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RESEARCH ARTICLE

An Investigative Study of Challenges Facing Nigerian Small and Medium Scale Enterprises in Adoption of E-Commerce Technology

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Abstract

In other developing countries, E-commerce is one of the leading non-oil sectors and it has not been greatly adopted by the SMEs in Nigeria. More Studies in this area are worthy, most especially in the recent time of Technology Development. This study investigates challenges facing Small and Medium Enterprises (SMEs) Adoption of e-commerce technology in Nigeria. It presents quantitative evidence of SMEs perceptions of e-commerce technology, benefits, and barriers. The study was carried out in Lagos state with One thousand (1000) Questionnaires administered and distributed to both staff and owners of the Manufacturing SMEs located in all 20 local government area in lagos state through National Association of SMEs (NASMEs) Lagos branch using stratified random sampling to explore the vital influential factors affecting the adoption of E-commerce Technology (EcT) by SMEs. Descriptive and Inferential statistics such as table, percentage, Chart, multiple regression and ordinary least square regression were employed in the analysis. The result reveal clearly the factors affecting the adoption of EcT by SMEs and the level at which it affects them. The outcome of this study would help management of SMEs to develop effective strategic planning for future business development. It was recommended that an appropriate government policy should be formulated to stimulate the utilisation of e-commerce by SMEs in Nigeria and proper awareness to SMEs owners on the value created by e- commerce adoption.

Keywords: *E-commerce Technology, Small and Medium Enterprises, ICT Adoption, Technology Barriers.*

Introduction

Electronic commerce (E-commerce) is a technological innovation that enables small to medium enterprises (SMEs) to compete on the same level with their larger counterparts. And it has the potential to improve efficiency and productivity in many areas and, therefore, has received significant attention in many countries of the world. A thorough analysis of the impact of the internet and e-commerce across firms, industries and economies is necessary to separate hype from reality. However, several researchers have called for the investigation of the association between the perceptions of e-commerce and the barriers to its adoption in developing countries. It is however on record that SMEs the world over are faced with significant challenges that compromise their ability to function and to contribute optimally to the respective economies where they operate.

Many organizations of all types are currently using Information and Communication Technology (ICT) around the globe, not only for cutting costs and improving efficiency, but also for providing better customer services. Also Governments world over are adopting ICT to provide better services to their citizens. The adoption of ICT by organizations requires a business environment that encourages open competition, trust and security, interoperability, and standardization and the availability of finance for ICT [1]. The effective use of ICT remains at central stage in facilitating the change and growth of enterprises. Many small and medium

enterprises (SMEs) consider the creative use of ICT as a key enabler to their development [2].

SMEs can benefit either as producers of ICT or as users of ICT for purposes such as increased productivity, faster communications and reaching new clients. However it must be noted at the outset that not all SMEs need to adopt ICT tools to the same degree of sophistication. The most basic ICT tool is having communication capabilities through fixed lines or mobile phones, whichever is more cost effective. SMEs may then use a personal computer (PC) with basic software for simple information processing needs such as producing text or keeping track of accounting items. Internet access enables SMEs to have advanced communication capabilities such as email, web browsing and launching a website. SMEs in manufacturing can benefit from more advanced ICT tools such as Enterprise Resource Planning (ERP) or inventory management. This study remain germane by exploring factors influencing Adoption of e-commerce technology by small and medium enterprises in Nigeria.

Statement of Problem

In developing country such as Nigeria SMEs are seen as a driven engine of growth through job creation and competitiveness in global markets. In other to achieve full potential in these area Nigeria SMEs need to catch up with new trend in business. More Studies on challenges facing Small and medium enterprises in adopting e-commerce technology are worthy in Nigeria due to recent technology development. The factors influencing e- commerce adoption by SMEs has not been greatly explored in Nigeria. Studies in Nigeria focus more on Appraisal of Information Technology and few on Factors affecting ECT Adoption and Usage in SMEs [3-5]. This is because Information Technology is gaining wider acceptance in other sectors in Nigeria such as Banks, Insurance and others. This paper aim to examine factor influencing E-commerce technology Adoption from the perspective of Manufacturing SMEs.

Research Questions

The following research questions were answered in the course of this research;

- What is the relative contribution of each of the highlighted variables to the prediction of adoption of ICT in SMEs in Nigeria?
- What is the joint contribution of these variables to the adoption of Information and Communication Technology (ICT) in SMEs in Nigeria?
- What are the Challenges Facing SMEs in Adopting E- commerce Technology in Nigeria?

Research Hypotheses

H_{01}: The identified external variables jointly contribute significantly to the adoption of ICT in SMEs in Nigeria.
H_{02}: The identified internal variables jointly contribute significantly to the adoption of ICT in SMEs in Nigeria.

Literature Review and Conceptual Framework

A well-articulated e-commerce within an organisation often facilitates growth and expansion as stressed by Harindranath, et al. [6]. Ihua [7] however, stated that the application and use of e-commerce in developing countries can lead to substantial savings in communication costs, marketing, advertising, as well as production processes and the delivery of goods and services to various parts of the globe.

Mpofu and Watkins-Mathys [8], sees e-commerce as responses to the changing environment due to changing tastes and new types of customers who are now demanding quality and the new sets of value propositions of what these customers want, when they want it and how they want it as well as the cost they are ready to pay. In addition, other reasons for e-commerce adoption include but not limited to:

Access to extensive online information – this, according to Arikpo et al. [9] gives customer access to large amount of information based on which decisions can be made.

Price comparison-Kapurubandara [10] stressed that the online market place has presented a stiff competition among sellers and there is always a war on price – this however, gives the consumers opportunity to make wide range of choices.

Time savings-working parents can conveniently combine their work schedule and shopping with ease.

Online delivery-purchases are delivered with ease on the online channel such as e-tickets, e-books, etc. Olusegun, et al., [11] also stressed that the whole commercial cycle can be conducted via a network-providing instant access to products.

Convenience and accessibility: this means a customer can shop anytime from anywhere in the world and this singular benefit is often the most cited reason for e-commerce adoption.

Despite these benefits, several empirical researches on e-commerce which directly relates to barriers have been widely written in various countries of the world. MacGregor [12], in their research on SMEs within the European Union stressed that consumers' who are motivated by convenience are more likely to indulge in online purchases. However, MacGregor and Vrazalio [12] found attitude and perceived usefulness as predictors of the usage of the web for retail usage between Australia and Indonesia. Comparative analysis of these findings shows that education and channel knowledge plays key role in the Zimbabwe but same was not the case in Europe, rather it bothered on motivation.

Barriers to E-Commerce Adoption

E-readiness can be classified as one barrier that houses all other barriers to EcT adoption in developing countries and especially Nigeria Uzoka et al. [13]. The barriers to utilisation and adoption of EcT in SMEs can be broadly classified as internal and external; Kapurubandara and Lawson [10]. Internal barriers are those that exist within an organisation and can also be resolved within the organisation. They typically include lack of top management support, technical know-how, inadequate human resources, insufficient innovation, management and organisation structure and lack of budget incorporation. The external barriers are those that lie outside the immediate control of the organisation. These include customer resistance to ICT adoption, illiteracy, insecurity, poor network services from service provider, ambiguity, cost, government policy, ICT infrastructure, and customer resistance to change. It has been suggested that in order for these to be overcome SMEs need to work collaboratively Kapurubandara and Lawson [10]. Hence, there is a need for both the managers and the employees to undergo some form of training in order to be aware of the vast changing nature of EcT and to find the most suitable solution for the organisation [2]. However, many managers fear that they will lose their employees to other organisations after investing in training [14].

There are three main reasons for the slow rate of adoption and unsuccessful implementation of EcT in SMEs. The first is that the management of the firms are not clear about how and why their firms should adopt EcT in the first place Modimogale and Kroeze [15]. Managers of most SMEs do not understand the relationship between EcT. Finally, the ever-changing EcT environment requires regular update and training to remain abreast of developments and opportunities [15].

The attitude of management in an organisation plays a crucial role in the adoption of EcT as in most cases in SMEs the managers are the owners [16]. If the management is not disposed to EcT adoption and utilisation, then SMEs will not be able to use EcT [17]. The manager/owner's weakness therefore becomes a limitation of the business [15].

Secondly, managers' perceptions of security and reliability significantly inhibit EcT adoption. These range from the fear of computer viruses, to the theft of money during electronic transactions, and data theft [14]. The perceived potential of hackers gaining access to people's information and the level of fraud is one of the major barriers to EcT adoption in Nigeria.

Thirdly, most SMEs do not have the capability to expand their IT resources due to limited access to capital (Golding et al. 2008). This is a common factor that affects the adoption of EcT in SMEs Arendt [14]; Mpofu and Watkins-Mathys [8].

Also most SMEs in Nigeria do not have access to bank loans or funding to support the development of EcT in their businesses due to lack of adequate collateral and high interest rate. Olusegun et al. [11]. Abor and Quartey [18].Poor infrastructure is also a problem that affects the adoption of EcT. The lack of internet access is recognised as a barrier to the adoption of EcT in Nigerian SMEs. It cannot be claimed that Nigeria completely lacks the necessary infrastructure, but it can be argued that the infrastructure is in a poor condition Oshikoya and Hussain [19]. The unstable nature of electricity supply in Nigeria is one of the factors affecting the adoption of EcT: EcT works hand-in-hand with stable sources of electricity supply Apulu and Latham [16]. In fact, it can be argued to be the most discouraging factor of EcT adoption by SMEs in the country as a whole Akpan-Obong [17]. Setting up the required infrastructure is expensive and requires significant funding Akpan-Obong [17]; Arikpo et al. [9]. Some individuals in the country have actually taken it upon themselves to acquire and set up the necessary infrastructure needed to run their organisation and to better serve their customers Ashrafi and Murtaza [20].

This paper however, aims at investigating the factors that affect e-commerce adoption by small and medium enterprises in manufacturing industries in South-Western Nigeria. A variety of internal and external factors have been identified as preventing many SMEs from adopting EcT. The study will provides more in-depth information about the reasons why local SMEs are reluctant to adopt EcT for their business activities. Identifying the major reasons may help the industry and government to provide appropriate information and support thus, enhance EcT usage.

Methodology

The study was carried out in lagos state, south west, Nigeria. A survey method was used for the purpose of the study. The target population was SMEs that are located in all the 20 local government in lagos state. The study made use of 1000 Small and Medium Enterprises located in 20 Local Government Areas (LGA) of Lagos state.

The stratified random sampling technique was employed and questionnaire was structured on a two-point and five-point Likert rating scale for EcT adoption and factors hindering the adoption of EcT respectively was administered to the owner or member of staff that can provide useful information. SPSS.17 was employed for analysis in this study in which the descriptive statistics such as table, percentages and bar chart were used for the EcT adoption by SMEs. The modelling framework was adopted in the investigation in which Multiple Regression analysis and Ordinary Least Square Dummy Variabe (OLSDV) technique was adopted, since the response variable and respondents are discrete and categorical in nature.

Model Specification

Based on the literature discussed above, the research model illustrated in Fig. 1 and 2 for this study consists of nine (9) set of variables each of internal and external factors. These variables are hypothesized to evaluate the effect of factors the hindering the adoption of EcT in SMEs.

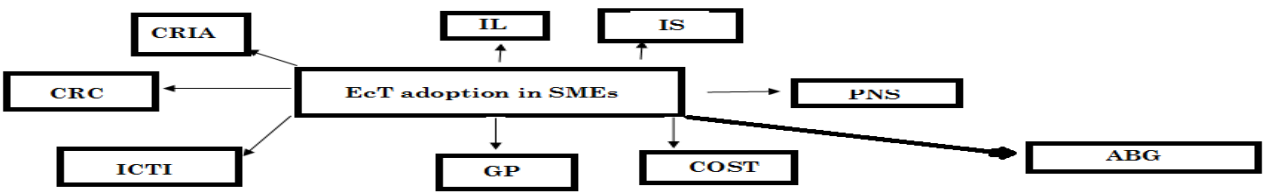

Fig. 1: The model of external factors on EcT Adoption in SMEs.

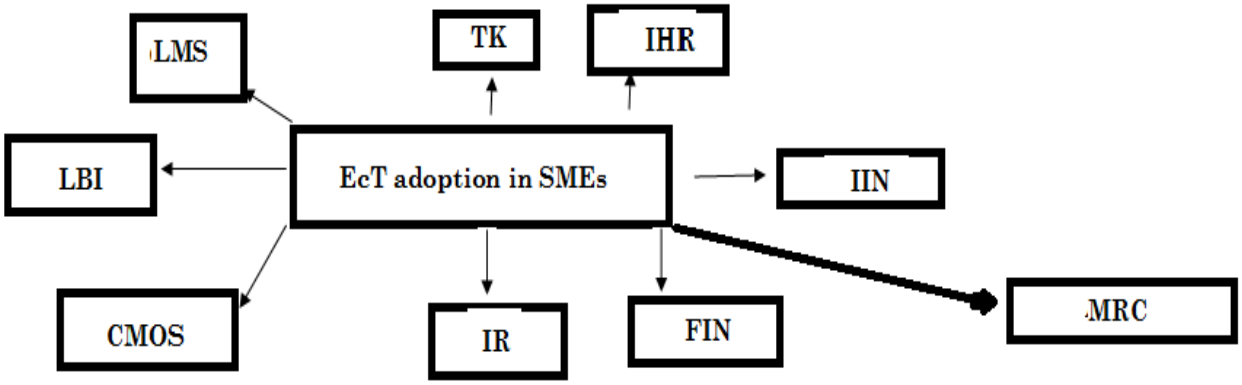

Fig. 2: The model of internal factors on EcT Adoption in SMEs

Keys: *CRIA=Customer Resistance to ICT adoption, IL= Illiteracy, IS=Insecurity, PNS=Poor network service from service provider, ABG=Ambiguity, COST=Cost, GP=Government Policy, ICTI=ICT Infrastructure, CRC= Customer resistance to change, LMS=Lack of top management support, TK=Technical Know-how, IHR=Inadequate Human Resources, IIN=Insufficient innovation, MRC=Management resistance to change, FIN=Finance, IR=In availability of resources, CMOS=Changes in management and organization structure, LBI=Lack of budget incorporation.*

OLSDV Regression was used to analyse the data because of its efficiency as a statistical technique in which the outcomes are not dichotomous alone and is related to a set of explanatory variables that are hypothesized to influence the outcome.

Data Analysis and Results

1000 copies of questionnaire were administered to SMEs in 20 local government areas in Lagos state 50 each. Given the lengthened and compressive nature of the survey, the response rate was concluded to be reasonable. Data were entered and processed using the Statistical Package for Social Science (SPSS.17) software. Descriptive information for the characteristics of the sample was summarized in Tables 1.

Table1: Respondent frequency and percentage

Item No	E-commerce resources adopted	Yes (Utilised)	No (Not Utilised)
1	Does your company make use of e -advertising?	491 (49.1)*	509 (50.9)
2	Does your company adopt e-customer support service?	495 (49.5)	505 (50.5)
3	Does your company adopt e-Marketing?	500 (50.0)	500 (50.0)
4	Does your company operate e- payment system?	211 (21.1)	789 (78.9)
5	Does your company electronically Order and Deliver?	503 (50.3)	497 (49.7)
6.	Does your company make use of ATM?	502 (50.2)	498 (49.8)
7	Does your company make use of E-transaction	556 (55.6)	444 (44.4)

Source: Computations and Output of SPSS17 based on Authors' Field Survey(2015).*Percentages (%) in Bracket.

From the table1, it is shown that approximately half of SMEs visited adopted the use of e-advertisement 49.1%. Likewise, the adoption of e-commerce support services, e-marketing, e-order and delivery and the use of ATM are of average; 49.5%, 50%,5 0.2% and49.8% respectively. Conversely, the e-payment system of Point of Sales (PoS) is not well and popularly adopted 21.1%. Even, where available it is not optimally put to use.

Surprisingly, about 55.6% of SMEs interviewed adopted the use of e-transaction. However, the above information are depicted graphically with the aid of bar-chart as shown in fig.3

Bar -charts

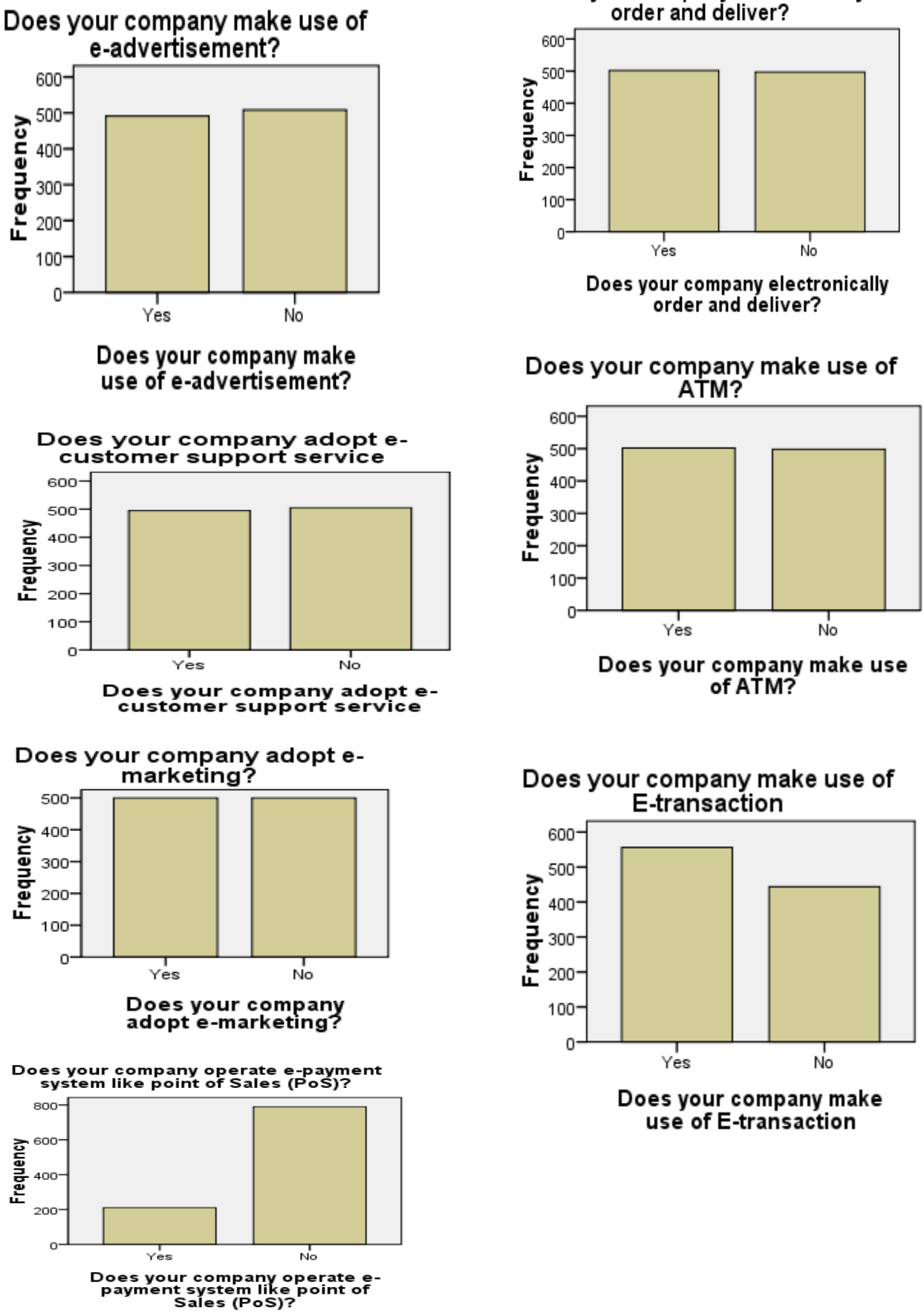

Fig.3: LSDV Regression model of SMEs adoption of e-commerce on external factors hindering the use of e-commerce.

Hypothesis 1 H_{01}: The identified external variables jointly contribute significantly to the adoption of ICT in SMEs in Nigeria.

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	1.791	.046		38.730	.000
	Customer Resistance to ICT adoption	.003	.025	.006	.137	.891
	Illetracy	-.157	.048	-.195	-3.289	.001
	Insecurity	.010	.050	.012	.198	.843
	Poor network service from service provider	.057	.053	.069	1.069	.285
	Ambiguity	-.031	.040	-.043	-.792	.429
	Cost	-.059	.044	-.074	-1.327	.185
	Government Policy	-.009	.039	-.013	-.242	.809
	ICT Infrasructure	.093	.045	.117	2.061	.033
	Customer Resistance to change	-.092	.033	-.131	-2.777	.004

Source: Computations and Output of SPSS17 based on Authors' Field Survey (2015).
a. Dependent Variable: SMEs adoption of e-commerce. **R-square=0.152**

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	14.775	9	1.642	6.909	.000[a]
	Residual	235.225	990	.238		
	Total	250.000	999			

Source: Computations and Output of SPSS17 based on Authors' Field Survey (2015).
a. Predictors: (Constant), Customer Resistance to change, Illetracy, Customer Resistance to ICT adoption, Ambiguity, Government Policy, ICT Infrasructure, Cost, Insecurity, Poor network service from service provider

b. Dependent Variable: SMEs adoption of e-commerce

Interpretation

The result of **(Table1a)** reveal that R-square is 0.152 meaning that only 15.2% of the identified external factors significantly accounted for the adoption of e-commerce by the SMEs which according to the test of significant at α =0.05, illiteracy (0.001), ICT infrastructure (0.003) and customer resistance to change (0.004) are significantly contribute to EcT adoption. Moreover, the ANOVA test**(Table1b)** F= 6.909 (P-value = 0.000) reports that the model is fit for prediction. Therefore null hypothesis is accepted and conclude that the identified external variables jointly contribute significantly to the adoption of e-commerce by SMEs in Nigeria.

LSDV Regression Model of SMEs Adoption of E-Commerce on Internal Factors Hindering the Use of E-Commerce.

Hypothesis 2

H_{01}: The identified external variables jointly contribute significantly to the adoption of ICT in SMEs in Nigeria.

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	1.767	.046		38.677	.000
	Lack of top managment support	.061	.033	.094	1.851	.034
	Technical Know-how	.017	.052	.021	.321	.748
	Inadequate Human Resourses	-.027	.035	-.039	-.789	.431
	Insufficient innovation	-.077	.028	-.121	-2.706	.007
	Management resistance to change	-.025	.033	-.041	-.766	.444
	Finance	-.093	.056	-.111	-1.653	.039
	Inavailability of resources	-.003	.046	-.003	-.056	.955
	Changes in management and organization structure	-.059	.036	-.090	-1.650	.029
	Lack of budget incorporation	.042	.045	.054	.918	.359

Source: Computations and Output of SPSS17 based on Authors' Field Survey (2015).
a. Dependent Variable: SMEs adoption of e-marketing **R square = 0.335**

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	12.235	9	1.359	5.660	.000[a]
	Residual	237.765	990	.240		
	Total	250.000	999			

Source: Computations and Output of SPSS17 based on Authors' Field Survey (2015).
a. Predictors: (Constant), Lack of budget incorporation, Insufficient innovation, Inadequate Human Resourses, Management resistance to change, Lack of top managment support, Inavailability of resources, Changes in management and organization structure, Technical Know-how, Finance

b. Dependent Variable: SMEs adoption of e-marketing

Interpretation

According to result in **Table2a**, the R-square is 0.335 meaning that only 33.5% of the identified internal factors significantly accounted for the adoption of e-commerce by the SMEs. Lack of top management support (0.034), insufficient innovation (0.007), finance (0.039) and changes in management and organisation structure (0.029) are significantly contribute to EcT adoption α =0.05. Moreover, the ANOVA test (**Table2b**) F= 5.660 (P-value= 0.000) reports that the model is fit for prediction. Therefore null hypothesis is accepted and conclude that the identified external variables jointly contribute significantly to the adoption of ICT in SMEs in Nigeria.

Conclusion

The primary purpose of this study is to identify the most important factors that affect the adoption of Information and Communication Technology in Small and Medium Enterprises in Nigeria. This research was empirically evaluated using data from 1000 SMEs located in 20 LGA of Lagos state. The status of the utilisation of e-commerce among SMEs in Nigeria is low as the utilisation of e-commerce by SMEs in Lagos metropolis is at the basic and growing level as they only highly utilised the

rudiments of e-commerce resources (e-mail and www) in marketing their industrial products. The problems inhibiting the full utilisation are enormous but some are significant and serious as inferred from this research, they are illiteracy, ICT infrastructure, customer resistance to change, lack of top management support, insufficient innovation, finance and changes in management and organisation structure. The small categories of the SMEs are mostly affected by the problems [21-23].

Recommendations

Based on the findings made and conclusions drawn, the following recommendations were made:

- SMEs in Lagos metropolis and other part of Nigeria should fully integrate e-commerce resources into their marketing strategy in marketing industrial products, through the utilisation of other e-commerce resources other than the e-mail and World Wide Web (WWW). This could be achieved by designing and hosting a comprehensive website that incorporate order processing, e-procurement, and e-payment, among others.
- SMEs in Nigeria should embark on e-commerce capacity building to ensure better understanding of e-commerce and the operations in marketing industrial products. This could be achieved by collaborative efforts with the relevant educational institutions, government agencies and consultants through the organisation of seminars, workshops, conferences and training programmes for both the management and the staff of the concerns.
- SMEs in Nigeria should adopt e-commerce resources as a marketing strategy in order to satisfy the demands of their customers and to keep pace with the current global marketing.
- SMEs in Nigeria should exploit the full benefits of e-commerce by establishing Enterprise Portal for SMEs to serve their e-commerce marketing demands. This would reduce the cost of establishing portals on individual basis.
- The Federal Ministry of Commerce and Industry should create an enabling e-commerce environment for the SMEs. This could be done by recommending to the government for the formulation of appropriate e-commerce policy for SMEs which would ultimately lead to the enactment of a law governing the utilisation of e-commerce.

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