

# ASSESSING CAUSAL RELATIONSHIP OF E-COMMERCE ADOPTION FACTORS AMONG UNDERGRADUATE STUDENTS OF UNIVERSITY OF LAGOS

Rahim Ajao Ganiyu<sup>1</sup>, Omoera Charles Ighedoise<sup>2</sup> & Sadamoro Festus<sup>3</sup>

<sup>1&2</sup>Department of Business Administration, University of Lagos, Lagos, Nigeria.

<sup>3</sup>Department of Business Education, Ekiti State University, Ekiti State, Nigeria.

Corresponding Author's E-mail: Abdulrahimajao@yahoo.com

## Abstract

*Adoption of e-commerce applications is predisposed by a number of influences that determine its usage. This study investigated causal relationship of e-commerce adoption factors among undergraduate students of University of Lagos. The study used cross-sectional survey research design. The population of the study consisted 31408 fulltime undergraduate students drawn from 12 faculties in University of Lagos. A total of 264 valid responses were obtained from participants recruited through purposive and convenience sampling approach techniques. Questionnaire in closed-ended format was used to collect information from the participants. Eight hypotheses were tested using Pearson's correlation analysis. Results of the analysis revealed that all the eight adoption factors consisting of perceived ease of use, perceived usefulness, perceived enjoyment, perceived site quality, security concern, previous satisfaction experience, shopping habit and trust are positively and significantly related to one another. The correlation value ranged from ( $r=.379$  to  $r=.906$ ,  $p<0.01$ ). The study concluded that the eight adoption factors are pivotal to e-commerce. On the basis of the findings, the study recommended that vendors and information system developer should ensure improvement along these factors to increase usability and by extension user satisfaction of online platform.*

**Keywords:** perceived ease of use, perceived usefulness, previous satisfaction experience, security concern, shopping habit, and trust

## Background to the Study

Electronic commerce is one of the major features of the internet era. The early growth of e-commerce started prior to 1960s, although some of its applications are connected with the innovations that emerged in the 1970s (Solomon & Ajagbe, 2014; Abiso, 2017). In the contemporary era, internet is deliberated not only a networking avenue but also a means of transacting business. Enabled by the internet, e-commerce rapidly spread out to most business settings as companies considered it to be operational in executing business dealings (Nguyen, 2014). Since its recognition in the 1990s, electronic commerce has transformed the way people transact business with

enormous benefits to both the vendors and users. For instance, e-commerce saves time, permits high customization and enables companies to increase service delivery efficiency (Choi & Winston, 2000). According to Grandon and Pearson (2004), e-commerce is a business dealings executed through electronic data system over the internet. Canzer (2005) viewed e-commerce as a business model and descriptive exemplification of the fundamental constituents of a firm that functions partly or totally on the internet. Some examples of e-commerce model include e-shop, brokerage model, content provider model and affiliation model among others.

The e-commerce industry in Nigeria commenced in the mid-nineties with the progressive growth and development of the internet and telecommunications industry (Martin & Ernst, 2003). With the progress recorded in the telecom sector, consumers' become increasingly interested to make use of e-commerce innovation. Electronic commerce, particularly online shopping, is an emergent phenomenon across the world and online shopping is gradually gaining prominence, becoming a buzz that is pervading every form of commercial and marketing activities such as buying/selling, order taking and money transfer among others. Online shopping can be defined as the tasks of searching, buying, selling products and offering services online (Al-Maghrabi, Dennis, Halliday, & Bin, 2011). Shopping online give consumers a much better choice with respect to their desired products and services and offer much more in terms of comfort and convenience, as against traditional market outlets or travelling abroad for shopping purposes (Park, Lee, & Han, 2007). Among the regular and prominent users of e-commerce, is the youth, particularly students. Notwithstanding the restricted usage tendency, students have come to be the major force in the use of e-commerce platform.

According to Liu (2015), if students have formed the habit of shopping online regularly, then they constitute the regular and stable customer group to mobile-commerce adoption. While the use of e-commerce is apparently beneficial not only to students but all strata of consumers' all over the world, both consumers and vendors have also faced a number of complications. For instance, it has been realized that promoting shoppers' intention to use, addressing low literacy level, safeguarding customer satisfaction and ensuring customers' trust of e-commerce platforms is a complicated task (Someswar, Sam, & Sridhar, 2002). In addition, decisions about using innovative technologies such as e-commerce are predisposed by issues such as its relative uniqueness, ease of use, shopping habit, experience, usefulness, subjective norms, security concern and web aesthetics among

others (Rahim, Iyiegbuniwe, Obanla, & Adeleke, 2017; Eliana Luis, Alejandro, & Edgar, 2018). The recently published statistics by The World Economic Forum's Global Information Technology Report in 2018, revealed that Nigeria's inclination to participate in the electronic world is below average and this will impact negatively on adoption of e-commerce.

The growth of e-commerce in Nigeria is phenomenal, but online shopping is not as developed compared to advanced nations of the world (Onifade, 2003; Omotayo, 2018). According to these scholars, many users of online in Nigeria may exhibit tendency of abandoning or repeat use of online shopping after their first attempt due to issue of trust and security concern. Research on e-commerce adoption has largely concentrated on developed nations (Grandon & Pearson, 2004; Mbarika, 2003). E-commerce adoption in developing nations particularly Nigeria has not been adequately researched (Molla & Licker, 2005; Molla & Duncombe, 2006). Due to inadequate research attention on e-commerce activity in Nigeria, it is perhaps wrong to link research findings from the research carried out in developed countries to developing ones (Molla & Duncombe, 2006). Therefore, an understanding how e-commerce adoption patterns in the social and economic settings in which it has not been sufficiently examined is of vital significance to research and business practices (Eliana et al., 2018). From the aforementioned research background, this study seeks to investigate the causal relationship among the dimensions of e-commerce adoption from the perspective of Undergraduate Students of University of Lagos, Nigeria.

## **Literature Review**

This section is categorized into three sub-sections consisting of conceptual clarifications, theoretical framework and empirical review.

## **Conceptual Clarification**

### **E-Commerce: Definition and Adoption Factors**

E-commerce became feasible in 1991 with the explosive growth of internet penetration and telecommunications (E-commerce White Paper, 2008). The term e-commerce is interchangeably denoted to as, e-business, digital marketing, e-marketing, internet marketing, e-shopping and e-retailing (Chaffey, Chadwick-Ellis, Johnson, & Mayer, 2006). As expressed by Lignell (2014), e-commerce describes purchasing or ordering goods or services through the internet for a consumer's individual or household's use. E-

commerce incorporates business-to-consumer, business-to-business, commerce-to-administration customer-to-customer and consumer-to-business commercial transactions (Khoshnampour & Nosrati, 2011). In the opinion of Turban, King, Lee, Warketin, and Chung (2002), e-commerce is the procedure of buying, selling, or exchanging products, services and information through computer networks. Gibbs and Dedrick (2003) defined e-commerce as the use of the internet network to buy, sell, or support products and services.

Howladar, Mohiuddin and Islam (2012) claimed that e-commerce represents the activity of selling and purchasing goods and services online through internet platform often denoted to as e-store. E-commerce, according to Chong (2008) can be viewed as an innovative approach of conducting commercial transactions. Chaffey (2009) defined e-commerce as all form electronically facilitated transactions between the vendor and consumer. Rainer and Cegielski (2011) conceptualized e-commerce as a procedure of buying, selling, transferring, or exchanging of products, services and/or idea through computer networks. Rayport and Bernard (2002) maintained that e-commerce is a system of exchange via technology mediated platform for facilitating commercial exchange. E-Commerce can also be defined as a channel for any form of transaction, comprising offering products and services through the internet to carry out transactions (Barbonis & Laspita, 2005). As reported in a number of previous research, the growing mobility of mobile devices and the universality of mobile networks offer mobile users the opportunity to use m-commerce 24/7 anywhere. As a result, a number of factors influencing e-commerce adoption must be thoroughly investigated (Wu, & Wang, 2005; Doong, Wang, & Shih, 2008; Choon Ling, Bin Daud, Hoi Piew, Keoy, & Hassan, 2011; San-Martin, & Lopez-catalan, 2013; Ping-hao, & Li-qiong, 2017).

In the light of the above, the following hypotheses are formulated:

- i. Perceived usefulness (PUS) has significant influence on consumers' adoption of e-commerce.
- ii. Perceived ease of use (PEU) has significant influence on consumers' adoption of e-commerce.
- iii. Perceived enjoyment (PEJ) has significant influence on consumers' adoption of e-commerce.
- iv. Perceived site quality (PSQ) has significant influence on consumers' adoption of e-commerce.

- v. Security concern (SC) has significant influence on consumers' adoption of e-commerce.
- vi. Previous satisfaction experience (PSE) has significant influence on consumers' adoption of e-commerce.
- vii. Shopping habits (SH) has significant influence on consumers' adoption of e-commerce.
- viii. Perceived Trust (PT) has significant influence on consumers' adoption of e-commerce.

### **Theoretical Framework**

This study is underpinned by the Technology Acceptance Model (TAM). The TAM has been one of the popular theories used to explain the adoption of technological innovation such as electronic commerce. Davis advocated the TAM Model to describe and predict the adoption and use of information technology. The TAM theory is founded on two major predictors: the ease of use and the perception of usefulness of innovation. In the opinion of Park (2009), TAM can explicate user behavior tendency through a diverse range of behavior of end users. Furthermore, the TAM theorized that perceived usefulness and perceived ease of use are two key determinants of technology adoption. TAM suggests that user adoption of new information systems is determined by user's intention to use the system. The TAM theory establishes the foundation for numerous research in information and computer technology context (Davis, 1989). Other scholars have extended the TAM model to embrace supplementary influences that can be link to technology usage (Abad, Itxaso, & Markel, 2010).

### **Empirical Review**

Several studies have demonstrated that the rate of consumer usage or adoption of e-commerce is founded on a number of factors that are both personal and context specific. Study conducted by Purcell, Toland and Huff (2004) recognized critical success factors for e-commerce adoption as: value addition, niche focusing, expansion tendency, flexibility, use of optimal technology, segmentation strategies, adopting the right technology, provision of vital service, efficient connection and understanding of internet usage domain. Dholakia and Kshetri (2004) highlighted internal and external structural influences that may affect the adoption of internet platform, their finding exposed technologies connected to marketing use and perceived competitive burden as a vital element. Al Noor and Arif (2011) study advocated factors such as perceived compatibility, complexity, observability

and uncertainty as pivotal to e-commerce adoption. Research conducted by Rouibah, Lowry and Hwang (2016), presented a model of online shopping that revealed four relevant external influences: individual innovation, propensity to trust, understanding and security concern via third party seals and three endogenous influences: pleasure, risk tendency and trust as determinants of adopting e-commerce. Molla and Licker (2005) investigated factors that influence e-commerce adoption. Results elaborated that knowledge is the most vital issue impacting the adoption of e-commerce. Study carried out by Esmaeilpour, Hoseini, and Jafarpour (2016) revealed that organizational, technical and environmental complications, as well as degree technological advancement impact e-commerce adoption.

Al-Maghrabi et al. (2011) investigated the determining factor of shopper continuance use of online shopping. Their study reported that perceived worth, fun and subjective norms influence e-shopping adoption. Praveena and Thomas (2014) examined the impact of perceived enjoyment in explaining the continual usage of technological devices such as Facebook. The findings show that perceived enjoyment was a strong determining factor and that it influenced attitude more than perceived usefulness and perceived ease of use. Study carried out by Assensoh-Kodua (2014) reported that perceived trust, social norm and user satisfaction are determinants of online shopping. Research carried out by Li (2016) reported that utilitarian values (such as perceived ease of use and perceived usefulness), social values (i.e. satisfaction and trust) and the hedonic value (consisting of perceived enjoyment) directly and indirectly influenced customers' usage of online shopping.

## Research Methods

A survey research design was utilized to elicit information from participants who are under-graduate students of University of Lagos, Nigeria. Using quantitative research approach, data related to the study variables were collected, which tilts the study design towards positivist perspective. The population consisted of 31,408 fulltime undergraduate students of University of Lagos in 2017/2018 session. Leslie (1965) formula was used as presented below:

$$n =$$

A non-probability sampling procedure was used to solicit information from a purposively selected sample of participants across the 12 faculties in University of Lagos. The faculties are: Arts, Basic Medical Sciences, Clinical Sciences, Dental Sciences, Education, Engineering, Environmental Sciences, Law, Management Sciences, Pharmacy, Science, and Social Sciences. Three postgraduate students who are trained prior to the survey assisted in collecting the data. The survey instrument (questionnaires) was administered at strategic centres such as lecture theaters, restaurants, laboratory and common room. The questionnaire items were adapted from previous validated studies and cautiously designed in close ended questions format for easier understanding by the participants. Both validity and reliability assessments was evaluated. Face and content validity was executed by soliciting scholars' opinion. Subsequently, a pilot study was examined to test the reliability of the instrument. The Cronbach Alpha for all the constructs exceeded 0.70, which specified a strong reliability of the instrument (Sekaran, 2003). A 7-point Likert scale was adopted to evaluate the response from "1"= not at all important to "7"= extremely important. Out of the targeted sample size of 589, a total of 257 copies of questionnaires were retrieved, out of which 246 were valid for data analysis. Descriptive statistics such as simple frequency, mean and standard deviation was run to present the descriptive view of the data, while hypotheses was tested using Pearson correlation analysis.

### Test of Hypotheses and Discussion of Results

Table 1: Descriptive Statistics of Study Variables

Adoption Factors of E-commerce	Mean	Standard deviation	Coefficient of Variation (CV)	Ranking
Perceived usefulness (PUS)	3.54	.777	21.95%	1
Perceived ease of use (PEU)	3.45	.718	20.81%	3
Perceived enjoyment (PEJ)	3.37	.840	24.93%	5
Perceived site quality (PSQ)	2.96	.897	30.30%	8
Security concern (SC)	3.35	.894	26.69%	6
Previous satisfaction experience (PSE)	3.50	.766	21.89%	2
Shopping habit (SH)	3.40	.753	22.15%	4
Trust (PT)	3.11	.648	20.84%	7

**Source:** Field Survey, 2019

Table 1 shows the mean scores for all the e-commerce adoption factors ranged from 2.96 to 3.54 and standard deviations ranged from .648 to .897. As depicts in Table 1, coefficient of variation (which is the standardized measure of variability and stability of data set computed manually, revealed that all the data sets for e-commerce adoption factors are stable, with the exception of perceived site quality, which is slightly higher than the standard cut-off (Mojekwu, 2012). The coefficient of variation ranged from 20.81% to 30.30%. To rank the respondents' evaluation of e-commerce adoption factors, the Likert scale was transposed into verbal expression based on the level of importance attached to the e-commerce factors. The verbal descriptions and points awarded are as follows:

Not at all important	=	0 – 1.99
Low importance	=	1 – 2.99
Slightly important	=	2 – 3.99
Neutral	=	3 – 3.99
Moderately important	=	4 – 4.99
Very important	=	5 – 5.99
Extremely important	=	6 – 6.99

The mean value of all the e-commerce adoption factors as evaluated by the participants indicated relatively higher adoption tendency along all the eight dimensions as reflected by the mean values. To examine the casual relationship among the e-commerce adoption factors, Pearson correlation was run. The correlation coefficients (r) values among the eight adoption factors are provided in Table 2 below and they show the strength and relationship among variables.

**Table 2: Correlation Matrix of E-commerce Adoption Factors**

	1	2	3	4	5	6	7	8
PUS	1							
PEU	.447**	1						
PEJ	.431**	.459**	1					
PSQ	.315**	.379**	.589**	1				
SC	.345**	.457**	.555**	.598**	1			
PSE	.863**	.437**	.451**	.383**	.450**	1		
SHB	.441**	.906**	.430**	.403**	.451**	.456**	1	
TRT	.482**	.504**	.826**	.496**	.455**	.462**	.476**	1

\*\* Correlation is significant at the 0.01 level (2-tailed). N= 264

**Source:** Field Survey, 2019



Table 2 shows inter-correlations among the e-commerce adoption factors which exhibit low, to moderate and high positive and statistically significant correlations among themselves (the correlation ranged from .315 to .906 and  $p < 0.01$ ). Specifically, perceived usefulness is connected to other factors as: perceived usefulness and perceived ease of use ( $r = .447$ ,  $p < 0.01$ ), perceived usefulness and perceived enjoyment ( $r = .431$ ,  $p < 0.01$ ), perceived usefulness and perceived site quality ( $r = .315$ ,  $p < 0.01$ ), perceived usefulness and security concern ( $r = .345$ ,  $p < 0.01$ ), perceived usefulness and previous satisfaction experience ( $r = .863$ ,  $p < 0.01$ ), perceived usefulness and shopping habit ( $r = .441$ ,  $p < 0.01$ ), perceived usefulness and trust ( $r = .482$ ,  $p < 0.01$ ). From Table 2, perceived ease of use is linked to other factors as: perceived ease of use and perceived enjoyment ( $r = .459$ ,  $p < 0.01$ ), perceived ease of use and perceived site quality ( $r = .379$ ,  $p < 0.01$ ), perceived ease of use and security concern ( $r = .457$ ,  $p < 0.01$ ), perceived ease of use and previous satisfaction experience ( $r = .437$ ,  $p < 0.01$ ), perceived ease of use and shopping habit ( $r = .906$ ,  $p < 0.01$ ), perceived ease of use and trust ( $r = .504$ ,  $p < 0.01$ ). As depicts in Table 2, perceived enjoyment is related to other factors as: perceived enjoyment and site quality ( $r = .589$ ,  $p < 0.01$ ), perceived enjoyment security concern ( $r = .555$ ,  $p < 0.01$ ), perceived enjoyment and previous satisfaction experience ( $r = .451$ ,  $p < 0.01$ ), perceived enjoyment and shopping habit ( $r = .430$ ,  $p < 0.01$ ), and perceived enjoyment and trust ( $r = .826$ ,  $p < 0.01$ ).

Table 2 also depicts that perceived site quality is associated with other adoption factors as: perceived site quality and security concern ( $r = .598$ ,  $p < 0.01$ ), perceived site quality and previous satisfaction experience ( $r = .383$ ,  $p < 0.01$ ), perceived site quality and shopping habit ( $r = .403$ ,  $p < 0.01$ ), and perceived site quality and trust ( $r = .496$ ,  $p < 0.01$ ). Statistics from Table 2, shows that security concern is connected to other factors as: security concern and previous satisfaction experience ( $r = .450$ ,  $p < 0.01$ ), security concern and shopping habit ( $r = .451$ ,  $p < 0.01$ ), security concern and trust ( $r = .455$ ,  $p < 0.01$ ). From Table 2, the correlation matrix shows that previous satisfaction experience is linked with other adoption factors as: previous satisfaction experience and shopping habit ( $r = .456$ ,  $p < 0.01$ ) and previous satisfaction experience and trust ( $r = .462$ ,  $p < 0.01$ ). As shown in Table 2, shopping habit also demonstrated relationship with trust ( $r = .476$ ,  $p < 0.01$ ).

Findings of this study corroborates a number of studies that highlight the relevance of perceived usefulness (Wangpipatwong, Chutimaskul, & Papasratorn, 2008; Al-Maghrabi et al. 2011), ease of use (Priyanka & Ramya, 2016), enjoyment, (Al-Maghrabi et al. 2011; Li, 2011), perceived site quality (Liang & Lai, 20020), security concern (Pilik & Jurickova, 2016; Aggarwal &

Rahul, 2018), previous satisfaction experience (Lin & Lekhawipat, 2014; Rehman, Mokhtar, Katan, 2016), shopping habit (Pahnila & Warsta, 2010; Lin & Lekhawipat, 2014) and trust (Gefen, Karahanna, & Straub, 2003; Hernandez, Jimenez, & Martin, 2009) as a determinants of e-commerce adoption. The implications from the above findings is that an innovative business service model- e-commerce is developing rapidly at a worldwide scale and its success and potential depend strongly on perceived usefulness, ease of use, perceived enjoyment, site quality, security concern, trust and shopping habit of users. Therefore, the dynamic nature of e-commerce will pose a number of practical and theoretical implications on the adoption and usage behaviors of users. Consequently, an understanding of e-commerce adoption in the social and economic contexts of developing country such as Nigeria is of vital importance to contribute to future research in this area, as well as to offer commercial establishment interested in business transaction through channels different from the traditional ones to enter new markets.

## **Conclusion**

This study investigated the adoption factors of e-commerce in Nigeria with a focus on undergraduate students of University of Lagos. The eight variables (perceived usefulness, perceived ease of use, perceived enjoyment, perceived site quality, security concern, previous satisfaction experience, shopping habit and trust) were found to significantly impact students' adoption of e-commerce. It is generally acknowledged that users would display progressive usage of online shopping if the vendor develop capability usefulness and ease of use that align with user expectations (Davis, 1989). Therefore, the degree of user belief that online shopping is easier to use and do not necessitates additional effort, will likely promote usage. As expressed by Ulaan, Pangemanan, and Lambey (2016), young people are inclined to seek and derive a feeling of liking while engaging in online transactions and it will influence their intention to shop online.

A vendor's site that is also user-friendly and offer easy navigation will offer user with a superior sense of control during shopping experience which in turn creates positive feelings regarding the capability of the vendor. Consumers attach much importance to security concern due to the need to disclose important information such as credit card details, residential/office address and bank information among others. Similarly, previous satisfaction experience is very vital to online shopping, because the more experience the user's is with online shopping and the more satisfied they are with their prior shopping, the more likely they will engage in repeat usage of the platform. In

the same vein, previous satisfaction experience boosts users' perception towards the utility, convenience, which lessen the perceived risk, promote shopping habit and foster trust using online platform. Therefore, an understanding of consumer trust in online context is vital to adoption of e-commerce.

No doubt, progressively growth in the use of internet and telecom devices have created opportunities for numerous innovations such as e-commerce and its growing adoption has dramatically altered both the way companies operate and how consumers engage in shopping. A large numbers of businesses now offer goods and services over the internet and the consequences of e-commerce have created a very intense/ highly competitive market that prompted a rethink on the part of large brick-and-mortar firms to reconfigure their business models with the goal of sustaining their competitiveness (Thulani, Tofara, & Langton, 2010). With e-commerce, companies can gather relevant data about their customers, which can be used for segmentation, targeting and positioning the company brands. The pervasive nature of e-commerce implies that users have access to a vast number of products and services from suppliers around the globe, therefore offering a much wider range of choices in term of suppliers, price, quality and attributes. Equally, the buyers are able to shop and engage in product or service comparison from diverse online stores from the convenience of their homes/office 24/7. Thus, with online shopping, there is no restriction to the market place and this significantly contrasts to traditional commercial transactions where consumers have to visit a marketplace in order to make a purchase.

## **Recommendations**

- i. Core stakeholders such as Web designers, service providers, merchants and application developers must carefully consider user demands, along the seven adoptions factors consisting of perceived usefulness, ease of use, perceived enjoyment, site quality, security concern, trust and shopping habit of users to offer better services that will enhance user satisfaction.
- ii. To improve adoption of e-commerce and user satisfaction, all participants of the e-commerce space should intensify effort to strengthen collaboration, impartially scrutinize user consumption behavior, augment the basic e-commerce layout, improve navigation design and built devices that will enhance safety and security of e-commerce platform.

- iii. Lastly, concerted effort should be made to enhance the speed and efficiency of user feedback to offer complete interaction opportunities to user.

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