The Determinant of use and impact Assessment of ICT as an Enhancing Tool in Small and Medium Scale Enterprises (SMEs) in Nigeria

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Abstract - The role of ICTs as a veritable tool of achieving growth among SMEs in Nigeria is very central and the various research efforts have acknowledged this. This study attempts to further look at the determination of use of ICTs among the SMEs in Nigeria with a view to establishing how the determinant has contributed to the growth of SMEs. The work employed purposive sampling technique; the instrument for the study was questionnaire which was designed in the Likert Ratio Scale Format , the questionnaire contained 17-items in all, constructed to conform with the relevant hypotheses. Tobit regression model was employed to ascertain the determinant of ICTs' usage by SMEs' in the study area, while the different livelihood activities and ICTs facilities were ranked to determine their level of patronage by the respondents. The result shows that the coefficient of age ($p<0.10$), gender ($p<0.05$), educational level ($p<0.00$) and membership of community association ($p<0.05$) were positive, those of household size ($p<0.05$), income ($p<0.00$) and primary occupation ($p<0.10$) were negative.

Keywords: ICT, SME, Determinant

I. INTRODUCTION

ICTs has been found to impact greatly on SMEs. These impacts manifest in a number of ways, notably among which are improved practices, income deepening, cost effectiveness and improved advertising potentials. It was highlighted that the wide spread of SMEs spurred by emergence of ICTs in Nigeria and the multiplier effects they have on the rest of the economy enable them to be the engine of economic progress. It was also noted that the SME sector is the main driving force behind job creation, export earnings, poverty reduction, wealth creation, income distribution and reduction in income disparities.

The advent of ICT has changed the way things are done, hence it is no gainsaying that SMEs must be supported by ICT and the transformation effect of this is tellingly evident. Educational status, membership of community association and gender of respondents were some of the significant factors explaining usage of ICTs in the study area. With regards to linkages, the SME sector cuts across all other sectors of the economy and in its growth and developmental process, has the potential to transform these sectors and set them onto the path of sustained growth. There is no doubt that SMEs need to strengthen their linkages to large-scale enterprises as they are key players in the supply of raw materials and distribution of manufactured goods. High value added regions in the world demonstrate high interdependency between value added manufacturers and SME suppliers of all types.

II. RELATED WORKS

There have been many discussions over the importance of SMEs to the economy although there is evidence to suggest that small firms do play a major role in the world economy and that they constitute the bulk of enterprises in all world economies [3][10][11]. It is widely recognised that SMEs are an important driving force of economic growth and job creation in both developed and developing countries. SMEs play an important role in all the economies of the world. SMEs are often seen as vital for the growth and innovation of dynamic economies as they create employment. It is the backbone for the economic growth of most economies in terms of driving industrial development and increasing employment. SMEs are generally regarded as the cornerstone of both developed and developing economies as they help to diversify economic activities that have significant contribution to imports and exports and can adapt quickly to changing market demands [2][7].

The significance of SMEs for growth, productivity and competitiveness of the economies in both developed and developing countries is acknowledged universally, since SMEs bring about substantial local capital formation, contribute to improved living standards and achieve high levels of productivity. They are identified as a major means of achieving equitable and sustainable industrial diversification [2][12]. The contributions of SMEs to any economy are obvious, as SMEs are known to contribute to the development of several economies in terms of output of goods and services, the creation of jobs at a relatively low capital cost, especially in the fast growing service sector, and they provide a vehicle for the reduction of income disparities thus developing a pool of skilled or semi-skilled workers as a basis for future industrial expansion. SMEs are also known to improve forward and backward linkages between economically, socially and geographically diverse sectors of many economies and provide opportunities for development. The major advantage of the SME sector is its employment potential at low capital cost [1][2].

These contributions can further be enhanced and strengthened through the use of ICTs that are increasingly transforming modern businesses by enabling the rapid, reliable and efficient exchange of large amounts of information. However, while ICTs are not a panacea for all development problems, they offer enormous opportunities to reduce social and economic inequalities, particularly those

related to income generation, poverty reduction, education, health, environment and gender equity, and thus help achieve broader development goals especially in the rural areas. Access to and the use of ICTs by SMEs, particularly as a collective sector, will lead to greater job creation, increased public revenue and a general rise in the standard of living. Also, ICTs enhance SMEs' efficiency, reduce costs, and broaden market reach, both locally and globally. Since the SME sector plays a major role in national economies, these benefits to individual SMEs collectively translate into positive results in the form of job creation, revenue generation and overall country's competitiveness. Small firms making intelligent use of ICTs to network can become "knowledge integrators" who benefit not only themselves but their other partners in the supply chain [3].

Information and Communication Technologies (ICTs) can impact SMEs in three main ways; increase productivity in the production process, increase efficiency of internal business operations and connect SMEs more easily and cheaply to external contacts, whether locally or internationally. Although it is tempting to assume high levels of ICT use in expanding SMEs, it can be difficult to separate the effects of technology use from other factors since we could have some fast-growing firms that are not necessarily high ICT users. However, some recent studies do seem to indicate that the extent of ICT adoption is correlated with the bottom line of company balance sheets. Firms using e-mail for customer communication, for instance, can grow 3.4 percent faster in terms of sales than those which do not [3][5][8].

Considering the enormous potentials and immense contribution of the SME sector to sustainable economic development, Nigerian SMEs not unlike other developing countries, still fall below expectation especially in adoption of ICT. There are many factors affecting Nigerian SMEs adoption of ICT and these factors increase in their rate of failure. SMEs are hindered in adopting technologies as a result of the barriers that arise in the organization. The factors affecting Nigerian SMEs include lack of infrastructural facilities, corruption, cost of implementation, lack of funds, lack of awareness among owners managers, lack of skills and training, cultural factors, lack of government policies that support ICT adoption in SMEs, electricity constraints among others. One of the major factors inhibiting ICT diffusion and intensive utilization is poor physical infrastructure. Another obstacle is inapplicability of the standard software used in developed countries due to their high cost, lack of developed supporting infrastructure and a number of other reasons [4].

Information and Communication Technology (ICT) play a very important role in helping SMEs both to create business opportunities and to combat pressures from competition. Appropriate ICT can help SMEs cut costs by improving their internal processes, improving their product through faster communication with their customers, and better promoting and distributing their products through online presence. In fact, ICT has the potential to improve the core business of SMEs in every step of the business process. Through the use of information technology, SMEs can gain from developing capabilities for managing information, intensive resources, enjoy reduced transaction costs, develop capacity for information gathering and dissemination of international scale and gain access to rapid flow of information. ICT solution helps SMEs in increasing their productivity and achieving higher business performance [4][7].

For an SME to set itself apart from its competitors and also to have a sustainable competitive advantage there is a need to invest in ICT. It is necessary for the Nigerian government to develop an ICT model that will assist Nigerian SMEs to successfully adopt ICT, and technological infrastructures should be put in place by the government to support ICT adoption. For Nigerian SMEs to remain competitive or to become successful, it is important for owner-managers to understand the critical success factors related to ICT adoption. This involves the Nigerian government making more funds available to SMEs and putting some structures in place to ensure a successful investment. The integration of ICT in Nigerian SMEs would help integrate these SMEs into the world's IT village [4].

III. PROBLEM STATEMENT

ICT has increasingly become one of the dominant factors affecting every aspect of development all over the world. In recent times, many SMEs in developed countries are adopting and effectively utilising ICT for developmental purposes, unlike Nigeria where the use of ICT in SMEs is still very low. It is against this backdrop that the researcher seeks to examine the determinant of ICT adoption among SMEs in Nigeria.

IV. PURPOSE OF THE STUDY

The purpose of the study is to examine the determinants of ICTs usage and its impact on the operations of selected SMEs and services organizations in Nigeria. The study emphasis will be on computers, other information and communication technologies and selected peripherals. The study as well sets to review the literature on the emerging ICT at the global and regional levels and to highlight their implications for Africa in general and especially, Nigeria. The nature of technologies driving ICT, required technological capabilities and capabilities available to operate, maintain and adapt systems require analysis with a view to positioning business practices and growth.

V. HYPOTHESIS

a. **Ho_1:** There is no significant relationship between the determinants of ICT adoption and the growth of Small and Medium Sized Enterprises.

VI. SIGNIFICANCE OF THE STUDY

This research is of significant importance, generating an empirically grounded understanding to help practitioners in various ICT interventions in Nigeria. Since this research sets out to investigate the adoption and utilisation of ICT within organisational contexts, its findings are aimed at providing a deeper understanding of issues associated with the adoption and utilisation of ICT in a developing country such as Nigeria. In order words, the research contributes to knowledge by developing an evidence based report that describes the level of ICT adoption in Nigerian SMEs.

On the practical aspect, since this area is still under-researched, results of the study will have significant

implications for practitioners, especially in the area of ICT in developing countries, particularly with regard to Nigeria. It is intended that the quantitative phase of the study will contribute to the statistics of ICT use in Nigeria whilst the qualitative study will add to the body of literature, mainly on developing countries. Also, the research makes a practical contribution by suggesting ways through which Nigerian SMEs can successfully adopt and effectively utilise ICT in their respective businesses and further contribute towards Nigeria's socio-economic advancement.

Furthermore, the research makes a methodological contribution by employing tobit model for the analysis of questionnaire, in addressing issues relating to ICT adoption in Nigerian SMEs, and further examines the extent to which Nigerian SMEs utilise ICT, especially sophisticated ICT applications, in conducting their business., Results from this research will be of great benefit to senior managers, IS executives, strategic planners, business managers, government, amongst others, as the research will help managers to better understand the benefits associated with the adoption and utilisation of ICT by helping to provide a set of critical success and failure factors. Findings of the research will also assist to better position stakeholders, researchers and practitioners in their attempts to implement and manage ICT initiatives within SMEs in Nigeria.

VII. RESEARCH DESIGN

Survey research design was adopted for the study because it caters for full participation that provides unfettered access to the population of the study.

VIII. POPULATION

The population for this study comprised SMEs drawn from six (6) states in all geopolitical zones in Nigeria.

IX. SAMPLE AND SAMPLING TECHNIQUES

A purposive sampling technique was employed in the selection of one state each from the six (6) geopolitical zones. About 100 questionnaires were administered and used in the analysis.

X. RESEARCH INSTRUMENT

A structured questionnaire was used to obtain responses and elicit information from the respondents. This was considered apt for the study in view of the fact that the respondents need be reached directly.

XI. VALIDITY OF THE INSTRUMENT

The instrument was face-validated and content validated by the experts in test and measurement and was found to measure what it purports to measure.

XII. RELIABILITY OF THE INSTRUMENT

In quantitative research, reliability deals with an indicator's dependability, which means that the information provided by indicators does not vary as a result of the characteristics of the indicator, instrument, or measurement device itself [9]. To improve reliability, the measurement variables in this research are not only those taken from other associated researches, but also include those proved to be important in qualitative research results. Furthermore, to maximise reliability of the instrument used, the survey was constructed as follows: 1) a pilot survey was conducted to ensure the reliability of the questionnaire; 2) each question was framed succinctly to reduce ambiguity and minimize bias, thereby ensuring the high statistical value of the data.

XIII. ADMINISTRATION OF THE INSTRUMENT

The researcher administered the questionnaire and availed herself the opportunity to interact with the respondents face-to-face and on one on one basis and this helped curtailed bogus responses.

XIV. DATA ANALYSIS

In this study, a number of statistical tools were used in analysing the data. These include descriptive statistics (tables, frequencies and percentages) and tobit regression model. While Descriptive statistics was used to analyse, describe and summarise respondents' socioeconomic characteristics, such as age, gender and income distribution of the respondents; the Tobit regression model was employed to ascertain the determinants of ICTs' usage by SMEs' owners in the study area. Also, the different livelihood activities and ICTs facilities were ranked to determine their level of patronage by the respondents.

XV. PRESENTATION OF RESULT

Table: 1Determinants of ICTs' Usage in Nigeria

Variables	Coefficients
Age	2.1432*
	(1.326)
Gender	0.042 **
	0.021)
Household size	-0.045**
	(0.023)
Years of formal education	0.153***
	(0.332)
Experience in business	0.551
	(0.021)
Access to credit facility	0.017
	0.011)
Membership of community association	0.315**
	(0.620)
Income	-0.483***
	(0.098)
Primary occupation	-1.105*
	(0.209)
Number of SMEs	0.025
	(0.021)
Constant	1.423
	(0.464)

* Coefficients significant al 10 %; ** Coefficients significant at 5%; *** Coefficients significant at 1%;
Figures in parenthesis are standard errors; Number of observation = 100,
Log likelihood = -78.24342; Prob > chi2 = 0.0000

XVI. DISCUSSION

In ascertaining what determines ICTs' usage in the study area, the effect of a number of respondents' socioeconomic characteristics and external factors were considered. From the result presented in Table 4; age, gender, household size, educational status, income,

membership of community association and primary occupation were significant factors. While the coefficients of age (p<0.10), gender (p<0.05), educational level (p<0.00) and membership of community association (p<0.05) were positive, those of household size (p<0.05), income (p<0.00) and primary occupation (p<0.10) were negative. For example, as age and educational level of respondents increase, their usage of ICTs is enhanced because of experience and better exposure as a result of education. Again being a member of community association creates an avenue to learn new ideas and get up-to-date information which invariably translates to better usage of ICTs. On the other hand, as household size increases, usage of ICTs dwindles and this is due to the negative impact that large household size will have on income and as income level falls, usage of ICTs will fall.

The study has particularly provided empirical evidence that indeed the adoption of ICT in the Nigerian economy is beneficial, going by what the analyzed data collected on the operation in the service sectors have revealed. It has been shown that adoption level in terms of availability and utilization, is abysmally low. The frequency of use is also at an average level, according the Computer Association of Nigeria (CAN), there were between 500,000 and 650,000 computer systems in Nigeria as at 1997 (Vanguard, 26 August, 1998). This will translate into a rate of 6.5 computers per 1000 population. This low computer availability rate understandably accounts in part for the low per capita level adoption.

The overall conclusion, however, is that the adoption level of ICT in Nigeria has been directly influenced by the availability of information and communication gadgets. The inadequate level of computer availability, for example, was found to be a limiting factor to computer application for many functions in industries. The situation is the same for telephone lines, which due to low density, has made acquiring telephone facilities a luxury to many factories and business establishment in Nigeria.

XVII.   RECOMMENDATIONS

Based on the findings of this study, it is recommended that:
a.   Capacity building for women needs be priotised through education since education supports and encourages the adoption of new technology which invariably leads to increased income.
b.   Infrastructural facilities especially power (electricity) is very vital to enhance the usage and performance of ICT facilities. Virtually all ICTs facilities rely on power to function. In fact, the most patronized ICT facility (mobile phones) requires power to charge the batteries. It is therefore expedient, to provide uninterrupted power supply in order to boost SMEs activities.
c.   The cost of ICTs has been found prohibitive; there is every need therefore to subsidize the cost of acquiring these gadgets. This can be done through a policy framework that would beat down the duties imposed on ICT facilities that are imported for productive ventures.

d.   The crucial role of association as a platform through beneficial information is obtained cannot be downplayed, hence, association should be encouraged and supported, it is believed that, their activities would go a long way to solve a number of challenges that are stifling the efforts of SMEs.

XVIII.   REFERENCES

[1]   Aina, O. C. (2007). The role of SMEs in poverty alleviation in Nigeria [online]. <http://www.journalanduse.org/Assets/Vol3%20Papers/JOURNAL%2010.pdf>

[2]   Apulu, I. (2012). Developing a Framework for Successful Adoption and Effective Utilisation of ICT by SMEs in Developing Countries: a Case Study of Nigeria. PhD Thesis submitted to University of Wolverhampton.

[3]   Isaac B.O. (n.d.) Information and Communication Technologies as Drivers of Growth: Experience from Selected Small-Scale Businesses in Rural Southwest Nigeria. Retrieved from http://www.nai.uu.se/ecas-4/panels/141-156/panel-150/Isaac-Oluwatayo-Full-paper.pdf on September 10, 2014

[4]   Kuyoro S.O., Awodele O., Alao O.D. and Omotunde A.A. (2013). ICT solution to Small and Medium Scale Enterprises (SMEs) in Nigeria. International Journal of Computer and Information Technology, 2(4). www.ijcit.com

[5]   Locke, S. (2004) 'ICT Adoption and SME Growth in New Zealand', Journal of American Academy of Business, Cambridge 4 (1/2): 93-102.

[6]   Macpherson, A., Jones, O., and Zhang, M. (2002) 'Network Learning in a High-Tech SME: Expanding Entrepreneurial Capabilities', Manchester Metropolitan University Business School Working Paper: Manchester Metropolitan University Business School.

[7]   Ongori, H and Migiro, S. O. (2010) Information and Communication technology adoption: a literature review. Journal of Chinese Entrepreneurship, 2(1), 93-104.

[8]   Qiang, C. Z., Clarke, G. R., and N, Halewood (2006) 'The Role of ICT in Doing Business' Information and Communications for Development - Global Trends and Policies, Washington DC: World Bank.

[9]   Sarantakos, S. (1998). Social research. South Melbourne, Macmillan Education Australia.

[10]   Storey, D. (1994) Understanding the Small Business Sector. Thompson Business Press, London.

[11]   Timmons, J. (1994) New Venture Creation, 4th edition, Irwin, New York.

[12]   Wattanapruttipaisan, T. (2003) Four proposals for improved financing of SME development in ASEAN. Asian Development Review, 20(2), pp. 1-45.

XIX.   ACKNOWLEDGEMENT