An Examination Of Information And Communication Technology Adoption Barriers By Small And Medium Enterprises In Nigeria

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Abstract

This paper examines the adoption and usage of Information and Communication Technology (ICT) among the Small and Medium Enterprises (SME) in Nigeria. An exploratory research design was adopted using a structured survey instrument administered to 40 SMEs that was conveniently selected from the database of SMEs in Lagos, Ogun and Oyo States of Nigeria. Descriptive statistics was employed for the analysis through the use of statistical package for social sciences. The study found that the level of usage of ICT by SMEs in Nigeria is still in its infancy and that majority of SMEs use ICT mainly for Communication purposes. The prominent perceived barriers found included the high cost of acquiring and setting up ICT equipments and fear of losing personal touch with customers / clients. The study concludes that in order to improve the quality of information available to suppliers and customers and achieve the resultant positive impact on the economy, the government should provide incentives to motivate the SMEs to adopt sophisticated ICT equipments.

Key word: Technology Effectiveness; Information and Communication Technology; Evaluation model; Teledencity; ICT adoption

Introduction

Small and Medium Enterprises (SMEs) are noted to be in vantage position to respond more quickly to new opportunities and innovations because of their size and ability to take decisions more quickly. Despite the array of benefits and opportunities offered by ICT, the adoption by SMEs has been rather sluggish (MacGregor and Vrazalic, 2004 and Bolongkikit et al, 2006). Empirical evidence suggests that the adoption and utilization of ICT by SMEs contribute immensely to their stability and success and places them in a good position for competition. (Ramsey et al, 2003, Stansfield and Grant 2993, MacGregor and Vrazalic 2005.

Most prior studies were done in developed economies while research in this area in developing economies is scanty. This study therefore aims to fill the apparent gap by examining ICT adoption barriers in SMEs within the context of a developing country like Nigeria. Consequently, the following research objectives were formulated.

- To examine the level of awareness and usage of ICT applications among SMEs.
- To examine the significant barriers for the adoption and use of ICT by SMEs.

Literature Review and Theoretical Background

There is no universally agreed definition of SMEs. Researchers have used various definitions for SMEs over time (Cloete, 2002; Gamage, 2003; Ihistrum et al, 2003; MacGregor and Vrazalic, 2004; Gilmore et al 2007).

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The common threads that cut across the various definitions are the qualitative and quantitative measures that can easily be identified such as turnover, number of employees; nature of business and size of capital invested. For the purpose of this research, SME is defined as a business not having more than 50 employees or/and annual turnover of not more than 50 million Naira.

The positive role played by SMEs in the economy of most developing Nations has been acknowledged by some researchers (Al-Qirim and Corbitt, 2001; Pease and Rowe, 2003, Ihistrum et al. 2003; McAnley 2001; An dam, 2003; Mensah et al, 2005; Kaynak, et al,2005) In the same vein, barriers to the adoption and usage of ICT in SMEs have been documented by some authors (MacGregor and Vrazalic, 2005). Attempt to dismantle these barriers have remained a major challenge to various governments (Taylor and Murphy, 2004).

Some of the identified barriers to the adoption and usage of ICT by SMEs are complexity of operation (Queyle, 2002); Lack of technical skills and IT knowledge (Quayle, 2002; Van Akkeren and Cavaye, 1999; Walczuch et al, 2000; Ramsey et al, 2003; Andam, 2003; Stockdale and Standing, 2006). Deliberate resistance to change (Akkeren and Cavaye, 1999). High costs of ICT implementation (Walezuch et al, Quayle,2002; Van Akkeren and Cavaye, 1999; MacGregor and Vrazalic, 2005; Andam, 2003; Lawson et al, 2003. Compatibility of ICT to products and services offered by SMEs (Walczuch et al, 2000; Ramsey et al, 2003) Inability to raise financial resources (Andam, 2003; Stockdale and Standing, 2006; Ramsey et al, 2003). Lack of support from senior management (Ramsey et al; 2003) and Lack of trust / concerns about security issues (Queyle, 2002; Walczuch et al, 2003; Andam, 2003; Stockdale and Standing, 2006). The technology deemed two expensive and incompatible with the way SMEs / customers do business (Thulani et al, 2010).

Theoretical Background

Abiola (2013) posited that the adoption and use of ICT by SMEs is a function of many variables such as perceived benefits, organisational readiness, trust, external pressure, contiagent factors such as size of organisation, cost of staff training, infrastructure readiness and optinal mix of human and technological capabilities.

Abiola (2013) proposed Technology Effectiveness Planning and Evaluation Model (TEPEM) as a useful model in developing economies. The model is an extension of Technology Acceptance Model (TAM) and Three-layered model (a meta-level theoretical model encompassing contingency theory, Socio-technical systems theory and structuration theory). The planning process in TEPEM is a unique one to developing economics like Nigeria. For instance, issues like electricity generation and stable regulatory environment are assumed to be constant in developed economies where TAM and TLM have been individually applied but call for careful planning in developing economies. External factors are of utmost importance as a contingent factor as it concerns the macro environmental variables like effective maintenance capability, availability of steady electricity power and government regulations. Lack of constant electricity supply is a major contingency variable in developing countries like Nigeria. Adoption of ICT by the SMEs has been noted to be sluggish as each phase of adoption needs planning. The customers / clients and the operators of SMEs need access to online facilities to be able to transact their businesses. The massive adoption of mobile telephone technology in Nigeria (Nigeria teledensity as at January 2013 according to the Nigerian Communication Commission, 2013 is 81.78 percent) and the introduction of internet enabled iphone and ipad, provided a cheaper alternative to computers as they can easily be powered by

battery and solar energy. Accordingly, the following hypotheses are formulated in order to bring out significant perceived barriers to adoption and use of ICT by SMEs.

H1: SMEs have high level of awareness and usage of ICT applications.

H2: SMEs have positive / favourable attitude for adoption and use of ICT.

Research Methodology

An exploratory research design is considered appropriate for this research in view of paucity of prior-work in this area in developing countries like Nigeria. Furthermore, the exploratory approach provided a friendlier platform for SMEs to be open and let out information about their operations with regards to ICT usage.

40 SMEs organisations were conveniently selected from database provided by the Lagos Chamber of Commerce and Industry (LCCI). Our target population was SMEs located in Lagos, Ogun and Oyo States irrespective of level of their ICT adoption. The choice of these states as targeted population is informed by the fact that they have highest number of SMEs in Nigeria because of their nearness to the seaport. 40 survey questionnaires were administered to all the selected SMEs. The identity of selected SMEs is not disclosed for commercial confidentiality.

In order to benefit from already validated instrument, a structured questionnaire was adapted and modified from previous instruments used by Ramsey et al (2003); McGregor and Vrazalic (2004) and Abiola (2013) in similar studies on ICT adoption was used to gather data from respondents. The instrument was piloted on 10 MBA students of Lagos State University and was consequently modified to increase its clarity and provide more relevant demographic information.

Empirical Results

Descriptive statistics was employed through the use of Statistical Packages for Social Science (SPSS) version 18 to analyze the data collected. The demographical data is presented in Table 1 below:

Table 1: Profile of respondents

Survey Question	Response		Frequency(N)	%	Cumulative %
Business size	1-10 employees	1	15	38	38
	11-20 employees	2	11	28	66
	21-30 employees	3	6	15	81
	31-40 employees	4	5	13	94
	41-50 employees	5	3	06	100
TOTAL			40	100	
Business age	Less than 1 year	1	4	10	10
	1-2 years	2	5	12	22
	3-5years	3	15	38	60
	5 years and above	4	16	40	100
TOTAL			40	100	

The four attitude statements (in table 3) above shows that the total ratings at the agree/strongly agree level were very high (88%; 85%; 86% and 88% respectively).

Hypothesis Testing

Table 4 shows the hypothesis which the study sought to test. It brings out the summary of results obtained in tables 2 and 3.

Table 4: Hypothesis Testing Results

Hypothesis Number	Hypothesis	Result
H1	SMEs have high level of awareness and usage of ICT Applications	Accepted
H2	SMEs have positive/favourable attitude for adoption and use of ICT	Accepted

ICT Adoption Barriers

The study probed further to find out significant barriers to adoption of ICT from non-adopters as well as from some adopters who merely use ICT for communication/information purposes. They were asked to rate their reasons based on a five point Likert scale ranging from 1 (not important) to 5 (very important). The responses from the respondents are presented in table 5 below.

Table 5: Rank order of ICT adoption barriers

Rank	ICT adoption barriers	N	%*	Mean	SD	Var
1	ICT is too costly	16	78	4.1	1.44	2.21
2	ICT is too complicate to implement	16	51	3.7	1.15	2.1
3	ICT does not fit with the way our customers do business	16	52	3.8	1.46	2.16
4	ICT does not offer any advantages to our business	16	42	3.1	1.32	1.82
5	ICT does not fit with the way we do business	16	60	3.9	1.62	2.75
6	ICT does not fit with our products/services	16	41	3.1	1.51	2.43
7	Barriers associated with lack of know how about ICT	16	26	2.6	1.43	2.09
8	Barriers associated with lack of time to implement ICT	16	16	2.4	1.27	1.71

Note: * % = those respondents who considered ICT adoption barriers very important in decision not to adopt ICT.

Table 5 shows that the first 6 barriers have means 3 and above and therefore considered strong inhibitors to ICT adoption and usage. However only 4 of these barriers may be considered conclusive i.e ICT is too costly (78%); ICT does not offer any advantages to our business (52%); ICT is too complicated (51%) and ICT does not fit with the way we do business (60%). Other relatively important barriers include ICT does not offer any advantages to our business (42%) and ICT does not fit with our products/services (41%). This findings support the view that non-adopters have little motivation to adopt and use ICT.

ngly Agree	
	%
	50
	50
	48
	43

Discussion

The findings show that high percentages (90%) of respondents have adopted ICT. This is consisted with prior research in this area (Thulani et al. 2010, Abiola, 2013). However,

ICT applications currently used by study respondent organisations are entry-level technologies/activities according to adoption ladders suggested by Akkeren and Cavaye (1999). The use of ICT by the study SMEs are therefore still very rudimentary however they provide the right platform upon which sophisticated ICT can be developed (Akkeren and Cavaye, 1999, Cloete et al; 2002).

Furthermore, Davis (1986) in his TAM model propounds that a user of ICT must have a positive attitude towards the technology. This was also supported by Technology Effectiveness planning and Evaluation Model (TEPEM) proposed by Abiola (2013). The survey respondents, as the findings indicated, have positive attitude towards ICT. This supports prior findings by Poon and Strom, (1997), Cloete et al (2002), Scupola (2003); Ramsey et al., (2003); Turban et al (2006); and Thulanu et al (2010). Furthermore the findings support the view that non-adopters also have positive attitudes towards ICT. This is also consistent with the findings of Ramsey et al (2003) and Walczuch et al., (2000). Other significant findings from the study include ICT barrier concerning incompability between ICT and the way SMEs transact business with their customers. This supports results from prior studies (Ramsey et al., 2003; Pracy and Cooper, 2000; and Bolongkikit et al., 2006) which also highlighted lack of suitability of ICT for business purposes.

The findings revealed that 42% of non-adopters contend that ICT does not offer any advantage to their organisations. The implication of this is that if the surveyed SMEs do not perceive ICT benefits to their organisations then they will not adopt ICT (Thulani et al., 2010).

Conclusion

This study has examined (i) the level of awareness and usage of ICT application among SMEs and (ii) the significant barriers for the adoption and use of ICT by SMEs. With regards to the first objective, SMEs have high level of awareness and usage of ICT applications even though the ICT equipments involved are still very rudimentary and mainly acquired for communication purposes.

As for the second objective, both adopters and non-adopters of ICT among the SMEs have positive attitude towards ICT. Furthermore, the findings highlighted the four most important barriers/inhibitors of ICT adoption in SMEs. These are (in order of importance), ICT is too costly; ICT does not fit with the way we do business; ICT does not fit with the way our customers do business; and ICT is too complicated to implement.

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