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# An Investigation of Users' Acceptance and Satisfaction of E-Banking System as a Panacea towards a Cashless Economy in Nigeria

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## ABSTRACT

The benefits of e-banking have been established as being numerous and its success has been argued by many researchers to depend partly on the quality of the banking services but more especially on customer preferences and satisfaction. Surprisingly, as numerous as these e-banking benefits are, very long queues could still be seen in many Nigerian banks for the consumption of the traditional banking services of fund transfer, cash deposits and cash withdrawals. However, to prove the success of e-banking in Nigeria, users' acceptance and satisfaction of the system need to be validated. Many research works had been conducted using the Technology Acceptance Model (TAM), an information system theory that models how users come to accept and use a technology, to predict and explain users' acceptance of e-banking. TAM poses two theoretical constructs; perceived usefulness (PU) and perceived ease of use (PEOU) as fundamental determinants of user's acceptance of an information system. This research work examines the factors that may influence users' acceptance and satisfaction of e-banking in Nigeria by adding the impact of perceived credibility (PC) and trust to the TAM constructs (PU and PEOU) with four other external variables (convenience, quality of technology, service quality and system accessibility) in extending its validity on examining user's acceptance and satisfaction of e-banking system in Nigeria as a panacea towards operating a cashless economy. The result of the hypothesis testing using Pearson chi square is consistent with previous studies which showed that there is a significant relationship in the predicted direction on intention to use information system (IS).

**Keywords:** *E-Banking, Users' satisfaction, Trust, TAM, Customers' satisfaction.*

## 1. INTRODUCTION

The trend of advances in the internet technology has brought about huge impact on business operations and has prompted Nigerian banks to undertake widespread and extensive activities in line with applying computer systems in their banks. Technological breakthroughs and product designs have led to the emergence of e-banking services which, in recent times has become globally popular (Odumeru, 2012). Daniel, (1999) defined e-banking as the provision of banking services to customers through internet technology. Encyclopedia Britannica (2010) defined e-banking as the use of computers and telecommunications to enable banking transactions to be done by telephone or computer rather than through human interaction. E-banking helps banks to increase speed, shorten processing periods, improve the flexibility of business transactions and reduce costs associated with having personnel serve customers physically (Ayo, *et al.*, 2010).

The adoption of e-banking has encouraged customers to use banking services more effectively coupled with the fact that the Nigerian banking industry went through a consolidation exercise that left Nigeria with 25 banks out of 89 banks previously in existence (Ayo, *et al.*, 2010). According to Chiemeké *et al.*, 2006, the ability of these 25 banks to satisfy and retain their customers in the post-consolidation era will depend largely on the

development of their Information Technology (IT) infrastructure. However, with the adoption of e-banking by all the banks in Nigeria and its concomitant advantages, the volume of cash in circulation has continued to increase pre- and post- consolidation exercise. In order to harness the benefits of e-banking, the Central Bank of Nigeria (CBN) in April 2011, released a circular on the introduction of 'cashless' policy which was used to set cash deposit and withdrawal limits. The success of this policy requires the increase use of alternative payment systems including e-banking.

In the past decades, IT acceptance has been the subject of a number of researches. Several theories have been employed and extended to offer new insights into users' acceptance of e-banking. While e-banking services are numerous in number, there is not enough evidence of its acceptance among consumers. However, for us to accept that e-banking has fully gained prominence in Nigeria, users' acceptance and satisfaction of the system need to be validated. Many research works had been conducted using the Technology Acceptance Model (TAM) to predict and explain users' acceptance of e-banking. TAM is an information system theory that models how users come to accept and use a technology. It posits two theoretical constructs; perceived usefulness (PU) and perceived ease of use (PEOU) as fundamental determinants of user's acceptance of an information system. The objective of this study is to examine the factors that may influence users'

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acceptance and satisfaction of e-banking in Nigeria. To accomplish this arduous task, the impact of perceived credibility (PC) and trust would be added to the TAM constructs (that is, perceived usefulness (PU), perceived ease of use (PEOU)) plus four other external variables (that is, convenience, quality of technology, service quality and system accessibility) in extending its validity on examining user's acceptance and satisfaction of e-banking system in Nigeria as a panacea towards operating a cashless economy. The rest of the paper is organized as follows. Section 2 presents e-banking system cashless economy in Nigeria while section 3 succinctly discussed the theoretical background. The conceptual framework and hypothesis is presented in section 4. The result and discussion for the work is presented in section 5 while section 6 gives the concluding remark.

## 2. E-BANKING AND CASHLESS ECONOMY IN NIGERIA

### 2.1 E-Banking

E-banking can be defined as the deployment of banking services and products over electronic and communication networks directly to customers, Singh (2004). It is the automated delivery of new and traditional banking products and services directly to customers through electronic, interactive communication channels. Electronic banking is the provision of banking services to customers through Internet technology (Daniel, 1999). E-banking has been reported as an efficient route for delivering banking service (Al-Smadi and Al-Wabel, 2011). However, most competitive advantages of e-banking services reduce transaction cost through convenient e-banking services. Through the use of IT, banks now employ different channels such as internet technology, video banking technology, telephone banking, Automated Teller Machine (ATM), and WAP technology to deliver their services. Report on e-banking system in Nigeria reveals that e-payment machinery, especially the card technology, is presently enjoying the highest popularity in Nigeria banking market (Ayo, et al., 2010). The inters witch statistics cogitate that Nigeria has 30million ATM card holders who conduct over 100 million transactions on the machines every month. The present Nigeria's 25 banks operate over 9,000 ATM machines across the country's 36 states and Federal Capital Territory. Basically, the union of technology and finance has recorded huge success and has impacted very positively on financial transactions in Nigeria banking system thereby making e-banking system to become the main technology-driven revolution for conducting financial transactions.

### 2.2 Cashless Economy

The cashless policy (as an intention to migrate to cashless economy) took effect from April 1, 2012 in Lagos. The essence of the policy is to shift the economy from a

cash-based economy to a cashless one. Thus it is geared towards engendering an efficient payment system anchored on electronic – based transactions. Desirous of making the policy succeed, a number of financial services has been introduced which among others include mobile money payment system, point of sale terminals, Alerts and Automated Teller Machines (ATM). Essentially, Mobile Payment System introduced at the dawn of January 1, 2012 allows users to make payments with their GSM phones. It is a saving device and transfer system that turns GSM phone into a saving account platform, allowing owners to save money in it and also make transfers. The Point of Sale (POS) terminals are installed by businesses and connected to the Nigerian Inter Bank Settlement System for purposes of making payments during business transactions.

But contrary to what is suggestive of the term, cashless economy does not refer to an outright absence of cash transactions in the economic setting but one in which the amount of cash-based transactions are kept to the barest minimum. It is an economic system in which transactions are not done predominantly in exchange for actual cash. It is not also an economic system where goods and services are exchanged for goods and services (the barter system). It is an economic setting in which goods and services are bought and paid for through electronic media. It is defined as “one in which there are assumed to be no transactions frictions that can be reduced through the use of money balances, and that accordingly provide a reason for holding such balances even when they earn rate of return” (Woodford, 2003). In a cashless economy, how much cash in your wallet is practically irrelevant. You can pay for your purchases by any one of a plethora of credit cards or bank transfer (Roth, 2010). Some aspects of the functioning of the cashless economy are enhanced by e-finance, e-money, e-brokering and exchanges. These all refer to how transactions and payments are effected in a cashless economy.

In Nigeria, under the cashless economy concept, the goal is to discourage cash transactions as much as possible. The CBN had set daily cumulative withdrawal and deposit limits of ₦150,000.00 for individuals and ₦1,000,000.00 for corporate bodies (now reviewed to ₦500,000.00 and ₦3million respectively). Violation of these rules attract a penalty fees of ₦100.00 and ₦200.00 respectively (now reduced to 5% and 3% respectively) to be charged per extra ₦1000.00 (Ezumba, 2011). It should be said that as at now there are already some forms of cashless transactions that are taking place in Nigeria by indigenous firms and have been stimulated by improvement in technology and infrastructure (Babalola, 2008).

## 3. THEORETICAL BACKGROUND

A number of Socio-Cognitive models have been proposed in time past in order to predict and explain users' acceptance of e-banking. The most prevalent are (1) the Theory of Reasoned Action (TRA) and (2) the Theory of

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Planned Behaviour (TPB). Other derivatives include Technology Acceptance Model (Davis, 1989) and Roger's Diffusion of Innovation (DOI) Theory (Rogers, 1983).

also users' attitudes, intention and adoption behavior (Davis, *et al.*, 1989).

### 3.1 Theory of Reasoned Action (TRA)

Fishbein and Ajzen (1975) demonstrated TRA as a model in social psychology that can explain virtually any human behavior. It assumes that individuals are usually quite rational and make systematic evaluation of information made available to them. TRA includes the following general perceptions: (i) attitude, (ii) subjective norm, (iii) behavioural intention, and (iv) behavior. Moreover, Fishbein and Ajzen (1975) identified two factors affecting the individual's intention: The first one is the personal evaluation – positive or negative – that the person has set as a standard, and refers to attitudes, while the second factor is the person's perception of the social pressure put on him/her in order to realize or not the requested task, and is represented by the use of subjective norm.

### 3.2 Theory of Planned Behaviour (TPB)

The TPB was introduced by Ajzen (1985). TPB encompasses the TRA and extends it. Both theories establish that behavior is a direct function of behavioural intention (Shih and Fang, 2004). However, the TPB differs from the TRA, since it includes a new construct, the Perceived Behavioral Control (PBC). PBC has been added to account for conditions where the individuals have no control over their behavior. Ajzen (1991) defined PBC as the perceived ease or difficulty of performing the behavior and it is assumed to reflect past experience as well as anticipated impediments and obstacles.

### 3.3 Technology Acceptance Model (TAM)

TAM is an information system theory that models the acceptance and use of a technology. TAM as proposed by Davis (Davis, 1989) is an extension of Theory of Reasoned Action (TRA) and the Theory of Planned Behavior (TPB). TAM puts forward two theoretical constructs; perceived usefulness (PU) and perceived ease of use (PEOU) as fundamental determinants of users' acceptance of an information system.

Much research had been conducted using TAM and it has become the most widely accepted model among information system researchers (Jaruwachirathanakul and Fink, (2005); Lallmahamood, (2007)). Some other researchers had incorporated some other variables into TAM, which are validated as having impact on usefulness, ease of use, users' acceptance and intention (Pikkarainen *et al.*, 2004). For instance, Hanudin (2007) concluded that credibility (security and privacy), is the heart of Internet banking system and found computer self-efficacy as a major influence on perceived ease of use. The model specifies the casual linkages between the key beliefs: Perceived Usefulness (PU) and Perceived Ease of Use (PEOU), and

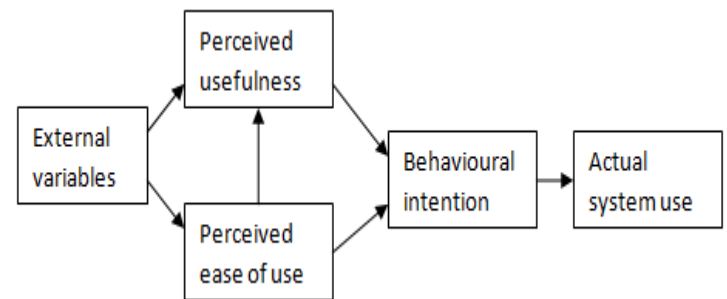


Fig 1: Technology Acceptance Model

#### 3.3.1 Perceived Usefulness (PU)

Perceived usefulness refers to the degree, to which a person believes that using a particular system would enhance his or her job performance. The importance of perceived usefulness has been widely recognized in the field of e-banking (Davis *et al.*, 1989; Polatoglu and Ekin, 2001). According to the previous research work, usefulness is the subjective probability that the application of a new technology would improve the way a user could complete a given task.

In the words of Davis, *et al.* (1992), perceived usefulness refers to consumers' perceptions regarding the outcome of the experience. Perceived usefulness is defined as the individual's perception that the application of the new technology will enhance or improve his or her performance (Davis, 1993). Adams *et al.* (1992) and Davis *et al.* (1989) reported that user acceptance of computer systems is driven to a large extent by perceived usefulness. In addition, Mathwick, *et al.*, (2001), defined perceived usefulness as the extent to which a person deems that a particular system will boost his or her job recital. In the same way, perceived usefulness is defined as consumer's perception of functional and utilitarian dimensions (Childers, *et al.*, 2001).

There are few broad empirical research findings on the impact of the perceived usefulness on users' acceptance of e-banking (Davis *et al.*, 1989; Agarwal and Prasad, 1999; Venkatesh, 2000). The proposed relationship between perceived usefulness and behavioural intention is based on the theoretical argument by Wang *et al.* (2003), and Guriting and Nelson (2006). Wang *et al.* (2003) discovered that perceived usefulness effect Taiwan people's intentions to adopt e-banking systems significantly. In other words, perceived usefulness has a significant relation with behavioural intention. Hence, the greater the perceived usefulness of using e-banking services, the more likely that e-banking will be accepted by users (Polatoglu and Ekin, 2001).

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### 3.3.2 Perceived Ease of Use (PEOU)

Perceived ease of use on the other hand refers to the degree to which a person believes that using a particular system would be free of effort (Davis, 1989). In TAM, perceived ease of use is a major factor that affects acceptance of information system (Davis et al., 1989). Rogers (1983) has stated that perceived ease of use represents the degree to which an innovative technology is perceived not to be difficult to learn, understand and operate. Therefore, he defined PEOU as customer's perceptions towards a new product. On the other hand, Igarria and Davis (1995) believe that ease of use refers to their perceptions regarding the process leading to the final e-banking outcome. In simple terms, the ease of use refers to how easy it is to use the e-banking system (Gefen and Straub, 2000). Hence, a technology application which is perceived to be easier to use as compared to others will enhance the user acceptance.

### 3.3.3 Perceived Credibility (PC)

Perceived Credibility is "the belief that the promise of another can be relied upon even under unforeseen circumstances" (Suh and Han, 2002). Particularly, perceived credibility prior to service subscription has a significant impact on customer acceptance, since customers generally stay away from a service provider whom they do not trust (Reichheld and Scheffer, 2003). According to Jacoby and Kaplan (1972), perceived credibility refers to how 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. Besides, Wang et al. (2003) claims the security and privacy are two important dimensions in perceived credibility. Consequently, perceived credibility is used as a new construct to reveal the privacy and security concerns in the usage intention of e-banking (Ba and Pavlou, 2002). In the context of e-banking, perceived credibility refers to the security and reliability of transactions over the Internet (Goldfinger, 2001). Adesina, et al., (2010) defined perceived credibility as user's perception of protection of their transaction details and personal data against unauthorized access. PC is about personal belief that a user has in the system to carry out a transaction securely and maintain the privacy of personal information.

### 3.3.4 Trust

Trust is "the variable most universally accepted as a basis of any human interaction or exchange" (Gundlach and Murphy 1993). Trust is a must in most business relationships (Fukuyama, 1995), especially those containing an element of risk, including interacting with an e-vendor (Reichheld and Scheffer, 2000; Gefen et al., 2003). In an online shopping study, Gefen et al. (2003) integrated Trust into TAM as a belief and concluded that Trust had the same significance on intention as PEOU. In the Online Banking context, Suh and Han (2002) found Trust to have almost the

same impact on attitude as PU, which was the strongest variable of attitude prediction. Therefore PEOU, PU, and Trust are proposed to be key dimensions in the study of Online Banking acceptance.

Trust is of paramount importance to banking transaction as online transaction requires mutual relationship with customers via trust-oriented collaboration processes with banking sectors in Jordan (Badi *et al.*, 2012). Concern has grown over lack of trust in e-banking services owing to its enormous potentially risk to users satisfaction (Siam, 2006). However, trust is most needed in a risk-prone transaction in other to secure certain particulars from abused (Sulieman *et al.*, 2011). Trust is often interwoven with risk because it reduces the risk of being victimized to undesirable behavior or conduct. Trust has been noted as situational specific in the context of e-banking. Trust is central to e-banking transaction and of paramount importance in satisfying users need (Crumlish and Malone, 2009).

Trust influences users' behavior (Ja-Chul *et al.*, 2009) and is central to e-banking services (Harris and Dennis, 2011). It influences user's willingness to engage in online transaction (Ala'Eddin and Hasan, 2011; Al-Smadi and Al-Wabel, 2011) and is vital to economic activities (Jeoungkun *et al.*, 2011). Knowledge of trust determinant in e-banking processes is vital so as to promote e-banking adoption in Nigeria and to overcome their effect to e-banking user's satisfaction (Blanca, 2011). These trust-related problems would have great negative impact on e-banking user's satisfaction in Nigeria.

### 3.4 Roger's Diffusion of Innovation (DOI) Theory

The theory of diffusion of innovation is a model developed to predict factors influencing adoption of information system (Rogers, 1995). Literature in IT diffusion emphasizes the importance of perceived relative advantage and improved organizational performance as enablers of adoption of new innovation. Rogers (1995), stated that the greater the perceived relative advantage, the faster the adoption. The diffusion of innovation theory posits that potential adopters evaluate an innovation based on innovation attributes such as relative advantage, compatibility, complexity (ease of use), trial ability, and observability. All the attributes were found to be positively related to its rate of adoption, while the perceived complexity of an innovation is negatively related to its rate of adoption (Rogers, 1995). Using the DOI theory, Hogarth et al (2008) discovered that 'the more observable, compatible, simple, useful, and the more advantages the technology offers, the more likely are the consumers to adopt that technology'

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#### 4. CONCEPTUAL FRAMEWORK AND HYPOTHESIS

Extended TAM is being widely used and proven model of investigating user’s adoption of information systems. This extension refers to the introduction of some other constructs and measuring their impact on the acceptance to use an information system. Extended TAM is adopted as the theoretical framework to examine the intention to use electronic banking. In this study, the extended TAM includes the external variables “perceived credibility” and “trust”. The proposed methodology was designed to quantify users’ acceptance and satisfaction on

the use of e-banking system in Nigeria as a panacea towards operating a cashless economy. To accomplish this objective, a conceptual framework was developed as shown in Figure 2 to guide our hypotheses formulation as well as its analysis. The arrows linking constructs (latent variables) specify hypothesized relationships in the direction of arrows. The arrows between constructs and indicators (observed variables) indicate measurement validity. Perceived ease of use, perceived usefulness, perceived credibility and trust can be considered cognitive constructs. Attitude might be considered an affective construct, while intention to use could be regarded as a behavioral construct.

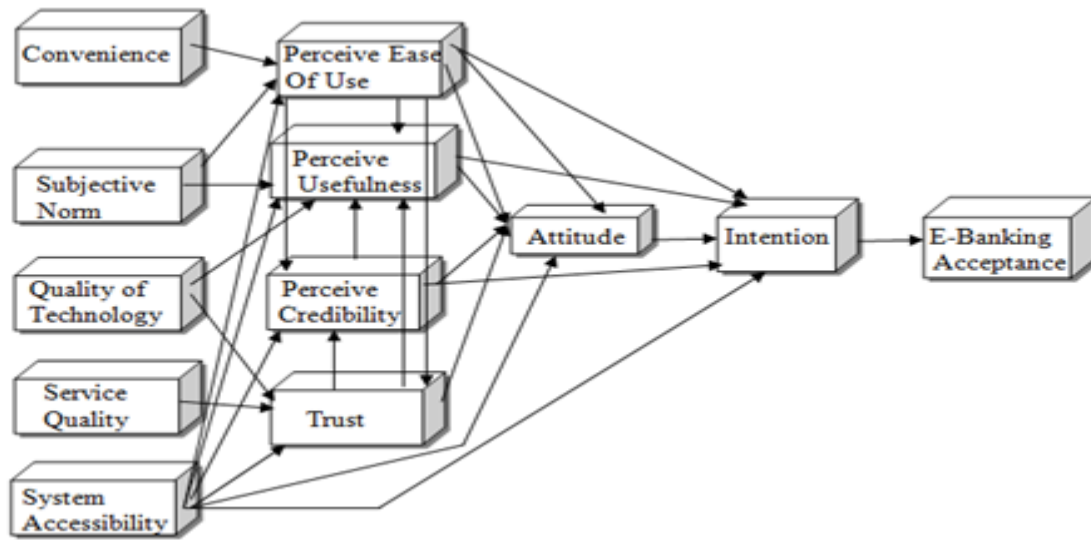


Fig 2: The conceptual Framework

By applying these into electronic banking context we hypothesize that:

Null hypothesis  $H_0: \mu_d = 0$

The alternative hypotheses  $H_1 - H_{13}: \mu_d \neq 0$  are given thus

- H<sub>1</sub>: Intention has a positive significant effect on actual behavior.
- H<sub>2</sub>: Attitude has a positive significant effect on intention.
- H<sub>3</sub>: PU has a positive significant effect on intention
- H<sub>4</sub>: PU has a positive significant effect on Attitude
- H<sub>5</sub>: PEOU has a positive significant effect on PU
- H<sub>6</sub>: PEOU has a positive significant effect on Trust
- H<sub>7</sub>: PEOU has a positive significant effect on Attitude.
- H<sub>8</sub>: Information quality will have a positive significant effect on PU
- H<sub>9</sub>: Convenience will have positive significant effect on PEOU
- H<sub>10</sub>: Navigation will have positive significant effect on PEOU

- H<sub>11</sub>: Service Quality will have positive significant effect on Trust
- H<sub>12</sub>: Trust will have a positive significant effect on attitude.
- H<sub>13</sub>: Trust will have positive significant effect on PU.

For the purpose of data collection, a survey instrument was developed with its methodological principle being divided into two parts as illustrated in Figure 3 below.

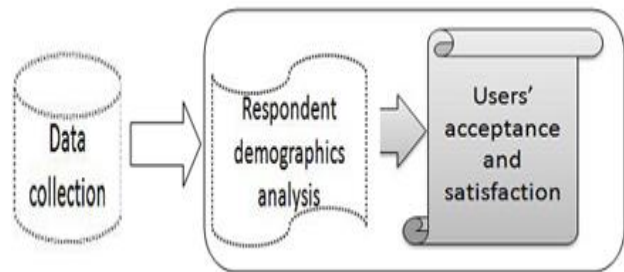


Fig 3: The Methodology Principle

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The data collection was based on questionnaire as the survey instrument such that the information obtained from collected data can be statistically analyzed. The questionnaire was designed to collect demographic and attitudinal characteristics that might have an impact on or a relationship to respondents' views on the use of e-banking. A total of 400 questionnaires, which consists of 35 questions were distributed to the respondents. 6 questions on perceived ease of use, 7 questions on perceived usefulness, 8 questions on perceived credibility (security & privacy), 6 questions on computer self-efficacy, 5 questions on transaction speed, and 3 questions on intention to use (see table 1 for demographic profile of the sample). The

participants were asked to indicate their perception on a likert scales (1- 5) with response ranging from "strongly disagree" to "strongly agree". The authors discarded incomplete questionnaires and considered 310 questionnaires containing all information, which represents 77.5% of the total respondents for which demographic analysis towards determining the users' acceptance and satisfaction was carried out in order to determine whether there is a significant relationship between demographic characteristics and respondents' perception on e-banking,

**Table 1:** Demographic Profile of the sample

Gender			Age		
Groups	Frequency	Percentage	Groups	Frequency	Percentage
Male	180	45.0	< 25	62	15.5
Female	220	55.0	25 – 35	192	48.0
			36 – 45	106	26.5
			> 46	40	10.0
Total	400	100	Total	400	100
Education			Type of e-banking usage		
Groups	Frequency	Percentage	Groups	Frequency	Percentage
Undergraduate	126	31.5	ATM	168	42.0
HND/BSc	168	42.0	I- Banking	140	35.0
Postgraduate	106	26.5	M-Banking	92	23.0
Total	400	100	Total	400	100

## 5. RESULTS AND DISCUSSION

### 5.1 Descriptive Statistics

The descriptive statistics for the various construct items are shown in Table 2. It was observed that all means were greater than 3.0, ranging from 3.69 to 4.46. This indicates an overall positive response to the constructs that are measured in this study. The standard deviations for all variables were less than one and this indicates that the item scores were around the mean scores.

**Table 2:** Descriptive Statistics of the Constructs

Construct	Mean	Standard Deviation
PEOU	4.13	0.55
PU	3.69	0.59
PC	3.81	0.63
Trust	3.79	0.55
Intention	4.44	0.62

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## 5.2 Hypothesis Testing

Hypotheses were examined by confirming the presence of statistically significant relationship in the predicted direction as shown in figure 2. The null hypothesis is such that  $H_0: \mu_d = 0$ , which means that perceived usefulness, perceived ease of use, perceived credibility and system accessibility are not significantly

associated with intention. On the other hand,  $H_1 - H_{13}: \mu_d \neq 0$  meaning that perceived usefulness, perceived ease of use, perceived credibility and system accessibility are significantly associated with intention. Table 3 below depicts the summary of the results of the hypothesis testing

**Table 3:** Summary of the Hypothesized Results

Hypothesis	Path	Path Coefficient	Effect Type	Result
H <sub>3</sub>	PU → Intention	0.59**	Direct	Supported
H <sub>4</sub>	PU → Attitude	0.23**	Direct	Supported
H <sub>5</sub>	PEOU → PU	0.34**	Direct	Supported
H <sub>6</sub>	PEOU → Trust	0.54**	Direct	Supported
H <sub>7</sub>	PEOU → Attitude	0.38**	Direct	Supported
H <sub>12</sub>	Trust → Attitude	0.52**	Direct	Supported
H <sub>13</sub>	Trust → PU	0.41**	Direct	Supported
** P < 0.01				

The result of the hypothesis testing indicates that perceived usefulness, perceived ease of use, perceived credibility, Trust and system accessibility are significantly associated with intention. As far as behavioral intention is concerned, attitude, e-learning self-efficacy, and subjective norms were identified to be significant. In terms of attitude, perceived usefulness, perceived ease of use, and subjective norms turned out to be significant. System accessibility had no effect on perceived usefulness. On the other hand, subjective norm had no significant relationship with perceived ease of use. This result is consistent with previous studies which showed that there is a significant relationship in the predicted direction on intention to use information system (IS).

## 6. CONCLUSION

This paper has consciously presented the factors determining users' acceptance and satisfaction of information systems using e-banking as spotlight. With the extension of TAM, the authors have been able to support the argument by other researchers who claimed that perceived usefulness and perceives ease of use is not sufficient to determine the consumer's behavioral intention to use information system. From the statistical analysis it is observed that the users' acceptance and satisfaction of e-banking have influence on the acceptance of the system. This is based on the response from both current and potential users of e-banking system. This study clearly reflects that users find e-banking system useful, convenient, and easy to use which facilitate and influences Nigerian transition into cashless economy

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