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Deployment of Information Communication Technologies (ICT) and the Performance of Small and Medium Retail Stores in Sango-Ota Area of Ogun State, Nigeria

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Abstract

The purpose of this study is to gain an understanding of the factors which influence the adoption and usage of ICT by retail SMEs in Nigeria. It therefore examined the effect of ICT deployment on three main performance indicators which are sales, productivity, and inventory management. The study population consisted of employees and customers of retail stores in the study area whose actual number cannot be ascertained. A sample size of 160 (one hundred and sixty) respondents was selected. The research instrument was the questionnaire and the analytical techniques included both descriptive and inferential statistics. The results of this study show that the factors examined are significantly important to the deployment of ICT. The individual contributions of the ICT factors to changes in the performance indicators studied are: $\beta = 0.002$, $t=0.016$, $P<0.05$; $\beta = -0.199$, $t= 1.379$, $P<0.05$; $\beta = 0.081$, $t=0.562$, $P<0.05$; $\beta = 0.155$, $t=1.117$, $P<0.05$; and $\beta = 0.173$, $t=1.135$, $P<0.05$ respectively. This implies that all the five independent variables have significant impact on inventory management performance. However, some of the components of ICT deployment were found to be insignificant in determining their adoption. The study concluded that majority of retail stores have limited usage of ICT in business activities. This may be caused by internal and external factors. Those SMEs who are interested in promoting their businesses based on ICT may find these results helpful in guiding their efforts. The study recommends that the information communication technology trends should be complemented by delivering on what customers truly want and value by not only listening to what customers say, but also by analyzing their purchase behavior.

Keywords

Information Communication Technologies, Small and Medium Retail Stores, Sales Performance, Customer Patronage, Organizational Performance, ICT Deployment

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1. Introduction

One of the sectors of the Nigerian economy that is fast growing and contributing significantly to the growth of the economy is the service sector. And by extension, retail business is one of the major sub-sectors of the service industry that is also currently experiencing growth in Nigeria. Although traditional retail business is old in Nigeria, there is a new vigour in the industry with the entry of big players such as Shoprite, The Game, etc. As opined by Ajomole (2015), these stores spring up regularly in different parts of Nigeria especially the Lagos metropolis which many regard as the nation's commercial nerve-centre. They have equally

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spread to almost every state in Nigeria including Ogun which is unarguably most contiguous to Lagos.

One of the reasons for this upsurge, as Ajomole (2015) further asserted, is the growing population of the nation, coupled with the fact that more people are better educated and there is an increased awareness especially regarding information communication technology (ICT) and the use of the internet. The shift towards dependence on technology, and the rapid advancement of information technology was a game changer for SMEs, particularly retail stores, since it had the potential of helping to level the competition between firms that operate at different levels and sizes. This is also because technology provides a platform to compete, survive and grow, based on knowledge resources rather than physical resources. On the bases of this, scholars have proposed models based on "knowledge-led growth, knowledge-centered organizations and knowledge-supply to enable companies to thrive in this novel economic environment". (Talukder, 2011). Talukder, Harris, and Mapunda (2008) opine that information technology (IT) can help organizations build the requisite memory and knowledge to withstand any challenge in the business environment at any given time. As such, Information and Communication Technology (ICT) is widely considered to be a key factor in improving organizational performance.

It is therefore safe to suggest that the advent of internet and other information and communication technologies have played significant roles in changing how SMEs perform their businesses even in a developing economy like Nigeria, where Small and Medium Enterprises (SMEs) like retail stores can and do play significant roles in the development and advancement of the socio-economic environment of the country.

In today's globalized and fiercely competitive business environment, technological changes and deployment have become a norm. The development and deployment of ICT by small and medium retail stores is a critical factor that can help them compete and overcome challenges in both the local and the ever-changing and fiercely competitive global markets. Unfortunately however, only a fraction of the retail SMEs in developing economies like Nigeria are well positioned and equipped to develop, adopt and deploy necessary ICT infrastructure that enables them serve their ever-growing clients (Caniels & Romijn, 2003), and the understanding of how to develop or adopt and deploy ICT is still very much inadequate among these SME retail stores, save a marginal few.

Also, in spite of the tremendous benefits inherent in the use of Information and Communication Technology to improve retail SMEs' performance, a number of authors (Kuteyi, 2009) report that Africa has one of the lowest deployment rates when compared with developed countries. Besides, scholars have also found that despite the huge growth rate of IT within SMEs, the rate of ICT deployment by retail firms has remained relatively low when compared with their overseas counterparts, in addition to the fact that large organizations have largely profited in both IT-enabled improved sales and costs savings more than SMEs.

More specifically to the sector under investigation, it has been observed that so many small and medium retail businesses in Nigeria today do not grow beyond their territories in terms of coverage and do not survive for long because of stability and sustainability issues. One of the good examples of the roles of ICT in service enhancement within the sector is the recent introduction of the cashless policy by the Federal government. Following the introduction of the policy, shoppers now purchase goods at the counter via point of sales (POS) terminals which are available at most major retail stores in the urban centres across Nigeria, aimed at making shopping a convenient and smooth experience (Ajomole, 2015). The problem with the deployment of this latest technology however, is the hassle often associated with debiting and crediting the relevant accounts via the POS terminals. Most times when this problem occurs, internet connectivity is often the culprit. The main objective of this study therefore is to evaluate the impact of technology deployment on the performance of retail stores in Sango-Ota area of Ogun state.

2. Theoretical Framework

The theoretical framework that is adopted for this research is Technology, Organization and Environment (TOE) theory, based on some of the well established theories including Diffusion of Innovation (DOI) theory, Institutional Theory (IT), and Electronic Data Interchange (EDI) theory. The theory was selected for review based on the fact that it operate at the organizational level as against others that operate at the individual level such as the Theory of Reasoned Action (TRA), the Technology Acceptance Model (TAM) and the Unified Theory of Acceptance and Use of Technology (UTAUT) model.

2.1. Technology, Organization, and Environment (TOE) Theory

The TOE theory was developed by Tornatzky and Fleischer (1990). It identifies three aspects of an enterprise's context that influence the process by which it adopts and implements a technological innovation namely: technological context, organizational context, and environmental context (see Figure 1 below).

(a) *Technological context* describes both the internal and external technologies relevant to the firm. This includes current practices and equipment internal to the firm (Starbuck, 1976), as well as the set of available technologies external to the firm (Thompson, 1967, Khandwalla, 1970).

(b) *Organizational context* refers to descriptive measures about the organization such as scope, size, and managerial structure.

(c) *Environmental context* is the arena in which a firm conducts its business—its industry, competitors, and dealings with the government (Tornatzky & Fleischer, 1990).

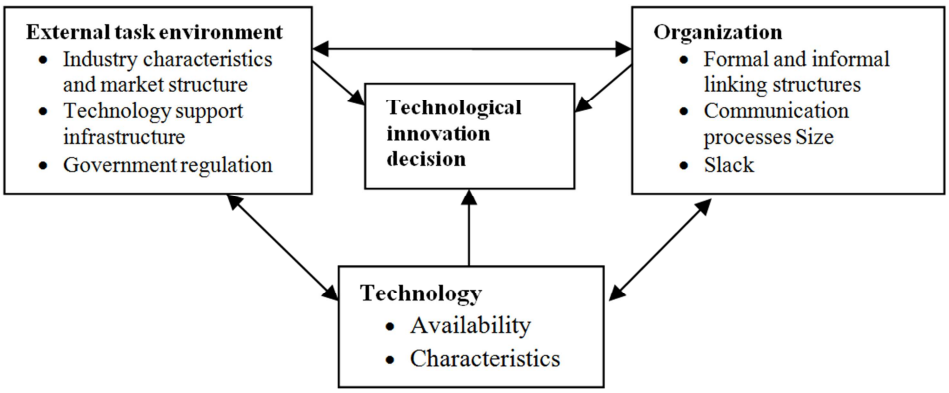

Figure 1. Technology, organization, and environment framework (Tornatzky& Fleischer, 1990).

The TOE framework as originally presented, and later adapted in IT deployment studies, provides a useful analytical framework that can be used for studying the deployment and assimilation of different types of IT innovation. The TOE framework has a solid theoretical basis, consistent empirical support and the potential of application to IS innovation domains, though specific factors identified within the three contexts may vary across different studies.

This framework is consistent with the DOI theory, in which Rogers (1995) emphasized individual characteristics, and both the internal and external characteristics of the organization, as drivers for organizational innovativeness. These are identical to the technology and organization context of the TOE framework, but the TOE framework also includes a new and important component, environment context. The environment context presents both constraints and opportunities for technological innovation. The TOE framework makes Rogers' innovation diffusion theory better able to explain intra-firm innovation diffusion (Hsu, Kraemer, & Dunkle, 2006).

2.2. Electronic Data Interchange (EDI) Theory

Iacovou, Benbasat, and Dexter (1995) analysed inter-organizational systems (IOSs) characteristics that influence firms to adopt IT innovations in the context of EDI deployment. Their framework is well suited to explain the deployment of an IOS. It is based on three factors: perceived benefits, organizational readiness, and external pressure (see Figure 2 below). Perceived benefits is a different factor from the TOE framework, whereas organizational readiness is a combination of the technology and organization context of the TOE framework. Hence, IT resources is similar to technology context and financial resources is similar to organizational context. The external pressure in the Iacovou *et al.* (1995) model adds the trading partners to the external task environmental context of the TOE framework as a critical role of IOSs deployments.

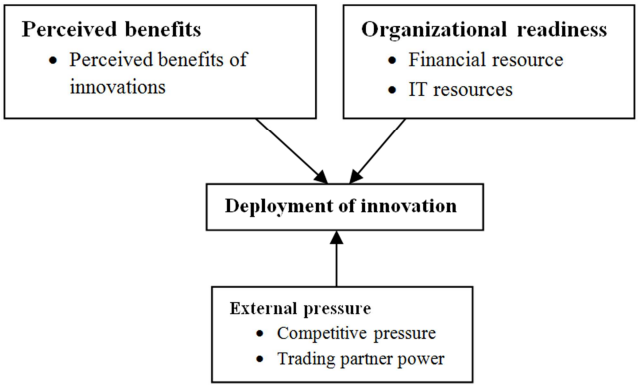

Figure 2. Electronic Data Interchange (EDI) Theory/model (Iacovou et al., 1995).

3. Review of Related Literature

3.1. Definition of ICT Innovation

The end of the industrial era in early 1800s was significantly replaced by new era that was marked by the advent of new innovations known as Information and Communication Technology (ICT).

This new era widely marked as Information Age (Locke, 2004). The importance of ICT innovations toward individuals and organizational performance emerged as important topic

among IT-expertise and governments around the world (Bozeman, 2000). There are at least three evidences that show how important ICT innovations are in this century (Bozeman, 2000):

a. At least eight policies related to ICT innovations have been approved by US Government (Fujisue, 1998);

b. Improving the concern on ICT innovation as new mission of organizations which has been introduced by some professional institutions;

c. Opening wide opportunities to become government employees as ICT innovations agent.

While ICT innovations has been defined as the deployment of new and sophisticated ICT applications to an organization (Swanson & Ramiller, 2004), it has also been described as a source of competitive advantage and economic growth of raised world-wide emulation, technological transform, rapid-changing market conditions and contiguity customer/client requisition for quality service (Damanpour, 1991). Furthermore, ICT innovation is considered as an intelligent database and an integrated application aimed at providing service (Oh, Cruickshank, & Anderson, 2009). ICT innovation has also been conceptualized as a process and an outcome. ICT innovations can also be defined as internet technology that primarily consist of some activities such as collecting, maintaining, organizing, processing, storing, and spreading the information both inside and outside the organization.

ICT innovations also can be defined as a system belonging to some new factors that enable work performance to improve and enhance organizational efficiency (Talukder & Quazi, 2011; Talukder, Quazi & Djatikusumo, 2013). Furthermore, Damanpour (1991) noted that at the organizational level, innovation can be defined as the deployment of new product, process, technology, policy, service, structure or administrative systems. Essentially, the deployment of innovation also determined that innovation is novel to the adopting organization (Angle & Van de Van, 2000 in Damanpour, 1991). Rogers (1995) defined innovations "as an idea, practice or object that is perceived as new by individual or other unit of deployment. That means an object or an idea would qualify to be an innovation if it is considered new. However, "newness" is a relative term which is not always easy to define.

3.2. ICT Innovation Deployment Process

ICT innovation has become the most attractive subject for many researchers for over 20 years (Swanson & Ramiller, 2004). ICT plays a pivotal role in marketing, advertising and direct distribution of goods and services as its deployment such as e-commerce or internet, help strengthen businesses's ability to survive in the challenging global market environment (Thong, 1999). The internet also helps businesses to reach new customer or offer new opportunities. Competitive advantage of an organization can also be achieved by adopting ICT innovations because ICT can build a unique positioning capability of an organization in the market.

Furthermore, innovative ICT can be instrumental in encouraging employees to increase their effective participation in the organizational activities (Fernandez-Villavicencio, 2010). Referring to the limitation of diffusion of innovation, Peres, Muller and Mahajan (2010) argued for the revision of the traditional theory of diffusion and deployment of innovations. The traditional theory should be extended to accommodate other factors influencing the deployment of innovations. Peres, Muller, and Mahajan (2010), introduced new definition of diffusion of innovation as the condition in which new products and services are driven by social and peer influences. ICT innovations enable individuals to make accurate decisions and to solve problems in an efficient and effective way (Fernandez-Villavicencio, 2010; Talukder, Quazi, and Djatikusumo, 2013). Individuals with knowledge of ICT innovations are able to access all features online efficiently and effectively. Fernandez-Villavicencio (2010) also argued that communication can be generated effectively by individuals with excellent knowledge and skill of innovations. On the other hand, capital expenditure of an organization is substantially reflected in investment in innovation of technologies (Talukder & Quazi, 2011). This phenomenon leads businesses to ensure innovation of technologies towards improving organizational performance.

Rogers (2003) defined innovation as the decision to create full use of innovation by the adopter as the best course of action. Deployment that occurs at the individual level within organizational can be assumed as intra-organizational deployment (Frambach & Schillewaert, 2002). Furthermore, various phases of the process of deployment of innovation have been introduced by prior studies.

3.3. Characteristics of Retail SMEs

In an increasingly global world, both information and information technology are of great significance to organisations of all sizes. SMEs are deemed to posses specific attributes that distinguish them from the large enterprises most often studied in regards to information systems usage (Craig & King, 1993). It is argued that SMEs differ from large companies in the way they develop their corporate strategies and their technology policies. Large companies typically have well-defined processes for developing and implementing strategies through a corporate

planning process. While SMEs often use less structured approaches, strategies and policies that may not be formulated but may "emerge" from a set of actions and experiments. SMEs have fewer resources and expertise in terms of management of new technologies. They are more vulnerable because of their lack of financial and human resources as well as information resources that are needed to sufficiently understand and master the organisation and its environment.

Many SMEs do not possess the technological background, which would enable them to use and evaluate IT, or lack the time to explore it. Yet the need to remain flexible and innovative are the criteria for survival and success for SMEs (Poon & Swatman, 1995). On the other hand, SMEs have their own particular advantages of being more flexible and adapt to changes more readily than larger enterprises. They are often innovative in new and different ways, for example in their approach to management and marketing, rapid implementation and execution of decisions, market proximity and their capacity for adaptation and short-term orientation (Poon & Swatman, 1995).

4. Methodology

The data for this study were obtained mainly from primary sources. The primary data were collected through the use of structured questionnaire. The population of the study consists of both employees and customers of the selected retail stores within the Sango-Ota axis of Ogun State. An actual number of the constituent population could not be ascertained due to non-availability of such data. From the population, a sample size of 160 (one hundred and sixty) respondents was taken. This sample size was arrived at using the rule of the thumb since the rule of the thumb is one of the acceptable methods of selecting samples in a survey study. However, the number of samples selected is regarded as adequate for the study such that the outcome of the data analysis can be generalized.

The 160 (one hundred and sixty) respondents were selected using multi-stage sampling technique. As a result, ten retail stores:Justrite, PEP, Best Buy, Choozrite, Strong Tower, Ray-field Supermarket, J Classic Stores, Daylight Supermarket, Sammy Spaco, and Demoree Supermart, were selected for convenience. The quota sampling technique was adopted to select six (6) employees and ten (10) customers from each retail store. This brought the total number of respondents to one hundred and sixty (160). Each customer was however, randomly selected.

Both descriptive and inferential statistical tools were used to analyze the data for this study, including percentages, frequency tables, correlation, and regression analyses. The study adopted the ordinary least square (OLS) regression method to test the effect of technology deployment on the performance of SMEs retail stores.

5. Results and Discussions

The data presented and analyzed in this chapter are those collected in the course of the field survey through the administration of questionnaire. A total of one hundred and sixty (160) copies of the two questionnaires were distributed out of which 142, (representing 88.75%) were returned.

The following table indicate the adoption of ICT components by the retail stores.

Table 1. Deployment of ICT Infrastructure.

S/N	ICT Elements	YES	%	NO	%
1	Desktop	30	55.6	24	44.4
2	Laptop	33	61.1	21	38.9
3	Printer	39	72.2	15	27.8
4	Phone	38	70.4	16	29.6
5	Fax Machine	37	68.5	17	31.5
6	Voice Mail	38	70.4	16	29.6
7	Video Conferencing	32	59.3	22	40.7
8	Intranet	35	64.8	19	35.2
9	Internet	39	72.2	15	27.8
10	E-mails	39	72.2	15	27.8
11	Electronic Data Share	37	68.5	17	31.5
12	Task Software	39	72.2	15	27.8
13	Point of Sales	14	25.9	40	74.1
14	Social Media	32	59.3	22	40.7
15	Accounting Software	21	38.9	33	61.1
16	Inventory Software	13	24.1	41	75.9
17	CCTV	20	37.0	34	63.0

Source: Author's computation, 2017

From table 1 above, it is observed that 30 (55.6%) of the employees sampled indicated that they use desktop in their daily operations, while 24 (44.4%) reported that they don't. Whereas 33 (61.1%) stated that they use laptop, 21 (38.9%) said they don't. The table further show that 39 (72.2%) of the employee respondents use printers in their daily routines, 15 (27.8%) indicated that they do not. 38 (70.4%) of the respondents indicate that phone forms an integral part of their daily routine while 16 (29.6%) indicate that it does not. Whereas 37 (68.5%) of the employees use the fax machine, 17 (31.5%) don't. 38 (70.4%) use voice mail, while 16 (29.6%) do not use voice mail. In respect of video conferencing, 32 (59.3%) said their duties involve the use of video conferencing, while the remaining 22 (40.7%) said it does not. The table equally show that 35 (64.8%), 39 (72.2%), and another 39 (72.2%) adopted the use of intranet, internet, and e-mails, while the remaining 19 (35.2%), 15 (27.8%), and 15 (27.8%) do not, respectively.

The number of respondents who use electronic data sharing, task software, and point of sales, were 37 (68.5%), 39 (72.2%), and 14 (25.9%) respectively, while those who don't were 17 (31.5%), 15 (27.8%), and 40 (74.1%) respectively.

Whereas 32 (59.3%) of the respondents use or are involved in the use of social media, 22 (40.7%) are not. While 21 (38.9%), 13 (24.1%), and 20 (37%) of the respondents use accounting software, inventory software, and CCTV respectively, 33 (61.1%), 41 (75.9%), and 34 (63%) of the employees do not.

The following hypotheses were tested:

5.1. Test of Hypothesis 1

i. H_0: ICT deployment does not significantly affect the sales performance of the retail stores

H_1: ICT deployment significantly affects the sales performance of the retail stores

We tested this hypothesis with the following regression model, and the results presented in the tables that follow:

To perform the regression analyses, Technology Deployment (TD) was grouped into four as follow: Telecomm Tech (TT), Computer Tech. (CT), Software (SW), Networking Architecture (NA), and Other Info Tech (OIT). Therefore;

$SP = f(TD)$

Where:

SP = Sales Performance

TD = Technology Deployment

Where $TD = TT + CT + SW + NA + OIT$

Therefore: $SP = \beta_0 + \beta_1 TT + \beta_2 CT + \beta_3 SW + \beta_4 NA + \beta_5 OIT + \varepsilon$

Where: β_0 and $\beta_1 ... \beta_5$ are Coefficients, and ε= error term

Table 2. Model Summary.

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.945[a]	.934	.854	.41511

a. Predictors: (Constant), Other Info Tech, Software, Networking Architecture, Telecomm. Tech, Computer Tech
Source: Author's computation, 2017

Table 3. ANOVA[a].

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	1.714	5	.343	43.323	.000[b]
	Residual	8.271	48	.172		
	Total	9.986	53			

a. Dependent Variable: Sales
b. Predictors: (Constant), Other Info Tech, Software, Networking Architecture, Telecomm. Tech, Computer Tech
Source: Author's computation, 2017

Table 4. Regression Coefficients[a].

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	3.000	.682		4.396	.000
	Computer Tech	.038	.065	.204	.821	.007
	Telecomm. Tech	-.062	.062	-.245	-1.015	.032
	Networking Architecture	.075	.059	.172	1.265	.212
	Software	.249	.095	.346	2.630	.011
	Other Info Tech	.021	.091	.033	.227	.822

a. Dependent Variable: Sales
Source: Author's computation, 2017

Tables 2 to 5 above show the results of the regression analysis of the relationship between sales performance (SP) and technology deployment (TT, CT, SW, NA, and OIT). Table 2 shows that the adjusted R^2=0.854 which implies that 85% of a unit change in sales performance can be accounted for by changes in technology deployment (TT, CT, SW, NA, and OIT) while the remaining 15% may be due to factors (error terms) not accounted for in this model.

In addition, table 3 shows the F statistic is significant ($F_{5,48}$ =43.323, $p<0.01$), indicating that TT, CT, SW, NA, and OIT, jointly affected sales performance (SP). However, the individual contributions of three of the independent variables (TT, CT, and SW) to observed changes in the dependent variable are statistically significant as shown on table 4 (β = 0.204, t=0.821; $P<0.05$; β = -0.245, t= -1.015; $P<0.05$; and β = 0.346, t=2.630; $P<0.05$ respectively). In contrast, the contribution of the other two variables (NA, and OIT) are statistically insignificant (β = 0.172, t= 1.265; $P>0.05$, β = 0.033, t= 0.227; $P>0.05$). The implication of these is that only three of the five independent variables have significant impact on sales performance.

We therefore reject the null hypothesis, and accept the alternative hypothesis, and conclude that ICT deployment has significant effect on sales performance of the retail stores.

5.2. Test of Hypothesis 2

i. H_0: ICT deployment does not significantly affect the productivity performance of the retail stores

H_1: ICT deployment significantly affect the productivity performance of the retail stores

We tested this hypothesis with the following regression model, and the results presented in the tables that follow:

PP= f(TD)

Where:

PP = Productivity Performance

TD = Technology Deployment

Where TD= TT + CT + SW +NA + OIT

Therefore: $PP=\beta_0 + \beta_1 TT + \beta_2 CT + \beta_3 SW + \beta_4 NA + \beta_5 OIT + \mathcal{E}$

Where: β_0 and $\beta_1 ... \beta_5$ are Coefficients, and $\mathcal{E}$= error term

Table 5. Model Summary.

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.541[a]	.416	.424	.48966

a. Predictors: (Constant), Other Info Tech, Software, Networking Architecture, Telecomm. Tech, Computer Tech
Source: Author's computation, 2017

Table 6. ANOVA[a].

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	1.512	5	.302	1.262	.000[b]
	Residual	11.509	48	.240		
	Total	13.021	53			

a. Dependent Variable: Productivity
b. Predictors: (Constant), Other Info Tech, Software, Networking Architecture, Telecomm. Tech, Computer Tech
Source: Author's computation, 2017

Table 7. Coefficients[a].

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.926	.805		3.635	.001
	Computer Tech	.178	.077	.331	2.319	.025
	Telecomm. Tech	-.035	.073	-.068	-.481	.033
	Networking Architecture	-.036	.070	-.073	-.520	.005
	Software	-.010	.112	-.012	-.087	.031
	Other Info Tech	.121	.108	.168	1.126	.266

a. Dependent Variable: Productivity
Source: Author's computation, 2017

Tables 5 to 7 above show the results of the regression analysis of the interactional relationship between productivity performance (PP) and technology deployment (TT, CT, SW, NA, and OIT). Table 5 shows that the adjusted R^2=0.424 which implies that 42% of a unit change in productivity performance can be accounted for by changes in ICT deployment (TT, CT, SW, NA, and OIT) while the remaining 58% may be due to factors (error terms) not accounted for in this model.

In addition, table 6 shows the F statistic (F ratio) of 1.262 ($p<0.01$) is significant, indicating that TT, CT, SW, NA, and OIT, jointly affected productivity performance (PP). However, the individual contributions of four of the independent variables (TT, CT, NA and SW) to observed changes in the dependent variable are statistically significant as shown on table 7 ($\beta = 0.331$, $t=2.319$; $P<0.05$; $\beta = -0.068$, $t= -0.481$; $P<0.05$; $\beta = -0.073$, $t= -0.520$; $P<0.05$, and $\beta = -0.012$, $t=-0.087$; $P<0.05$ respectively). In contrast, the contribution of the remaining one variable (OIT) is statistically insignificant ($\beta = 0.168$, $t= 1.126$; $P>0.05$). This implies that four of the five independent variables have significant impact on productivity performance.

We therefore reject the null hypothesis, and accept the alternative hypothesis, and conclude that ICT deployment has significant effect on productivity performance of the retail stores.

5.3. Test of Hypothesis 3

i. H_0: ICT deployment has no significant effect on inventory management of the retail stores

ii. H_1: ICT deployment has significant positive impact on inventory management of the retail stores

We tested this hypothesis with the following regression model specified in chapter three, and the results presented in the tables that follow:

IMP= f(TD)

Where:

IMP = Inventory Management Performance

TD = Technology Deployment

Where TD= TT + CT + SW +NA + OIT

Therefore: $IMP=\beta_0 + \beta_1 TT + \beta_2 CT + \beta_3 SW + \beta_4 NA + \beta_5 OIT + e$

Where: β_0 and $\beta_1 ... \beta_5$ are Coefficients, and e= error term

Table 8. Model Summary.

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.775[a]	.675	.621	1.71256

a. Predictors: (Constant), Other Info Tech, Software, Networking Architecture, Telecomm. Tech, Computer Tech
Source: Author's computation, 2017

Table 9. ANOVA[a].

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	11.489	5	2.298	7.783	.000[b]
	Residual	140.778	48	2.933		
	Total	152.266	53			

a. Dependent Variable: Inventory Management
b. Predictors: (Constant), Other Info Tech, Software, Networking Architecture, Telecomm. Tech, Computer Tech
Source: Author's computation, 2017

Table 10. Coefficients[a].

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	6.412	2.815		2.278	.027
	Computer Tech	.004	.268	.002	.016	.007
	Telecomm. Tech	.354	.257	.199	1.379	.014
	Networking Architecture	.138	.245	.081	.562	.017
	Software	.437	.391	.155	1.117	.009
	Other Info Tech	.428	.377	.173	1.135	.022

a. Dependent Variable: Inventory Management
Source: Author's computation, 2017

Tables 8 to 10 above show the results of the regression analysis of the relationship between inventory management (IMP) and technology deployment (TT, CT, SW, NA, and OIT). Table 8 shows that the adjusted R^2=0.621 which implies that 62% of a unit change in inventory management performance (IMP) can be accounted for by changes in ICT deployment (TT, CT, SW, NA, and OIT) while the remaining 358% may be due to factors (error terms) not accounted for in the model.

In addition, table 9 shows a significant F statistic of 7.783 ($p<0.05$), indicating that TT, CT, SW, NA, and OIT, jointly affected inventory management performance (IMP). The individual contributions of the independent variables to observed changes in the dependent variable are all statistically significant as shown on table 10 (β = 0.002, t=0.016, $P<0.05$; β = -0.199, t= 1.379, $P<0.05$; β = 0.081, t=0.562, $P<0.05$; β = 0.155, t=1.117, $P<0.05$; and β = 0.173, t=1.135, $P<0.05$ respectively). This implies that all the five independent variables have significant impact on inventory management performance.

We therefore reject the null hypothesis, and accept the alternative hypothesis, and conclude that ICT deployment has significant effect on inventory management performanceof the retail stores.

6. Conclusion

Nowadays, the adoption of ICT by industries cannot be denied. Majority of ICT deployment is applied by large companies as well as SMEs. The ICT adoption development is not avoided by any business organization, such as the business activity tends to apply ICT that give the impact on retail stores' business process. However majority of retail stores have limited usage of ICT in business activities. This is caused by internal and external factors including paucity of funds, awareness, ICT skills, ICT knowledge, customers served, etc. Furthermore, in general the use of ICT impacted on organizational performances including sales, productivity, and inventory management. By extension, ICT deployment

could also enhance organizational performance including cost saving, expanded markets, additional sales, reduced costs, time saving, profitability, and market value.

Recommendations

Evidences from the results of this study indicate that ICT deployment among retail outlets could help the SMEs to achieve their objectives. It is therefore recommended that the technology trends be complemented by delivering on what customers truly want and value by not only listening to what customers say, but also by analyzing their purchase behavior. Consequently, each retailer's business model is only as good as the assumptions each retailer makes about what customers expect. In some instances, the situation may require radical ICT/business innovation whereas a process or product change may be sufficient in others.

Retail stores should strike a balance and maintain organizational flexibility, together with the monitoring of technology and customer trends, as important aspects of keeping the retailer's business model current and the whole concept of traditional stores valuable, in the future.

Future research also could focus on the role of governments in helping retail stores/SMEs in developing countries, particularly Nigeria. It is important to investigate what government should do in the future and what actual contributions have already been made and what assistance has already been given by government to help retail stores improve their performances.

References

[1] Ajomole, B. C (2015). Information technology implementation research - A technological diffusion approach, *Management Science*, 36 (2), 123-139.

[2] Bozeman, B. (2000). Technology transfer and public policy: a review of research and theory.

[3] Caniels, H. amd Romijn, O. E, (2003). Information technology adoption in small and medium sized enterprises; An appraisal of two decades literature. *Interdisciplinary Journal of Research in Business,* 1 (July), 53–80.

[4] Craig, P., & King, M., (1993). Small-firm computing: Motivators and Inhibitors*, MIS Quarterly*, (March), 47-59.

[5] Damanpour, F., & Schneider, M. (2006). Phases of the adoption of innovation in organizations: effects of environment, organization and top managers. *British Journal of Management*, 17 (3), 215-236.

[6] Damanpour, F., (1991). Organisation innovation: A meta-analysis of effects of determinants and moderators, *Academy of Management Journal*, 34 (3), 555-580.

[7] Fernandez-Villavicencio, N. G. (2010). Helping student become literate in a digital, networking-based society: A literature review and discussion. *The International Information and Library Review, 42*, 124-136.

[8] Frambach, R. T., & Schillewaert, N. (2002). Organizational innovation adoption a multi-level framework of determinants and opportunities for future research. *Journal of Business Research, 55*, 167-176.

[9] Fujisue, K. (1998). Promotion of academia-industry cooperation in Japan — establishing the "law of promoting technology transfer from university to industry" in Japan. *Technovation 18* (6), 371-381.

[10] Hsu, P. F., Kraemer, K. L. and Dunkle, D. (2006) Determinants of e-business use in us firms, *International Journal of Electronic Commerce*, 10, 4, 9-45.

[11] Iacovou, C. L., Benbasat, I. and Dexter, A. S. (1995) Electronic data interchange and small organizations: Adoption and impact of technology, *MIS Quarterly*, 19, 4, 465-485.

[12] Jeronimo, T. B. & De Medeiros, D. D. (2012). Scrum as community of practice to small and medium-sized high technology enterprises realize the strategic plan. *International Journal of Business, Humanities and Technology*, 2, 71-78.

[13] Khandwalla, P. (1970). *Environment and the organization structure of firms*, McGill University, Montreal, Faculty of Management.

[14] Kuteyi, D., (2009). Poor funding, bane of SMEs. Punch Newspaper, 8 April 2009.

[15] Locke, S. (2004). ICT adoption and SME growth in New Zealand. *The Journal of American Academy of Business, 3*, 93-103.

[16] Oh, K., Cruickshank, D., & Anderson, A. R. (2009). The adoption of e-trade innovations by korean small and medium sized firms. *Technovation, 29*, 110-121.

[17] Peres, R., Muller, E., & Mahajan, V. (2010). Innovation diffusion and new product growth models: a critical review and research directions. *International Journal of Research in Marketing, 27*, 91-106.

[18] Poon, S., & Swatman, P., (1995). The Internet for small businesses: Opportunities, government policies and implications*, Proceedings of the 5th Internet society conference*, INET'95, Hawaii. *Research Policy, 29,* 627-655.

[19] Rogers, E. M. (2003). *Diffusion of innovations*. London: Free Press.

[20] Rogers, E. M. (1995). *Diffusion of innovations*, Fourth Edition ed., New York, Free Press.

[21] Starbuck, W. H. (1976). *Organizations and their environments*, Chicago, Rand McNally.

[22] Swanson, E. B., & Ramiller, F. D (2004). Measuring user attitudes towards ICT: A review*, Journal of Management,* 10 (2), 135-153.

[23] Talukder, M. & Quazi, A. (2010). Exploring The Factors Affecting Employees' Adoption and Use of Innovation. *Australasian Journal of Information Systems 16* (2)*, 1-29.*

[24] Talukder, M. & Quazi, A. (2011). The impact of social influence on individuals' adoption of innovation. *Journal of Organizational Computing and Electronic Commerce 21* (2), 111-135.

[25] Talukder, M. (2011). Development of an enhanced model of innovation adoption by individual employees. *Journal of Asia Pacific Business, 12* (4), 316-339.

[26] Talukder, M., Harris, H. & Mapunda, G. (2008). Adoption of innovations by individuals within organizations: An Australian study. *Asia Pacific Management Review, 13* (2), 463-480.

[27] Talukder, M., Quazi, A. & Djatikusumo, D. (2013). Impact of social influence on individuals' adoption of social networks in SMEs. *Journal of Computer Science, 9* (12), 1686-1694.

[28] Thompson, R. L. (1967). Personal computing: Toward a conceptual model of utilisation*, MIS Quarterly*, (10), 105-122.

[29] Tornatzky, L. & Fleischer, M. (1990). *The process of technology innovation*, Lexington, MA, Lexington Books.