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Acceptance and Usability of Electronic Payment Systems in Nigeria Major Markets

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***Abstract* – The Nigeria payment system is predominantly cash based. Although the Nigeria monetary system have common electronic payment systems (EPSs) deployed, the extent of acceptance and usage among the Nigeria traders is however unknown. This is crucial to the Nigeria ambition of going cashless; being a commerce driven economy. Consequently, we conducted a survey to estimate the level of acceptance and usability of existing EPSs among the Nigeria traders. In particular, the survey instrument (questionnaire) was designed after the Unified Theory of Acceptance and Use of Technology (UTUAT) model. The result shows that traders in Nigeria major markets are yet, and are not even facilitated, to embrace existing EPS in their day to day buying and selling activities.**

***Keywords* – Electronic Payment System, Cashless Society, Trade, Nigeria Traders, Nigeria Markets, Usability and Acceptance.**

I. Introduction

Many African countries have started to implement policies that will enhance the electronic payment systems [1]. Following advances in electronic payment and networked information technology, wider market coverage, growing computing power with diminishing computing costs, more and more firms are getting attracted to the paperless world of electronic commerce. Before the introduction of electronic payment systems in Nigeria, traders may devote days in a bid to carry out some financial transactions, with the bank being the only financial arbiter. The transaction process was generally very slow because of the cash based payment overhead leading to long queues. Counterfeited currency were very common in our markets. Pocket picking, and robery at shops and high ways were common incidence so much so that jungle justices such as burning of culprits alife became popular in Nigeria major markets. But in recent times, Nigeria has witnessed an upsurge of electronic payment instruments which should help simplify payments and facilitate trade.

EPS is expected to help customers, traders and companies including banks to eliminate or reduce some of these problems inherent in the cash based payment process. Customers and traders can now make payments without having to actually move to the bank's premises or hold physical cash. Today, all the banks in Nigeria have one form of EPS or the other. [2] however made a case for telecommunication providers in Nigeria, to get fully involved in the provision of EPS services in Nigeria, in her bid to go cashless.

Payment systems as reported by [3] have evolved from a simple system involving cash as a means of exchange to a more sophisticated system (EPSs) involving various institutions and related regulations, providing payment instruments and infrastructures, allowing for interconnections between various partners or business units to fulfill their financial obligations. Basically, EPSs can be categorized as: Online Credit Card Payment System, Online Electronic Cash Payment System, Electronic Cheque Payment System and Smart Card-Based Electronic Payment System [4]. Specifically, however, the Nigeria monetary system is characterized by the following electronic payment instruments and channels: Cards, Automated Teller Machine (ATM), Point of Sales (POS) Terminals, Mobile phones, Online Electronic Cash Payment System and Electronic Cheque Payment System.

II. Electronic Payment Instruments and Channels in Nigeria

A. *Card Based Payments*

Card based payments which include debit cards, credit cards, smart cards and prepaid/cash cards are gaining popularity [5]. Banks and payment service providers are promoting the use of debit cards and prepaid/cash cards for ATM, POS and online/web-based transactions. Financial institutions issue debit cards to consumers (traders) to allow them make withdrawals at ATMs terminals or payment at POS terminals of participating shops. Card based payments are more prevalent in urban areas than in the rural areas due to poor availability of EPS infrastructure in the rural areas [2]. The Nigeria Card payment service providers include Velve, Visa and MasterCard (EFInA, 2010). Credit card is a dominant form of online payment all over the world [6].

B. *Automated Teller Machine (ATM)*

Mostly located within bank's premises, it can also be found at airports, shopping malls, etc. ATM is a combined computer terminal with cash vault and record-keeping system in one unit, permitting customers to enter the bank's book keeping system with a plastic card containing a Personal Identification Number (PIN). It is usually accessed by punching a special code number into the computer terminal linked to the bank's computerized records. This gave customers and traders a means to access physical cash from their accounts in most locations 24/7 as long as they had their ATM cards. The ATM is the most accepted and dominant EPS in Nigeria [2].

C. *Point of Sale (POS)*

Debit cards issued in Nigeria can be used to withdraw cash from ATMs and for transactions using POS terminals

at participating retailers' shop. Point of sale terminal is accessible at merchants and trading store in Nigeria. [2] reported a very low adoption (about 5.8%) of POS in Nigeria. POS unlike the ATM is capable of making our markets go cashless.

D. Mobile Electronic Payments (MEP)

A MEP allows electronic payment to be made through mobile device (e.g., a cell phone or a PDA) and telecommunication networks. It uses a mobile device to initiate and confirm electronic payment. [2], opined that MEP is one sure EPS that can guarantee a cashless Nigeria economy. MEP also include Mobile banking activities which include: balance enquiry, statement request, transfers between own accounts, third party transfer, airtime purchase, alerting debit or credit transactions in the customer's bank account, marketing messages on product and services. Mobile banking enables traders to access their card linked accounts through their mobile phones [5].

E. Online/Internet Payments

Customers can access their bank accounts and make transfers through a web site provided by the bank while complying with some rigorous security checks. This is the means by which customers transact business with a bank through the use of the Internet network. [6] added that, legal regimes, IT Infrastructure, economic and social conditions, are the strong determinants of the methods of online payment and all these vary from country to country and even within country.

F. Electronic Cheque

Electronic cheques are used in the same way as paper cheque – the clearing between payer and payee is based on existing and well known banking settlement system. The only difference between paper and electronic cheques are the dematerialization of the payment instrument which is passed on via computer networks like Internet technology [1].

[6] observed that different countries prefer different forms of electronic payment system. He reported that the electronic payment system is heavily influenced by the host country's financial infrastructure. Overall, he noted that credit card is the most popular methods of payment over Internet. Internet buyers seem to prefer credit cards to other electronic payment system that have been made available to them. This shows that user preference – acceptance and usage is critical to the adoption of EPS.

The Nigeria ambition of going cashless cannot ignore the Nigeria traders not only because they are the hub on which the Nigeria economy revolves being a commerce driven economy but also because most of the monatery exchange activity are traders bound. Consequently, the Nigeria traders is an excellent population for determining the acceptability and usability level of EPSs in Nigeria. In Nigeria, the highest concentration of traders are in the market and in particular, the major markets where heavy monetary exchanges take place. We have many major markets in Nigeria but due to the insecurity in the northern part of Nigeria, we only concentrated on those in the southern part of Nigeria for purposes of the survey. These markets include Alaba International market (Lagos state), Ariaria market (Abia state) and Onitsha main market (Anambra state). This research paper focuses on determining the acceptance and usability level of existing EPSs in Nigeria.

Following the rapid development of new payment technologies, interest in the acceptance and usability of these technologies has increased significantly. According to [7], technology acceptance is defined as "an individual's psychological state with regard to his or her voluntary or intended use of a particular technology". Technology acceptance models aim to study how to promote technology use and to explore the factors that hinder or facilitate the acceptance and use of technologies. A number of technology models have been developed over the years to study and investigate the effect of factors on the acceptance and use of technologies. These models include: Theory of Reasoned Action (TRA), Theory of Planned Behaviour (TPB), Technology Acceptance Model (TAM), Model of PC Utilization (MPCU), Motivational Model (MM), Social Cognitive Theory (SCT) model, Extension of the Technology Acceptance Model (TAM2), Diffusion of Innovation Model (DOI), and the Unified Theory of Acceptance and Use of Technology (UTAUT) model [7]. In this research, the UTAUT model was utilized to discover factors influencing the acceptance and usability of EPSs in Nigeria.

The Unified Theory of Acceptance and Use of Technology (UTAUT) is one of the latest developments in the field of general technology acceptance models. Like earlier acceptance models, it aims to explain user intentions to use a system and increase usage behaviour. The UTAUT model (figure 1) successfully integrates key elements from eight models: TRA, TPB, TAM, MPCU, MM, SCT, TAM2, and DOI and they each attempt to predict and explain user behaviour using a variety of independent variables. The theory holds that four key constructs (performance expectancy, effort expectancy, social influence, and facilitating conditions) are direct determinants of usage intention and behaviour [7, 8].

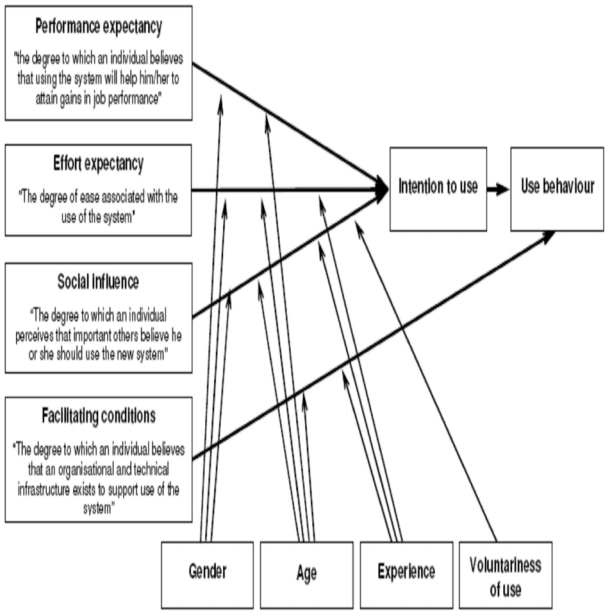

Fig.1. The Unified Theory of Acceptance and Use of Technology and definitions of the constructs [8].

The variables of gender, age, experience and voluntariness of use all work to moderate the impact of the four key constructs on usage intention and behaviour. The UTAUT has four core determinants that influence behavioural intention to use a technology:

- Performance expectancy (PE) is the degree to which a trader believes that using the electronic payment system will help him or her to attain gains in financial transactions.
- Effort expectancy (EE) is the degree of ease associated with use of the e-payment system.
- Social influence (SI) is the degree to which a trader perceives that important others believe he or she should use the e-payment system.
- Facilitating conditions (FC) is the degree to which a trader believes the financial and technical infrastructure exists to support use of e-payment system.

III. Material and Methods

We used the survey research methodology. The survey was designed to investigate the level of acceptance and use of existing EPSs in Nigeria. The research population were traders in Nigeria major markets. Sample and sampling techniques and questionnaire method was used for the survey. In particular, the questionnaire was modelled after the UTAUT model. The results of the survey are presented using descriptive and table representation.

A. Sample and Sampling

The target populace of this research survey were traders of major markets in Nigeria. Sampling was utilized as it was unattainable to reach the entire populace and all the major markets in Nigeria. A total of 150 traders in three major markets in Nigeria took part in this survey. The markets surveyed were Alaba International market (Lagos state), Ariaria market (Abia state) and Onitsha main market (Anambra state). The Boko Haram scare restricted us to the southern part of Nigeria but wish to affirm that the selected markets consist of traders of the different faith, tribe and culture within Nigeria.

B. Data Collection

Data was collected using questionnaire. The research questions were clear and unbiased, designed to reflect respondent's sex, age, educational status, proficiency with EPSs, EPS usage, market, EPS methods as well as traders performance expectancy, effort expectancy, social influences and facilitating conditions of EPSs in Nigeria. They were administered in three major markets in Nigeria namely: Alaba International market (Lagos state), Ariaria market (Abia state) and Onitsha main market (Anambra state). About 150 questionnaire were distributed, 123 feedbacks were retrieved giving a response rate of 82%. Contents of retrieved questionnaires were screened for validity and a total of nine questionnaires were invalidated thus given a 76% valid response which were summarised and analysed in line with our research objectives. The invalidation of the questionnaire were done on the ground of integrity, for example a respondent who selected non user of EPSs also selected the use of e-cheque. The questionnaires were distributed in the month of October, 2012 by the researchers and a research assistant. It is important to note that respondents were adequately educated on the difference between personal use of EPS and use of EPS for their trade – buying and selling purposes.

IV. Result and Discussion

Tables 1 and 2 and their following description captures the result of the survey as supplied by the respondents.

The ratio of male to female respondents is about 6:5, an indication that we have more male to female traders in Nigeria major markets. Most of these traders (i.e. over 60.0%) are literate youths, an indication that traders in Nigeria major markets are sufficiently literate and youthful and will easily embrace new technology or payments changes. However, the survey shows that only one of every five traders in Nigeria major markets use EPS as a payment method in their trade, an indication of technology rejection for trade. Of those that use one form of EPS or the other in their trade activities, none make use of MEP. At the time of the survey, however, a dozen MEP services were already deployed in Nigeria which include FirstMonie by FirstBank, MTN Mobile money and GTBank Mobile Money. Majority of those that use EPS in their trade in the Nigeria major markets, make use of smart cards (i.e. 21.1% of traders) which accounts for about 96% of traders that use EPS in trade. Others are POS (13.2%), internet banking (7.9%) and e-cheque (4.4%); which shows that those that use EPS in trade uses more than one EPS. Overall, these statistics indicate that traders in Nigeria major markets are yet to accept EPS as a payment option in Nigeria. This is a serious threat to the nation's cashless dream [2].

Table 1: Respondents Profile.

	Profile	Frequency	Percentage (%)
Gender	Male	61	53.5
	Female	53	46.5
Age	Under 21yrs	10	8.8
	21 – 30 yrs	36	31.6
	31 – 40 yrs	30	26.3
	41 – 50 yrs	21	18.4
	51 – 60 yrs	11	9.6
	Above 60 yrs	06	5.3
Educational level	Primary Six Certificate	14	12.3
	O' Level School Certificate	43	37.7
	Graduate of Higher institution	45	39.5
	Post Graduate	12	10.5
EPS Usability	User	25	21.9
	Non User	89	78.1
Market	Alaba	43	37.7
	Onitsha	34	29.8
	Ariaria	37	32.5
Proficiency with EPS	Poor	78	68.4
	Moderate	20	17.5
	Good	16	14.0
EPS Payment Methods	GSM (Mobile) Payments	00	0.0
	Internet Banking	09	7.9
	Smart Cards (e.g. ATM	24	21.1

	cards, credit card, etc)		
	e-cheque	05	4.4
	POS	15	13.2

We need not carry out any complex calculation, the results in table 2 shows that there is no intention by traders in Nigeria major markets to use the available EPS in Nigeria though they appreciate that EPS may save their transaction time. This conclusion was reached considering the respondents response to questions capturing data on Performance Expectancy, Effort Expectancy and Social influence which constitute "intention to use" in the UTUAT model. The high undecided responses strongly indicate that most of the traders are poorly exposed to existing EPS in Nigeria. Their responses to questions on facilitating conditions are equally not encouraging. This indicates that the Nigeria government, financial institutions and EPS technology vendors are yet to appreciate the gains in making the Nigeria market cashless.

Table 2: Respondents EPS Acceptance and Use Profile.

	EPS Acceptance and Use Profile	**Undecided**		**Disagree**		**Somewhat Agree**		**Agree**	
		Frequency	**Percentage - %**	**Frequency**	**Percentage - %**	**Frequency**	**Percentage - %**	**Frequency**	**Percentage - %**
1	**Performance Expectancy**								
	EPS is useful to me	75	65.8	06	5.3	14	12.3	19	16.7
	EPS is time effective	32	28.1	07	6.1	11	9.6	64	56.1
	EPS helps increase turn over	78	68.4	18	15.9	09	7.9	09	7.9
2	**Effort Expectancy**								
	EPS usage is simple	84	73.7	06	5.3	08	7.0	16	14.0
	EPS start-up/maintenance is cheap	69	60.5	31	27.2	02	1.8	12	10.5
	Traders are skillful at using EPS	33	28.9	62	54.4	15	13.2	04	3.5
	It is easy to learn and use EPS	36	31.6	12	10.5	42	36.8	24	21.1
	EPS very convinient	61	53.5	04	3.5	22	19.3	27	23.7
3	**Social Influence**								
	Customers request EPS methods	04	3.5	94	82.5	07	6.1	09	7.9
	Banks and EPS vendors encouragement	21	18.4	68	59.6	09	7.9	16	14.0
	EPS is popular among traders	05	4.4	97	85.1	09	7.9	03	2.6
4	**Facilitating Conditions**								
	EPS is secure	85	74.6	04	3.5	09	7.9	16	14.0
	EPS is reliable	86	75.4	05	4.4	12	10.5	11	9.6
	EPS services are compatible	79	69.3	14	12.3	13	11.4	08	7.0
	EPS infrastructures are accessible	58	50.9	31	27.2	10	8.8	15	13.2
	Banks and EPS vendors service support	65	57.0	26	22.8	07	6.1	16	14.0
	EPS activity has legislative support	78	68.4	29	25.4	06	5.3	01	0.9

V. Conclusion and Recommendations

We noted that the Nigeria ambition of going cashless cannot ignore the Nigeria traders not only because they are the hub on which the Nigeria economy revolves being a commerce driven economy but also because most of the monatery exchange activities are trade bound. To this end, the research surveyed some major markets in Nigeria using a questionnaire designed after the UTAUT model of technology acceptance and use with a view to determining the level of acceptance and use of available EPSs in Nigeria for their trade. The result shows that the case of Nigeria traders is a case of technology rejection. Even when most of the traders are sufficiently literate youths which should easily embrace change, Nigeria major market is still predominantly cash based. Our result also shows that the facilitating conditions for EPS in Nigeria is very poor.

A postmortem of our findings shows that traders in our major markets are able to rely on cash based payment system despite the high insecurity in Nigeria because of the high presence of banks within and around the markets. Presently, banks in Nigeria are one branch banks i.e. customers can carry out their financial transaction in any of their bank branches within and outside the countries. Besides, traders into import and export of goods says most EPS in Nigeria are not in alignment with those of other countries. This further exposes that the facilitating conditions must be very strong before the traders can be swayed into embracing EPS.

We recommend therefore that EPS service providers and technology vendors should align their products and services with those of their counterparts in other countries to facilitate both intra and inter national trade. Huge investments in EPS infrastructure for optimum performance is necessary. Government needs to enact and implement policies that will encourage and protect the users of EPSs in Nigeria. The need for banks and financial institutions to partner with telecommunication providers for an affordable, accessable and generally accptable MEP; create awareness and promote the benefits of MEP for a good cashless impact is also recommended. EPS Technology (e.g. POS terminals) manufacturers should partner with their respective EPS service providers in Nigeria to encourage traders towards a cashless market; for this will mean more money for the technology vendors, secured market, cheap and effective monetary system for government, and increased cash inflow for financial institutions.

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