

A FRAMEWORK FOR ELECTRONIC COMMERCE ADOPTION: A STUDY IN KADUNA STATE, NIGERIA

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ABSTRACT

The paper proposes a framework that integrates Perceived Credibility, Perceived Regulation, Perceived Benefit, Perceived Awareness/Education with the Unified Theory of Acceptance and Use of Technology (UTAUT) concept in users' adoption of e-commerce in Kaduna State, Nigeria. The findings show that while the original UTAUT model suggests a positive relationship between its variables and Behavioral Intention, it appears that the data do not support a significant relationship between these concepts. However, significant relationships were identified between performance expectancy, effort expectancy, facilitating conditions, perceived regulation on behavioural intention to adopt e-commerce. Unfortunately, no significant relationships were found between social influences, Perceived credibility, Perceived Benefit, Perceived awareness/education with respect to Behavioral Intention.

KEYWORDS: Adoption, E-commerce, Framework, Nigeria, UTAUT

INTRODUCTION

Electronic commerce (e-commerce) has become a significant issue with the growth of the Internet. Today, enormous business activities are conducted online. People go online to sell and buy both goods and services, and many transactions cannot be completed without Internet technology. Electronic commerce is an emergent research discipline with a history of less than 20 years. The exploding growth of electronic commerce activities in the last decade has attracted significant attention from practice as well as academics in different fields (Wang and Chen, 2010).

In Nigeria, the road to socio-political, economic, and technological development started after the year 1999. The year marked the debut of democratic rule after long years of military dictatorship, characterized by lack of vision, economic depression, looting and inadequate infrastructural development (Ayo et al., 2008). However, electronic banking is one area of e-commerce that has proven successful in Nigeria. Virtually all banks in Nigeria offer online, real-time banking services (Economist Intelligence Unit, 2006). Also, the Automatic Teller Machine (ATM) is the most widely used medium of e-payment in Nigeria, which is not very suitable for e-commerce implementation (Ayo et al., 2008; Chiemeke and Evwiekpaefe, 2011).

Furthermore, despite the global reach of e-commerce, not all countries have taken advantage of or benefited from e-commerce. There is a big gap in internet and e-commerce adoption between the developed and developing countries (Licker and Motts, 2000); thus creating a digital divide (Aghaunor and Fotoh, 2006; Chiemeke and Evwiekpaefe, 2011). Also, a lot of researches have been conducted in the developed countries to examine the factors affecting Internet and E-commerce adoption. However, their findings could not be generalized due to the differences

between developed and developing countries (such as available infrastructure, social and cultural issues) (Kapurubandara and Lawson, 2006; Taylor and Owusu, 2012).

Ecommerce is still a new concept to developing countries like Nigeria despite the fact that ecommerce has been around for some time (Aghaunor and Fotoh, 2006). The UTAUT model, an improved Technology Acceptance Model (TAM), suggests that when users are presented with a new technology, a number of factors influence their decision about how and when they will use it (Moosdijk, 2008). The UTAUT proposed by Venkatesh, et al (2003) incorporated eight famous Models/Theories in various discipline. Venkatesh, et al (2003) developed the Unified Theory of Acceptance and Use of Technology (UTAUT) model to consolidate previous TAM related studies as shown in fig. 1. Empirical results of the UTAUT model revealed it was able to account for 70% of variance in usage intention (Venkatesh et al, 2003; Abdulwahab and Dahalin, 2010). Wu et al (2007) stated that UTAUT is a pretty robust model for technology acceptance prediction, but is still subject to modifications for at least industry type and geographical area. Orji, 2010 reported that the moderating variables offer flexibility to allow the introduction of new dimensions into the model. Also, according to Abdulwahab and Dahalin, 2010, a recommendation by Venkatesh et al, (2003), suggested that future studies on UTAUT model should include developing deeper understanding of the dynamics that may influence user acceptance of information technology by concentrating on construct that can add to the prediction of intention and behavior over and above what is known and understood in understanding the organizational outcomes associated with success of new Information System.

Hence UTAUT model was modified in this paper with Perceived Credibility, Perceived Regulation, Perceived Benefit, and Perceived Awareness/Education. These variables were discovered in our review of literature of the underlying factors that influences ecommerce adoption.

Background

Unified Theory of Acceptance and Use of Technology (UTAUT) Model
Venkatesh et al, (2003) developed the Unified Theory of Acceptance and Use of Technology (UTAUT) model to consolidate previous TAM related studies. The UTAUT aims to explain user intentions to use an Information system (IS) and subsequent usage behavior. The theory holds that four key constructs (performance expectancy, effort expectancy, social influence, and facilitating conditions) are direct determinants of usage intention and behaviour (Venkatesh et al, 2003). Gender, age, experience, and voluntariness of use are posited to mediate the impact of the four key constructs on usage intention and behavior (Venkatesh et al, 2003). The theory was developed through a review and consolidation of the constructs of eight models that earlier research had employed to explain IS usage behavior (See Fig. 1).

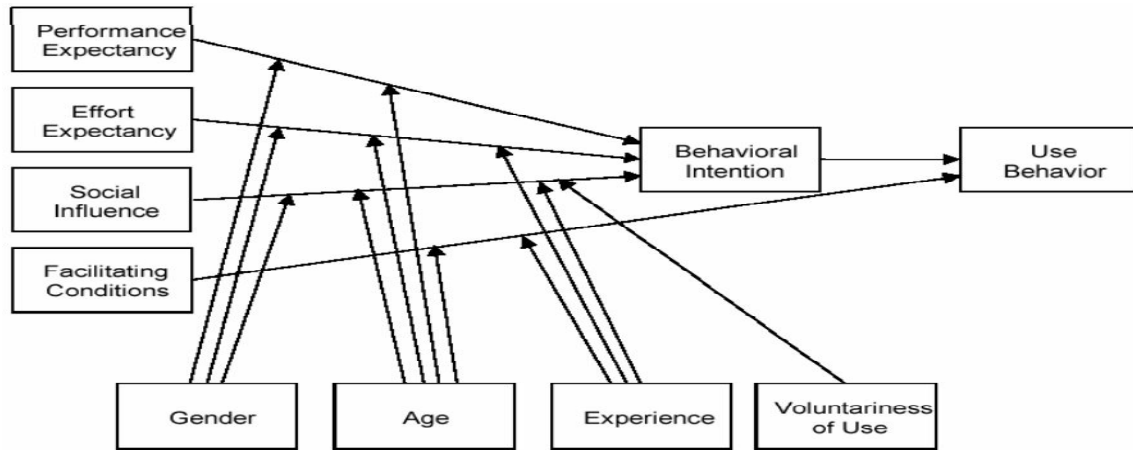


Fig. 1: Unified Theory of Acceptance and Use of Technology (UTAUT) Model
 Source: (Venkatesh *et al*, 2003)

The Proposed Conceptual Framework

A research model based on an adaptation of the (Venkatesh *et al*, 2003) Unified Theory of Acceptance and Use of Technology Model (UTAUT) with four additional factors is proposed in order to examine the factors affecting users' acceptance of e-commerce in Kaduna State, Nigeria. The research

model is designed to test the effects of performance expectancy, effort expectancy, social influence, facilitating conditions, Perceived credibility, Perceived Benefit, Perceived awareness/education, Perceived Benefit on behavioural intention to adopt e-commerce. See the proposed adapted framework in Fig. 2 below.

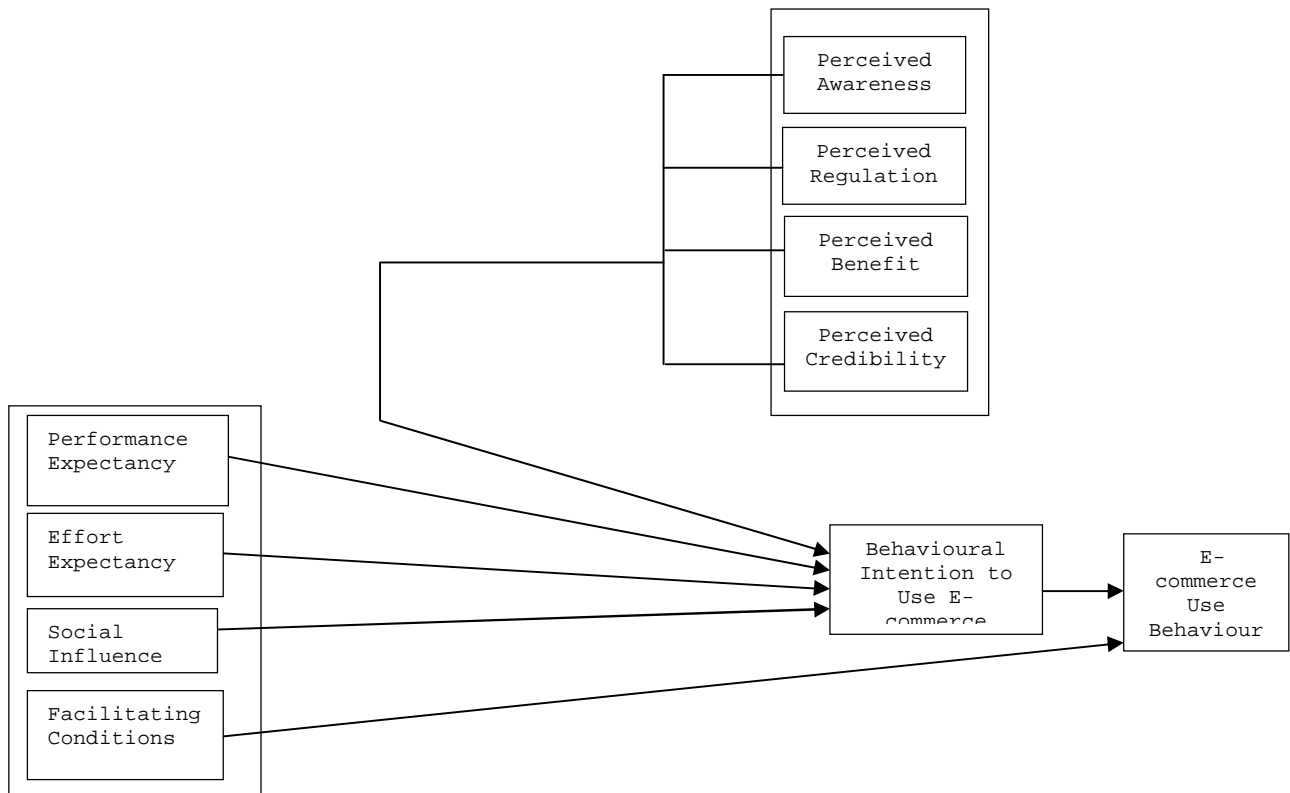


Fig. 2: The Proposed Research framework

METHODOLOGY

The data collection instrument used in this study is the survey questionnaire. The questionnaire was pre-tested by three experts in the academia and four experts involved in e-commerce in Nigeria. We used the pre-test to investigate whether the respondents would have any difficulties with the questionnaires. The experts made a few corrections to the survey instrument and thereafter certified that the questionnaire would be easily understood by respondents.

Our focus in this research is on the customer (the individual who is involved in any buying and selling goods over the internet). Therefore, the set of questionnaires was administered to users of e-commerce in Kaduna State, Nigeria. Kaduna State was chosen because it is located at the centre of Northern Nigeria and has a political significance as the former administrative headquarters of the North during the colonial era (Galleria Media Limited, 2004).

The survey questions were developed based on an adaptation of the instrument developed by Venkatesh, et al (2003). Data was collected from May, 2013 through August, 2013. A total of 150 questionnaires were administered randomly among users of ecommerce in Kaduna State,

Nigeria. The users cut across the aviation, finance, universities, conglomerates, petroleum, IT and private organizations. The organizations within a particular sector were randomly selected but with fair coverage and representation. Out of the 150 questionnaires distributed, 112 of the questionnaires were returned which represents 74.7% of the total number administered. The measurement instrument used the 5 likert scale for individual behavior.

RESULTS AND DISCUSSION

The demographic profile

The demographic profile of the overall participants is presented in Table I. The statistical package for social sciences (SPSS) version 20 was the software used because of its availability, robustness and flexibility in research analysis. The proportion of sex of participants has more males 82 (73.2%) while females are 30 representing 26.8%. Most of the respondents are between the ages 20-29 years (48.2%) and 30-39 years of age (36.6%), have a Bachelor's /HND degree (48.2%) and have a monthly income of N100,000 and above (42.3%). The occupation of respondents distribute amongst public servants (25.7%), business men/women (10.9%), students (16.1%) and civil servants (8.6%) as shown in table I.

Table I: Demographic profile of respondents

		Count	Percentage
Sex of respondents	Male	82	73.2
	Female	30	26.8
	Total	112	100
Age of respondents	16-19	5	4.5
	20-29	54	48.2
	30-39	41	36.6
	40-49	8	7.1
	50 and above	4	3.6
	Total	112	100
	Educational qualification of respondents	Primary	0
Secondary		22	19.6
OND		23	20.5
B.Sc/HND		54	48.2
Masters, Ph.D		13	11.6
Others		0	0
Total		112	100
Occupation of respondents	Student	6	3.4
	Business man/woman	19	10.9
	Civil Servant	15	8.6
	Public Servant	45	25.7
	Lecturer	13	7.4
	IT Professional	7	4
	Unemployed	7	4
	Others	0	0
	Total	112	100
	Income of respondents	Below N10,000	7
N10,000 - N39,999		22	19.8
N40,000-N69,999		23	20.7

N70,000-N99,999	12	10.8
N100,000 and above	47	42.3
Total	111	99

Construct validity, Reliability Test and Adequacy Test

The study presented and analyzed results of content validity, reliability testing, construct validity and adequacy test.

PE6, EE7, FC3, FC6 and PC6 would be deleted since their values were lesser than the benchmark of 0.4 as show in Table 2.

Construct validity

For the construct validity test, in order to test for convergent and discriminant validity of the constructs, factor analysis with varimax rotation was used. To determine the minimum loading necessary to include an item in its respective construct, variables with loading greater than 0.3 were considered significant; loading greater than 0.4, more important; and loadings 0.5 or greater were very significant (Hair, et al, 1998). Hence, this study accepts items with loading of 0.4 or greater. Therefore the items:

Reliability Test

To test the measurement instrument reliability, we use cronbach alpha test. The generally agreed upon lower limit for cronbach's alpha is 0.7 (Robinson, et. al.; 1991), although it may decrease to 0.6 in an exploratory research (Robinson et. al., 1991; Hair et. al., 1998; Dauda et. al., 2007). Nunally (1967) suggested that the score for each construct should be greater than 0.6 for it to be reliable. Thus, a score of 0.6 and above were accepted in this study as shown in table II.

Table II: Results of reliability and Construct validity

Variable	Items	Item loadings	Cronbach α
Performance Expectancy	PE1	.631	.709
	PE2	.766	
	PE3	.768	
	PE4	.757	
	PE5	.496	
	PE6	.358	
Effort Expectancy	EE1	.401	.737
	EE2	.705	
	EE3	.504	
	EE4	.525	
	EE5	.766	
	EE6	.692	
	EE7	.333	
	EE8	.745	
Social Influence	SI1	.668	0.721
	SI2	.797	
	SI3	.601	
	SI4	.721	
	SI5	.642	
Facilitating Condition	FC1	.701	.681
	FC2	.694	
	FC3	.277	
	FC4	.695	
	FC5	.718	
	FC6	.166	
	FC7	.684	
Perceived Credibility	PC1	.362	.710
	PC2	.562	
	PC3	.494	
	PC4	.656	
	PC5	.597	
	PC6	.469	
	PC7	.596	
	PC8	.649	
	PC9	.534	
Perceived Benefits	PB1	.635	.783
	PB2	.751	
	PB3	.790	

	PB4	.699	
	PB5	.778	
	PB6	.504	
Perceived Awareness/Education	PAE1	.574	.732
	PAE2	.589	
	PAE3	.576	
	PAE4	.532	
	PAE5	.468	
	PAE6	.493	
	PAE7	.618	
	PAE8	.646	
	PAE9	.573	
Perceived Regulation	PR1	.611	.644
	PR2	.706	
	PR3	.588	
	PR4	.593	
	PR5	.541	
	PR6	.556	
Behavioural Intention	INT1	.910	.881
	INT2	.935	
	INT3	.853	

Adequacy Test (KMO and Bartlett's Test of Sphericity)

To check the appropriateness of the factor analysis, the Kaiser-Meyer-Olkin (KMO) and Bartlett test were carried out. KMO values larger than 0.5

are considered adequate (Hermana, 2006). All variables are adequate since their values were greater than the 0.5 benchmark. The research variables and their KMO values used are shown in Table III below:

Table III: Kaiser-Meyer-Olkin Measure of Sampling Adequacy and Bartlett's Test of Sphericity

Variable	KMO	Bartlett's Test		
		Approx. Chi-Square	Df	Sig.
Performance Expectancy	.652	172.703	15	.000
Effort Expectancy	.667	284.947	28	.000
Social Influence	.720	106.168	10	.000
Facilitating Condition	.699	154.568	21	.000
Perceived Credibility	.669	191.339	36	.000
Perceived Benefits	.780	190.232	15	.000
Perceived Awareness/Education	.741	262.894	36	.000
Perceived Regulation	.592	229.719	15	.000
Behavioural Intention	.703	195.010	3	.000

Correlation Analysis and Model Summary

Table IV provides a summary of the Spearman correlation analysis used to test the relationships among the constructs. While the proposed model suggests a positive relationship between all constructs and Behavioral Intention, it appears that the data do not support a significant relationship between these concepts. However, significant relationship can be found

between performance expectancy, effort expectancy, facilitating conditions, perceived regulation on behavioural intention to adopt e-commerce. Unfortunately, no significant relationships can be found between social influence, Perceived credibility, Perceived Benefit, Perceived awareness/education with respect to Behavioral Intention.

Table IV: Summary of Hypotheses Testing

Hypothesis	Relationship Tested	Results
H1	Performance Expectancy is positively related to intention toward using e-commerce	Alternative hypothesis is Supported (p<.05)
H2	Effort Expectancy is positively related to intention toward using e-commerce	Alternative hypothesis is Supported (p<.05)
H3	Social Influence is positively related to intention toward using e-commerce	Null hypothesis is Supported (p>.05)

H4	Facilitating Condition is positively related to intention toward using e-commerce	Alternative hypothesis is Supported (p<.05)
H5	Perceived Credibility is positively related to intention toward using e-commerce	Null hypothesis is Supported (p>.05)
H6	Perceived Benefits is positively related to intention toward using e-commerce	Null hypothesis is Supported (p>.05)
H7	Perceived Awareness/Education is positively related to intention toward using e-commerce	Null hypothesis is Supported (p>.05)
H8	Perceived Regulation is positively related to intention toward using e-commerce	Alternative hypothesis is Supported (p<.05)

Model Summary

Table V presents the squared multiple correlations of the various variables in the model. For the "intention to use ecommerce," the value of R2 is

.458, which means the model can explain 46% variations of the "intention to use ecommerce." This is quite reasonable.

Table V: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.677 ^a	.458	.416	1.186	.458	10.900	8	103	.000

CONCLUSION

In this paper, we proposed a framework for defining and describing the adoption of e-commerce using the survey method. This framework will prove important and useful to organizations and individuals that are using or considering using e-commerce. The paper investigated the UTAUT model and proposed an adaptation particularly with regards to the e-commerce in Kaduna State, Nigeria and the need for the integration of Perceived Credibility, Perceived Benefits, Perceived Awareness/Education and Perceived Regulation. Results of reliability test for the model in this study show that all constructs are reliable and adequate. This is indicated by their cronbach-alpha values ranging from 0.644 of Perceived regulation to 0.881 of behavioural intention. These values are higher than the recommended benchmark of 0.6 for reliability of constructs. Also with KMO values ranging from .592 of Perceived Regulation to .780 of Perceived Benefits. The values were greater than 0.5. Validity test shows that the variables: Performance Expectancy, Effort Expectancy, Facilitating condition and perceived credibility have item loadings that are not convergent. The items are PE6, EE7, FC3, FC6 and PC6. These items were dropped since they are below the recommended mark of 0.4. Results of the regression analysis have only 46% supported for the model. This is a reasonable support for the model.

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