



FACTORS INFLUENCING THE ADOPTION OF BUSINESS-TO-CONSUMER ELECTRONIC COMMERCE (B2CEC) IN SOUTHWESTERN NIGERIA

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Abstract

This paper investigated factors influencing the adoption of Business-to-Consumer Electronic Commerce (B2CEC) by consumers in Southwestern Nigeria with a view to improving its adoption. Survey method was employed and primary data were obtained through questionnaire administered face-to-face to 300 consumers. The questionnaire elicited information on the factors influencing the adoption of B2CEC in Southwestern Nigeria such as performance expectancy and effort expectancy among others. The data were subjected to relevant descriptive and inferential statistical analysis. The results, showed using binary logistic regression to test relationships between contingent factors that, performance expectancy and facilitating conditions had the highest significance. This paper concluded that the adoption of B2CEC can be enhanced if merchants and government put in place appropriate technical infrastructures.

Key Words: Electronic Commerce, Technology Adoption, UTAUT

1. INTRODUCTION

The advent of Information and Communications Technology (ICT) has considerable impact on our lives especially in the way business and commercial activities are conducted both locally and globally. B2CEC plays a big role in the synergy of business and ICT by providing a beneficial channel that reduces the cost of transaction (Santarelli and D'Altri, 2003). It has become what organizations pursue, individuals desire and what governments cannot ignore in this 21st century. Recent statistics has predicted that B2CEC sales will increase this year 2016 to reach 1,321.4 million in all the regions of the world combined (eMarketer, 2013) whereas Nigeria have not benefitted from B2CEC (Hajli *et al.*, 2014) due to poor understanding of the drivers of its adoption (Chiemeké *et al.*, 2014). Some studies also emphasized on the limited theoretical and empirical studies in Nigeria on the factors that influence the adoption of B2CEC (Kshetri, 2007; Molla and Licker, 2005; Datta, 2011; Chiemeké and Ewwiekpaefe, 2011). The few that were proposed by Ayo *et al.* (2011) are limited in scope. This paper examined the factors that influence the adoption of B2CEC by consumers in Southwestern Nigeria, which is an unexplored area. In order to achieve the objective of this research, a survey-based research is conducted, using the modified Unified Theory of Acceptance and Use of Technology (UTAUT) model.

2. LITERATURE REVIEW

2.1. Nigeria and Business-to-Consumer Electronic Commerce

Electronic payment products were first introduced in 1996 when the Central bank of Nigeria granted the then All States Trust Bank approval to introduce a closed system electronic purse called ESCA (Ma' Aruf and Abdulkadir, 2012) which paved the way to socio-political, economic and technological development in 1999 (Ayo et al., 2008; Ogunleye *et al.*, 2013). The increasing number of active Internet subscription has reached over 85 million and there has been increase in the percentage contribution of the telecommunications sector to Gross Domestic Product (GDP) (NCC, 2015). The emergence of B2CEC can be traced to year 2012 with the entrance of konga.com and Jumia.com. The Nigerian Online Business Directory stated that there are over 75 B2CEC merchants in Nigeria while Chiejina and Soremekun (2014) concluded that over 105 B2CEC merchants exist in Nigeria. However, most of these merchants are clustered in Southwestern Nigeria in recent times, hence, the choice area for this work.

2.2. Adoption of B2CEC in Nigeria

The many works on B2CEC adoption factors in developing countries have focused largely on South African countries (Molla and Licker, 2005) and more recently, very few on Nigeria in areas such as Kaduna (Chiemeke et al., 2014), and Oyo and Lagos (Ayo et al., 2011). Literature has it that technology adoption in Nigeria is influenced by factors such as poor attitude, and lack of facilitating conditions (Akinuwesi *et al.*, 2013; Oluyinka *et al.*, 2013), Nigerian factors such as cultural/language, trust/security, cost, legal/government regulatory (Chiemeke and Evwiekpaefe, 2011), internal and external factors (Al-hudhaif and Alkubeyyer, 2011), economic and management factors (Uzoka *et al.*, 2007), weak and no-after sale support (Almoussa, 2013), and social networks, managerial capabilities and government commitment factors (Boateng *et al.*, 2011) among others. There is therefore the need to understand and discover through empirical studies the factors that drive the adoption of not just B2CEC but other technologies because this is the only way to maximize the adoption rate so that the technology will not be perceived as useless (Chigona and Licker, 2008).

3. Research Model

The UTAUT model is adapted and used in this work because it combines the various constructs from many theories and models, and was developed for the purpose of examining technology adoption using a more unified approach (Jaradat and Al-Rababaa, 2013). It also provides managers with a useful tool to assess the adoption of a new technology such as B2CEC in Southwestern Nigeria by consumers thereby helping to determine the drivers of its adoption (Venkatesh *et al.*, 2003). The model has four direct constructs of Performance Expectancy (PE), Effort Expectancy (EE), Social and Influence (SI) and Facilitating Conditions (FC) which emerged after series of validation on different technologies by Venkatesh *et al.* (2003) and have been found useful in explaining 70 percent of technology acceptance and usage behaviour thereby underscoring its relevance and choice for this work. Rosen (2005) concluded that the UTAUT model could serve as a benchmark for the technology acceptance literature than other earlier models. Although, the UTAUT model is no longer new, it has been used to validate a lot of studies in technology adoption (e.g. electronic commerce adoption), as shown in Table I. The theoretical boundaries of the UTAUT have further been expanded to incorporate extensions, applications and integrations in the Unified Theory of Acceptance and Use of Technology 2

(UTAUT 2) (Venkatesh *et al.*, 2012). However, the extensions made to the UTAUT2 have not been thoroughly validated. The adapted UTAUT model in Figure I used in this work has four additional constructs in order to investigate the factors influencing the adoption of B2CEC in Southwestern Nigeria from the consumer perspectives. The UTAUT model constructs and the four additional constructs determined from existing literature are summarised in table II.

A review of the existing studies showed that the influence of moderating factors vary depending on the technology being investigated, the setting and the users of the technology (Mohamadali, 2012). The moderating factors of age, gender, experience and voluntariness of use have little influence in intention to use, in the context of this work. Therefore, this work did not particularly set out to investigate the influence of any moderator on the adoption of B2CEC because a lot of studies have already confirmed the significance of these moderators on its adoption.

Table I: UTAUT Model Usage in various Studies

Usage	Details	Research Exploration/ Instrument	Major Influence
Mursalin (2002)	Information System Adoption and Usage: validating UTAUT model for Bangladeshi SMES.	225 SMEs/ Survey	PE,EE, FC
Kholoud (2009)	Applying the use of UTAUT Model in Explaining an Online Behaviour: Internet banking Adoption	UK and Jordan/ Survey	PE
Marchewka et al.(2007)	An Application of the UTAUT Model for Understanding Student Perceptions Using Course management Software	132 Students/ Statistical Analysis	EE and SI
Lin and Xie (2014)	Understanding the Adoption of Third-Party Online payment. An Empirical Study of User Acceptance of Alipay in China	300 Customers/ Statistical Analysis	SI and EE
Oshlyansky et al. (2007)	Validating the UTAUT Tool Cross Culturally	1570 students across cultures	PE,EE,SI, FC
Cruz et al. (2014)	Technology Acceptance and Actual Use with Mobile Learning: First Stage for studying the Influence of learning Styles on the behavioural Intention	500 Subsamples/ Structural Model	
Mandal and McQueen (2012)	Extending UTAUT to Explain Social media Adoption by Microbusiness	Microbusiness with both online and physical outlet/Exploratory study	None
Nisakorn and Thanakorn (2013)	Factors Affecting the Adoption of Healthcare Information Technology	400 healthcare workers/ Structural Equation modelling	SI and FC

4. Research Methodology

4.1 Research Design

The primary objective of this research is to test the model in Figure 1 using its constructs to determine the factors influencing the adoption of B2CEC in Southwestern Nigeria. The study relied on primary data collected through survey questionnaires, administered face-to-face.

4.2 Case of Southwestern Nigeria

This research selected the case of Southwestern Nigeria to investigate the adapted model in order to determine the factors that influence the adoption of B2CEC. The Southwestern part of Nigeria is one of the six geo-political zones of Nigeria and comprises of six of the thirty-six states and the Federal capital Territory (FCT) in Nigeria. The zone is one of the most populated, diverse, civilized, and often regarded as the commercial nerve zone of Nigeria. The zone was considered for an in-depth study and analysis on the subject matter because little or no empirical research had been conducted in the area, another justification for selecting the zone for this work. It was also observed that over 70 percent of B2CEC merchants are operating in the zone. Another important reason is that the authors have a wide understanding of the area based on experiential background making it easier for the collection of data.

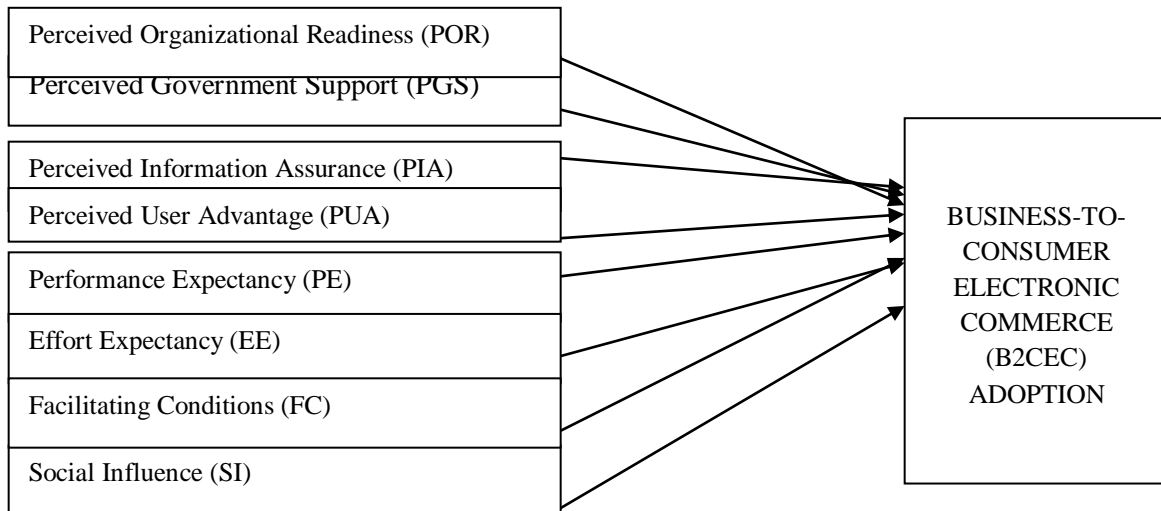


Figure I. Research Model

Table II: Research variables and their Constructs

S/N	Research Variables	Constructs
1	Performance Expectancy	The degree to which a consumer of B2CEC believes that using it will enable him to attain gains (Venkatesh <i>et al.</i> (2003)

2	Effort Expectancy	The degree of ease with which a consumer associates with the use of B2CEC and the efforts that he or she needs to put towards learning how to use it (Venkatesh <i>et al.</i> (2003)
3	Social Influence	The degree to which a consumer perceives that important others such as colleagues, families, friends and peers, etc believe that he or she should use B2CEC (Venkatesh <i>et al.</i> (2003)
4	Facilitating Conditions	The degree to which an individual believes or perceives that a satisfactory level of infrastructure exists to support the use of B2CEC (Venkatesh <i>et al.</i> , 2003).
5	Perceived Organizational Readiness (POR)	the consumers perception of B2CEC merchants' readiness in the assessment of presence, service level and delivery, cost structure, websites aesthetics, financial trust enablers (Hajli <i>et al.</i> , 2014; Al-Somali <i>et al.</i> , 2011; Molla and Licker, 2005; Palacios, 2003)
6	Percieved User Advantage (PUA)	The consumers assessment of competitive pressure amongst B2CEC merchants that may present new challenge of market, price, bargain option, other user gains, loyalty and increasing use (Shaharudin <i>et al.</i> , 2012; Yao <i>et al.</i> , 2013)
7	Perceived Government Support (PGA)	The degree to which a consumer believes that there is government support and regulations to support the adoption of B2CEC such as government promotion and awareness of the technology, provision of enabling environment and the necessary technology infrastructure and frameworks (Alghamdi <i>et al.</i> , 2003; Al-Somali <i>et al.</i> , 2011; Wymer and Regan, 2005).
8	Perceived Information Assurance (PIA)	The degree to which a consumer of B2CEC believes that it can guarantee security, reputation, trust, and data integrity, identity safety and engender willingness(Kim <i>et al.</i> , 2004)

4.3 Participants

This work was conducted in Southwestern Nigeria with the consumers as the main target, and the active age group population from ages 18-50. This is because, in general, they have a crucial impact on the economy and are the faster adopter of technologies. A total of 300 respondents from the six states of the zone were purposively sampled. They were sampled based on the research experience of the authors in the zone which enabled data to be collected more easily.

4.4 Data Collection

The research sampling method made use of purposive sampling and to make sure that the sample was sufficiently representative and data was collected using questionnaire administered face-to-face to 50 consumers in each of the six states in Southwestern Nigeria. The survey questionnaire was pretested by experts in the academia and in the area of B2CEC in Nigeria. During the pre-test, the respondents were observed closely to check for signs indicating problems such as

respondents not understanding or unable to answer, and on the length of the questionnaire and completion time. The experts made few corrections to the survey instrument and certified that it would be easily understood by the respondents. A total of 243 questionnaires were deemed fit for analysis out of the 300 administered. It represented over 81 percent response rate. The questionnaire items in the survey used a five-point Likert scale to measure the data ranging from 1=Indifferent through 3=Disagree to 5=Strongly Agree.

The questionnaire was divided into two sections. The objective of the first section was to provide personal and socio-economic characteristics of the consumers of B2CEC. The second section sought to establish the factors influencing the adoption of B2CEC which considered the measures of variables to be studied such as PE, EE, SI, FC, POR, PUA, PIA, and PGS. The section consists of 39 questions: 4 questions each on PE, EE, SI, FC, POR, PUA, PGS, and Intention-to-Use B2CEC (ITU-B2CEC), 7 questions on PIA. The scales used to measure PE, EE, SI, FC and ITU-B2CEC was adopted from prior studies (Venkatesh *et al.*, 2003). The scales used to measure the other constructs were adapted from relevant literature which confirmed their reliability and validity.

4.5 Reliability

The internal consistency of this work was tested and calculated using Cronbach's alpha which needed to be 0.70 or higher, this research has the value of Cronbach's alpha > 0.70 as shown in Table II, thus indicating an internal consistency that is adequate.

Table III: Reliability Study

Cronbach's Alpha	Number of items
0.787	39

5 Results and Discussion

5.1 Demographic Statistics

The proportion of respondents in this research is 56 percent male and 44 percent female which shows a fairly age distribution. In all, 54 percent of the respondents have a degree, and 32 percent have a postgraduate degree. The average age of the respondents is between the ages 30-39 years bracket. This shows that above 80 percent of the sampled population are learned and are potential users of B2CEC. The monthly income distribution of respondents showed a fairly distributed income with 35 percent earning between 51,000 and 100,000 and more than 20 percent earned above 100,000 which confirms that they have the capability to purchase goods using B2CEC.

5.2 Discussions

The consumers believed that adopting B2CEC enables them to accomplish commercial transactions and business tasks more quickly. The result is further supported by the findings of Ndayizigamiye (2013), Jaradat and Al-Rababaa (2013) and Chiemekwe *et al.* (2014), that PE significantly influences the adoption of B2CEC. Foon and Fah (2011) also in a study on the adoption of internet banking also confirmed that PE significantly influences adoption. The empirical result in Table III shows that consumers find the use of B2CEC easy to do all their buying and selling. This result also showed that EE has significant relationship on adoption

which corresponds to the result of Chiemekwe *et al.* (2014), Lin and Xie (2014), and Lai *et al.*(2009). The inclusion of global influence in SI as a variable is as a result of the global acceptance and recognition that B2CEC has gained in the past decade. The result shows that global influence significantly influences adoption which is in contrast to the findings of Gibbs *et al.* (2003) that a technology is driven by local phenomena. This work confirmed that global influence should be considered and included by researchers and scholars in the measurement of SI on the adoption of B2CEC and other related technologies. Table III shows that the consumers are influenced to adopt B2CEC by people who influence their behaviours and may be as a result of the findings by Chin *et al.* (2009) that a strong relationship exist between trust and SI evident in family influence towards willingness to purchase online.

Consumers believed that they possess the resources necessary to use B2CEC, the required knowledge necessary to use the system, and that the system is compatible with other systems but feel that, human and capital knowledge is not readily available in the event of any difficulty in the adoption of the technology. Similar studies such as Cheung *et al.* (2000) and Widjaja and Tedjawidjaja (2012) opined that FC has significant relationship on the adoption of a similar technology. However, the result negates the studies by Prassarry *et al.* (2015) and Udoka *et al.* (2007) that FC does not have significant effect on the decision to adopt B2CEC.

Consequently, consumers are aware of the security capabilities surrounding B2CEC for carrying out transactions, and are very ready to use debit and credit cards for the same purpose. It is imperative that improving trust factors should be thoroughly considered by the merchants to improve the adoption of B2CEC in Southwestern Nigerian. This study supports the conclusions by Ayo *et al.* (2011) that trust elements need to be improved to engender assurance in order for the adoption of B2CEC by the consumers. With regards to PUA, the result shows that consumers cannot get the best price for any product or service being offered by the B2CEC merchants because they have serious disbelief at being at an advantage getting the best price and deal.

The result in Table IV further provided empirical evidence that consumers perceive that merchants have the necessary infrastructural supports and resources needed at their disposal for the smooth running of B2CEC in Southwestern Nigeria. Consumers believe it is important that government promotes B2CEC and also provide supportive environment for its use. However, consumers are completely ignorant of any government promotion and support towards B2CEC and believed that the failure of government to put in place the right technology infrastructure also impact negatively on the adoption of the technology. The result in Table III shows that consumers intend to use B2CEC anytime they want and are very certain about its continued use.

This work also confirmed that consumers feel that the use of B2CEC as the only medium of carrying out commercial services may not be visible but may serve as the main mode of conducting business transactions and payments. This may be due to the cost of Internet subscription and bad network services delivered by telecommunication providers in Southwestern Nigeria.

Table IV: Table of Adoption of Influence Factors

S/ N o.	Statements Adoption Influence Factors	Level of Agreement (%) [n=243]						
		Strongl y Agree	Agree	Disagre e	Strongl y Disagre e	Indiffere nt	No Respon se	Mea n
	Performance Expectancy							
1	Usefulness	56	159	4	18	18	4	3.97
2	Task Accomplishment	93	121	3	6	14	6	4.15
3	Effectiveness	41	172	3	4	19	4	3.89
4	Quality	23	190	7	23	15	3	3.84
	Effort Expectancy							
1	Clarity	22	165	4	5	40	7	3.53
2	Ability	19	192	3	5	19	5	3.79
3	Learning	22	191	3	5	19	3	3.80
4	Availability	24	186	11	4	15	3	3.83
	Social Influence							
1	Family Influence	31	121	3	39	47	2	3.21
2	Peer Influence	85	135	3	4	13	3	4.15
3	Support and Help	13	44	47	94	37	8	2.58
4	Global Influence	59	163	7	59	8	2	4.08
	Facilitating Condition							
1	Infrastructural resources	27	157	7	2	40	10	3.55
2	Knowledge	50	151	2	5	32	3	3.76
3	Channel	13	171	0	33	29	3	3.72
4	Human Capital	38	119	15	33	25	13	3.49
	Perceived Information Assurance							
1	Security	54	139	14	4	29	3	3.77
2	Willingness	75	124	4	5	32	3	3.85
3	Reputation	42	129	19	6	0	3	3.50
4	Heuristics	37	147	16	8	31	4	3.63
5	Trust	35	118	4	28	52	6	3.24
6	Assurance	68	106	3	34	29	3	3.63
7	Integrity and Identity	62	97	15	27	26	16	3.63
	Perceived User Advantage							

1	Pricing Advantage	38	98	28	39	30	10	3.32
2	User Benefits	31	114	31	8	54	5	3.25
3	Ease/Convenience	25	137	9	5	62	5	3.24
4	Increasing Use	56	121	22	12	27	5	3.70
	Perceived Organizational Readiness							
1	E-readiness	55	116	25	15	26	7	3.67
2	Information	17	148	11	32	32	3	3.36
3	Organizational Infrastructure	56	107	32	16	27	5	3.63
4	Necessary Resources	59	117	23	12	27	5	3.71
	Perceived Government Support							
1	Promotion	87	94	23	12	22	5	3.89
2	Environment	60	117	22	12	27	5	3.72
3	Government Support	35	118	4	28	52	6	3.24
4	Technology Infrastructure	33	90	22	38	29	11	3.26
	Intention-to-Use B2CEC							
1	Everyday Use	27	90	85	12	25	4	3.34
2	Use Intention	59	117	23	12	27	5	3.71
3	Use Prediction	88	97	21	8	24	5	3.91
4	Future Use Planning	83	107	9	3	38	3	3.81

5.3 Binary Logistic Regression of the Relationship between Contingent Factors and the Adoption of B2CEC

Table V shows using binary logistic regression the contingent variables selected from each component that were perceived to have highest correlation from each of the components. Intention-to-Use B2CEC (0.889), PE (0.944) and FC (0.812) were selected from component one, two and three respectively. This was due to the fact that they have the highest explanation to the situation of each component. Binary logistic regression was deployed in order to measure the odds or likelihood of adoption based on PE, FC and intention to use B2CEC. The binary logistic regression tested was carried out at a 0.1% level of significance to know if there is a significant explanation of adoption by the factors: PE, FC and ITU-B2CEC

The result in Table V shows a significant explanation of the adoption of B2CEC by PE ($W= 4.079$; $p<0.1$) and FC ($W=1.312$; $p<0.1$). This shows the importance attached to performance expectancy by the consumers most especially pertaining to their expectation determined by the level of satisfaction to be derived in the adoption of the technology.

Table V: Binary Logistic Regression of Relationship between Contingent Factors and Adoption of Electronic Commerce by Consumers in Southwestern Nigeria.

Factor Variables	B	S.E	Wald	d f	Exp(B *Sig)	90% C.I for EXP(B)	Prob.
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								Lower	Upper
PE	-0.15	0.0	4.08	1	*	0.858	0.4617	0.757	0.972
FC	0.04	0.0	1.31	1	*	1.047	0.5114	0.915	1.197
ITU B2CEC	0.01	0.0	0.03	1	0.85	1.013	0.5032	0.906	1.131
Constant	-0.78	1.8	0.18	1	0.68	0.456	0.3131		

- Sig < 10%

6.0 CONCLUSION

Globalization, market share, gaining competitive advantages, time and space discrimination whilst exploiting and utilizing telecommunications are all but a few of the immense contributions of B2CEC in bringing change to the entire conduct of business activities. However, studies reveal that despite this appeal, adoption of B2CEC is still low among consumers and limited steps have been undertaken to know the drivers of adoption of the technology. The primary focus of this paper is to investigate the broad factors influencing the adoption of B2CEC from the consumers' perspective in the Southwestern Nigerian context. The factors considered from wide literature such as PUA, PGS, PIA, POR, in addition to PE, FC, EE, and SI of the UTAUT model produced a modified UTAUT model that was empirically validated. The modified model has been tested, using data collected through questionnaire and surveys of consumers in Southwestern Nigeria.

The result from binary logistic regression shows that consumers of B2CEC in Southwestern Nigeria are clearly influenced by PE and FC in their adoption of the technology. The consumers in Southwestern Nigeria are influenced towards adopting B2CEC by the accomplishment of tasks, attainment of user gains and the presence of human and capital resources with the assistance and support in the event of difficulties in the use of the technology. This paper empirically established the statistical significance of PE and FC. Consequently, this paper also discovered that in order to have improved and better adoption of the technology in Southwestern Nigeria, the government is advised to provide enabling environment with adequate infrastructures and other facilitating conditions. Government need to participate more in the business of monitoring and supporting B2CEC and its constituent industry as demonstrated. Nonetheless, this work has provided helpful direction for the further exploration of the UTAUT model in the research towards the adoption of ICT and relevant technologies.

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