

Analysis of Factors that Influence Electronic Payment Adoption

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Abstract: Electronic Payment System (EPS) has become the most acceptable means of payments in today's financial transactions across the world. This is due to its efficiency, convenience and timeliness. For this reason, EPS studies had attracted different scholars around the globe and conducted in different parts of the world to examine the extent of electronic payment system adoption and the influencing factors that leads to its adoption at both individuals and organizational levels. In view of this, this study aims to make an extensive literature review on prior studies that relates to e-Payment adoption with a view to examine and analyze the most influencing factors that contributes to its adoption. In addition, the study will analyze the context, methodology and the models used in such prior studies. To achieve the stated objective an extensive literature search on e-Payment adoption studies was carried out in searching for e-Payment adoption studies that were published between the years 2010-2016. To facilitate the understanding of the issue under study all past studies were analyzed based on the independent variables (influencing factors) context-location of the study, theories/Information System (IS) models adopted and the methodology used. Finally, the study has found among others that trust, ease of use, usefulness, security, convenience, cost, benefit, awareness and attitude are the most recurring factors that influences e-Payment adoption in prior studies.

Key words: e-Payment, e-Commerce, e-Government, electronic system, information system, prior studies

INTRODUCTION

Information and Communication Technology (ICT) has gone into facet of everything in today's world. As such technology adoption has become commonplace in both individual well-being and organizational operations through the use communication gadgets and other digital technologies. It is through these mechanisms that world's economics and finances were revolutionized in terms of operational costs minimization and enhancement of organizational performance (Slozko and Pelo, 2015). The era of ICT revolution and the proliferation of the internet and the World Wide Web have resulted in dynamic change in world's payment system. This is evident from the fact that financial transactions have now moved from cash-based systems to electronic forms (Mohamad *et al.*, 2009). As such business organizations and other non-profit organizations continue to adopt the use of electronic-based systems in their payment methods so as to move along with the current global trend of technological change. In addition, increased access to internet and the availability of computers and other communication facilities have immensely contributed in facilitating commerce in electronic forms which is widely known as electronic commerce (Fernandes, 2013).

Electronic commerce (e-Commerce) is the application of electronic systems in facilitating trade and/or business transactions. Businesses have now a days left no other option than to market and sell their product via the internet and as such payments are equally made electronically. Therefore, the utilization of electronic systems in facilitating online payments is termed as the Electronic Payment System (EPS). The emergence and development of EPS has therefore, posed a great challenge to business organizations and as a competitive advantage over competitors in the provision of effective, safe and convenient payment methods for both customers and other business partners. Therefore, EPS could be seen as a helping mechanism that enhances e-Commerce transactions across national boundaries with no or little restrictions. In consequence, the introduction of e-Payment system has turned the world payment system into cashless monetary system that provides more convenient, secured and fast means of money exchange and other financial transactions among business partners (Nwankwo and Eze, 2012).

Due to e-Payment secured nature and convenient way of value exchange among business partners it has been embraced by both individuals and organizations as an acceptable means of payment and a gateway to

technological advancement in the modern payment system (Slozko and Pelo, 2015). Also, it is through EPS that different electronic money exchange platforms emerged. These include debit cards, credit cards, money transfer, internet and mobile banking channels mentioned among others which are being provided by money banks and other financial institutions for their customers and other business partners (Premchand and Choudhry, 2015). Electronic payment adoption has also been found to be soaring in both business and public sector organizations (Balogun, 2012; Hussein *et al.*, 2010; Kaliannan and Awang, 2010; Garcia and Reyes, 2003). For example, according to World Payment Report the global annual Gross Domestic Product (GDP) has increased to \$296 billion due to the increased usage of e-Payment channels. It was also evident from the report of Moody's Economist that EPS adoption is significantly increasing in almost 70 countries that were studied on such matter between the years 2011-2015 (Zandi *et al.*, 2013).

Despite the continuous acceptance and adoption of EPS among individuals and organizations across the globe, previous studies in IS have established some factors that hindered the adoption and use of e-Payment system. For example, it was found that lack of trust and confidence, inadequate computing skills were the main reasons behind the non-adoption of e-Payment system (Boateng *et al.*, 2015). On the other hand, other studies have tried in finding out the influencing factors that immensely contribute to the adoption and use of EPS. In these kind of studies for example, security, usefulness, ease of use, benefit, cost and convenience were found as the most influencing factors that warrant EPS use and adoption among individuals and organizations (Nakhumwa, 2013). It is in view of this that this study aimed at summarizing findings from past EPS adoption studies with a view to analyze those influencing factors that lead its adoption and suggest areas for future research. In addition, the study will analyze all the reviewed past studies based on their scope, methodology and IS models used.

Concept of e-Payment system: Electronic Payment System (EPS) has been given considerable attention in recent times by IS researchers due to its relevance in electronic commerce. Many researches have been carried out on EPS and in view of that IS scholars are having differing definition to it. These definitions are being looked from the perspective of scholars in their field of specializations. For instance in IS research field we have computer scientist, IS designers, accountants, economists and technology managers. For example, EPS has been defined

a form of financial commitment that surrounds business partners (buyer and seller) facilitated by electronic systems (Dennis, 2004). Also, EPS is seen as any form of inter-relations between individuals and organizations that involves electronic monetary exchange through banks and other financial house inter-switch systems (Briggs and Brooks, 2011). Additionally, EPS is characterized to include any kind of fund transfer via the use of the internet or any form of electronic transfer made from a payer to payee through an e-Payment channel that allows business partners to remotely access and manage their bank accounts over an electronic network (Teoh *et al.*, 2013; Peter and Babatunde, 2012). Furthermore, EPS refers to all electronic means of payments for goods and services that is being procured online (Adeoti and Osotimehin, 2012). Similarly, EPS is defined as any monetary exchange that is being made as a result of electronic commerce transactions (Kaur and Pathak, 2015).

Moreover, EPS encompass all type payments made through electronic signals that is linked directly to debit or credit accounts or payments made via the automated clearing house, commercial card systems and electronic transfers (Shon and Swatman, 1998). In another point of view, EPS is being characterized to include both cash and electronic money transfer as opined (Humphrey and Hancock, 1997). Another definition of EPS refers to all cash and non-cash associated transactions facilitated and operated via electronic means.

The concept EPS has also been explained to include all electronic payment methods such as credit/debit card payments, direct credit or other electronic means other than payment by cheque and cash (AGIMO, 2004). However, other scholars viewed EPS as any kind of non-cash payment that does not involve paper cash or cheque (Hord, 2005). Looking from the legal perspective, EPS is any transfer of a monetary claim on a party acceptable to the beneficiary (Antwi *et al.*, 2015). In a nutshell, going by the above stated definitions, e-Payment system can be simply defined as the aggregate of all components and processes that enable two or more parties to transact and exchange monetary value via electronic systems.

For the EPS to function effectively, various channels were developed in different parts of the world to enable money exchange in an effective and efficient manner. These include electronic cheques, e-Cash, credit cards and electronic fund transfers (Ken and Will, 2002). There are four major categories of electronic payment systems. These are: online credit card payment,

electronic cash, electronic cheques and small payments (Yu *et al.*, 2002). Each of these systems has its own advantages and disadvantages which could be evaluated base on their technological, economic, social and institutional aspects (Yu *et al.*, 2002).

MATERIALS AND METHODES

The study employs a meta-analysis method to analyze and establish research findings from previous researches on EPS adoption. Meta-analysis is a technique in statistics that is being used to analyze a collection of results from different past studies with the aim of integrating such findings to come out with more informed result. Therefore, for the purpose of this study, an extensive literature search was carried out through the use of Google Scholar, Research Gate, IEEE Xplore and Web of Science in the month of March, 2016 for all relevant studies that were published on e-Payment adoption studies between the years 2010-2016. The use of the above mentioned search engines was justified due to their high performance in precision, accuracy and comprehensiveness in providing good academic journal articles (Harzing and DerWal, 2009; Meho and Yang, 2007).

The key words used for the search were in Google Scholar were as follows; (in title; “electronic payment” adoption), (in title; “e-Payment” adoption), (in title; “e-Payment” adoption) and (in title; “e-Payment” adoption). For Research Gate, IEEE Xplore and Web of Science the search word used was “e-Payment adoption”. Accordingly, the search produced a total number of 223 academic research study. For the purpose of this study, 77 empirical papers were reviewed on the condition that they were explicitly dwelled on the influencing factors that lead to EPS adoption. First, the review was carried out to establish all prior EPS adoption related articles that have been published in both academic journals and conference proceedings across the globe. Secondly, to analyze and discuss previous researches with regards to variables (influencing factors), context-location of study, methodology used and IS Models that were adapted. The analysis is aimed at analyzing and integrating research findings so as to identify existing research gaps that will call for future research.

RESULTS AND DICUSSION

Trend of previous studies on e-Payment system adoption: For the purpose of this research, out of the 223 paper, only the 77 empirical papers were analyzed. The analysis

Table 1: Publication approach

Approaches	No. of papers	Percentage
Conceptual papers	146	65.5
Empirical papers	77	34.5
Total	223	100.0

is based on the initial guiding principles which are influencing factors of e-Payment adoption, context-place of study, methodology and IS Models used.

Firstly, Table 1 presents the analysis of all the 223 papers. For the purpose of this analysis, only empirical papers were considered to achieve the desired outcome of this study. This is because empirical findings usually provide valid results on which generalization could be made. According to Table 1, 77 papers are empirical studies that were published in both academic journals and conference proceedings.

Context of the study; place of study: Information system studies are on the increase across the globe and EPS adoption studies are being conducted frequently to either assess the success of the system, extent of satisfaction among its users or understanding the factors that lead to IS adoption. One among the four key issues of analysis for this study is to analyze prior studies based on the locality of the study with a view to provide an understanding of e-Payment system adoption studies in different regions of the world. Considerable number of studies had been carried out in African developing countries to mention among others (Antwi *et al.*, 2015; Ken and Will, 2002; Harzing and DerWal, 2009; Meho and Yang, 2007; Tugume *et al.*, 2015; Mourad and Sherif, 2015; Muriithi, 2015; Tella and Abdulmumin, 2015; Dankwa *et al.*, 2014; Nzaro, 2014; Adams and Afolabi, 2013; Kavu *et al.*, 2013; Ngereza and Iravo, 2013; Senyo, 2013; Fenuga and Kolade, 2010; Haruna, 2012; Ogunleye *et al.*, 2012; Nwaolisa and Kasie, 2011; Oyewole *et al.*, 2011; Ebiringa, 2010; Gholami *et al.*, 2010).

Almost all the prior studies that emanates from African countries have their central focus on user acceptability of EPS, except for one studies (Antwi *et al.*, 2015), that investigated on its effectiveness. As expected, the trend of research in African developing countries has shown that EPS technology is an emerging issue in this part of the world. This could warrant future studies in African developing countries to further understand influencing factors that are contributory to its acceptability or otherwise could be properly ascertained. Apart from those influencing factors, further studies could also look into payment cultures, demographic and

lifestyles characteristics, readiness of consumers to use electronic means of payment and Point of Sale (POS) in business transaction payments (Dahlberg *et al.*, 2007).

Furthermore, other studies that were extensively reviewed include those from the Asian countries (Ho and See-To, 2010; Islam *et al.*, 2015; Sidek, 2015; Junadi, 2015; Lok, 2015; Hidayanto *et al.*, 2015; Dehbini *et al.*, 2015; Cheraghi *et al.*, 2015; Tani, 2015; Roy and Sinha, 2014; Zahari *et al.*, 2014; Teoh *et al.*, 2013; Bapat, 2012; Harris *et al.*, 2011; Dhevika and Latasri, 2011; Huang and Chen, 2011; Kim *et al.*, 2010). In comparing the African studies with the Asian ones, the later ones are contrary to the former in terms of “focus” and “theme”. For instance, EPS studies in Asian countries were mainly concerned with user’s perception and satisfaction of EPS services while that of African developing countries focused on user’s acceptability of the EPS and/or user attitude toward EPS use. In this regard, therefore, studies on user acceptability of EPS are not much in Asian countries except in some few studies (Roy and Sinha, 2014). Therefore, it is evident from the review that EPS adoption in Asian countries far outweighs that of African countries. This assertion can be supported by the 2014 World Payment Report which reports that combined Asian countries records 33.9% as compared to that of Central Europe, Middle East and Africa with only 23.8% (RBS., 2014).

On the other hand a lot of prior researches on EPS adoption had been carried out in the Middle East countries to mention among others (Majali and Bashabsheh, 2016; Rouibah, 2015; Alinejadi *et al.*, 2013; Adwan *et al.*, 2013; Trivedi and Mago, 2013; Zokaei *et al.*, 2012; Hanzaei and Alinejad, 2012; Muhayiddin *et al.*, 2011). After making a thorough review of these papers, it was observed that EPS adoption studies in Middle East have possessed the features of both African and Asian studies (Alinejadi *et al.*, 2013; Adwan *et al.*, 2013). In other words, researches from this part of the world include those that centered on user acceptability and user satisfaction on EPS channels.

However, in developed countries, the patterns of EPS adoption studies were found to be different compared to those in developing nations. Few researches Gallardo *et al.*, 2015; Masino and Zarazua, 2014; Ellison *et al.*, 2012; Mann, 2011) have been carried out and their central concern was mainly on the impact of EPS in business environment and beyond. It is evident that EPS have been used for a long period of time in almost all aspects of payment services in developed countries.

Table 2: Number of publications by continent

Continents	No. of papers	Percentage
Africa	29	37.7
Asia	33	42.9
Middle East	10	13.0
Europe and America	5	6.5
Total	77	100.0

Table 3: Frequently used variables with corresponding researchers

Variables	Selected articles (recent) that uses the variable
Trust	Ho and See-To (2015), Hidayanto <i>et al.</i> (2015), Gholami <i>et al.</i> (2010) and Kim <i>et al.</i> (2010)
Usefulness	Teoh <i>et al.</i> (2013), Harris <i>et al.</i> (2011), Hidayanto <i>et al.</i> (2015), Majali and Bashabsheh (2016) and Roy and Sinha (2014)
Ease of use	Teoh <i>et al.</i> (2013), Harris <i>et al.</i> (2011), Hidayanto <i>et al.</i> (2015), Majali and Bashabsheh (2016) and Roy and Sinha (2014)
Security	Junadi (2015), Lok (2015), Rouibah (2015), Hidayanto <i>et al.</i> (2015), Majali and Bashabsheh (2016), Islam <i>et al.</i> (2015) and Harris <i>et al.</i> (2011)
Cost	(Nakhumwa (2013), Lok (2015), Sidek (2015), Tagume (2015), Muriithi (2015) and Gallardo <i>et al.</i> (2015)
Benefit awareness	Gholami <i>et al.</i> (2010), Lok (2015) and Nakhumwa (2013) Sidek (2015), Antwi <i>et al.</i> (2015), Majali and Bashabsheh (2016), Gholami <i>et al.</i> (2010) and Boateng <i>et al.</i> (2015)
Convenience attitude	Mourad and Sherif (2015) and Tella and Abdulmumin (2015) Muhayiddin <i>et al.</i> (2011) and Roy and Sinha (2014)

Table 2 reveals that 80% of EPS adoption studies were carried out in Asian and African countries. Studies in Asia far outweigh other parts of the world and this point that electronic systems are highly used in payment services in this region. However, the analysis shows that developed countries have fewer studies in this regard which could be probably due to their advancement in technology adoption.

Analysis of variables (influencing factors) of e-Payment adoption:

A review of past studies on EPS adoption had revealed that many researchers have emphasized on investigating the relationship between EPS adoption and its influencing factors. Majority of these studies have focused on the positive factors that influence adoption while few others tried to find out the preventing factors that hindered EPS adoption. Nevertheless, there are differing factors that are specific to influence individual and organizations and there are factors that are for both.

Table 3 summarizes the research variables (influencing factors) that are being used in EPS adoption studies. Specifically, independent variables such as trust, ease of use, usefulness, security, convenience, cost, benefit, awareness and attitude are the most appearing variables in determining the factors that could influence EPS adoption for both individual and organizations.

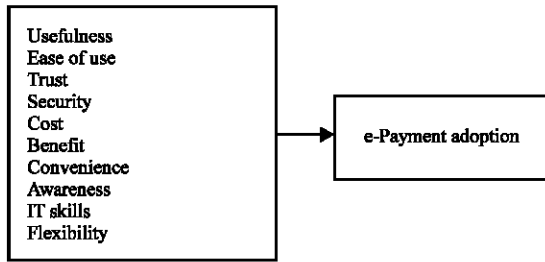


Fig. 1: Commonly used variables EPS adoption studies

However, in this study, it was found that trust, usefulness, security and ease of use are the top dominant independent variables prior researches constantly used in determining the readiness of people to adopt EPS at individual capacity and organizational level. In a nutshell, (Fig. 1) presents all the variables that were found in the prior studies that have been reviewed in the course of this study.

Analysis of methodology of previous studies: In research, methodology provides the foundation upon which the roadmap of a particular research is designed and therefore, the research designs that are being used in EPS adoption studies were analyzed. After going through most of the papers it was found that survey method is the most commonly used in e-Payment adoption studies. Table 4 presents the analysis and it reveals that out of the 77 empirical studies, 69 have employed survey method (including online survey) leaving the remaining 8 with other research methods. Therefore, it could be rightly said that survey is the most widely and thus suitable method to examine the influencing factors the lead to e-Payment adoption.

Furthermore, still within the methodology, questionnaire was the dominant instrument used in data collection in previous studies of e-Payment adoption studies. This is evident from Table 5 as it shows that not <70% of the studies employed the use of questionnaire. Notwithstanding, some studies have combined the use of the questionnaire with other secondary source of data. In light of this, therefore, future studies can utilize the use of other instruments of data collection with a view to determine any variability in research findings. Though, some few studies (Ebiringa, 2010; Senyo, 2013; Gallardo *et al.*, 2015) were qualitative in nature, further qualitative studies could enhance and buttress hidden issues on some matters especially with regards to customer’s perception on e-Payment usage.

Analysis of adapted IS Model: The use of underpinning theory in research is very important due to its foundational capacity to a research. Therefore, it is highly

Table 4: Analysis of research methods

Method used	No. of papers	Percentage
Survey	69	90.0
Other	8	10.0
Total	77	100.0

Table 5: Analysis of data collection instruments

Continents	No. of papers	Percentage
Questionnaire	54	70.1
Interview	7	9.1
Mixed	16	20.8
Total	77	100.0

Table 6: Analysis of adapted theories

IS theory	Frequency	Percentage
Technology acceptance model	13	16.9
Theory of planned behavior	3	3.90
Theory of reasoned action	2	2.60
Unified theory of acceptance and use of technology	7	9.10
Diffusion of innovations theory	2	2.60
Institutional theory	1	1.30
Expectation confirmation theory	2	2.60
Self service technology theory	1	1.30
Self-developed models	20	26.0
No model	26	33.8
Total	77	100.0

important to use theories in IS research. There are many theories that are widely used in IS research which are also referred to as IS Models. It is in line with this that this study critically analyzes the frequency of IS Models that are used in e-Payment adoption studies. Table 6 presents the analysis and it revealed that among those that adapted IS Model, the frequently used one are the Technology Acceptance Model (TAM) and Unified Theory of Acceptance and Use of Technology (UTAUT). These two models are always in use by IS researchers to explain behavioral intention to use or usage behavior in terms of social influence and cognitive instrumental processes in technology acceptance (Davis *et al.*, 1989).

Nevertheless, some few studies (Dehbini *et al.*, 2015) have used other models in investigating other factors that influence the adoption of e-Payment system. However, from the analysis presented below, majority of past researchers have developed their own conceptual framework. Therefore, it could be concluded that IS Models are less frequently used in e-Payment technology adoption researches. However, this might be due to lack of proper knowledge and awareness of these theories/models by some e-Payment researchers in management sciences.

CONCLUSION

The study had critically reviewed previous studies on e-Payment adoption studies across the world. The study had also analyzed them based on four distinct elements.

These comprise of the analysis of frequently used variables (influencing factors to EPS adoption) the context-location of the study, theories/models used and the methodology. One of the findings of this study was that most of EPS adoption studies were carried out in developing countries of Asia and African countries. Secondly, it was found that trust, ease of use, usefulness, security, convenience, cost, benefit, awareness and attitude are the frequently used variables (factors) in determining EPS adoption among individual and organizations. Thirdly, survey method was the predominant method used by previous studies to investigate the adoption of EPS across the world. Furthermore, the most daring instrument used for data collection in the past studies was the questionnaire method. Moreover, it was found that the most frequently used models in determining EPS adoption in prior studies are Technology Acceptance Model (TAM) and Unified Theory of Acceptance and Use of Technology (UTAUT).

LIMITATION

Finally, one of the limitations of this study is its inability to cover long period of time in the review as it covers 2010-2016 (6 years) only. Secondly, though the study has covered almost all aspects of prior studies with regard to EPS adoption but it only looks at the independent variables.

RECOMMENDATIONS

Based on the findings, the study would recommend that future studies should use other methods in carrying out this type of research other than survey so as to bring new methods with a view to observe if any variations from the previous researches that may arise. In addition, structured interview could be an important way that might yield better results from respondents too. Lastly, the study also recommends the use of established models in IS and/or extension of models to further examine the relationship between the influencing factors and EPS adoption. It is therefore, recommended that future studies should widen the analysis to include moderating or mediating variables that have been used in prior studies and their effects on EPS adoption.

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