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SMALL AND MEDIUM ENTERPRISES GROWTH IN KADUNA STATE OF NIGERIA: INFORMATION AND COMMUNICATION TECHNOLOGY ADOPTION FACTORS

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Abstract
The pervasiveness of information and communication technologies (ICTs) from cell phones to low-cost videos, digital camera, television, laptops to mention just a few has transformed the lives of many especially the rural dwellers. Recent advances in ICTs have resulted in expanding existing jobs and creating new opportunities some of which were unimaginable few decades ago. The result has been significant worldwide and especially in developing countries like Nigeria where over three quarter of the inhabitants rely on small scale non-farm business and agriculture as means of livelihood. ICTs have therefore become an indispensable tool in fighting poverty and actualizing proper growth. This paper investigated the factors that influence ICT adoption by small and medium enterprises in service of the industries in Kaduna State of Nigeria, by examining 155 SME owner/managers in Kaduna State using survey method that was developed form the variables used in the diffusion of innovation theories. The data was analyzed using descriptive frequencies, logistic regression analysis to predict the factors influencing the performance of SMEs by the measure of ICT knowledge and skills, external pressure, Government support and ICT adoption and use. This provided detailed information about the reasons why local SMEs are reluctant to adopt ICT for their business activities. Identifying the major reasons may help the industry or government, to provide appropriate information and support to the SMEs to enhance their ICT usage and growth.

Keywords: *ICT, SMEs, Growth,*

Background to the Study

In both developed and developing countries Small and Medium Enterprises (SMEs) play important roles in the process of industrialization and economic growth (Adekunle & Tella, 2008). Small and Medium Enterprises (SMEs) contribute significantly to the economic development of Nigeria, these contributions are remarkable as about 10% of the total manufacturing output and 70% of the industrial employment are by SMEs (Aina, 2007) (Ihua, 2009) states that about 97% of the enterprises in Nigeria are SMEs and they employ an average of 50% of the working population as well as contributing up to 50% to the country's industrial output. Small and Medium manufacturing enterprises in Nigeria's manufacturing sector are defined as enterprise with full time employees not exceeding 199 or annual sales turn over not exceeding #500 million. These enterprises are further categorized into small enterprises and medium sized one. Small enterprises are those with annual sales turnover of between #5

million and #50 million and less than #500 million or employing between 50 and 99 workers (SMEDAN, 2005).

Table 1: Definition of SME

S/N	Size	Employment	Assets (N million) excluding land and building
1.	Micro enterprises	Less than 10	Less than 5
2.	Small enterprises	10-49	5-less than 50
3.	Medium Enterprises	50-199	50-less than 500

(SMEDAN, 2005)

Ifinedo (2006) states that SMEs in Nigeria can increase their market reach, enhance customer services and reduce both marketing and distribution cost through e-business. However, majority of Nigeria SMEs are not utilizing ICT which is the foundation of e-business due to some major barriers as identified in this study. Many organizations of all types are currently utilizing 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 requires a business environment that encourages open competition, trust and security, interoperability and standardization and availability of finance for ICT (UNCTAD, 2004). The effective use of ICT remains at central stage in facilitating the change and growth of enterprises and many SMEs consider creative use of ICT as key enabler to their development (Dixon et al, 2002)

Literature Review

The objective of this paper is to investigate the factors that influence ICT adoption and use by small and medium enterprises in service of the industries in Kaduna state of Nigeria. A variety of internal and external factors have been identified as preventing many SMEs from implementing ICT. The study which is reported in this page provides detailed information about the reasons why local SMEs are reluctant to adopt ICT for their business activities. Identifying the major reasons may help the industry or government to provide appropriate information and support to the SMEs to enhance their ICT usage and growth. Most of empirical research is based on large companies and SMEs are characterized lack of knowledge about the real advantages of ICT could add to their business. (King, 1994, Pals, 1994). External pressure from the trading partners is important factor that has strong influence on adoption of ICT (Thong & Yag, 1995). Both industry and government bodies have a role to play in promoting and supporting SMEs in net working and using ICT (Doig, 2000).

ICT Knowledge and Skills

According to MacGragor et al (1996) small business tend to avoid ICT into their business it is seen as complex to use. This is not surprising because SMEs always lack skills amongst workforce to use ICT (Spectrum, 1997). Paul and Paseale (2003) study reveals that the ICT adoption in SMEs depends on the Chief Executive Officers / Owner being the ICT decision

maker. Their finding clearly indicated that ICT adoption is positively related to firm size. it is very important for organization to determine its employee's knowledge or skills of ICT because those knowledge or previous experiences may influence organization decision in adopting ICT. However, the ability of Manager or owner in ICTs knowledge or skills is definitely increasing the opportunity of ICT use amongst SMEs. Reynolds (1994) found that small business owner / managers are unlikely to adopt more sophisticated technologies if they are not familiar with the basic ones. This is because of the limited numbers of employees with little or no technical knowledge. This lack of knowledge based employees might hinder or prevent technology adoption if the owner believes that this technology can only be employed using specialists staff (Reynolds (1994), MacGregor et al (1996) and Cragg and King (1993) also stressed that employees of small and medium enterprise tend to lack skills expertise to use it in their businesses. It examined that SMEs always lack skills among the workforce to use ICT (spectrum. 1997). Allison (1999) agrees that a skilled and knowledgeable workforce was closely linked with the successful implementation of technology. More researchers confirm the finding such as Cragg and King (1993) found that one of the strongest inhibiting factors for small firms to implement information technology was lack of information system knowledge.

External Pressure

External pressure like pressure from trading partners is one of the important predictor that has strong influence on adoption and use of ICT. If not because of pressure from their trading partners, the business owner may perceive the technology as a waste of resources (Thong and Yap, 1995). It means that SMEs trading partners are not fully utilizing IT in doing business. According to King and Turner (1993) dependency on customer / supplier is closely related to external pressure to adopt (Kirby & Turner, 1993). Julien and Raymond (1994) also confirmed that industry sector has been shown to be interested in adopting a technology if competitors and trading partners are adopting ICT, the individual SME is likely to adopt as well. Saxes (1997), Poon and Swatsmaur (1996) studies found that SME are often forced to use ICT by large companies. So this could be a factor driving the use of web-commerce if their trading partners force them to use it.

Government Support

Both industry and government bodies have a role to play in promoting and supporting small business networking ICT. According to Doig (2000), Australian governments are committed to accessible e-commerce for SMEs, and have decided that some intervention was necessary to make participation affordable, particularly for small and remote businesses. Doig, (2000) also reported that in 1998, a national framework was established to ensure all internet based e-commerce used by government in Australia and New Zealand became fully interoperable which benefited SMEs and their access to market place. This has strong industry support with most of the major e-commerce service provided now established in Australia. According to a study carried out in Israel, the Israel government placed support of the ICT industry which played an essential role in initiating the financial base (Vinig etal 1998). The government also initiated a list of programs" which led to the establishment of financial base for Ireal ICT industry. The other government. Support in ICT is government's tax inventories. This program which supports start-ups SMEs to attract foreign investors to form strong international oriented companies was created locally.

ICT Adoption and Use and the Performance of SME

Venatraman (1989), in his research on ICT impact, suggested that ICT could build a development highway for new profit generating activities. He argued that ICT has an important organizational and strategic dimension. Cash and Konsynski (1985), Copeland and Mckeenye (1988) and Venkatraman and Kambit(1990) have explained that extending beyond the internal efficiency focus, the capabilities now exist for organizations to deploy new ICTs applications that leverage information and technology attribute to obtain differential sources of competitive advantages in the market place.

Recent research shows that ICT has tended to transform traditional firms into numeric digital enterprises (Issac, 2002), they enable enterprises to establish electronic relations with their clients and suppliers through Exchange Electronic Data Technology (EED). To share markets and electronic plat forms with their competitors (notably through market places) and to easily reach new global markets. The internet and the interconnection of different partners' production systems have increasingly facilitated cooperation (Isaac)/EED technology, 2002) for example, amplifies interactions between two partners by coordination of resources and models of adaptation or cooperation (Baile, 2003), argued that performance could be measured in two-ways: objectively or subjectively. Objective measurements are based on managers' evaluations relative to their perception of ICT impacts. According to Millier (1987), subjective measurements better than objective measurements since accounting information is not readily available and not usually reliable since they could be manipulated by owners for various reasons.

Conceptual Framework

The conceptual model tested in this page is based on a number of researches done in this area in different developed and developing countries, particularly on ICT adoption and use, and other innovation perspective. The model examines the factors that would possibly affect the ICT adoption and use in SMEs. The above conceptual framework is used to show the relationship between the dependent and independent variables. In this situation the study has tested four adoptable variables. These include: ICT knowledge and skills of the employees, external pressure, government support and ICT adoption and use in the SMEs that are believed to have some influences towards the dependent variable (performance of the SMEs) either in positive or negative way.

The moderating variable (ICT adoption and use) moderate influences of independent variables on dependent variable.

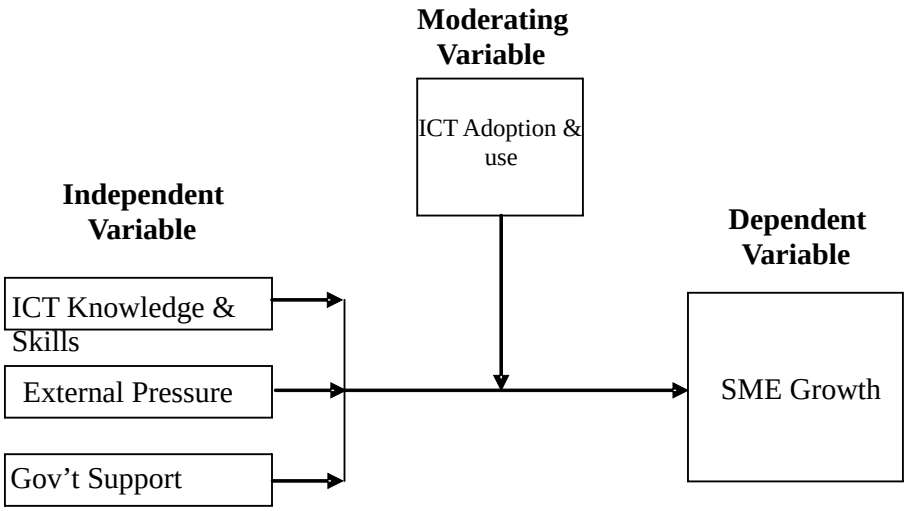

Figure 1: Conceptual Frame work

Hypotheses

The following hypotheses are derived from the relationships from previous literatures.

Ho1 There is no relationship between ICT knowledge and skills, and adoption, and use of ICT in SMEs.

Ho2 There is no relationship between external pressure and ICT adoption use in SMEs

Ho3 There is no relationship between government support and performance of SMEs.

Ho4 there is no relationship between ICT adoption and use and the performance of SMEs.

Materials and Methods

The slow growth rate of SMEs in Nigeria is linked to several factors. The factors identified below are based on a survey that was conducted between June and August, 2014 in Kaduna and Zaria, Kaduna State of Nigeria. A detailed questionnaire that measures the various variables was developed. The items in the questionnaire were initially derived after extensive literature review were subjected to thorough scrutiny. The dependent variable was measured using the questions "Does your company adopt ICT? Yes / No and the question was used to separate the samples into adopter, (those that have adopted ICT) and non adopter. The independent variables were measured by giving the response a 5-point likert Scale where is strongly agreed and 5 is strongly disagree.

Data Analysis and Results

Two hundred copies of questionnaires were sent out to SME owners, for the purpose of this study, 155 responses were received which implied a response rate of 77.5%. Considering the comprehensive nature of the survey the response rate was concluded to be reasonable. Among the 155 effective responses, 120 had partially implemented ICT while the remaining 35 were non adopter. Data were entered and processed using the Statistical Package for Social Sciences (SPSS) Software, English Version 10.0. Descriptive information for the characteristics of the sample was summarized in Table 1, 2 and 3.

The telecommunication / Mobile phone device has larger percentage among the respondents and it is also the main user of ICT. The size of the business range from less than One Million Naira to above N60million capital investment in 2014. The number of employees ranged from less than 10 to above 90 of these, 80% business feed employees 1-50. In all, the sample represented a wide range of business, increasing the authenticity and acceptability of the results.

Table 1: Industry Characteristics

Industry	Adopter	Non-Adopter	Total	Percentage
Engineering / Constricted	12	4	16	10.32
Telecom / Mobile phone	23	0	23	14.84
Whole Sale / Retails Shops	15	5	20	12.90
Pharmacies	8	2	10	6.45
Transportation	16	5	21	13.55
Financial Services	6	2	8	5.16
Manufacturing	10	2	12	7.74
Oil and Gas	5	2	7	4.56
Agriculture	10	5	15	9.68
Legal Practice	4	1	5	3.22
Hotel / Restaurants	7	5	12	7.74
Photo / Laboratories	4	2	6	3.87
Total	120	35	155	100

Sources: Data Survey, 2014

Table 2: Current Capital Investment (₦)

Range	Adopter	Non-Adopter	Total	Percentage
Less than ₦1million	55	22	77	49.68
₦5 - ₦10million	22	8	30	19.35
₦11 - ₦20million	13	10	23	14.83
₦12 - ₦30million	7	0	7	4.56
₦31 - ₦60million	10	3	13	8.38
₦61million and above	5	0	5	3.22
Total	112	43	155	100

Sources: Data Survey, 2014

Table 3: Current Total Number of Employees

Range	Adopter	Non-Adopter	Total	Percentage
Less than 10	45	17	62	40.00
11 – 30	30	10	40	25.81
31 – 50	16	6	22	14.19
51 – 70	11	4	15	9.68
71 – 90	10	0	10	6.45
91 and above	6	0	6	3.87
Total	118	37	155	100

Sources: Data Survey, 2014.

In order to test the relative importance of the independent variable with regard to the adoption of ICT, the model was analyzed using logistic regression analysis with the backward stepwise likelihood ratio method (Menard, 1995). The significance of the regression coefficients of the hypothesized independent variables was examined to determine support for the hypothesis.

Table 4: Results of Logistic Regression Analysis

Variables	Coefficients	SE	Wald statistic	Significant
Constant	3.568	1.451	5.121	0.015**
ICT Skill	0.847	0.262	4.271	0.030**
EXT PRSS	0.657	0.210	3.521	0.051*
GOVSPT	0.557	0.377	2.821	0.093*
ICT ADP	0.531	0.271	4.285	0.029**

Notes: -2 Log Likelihood $x^2 = 32.525$ (d.f = 6)
**Significant at 0.05 level *Significant at 0.1 level.

The result above partially rejects the first mull hypothesis. The coefficient of ICT knowledge and skill is the largest among the significant variables, implying that ICT knowledge and past experience of employees in handling computer equipments and establishing a communication network system have relative important effect on ICT adoption and use. Otherwise, as small business are characterized by server constraints on resources such as finance and in-house technical expertise, the adoption of ICT represents as disproportionately large financial risk which cannot be taken by SMEs. In addition external pressure from the trading partners, customers, suppliers, industry community and competitors force the SMEs to adopt ICT use in order to remain competitive and enjoy competitive advantage. This will encourage the availability of ICT infrastructure which will contribute significantly to the adoption of ICT in SME. Then there will be increase in the usage of ICT in the business in Nigeria.

According to the result, government support has a significant and strong positive relation to ICT adoption and use. According to Stonemon and David, (1986) the impact of government policies and initiatives has been shown to have direct and indirect stimulation of the supply of information which produces faster technology diffusion. For example, governmental efforts to establish a national information infrastructure in Australia, Isrcel, and Malaysia have shown that both governments provide a legitimate and positive leadership role in developing the information infrastructure in their effort to digitize their economy. (Doig, 2000 & Vinig et al, 1998). External pressure has negative relationship to the adoption and use of ICT while ICT adoption and use has positive influence on the performance of SMEs.

Table 5 : Multiple Regression Analysis of Contribution of Independent Variables to the Dependent Variable

Multi R	0.731
R Square	0.534
Adjusted R Square	0.512
Standard Error	4.983

Table 6: Analysis of Variance Table

	DF	Sum of Square	Mean Square	F-ratio
Regression	4	426.45	106.61	42.82
Residual	12	375.86	2.49	

Table 5 indicates that a combination of independent variables; ICT knowledge and skills, external pressure, government support and ICT adoption and use; yielded a coefficient of multiple regression (R2) of 0.534 accounting for 53.4% of the variance for the multiple regression data produced F-ratio value of 42.82 which is significant at 0.05.

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 155 industrial small and medium enterprises located in different part of Kaduna State. Several important findings were drawn from the research.

First, ICT knowledge and skill was discovered as the most potent factor in the adoption of ICT by SMEs in Nigeria. This is consistent with MacGragor et al (1996) findings that ICT knowledge and skill plays a critical role at an organization adoption and use of ICT.

Second, External pressure from trading partners is another important factor that enhances the adoption and use of ICT by SMEs. If there is adequate ICT infrastructure in the country, it will be very easier for SMEs to adopt it rather than running away from it. The finding is in accordance with Kapurubandra et al (2006) which found availability of internet facilities, telecommunication services as some of the factors affecting the adoption of ICT by SMEs in developing economy.

Third, government support should be considered as one of the factors militating against the adoption of ICT by SMEs in Nigeria. It is widely believed that ICT adoption and Utilization is predicated on availability of physical infrastructure, legal and regulatory issues, adequate research and development, and proper policy. All these can be put in place only when there is adequate support from the government. This finding was also conducted in Nigeria by Laik (2007).

Fourth, and lastly ICT adoption and use is a very important factor that influence the performance of SMEs.

According to Issac, (2002) they enable enterprises to establish electronic relations with their clients and suppliers through Exchange Electrion Data (EED) technology. The study has shown clearly the factors affecting the adoption and use of ICT in Nigerian small scale industries to enhance growth and the level at which it affect them. The findings can help marketing strategy making of ICT supplier and manufacturer as well as business policy makers, to identify important consideration in ICT adoption and use. Finally it will help small scale industries and government in identifying these factors so as to device strategy of overcoming them.

Recommendations

Finally, now that it has been established that ICT adoption and use helps an organization to grow, it is recommended that every SMEs should integrate the technology into their business practices and operations. It makes more sense to use the much your circumstance and financial capabilities can accommodate than staying away from taking advantage of these emerging technologies. The future survival of every business venture rests most squarely on its ability to Mary its human resources with its ICT resources.

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