementation of such security measures as privacy, transaction integrity, authentication, confidentiality, non-repudiation etc. In addition, the way and the extent to which this security information is presented to the potential customer is likely to impact on the customer’s understanding and confidence in the payment security being provided by the merchant. According to Furnell and Karweni (1999) consumers who have a greater awareness of security are more likely to use internet-based services, implying that awareness is fundamental to increasing consumer confidence.

The principal objective of this research is to empirically examine from the viewpoint of consumers, the determinants that affect consumer’s perceptions of security, on the use of EPS. Figure 1 outlines six independent variables which are) technical protection) transaction procedures) perceived privacy) perceived security) perceived usefulness and) perceived ease of use. The dependant variable is the EPS use in Iraq.

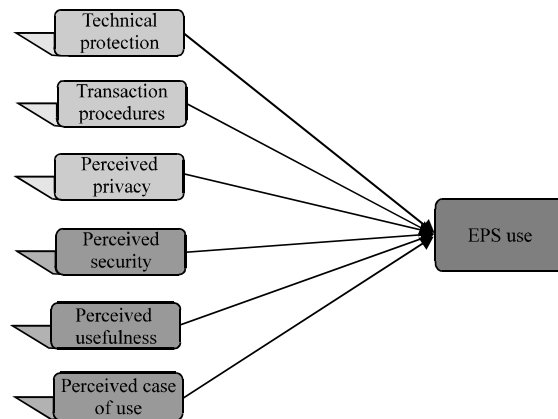


Fig. 1: Conceptual framework

Technical protections: Technical protections have been accepted as important antecedents for EPS security (Kim *et al.*, 2010a, b). Numerous technical protections have been developed and utilised in order to ensure the safety of electronic payment (Linck *et al.*, 2006). Likewise, Kim *et al.* (2010a, b) and Chellappa and Pavlou (2002) mentioned that technical protections (including privacy, integrity and stability) have a positive effect on perceived security and trust. In other words, providing sufficient technical protection will enhance consumer's perceived security and trust in EPS. Based on these findings, it is proposed that:

- H: technical protection has a significant and positive effect on EPS use

Transaction procedures: Transaction procedures are critical for individuals to be able to use EPS safely and efficiently. According to Hwang *et al.* (2007) and Kim *et al.* (2010a, b), well-defined transaction procedures assist individuals to eliminate their security concerns. Generally, three main transaction procedures are employed during the electronic monetary transactions. These procedures are authenticating each participant prior to the transaction providing consumers with several separate steps toward the completion of the payment sending acknowledgement messages to each participant after the completion of the payment (Hwang *et al.*, 2007). It is believed that transaction procedures will have an effect on perceived security and trust. It has been hypothesised that:

- H: transaction procedure has a significant and positive effect on EPS use

Perceived privacy: Concerns regarding online privacy have increased considerably and are a major impediment to e-Commerce (Teltzrow and Kobsa, 2004). Consumer privacy concerns are particularly elevated on the internet. A measurement scale for perceived privacy towards an EPS has been suggested by Chellappa (2008) where privacy has been described as the anticipation of how data is collected and used by a marketer. The researcher also found empirical support that perceived online privacy towards an EPS is significantly related to consumer trust:

- H: perceived privacy has a significant and positive effect on EPS use

Perceived security: Perceived security on EPS has been found to be a vital factor influencing consumer's

perceived trust in EPS (Kim *et al.*, 2010a, b; Mukherjee and Nath, 2003). According to Kim *et al.* (2010a, b) consumer's decision to use an EPS will heavily depend on the security statements posted, since, these statements can boost the consumer's perceived security and trust in EPS (Kim *et al.*, 2010a, b). Similarly, Miyazaki and Fernandez (2001) stated that security statements posted on EPS will increase the likelihood of consumers purchase over the internet. Kim *et al.* (2010a, b) have defined perceived security as the consumer's subjective evaluation of the e-Payment system's security. Consumers can analyse and judge the security of EPS differently. Thus, the perceived security of EPS may vary across individuals. The level of perceived security has a great impact on consumer's decisions regarding the use of EPS. If the level of perceived security in an EPS is too low, consumers are unlikely to engage in a transaction (Kim *et al.*, 2010a, b; Tsiakis and Sthephanides, 2005). Security is one of the important triggers of EPS use. Based on these findings, it has been hypothesised that:

- H: perceived security has a significant and positive effect on EPS use

Perceived usefulness: Perceived usefulness is defined as the degree to which a person believes that using a particular system would enhance his or her job performance. Davis *et al.* (1989) claim that perceived usefulness of a system is the primary determinant of user's technology acceptance, mainly because end users are more willing to deal with the challenges of use, if they believe that the system is useful and can improve their job performance (Davis *et al.*, 1989). Hu *et al.* (1999) examined physician's decision to accept telemedicine technology, the study found that perceived usefulness was the main factor that determined the attitude and acceptance.

Chang *et al.* (2006) argued that trust and trust technology have come into the picture of the virtual environment recently to give an online user the sensation for providing opinion and assessments before a decision is made. They also indicated that the dynamic, open and convenient web environment while boosting business potentials and the economy have created concerns with security, trust, privacy and risks. If these issues are not dealt with in a timely fashion, they could hamper the use of webs. Trust has been found to be a determinant of perceived usefulness, especially in an online environment because part of the guarantee that consumers will obtain on the usefulness of a web interface depends on the people behind the web site.

Table 1: Correlations analysis

Factors	TP	TEP	PP	PS	PU	PEU	PT	EU
TP	1.000							
TEP	0.349**	1.000						
PP	0.124*	0.223**	1.000					
PS	0.184**	0.426**	0.588**	1.000				
PU	0.371**	0.369**	0.168**	0.358**	1.000			
PEU	0.327**	0.229**	0.134**	0.210**	0.316**	1.000		
PT	0.354**	0.346**	0.181**	0.340**	0.399**	0.300**	1.000	
EU	0.344**	0.335**	0.133**	0.319**	0.431**	0.384**	0.412**	1

*,**Values are significant

Sambasivan *et al.* (2010) found that perceived usefulness had a significant effect on the intention to use EPS. Guriting and Ndubisi (2006) suggested that perceived usefulness determines significant behavioural intention (Table 1):

- H: perceived usefulness has a significant and positive effect on EPS use

Perceived ease of use: Lin (2007) states that perceived ease of use shows the degree to which a web site is considered easy to understand, learn or operate. Meanwhile, according to Ndubisi and Jantan (2003), perceived ease of use relates to individual assessment of the effort involved in the process of using technology. Based on TAM’s theory (Chong *et al.*, 2010) states that perceived ease of use is the extent to which prospective adopters expect newly adopted technologies to be free from any effort with respect to transfer and utilization (Yee-Loong *et al.*, 2010). Jayasingh and Eze (2009) states that perceived ease of use has a positive effect on consumer’s intentions to use. Jayasingh and Eze (2009) found that behavioral intention toward trust is directly affected by perceived ease of use. While Sambasivan *et al.* (2010) found that the adoption of ease of use had a significant effect on the intention to use EPS:

- H: perceived ease of use has a significant and positive effect on EPS use

RESULTS AND DISCUSSION

The size of sample in every research needs to be identified when developing research design. There are several factors need to be considered. There are five factors need to be taken into consideration namely significance level or criterion, effect size, desired power, estimated variance and sample size in order to perform a statistical power analysis (Cohen, 1988). This study employs Cohen’s (1988) statistical power analysis to determine the sample size. Based on Cohen (1988) for a given population of 7, 665, 000 at Bagdad, a total of 385 samples are required to represent.

Correlation analysis refers to studies the joint variation of two or more variables for determining the amount of correlation between two or more variables. Correlations are restricted to various rank order methods (Kothari, 2004). Measures of statistical significance are restricted to the non-parametric methods (Hawkins *et al.*, 2014). The correlation measures separately the relationship between two variables in such a way that the effects of other related variables are eliminated. In other words, the correlation analysis, aim at measuring the relation between a dependent variable and a particular independent variable by holding all other variables constant (Tabachnick and Fidell, 2007). Thus, the correlation coefficient is a number that shows how strongly two variables are related (Kothari, 2004).

CONCLUSION

The first objective of this study is to identify how Iraqi consumers, perceive electronic payment system focusing on trust and security aspects. e-Payment systems are important mechanisms used by individual and organizations as a secured and convenient way of making payments over the internet and at the same time a gateway to technological advancement in the field of world economy (Slozko and Pelo, 2015). In addition, it has also become the major facilitating engine in e-Commerce through which electronic business success relied upon. Electronic payment system had also brought about efficiency, fraud reduction and innovativeness in the world payment system (Oladeji, 2014). This study has verified that trust and security are the most important determinants of customer acceptance of internet banking. It is commonly believed that good security improves trust and that the perceptions of good security and trust will ultimately increase the use of electronic commerce.

The second objective of this study is to develop a framework based on determinant factors that influences trust and security aspect of electronic payment systems that suits with Iraq’s culture. e-Payment system tends to bring many electronic modes of payments through which financial institutions offer different e-Payment

opportunities and services to their customers such as the credit cards, debit cards, on-line banking and mobile banking (Premchand and Choudhry, 2015). As a result, the adoption of e-Payment technology is ever increasing in today's business environment (Kabir *et al.*, 2015) and public sector establishments (Hussein *et al.*, 2010; Kaliannan and Awang, 2010). However, despite all these benefits associated with e-Payment, adequate ICT know-how among users and fear of security breach remain the most concern of individuals, organizations and experts in the field of information system (Kaliannan and Awang, 2010). Trust is empirically identified as an antecedent of technical protection, transaction procedure, perceived privacy, perceived security, perceived usefulness and perceived ease of use in enhancing the attitude toward using internet banking. This study provides important theoretical and practical contributions to the area of security and trust in EPS.

The third objective of this study is to analyse the relationship in the trust and security framework with Iraq's trust culture. A large sample survey from one-time users of internet banking was conducted to empirically examine this research proposed model. A sample of 422 respondents was analysed through correlation the findings indicate that trust have a significant mediates between technical protection, transaction procedure, perceived privacy, perceived security, perceived usefulness and perceived ease of use on EPS use. Finally and most importantly perceived trust have been found as important determinants of EPS use. These findings are consistent with the previous results (Kim *et al.*, 2010a, b; Miyazaki and Fernandez, 2001). This finding shows that consumers are not only considering the security of the procedures but also the convenience of the procedures for EPS.

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