

Challenges Facing the Adoption of Information Technology in the Management of Small and Medium Enterprises in Nigeria

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ABSTRACT: *The economic growth of any country depends, to a certain degree, on the ability of the country's business community to maximize their growth potential. One of the biggest contributors from the business community of any nation, to the nation's economic development, is the small and medium sized enterprise (SME) sector. Studies have shown that SMEs and indeed, large and multi-national organizations can improve their productive capacity by using the benefits of the Information and Communications Technology (ICT). This paper explores how the Small and Medium Sized Enterprises (SMEs) in the developing economies such as Nigeria can achieve their own growth through the adoption of information communication technology. This study relies on secondary data from various sources to examine the availability, accessibility and affordability to relevant ICT facilities and challenges facing SMEs in the use of information technology. The study recommends that agencies that regulate SMEs should formulate policies that will facilitate the adoption of ICT facilities by SMEs because of its potential in improving firms growth performance; SMEs owners should invest in ICT and its components because they have been proven to significantly influence organizational performance.*

Keywords: *Information and Communication Technology (ICT), Small and Medium Scale Enterprises (SMEs), Adoption, Organisational performance.*

I. Introduction

Rapid globalization and advances in Information and Communication Technology (ICT) has brought about phenomenal improvements and great opportunities for developing countries to participate meaningfully in the global digital economy. It is in Nigeria's national interest to harness potentials that exist in the information-driven age through the deployment and exploitation of ICTs to facilitate socio-economic development. The information age is one in which information and knowledge is key factor in enabling social and economic growth (Moses, Theresa, Tonna and Moses, 2014). It is, therefore, imperative for Nigeria to facilitate the development of information and knowledge based economy through the deployment, development and exploitation of ICT. The impact of ICT affects all facets of the society and is used to meet real development needs such as wealth creation, job creation, poverty reduction, economic growth and education. It provides the unique opportunity to compete and participate in the global networked economy. ICT is a key factor in ensuring sustainable development in today's information age. Developing an ICT roadmap will show clearly how ICT fits into the national picture. In today's information age no nation can perform at its best without concrete, well-thought-out and working ICT strategies. Countries therefore develop national ICT policies in recognition of the enormous potential of ICT (Anga, 2014).

The Small Scale and Medium Sized Enterprises (SMEs) have been credited with enormous contribution to the growth of the developed economies of the world. In the same vein, the Information and Communications Technologies (ICT), and particularly the Internet have played their own part in those economies. The SMEs provide the cornerstones on which any country's economic growth and stability rests. The American economy, the largest economy in the world, depends largely on the success of SMEs for "innovation, productivity, job growth and stability" (Bhatnagar, 2003). The rapid transformation of the "Asian Tiger" countries of India, Malaysia, Indonesia, Taiwan and Hong Kong, has also been hailed as proof that SMEs are major catalysts to economic development. Their importance to any economy hinges on their ability to stimulate indigenous entrepreneurship, to provide employment to a greater number of people; to mobilize and utilize domestic savings and raw materials, to provide intermediate raw materials or semi-processed products to large-scale enterprises, and to curtail rural-urban migration.

Of equal strategic importance is also the role of the SMEs in other developing countries like Nigeria. With a Gross National Product (GNP) of some \$41.2 billion and a World Bank estimated population of 170.9 million, Nigeria is one of the largest economies in Africa (World Bank Report, 2014). This being the case, the economic success or failure of Nigeria can affect not only the country but the whole of sub Sahara Africa. This is why any effort geared towards understanding how the SMEs make use of emerging technologies in improving their products and services which ultimately reflect on their growth potential is worthwhile.

II. Meaning and Nature of Information Technology

The term "Information technology" evolved in the 1970s. Its basic concept, however, can be traced to the World War II alliance of the military and industry in the development of electronics, computers and information theory. There have been varying opinions on the concept of information technology most of them revolving around the same axis. Mitra (2002) present technology as something new as it drives change at an ever increasing rate. It is often equated as being modern and holds out a panacea in which the future is invariably better than the past. Information technology can be seen in the light of the following definitions.

- As the various technologies which are used in the creation, acquisition, storage, dissemination, retrieval, manipulation and transmission of information (Woherem, 2001).
- As a means of processing data, gathering information, storing collected materials, accumulating knowledge and expediting communication (Madon, 2000).
- As having a primary focus of collecting, organizing, storing retrieving, interpreting and using information. Khalil (2003) conceptualizes information technology as the term that describes an organizations computing and communications infrastructure, including computer systems, telecommunications, networks, and multimedia software and hardware. He goes on to assert that information technologies are computer based and operate on a convergence of the electronics and telecommunications devices.

Information technology is also seen as the use of electronic machines and programs for the processing, storage, transfer and presentation of information. It encompasses many technologies such as computers, software, networks and even telephone and fax machines. The purpose of IT is to facilitate the exchange and management of information and has a lot of potentials for the information process component of any organization (Apulu and Latham, 2011). Information technology according to Akunyili (2010) is a term which encompasses the notion of the application of technologies to information handling (generation, storage, processing, retrieval, dissemination etc).

Information technology is defined by the United Nations Development Programme (2007) as the study, design, development, implementation, support or management of computer based information systems, particularly software applications and computer hardware. Encompassing the computer and information industries, information technology is the capability to electronically input process, store, output, transmit and receive data and information including text, graphics, sound and video, as well as the ability to control machines of all kinds electronically. Information technology is comprised of computers, networks, satellite communications, mobile communications, robotics, videotext, cable television, electronic mail (E-mail), electronic games and automated office equipment. The information industry consists of all computer communications and electronic related organizations including hardware, software and services. Completing tasks using information technology, results in rapid processing and information mobility as well as improved reliability and integrity of processed information.

Udo, and Edoho, (2000) define IT as "Computer based information management systems allowing an organisation to collect information from many different sources and develop a composite picture about its customers, its market position in different market centers and its net exposure in those markets. In small and medium enterprises, information technology is seen as the development, installation and implementation of computer systems and applications. Information technology is concerned with the use of technology in managing and processing information especially in organizations. In particular it deals with the use of electronic computers and computer software of convert, store, protect, process, transmit and retrieve information. For that reason, computer professionals are often called IT specialists or business process consultants and the division of company or organization that deals with software technology is often called the IT department.

The Office of the Deputy Prime Minister, Department of Trade and Industry and Local Government Association UK, ODPM (2005) defined information technology to include any equipment or interconnected system or subsystem of equipment that is used in the creation, conversion or duplication of data or information. The term includes but is not limited to, telecommunication, products, (such as telephones, information kiosks, and transaction machines, World Wide Web sites and the office equipment such as copiers and fax machines.

All the above definitions of information technology share certain key characteristics which are outlined below.

- Information technology is a combination of two major components, computers and telecommunications.
- Information technology is a master tool for managing information in all its ramifications, i.e. creating /generating, gathering, organizing, manipulating, storing , retrieving and dissemination

- Information technology has the capability and versatility to impact and improve every field of endeavor and form of organization by automating the use of information.
- Information technology carries with it the hallmarks of a modern day computer i.e. Speed, accuracy, efficiency and productivity.

However, from the knowledge of the foregoing, and for the purpose of this research study, information technology will be defined as the various technologies which are used in the acquisition, storage, organization, manipulation and transmission of information to accumulate knowledge, ease and expedite planning, decision making and controlling in an organization, while enhancing efficiency. On a last and crucial note, with regards to the meaning of IT, there is the need to further stress the fact that IT is the merging of computing and telecommunications technologies. For the full potential of information technology to be realized, these two elements must come together. On their own, the powers of computers are immense, but limited. It is only when communications is introduced that computers can be networked so that people can work together by sharing data, documents and by sharing ideas mainly through electronic messages. Many believe that it is only when two or more computers are networked that organizations can start appreciating the real power of the computer. As Akomea-Bonsu and Sampong (2012) put it, "the personal computer has already had a huge effect on business. But its greatest impact won't be felt until the PCs inside and outside a company are intimately connected". What this implies is that, although an organization may own stand alone computers, such an organization cannot be said to be proficient in IT until these computers are interconnected or networked, allowing information to be exchanged within the organization with the utmost of ease.

III. Features of Small Scale Industry

Some of the features of Small Scale Industries in Nigeria are as follows:

- (i) Low set up costs compared with large companies.
- (ii) Reliance on local raw materials.
- (iii) Employment generation.
- (iv) Value added.
- (v) Accelerating rural development and contribution to stemming urban migration and problems of congestion in large cities.
- (vi) Stimulating entrepreneurship especially in the country side.
- (vii) Provide links between agriculture and industries.
- (viii) Mobilising private savings and harnessing them for productive purposes.
- (ix) Supplying parts and components for large-scale industries.
- (x) Contribute to domestic capital formation (Anamekwe, 2001).

Some of the operational structural problems of SMEs in Nigeria were further outlined by Anamekwe (2001) as follows:

- (1) Management Problems
 - all important entrepreneurial and operational decisions are taken by one person (sole owner).
 - lack of formal training in management and production skills
- (2) Financing- This constitutes major problem. Their low business credibility, poor management, inefficiencies, limited collateral security, high risk of failure make it difficult for them to raise capital from usual sources and often force them to secure loans at higher interest rates from other lenders.
- (3) Most of them tend to be imitators rather than being innovators.
- (4) Production of non-standardized products.
- (5) Problem of marketing of products due to lack of awareness of market opportunities/skills.
- (6) Most of them are concentrated in urban centers and could therefore not tap local advantages e.g. cheap labour, access to primary products etc.
- (7) Little access to/inability to apply new technologies e.g. computers.

It is clear from the foregoing that little or no access to modern technologies like the computers, Internet, in fact ICT infrastructure as one of the fundamental problems of SMEs in Nigeria posed serious challenges to their operations and overall service delivery to customers/clients. Empirical research on ground will prove or invalidate this assertion.

IV. Small and Medium Enterprises and ICT Usage

The usage of information technology is expected to be an important factor for competitive growth of SMEs in global and regional markets. Growth of competitive pressure force SME to fight for new markets, new products and new distribution channels. These environment movements can be faced just from those businesses that have quality information systems support. The only competitive advantages companies and SME enjoy are their process of innovation and ability to derive value from information as resource. As noted earlier, information technology is the technology that is used to store, manipulate, distribute or create information. Furthermore, it is claimed that 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 (Irefin, Abdul-Azeez, and Tijani 2012). New business models and market configurations enabled by information technology, including business process outsourcing, provide SMEs with access to new market and new sources of competitive advantages.

SME usage of ICT ranges from basic technology such as radio and fixed lines to more advanced technology such as email, e-commerce, and information processing systems. Using advanced ICT to improve business processes falls into the category of e-business (UNDP, 2007).

However, not all SMEs need to use ICT to the same degree of complexity. The first ICT tool that most SMEs adopt is having basic communications with a fixed line or mobile phone, whichever is more economical or most convenient for the business. This allows the SMEs operators to communicate with its suppliers and customers without having to pay a personal visit. After acquiring basic communication capabilities, the next ICT upgrade is usually a PC with basic software. Even without Internet connectivity, SMEs can use PCs for basic word processing, accounting, and other business practices. With the Internet, SMEs are able to use more advanced communications capabilities such as email, file sharing, creating websites, and e-commerce. This may be sufficient for most SMEs, especially those in service industries such as tourism. SMEs in manufacturing may adopt more complex IT tools such as Enterprise Resource Planning (ERP) software or inventory management software. SMEs may adopt the tools progressively or jump immediately to advanced ICT capabilities.

Like any firm, an SME decides which type of ICT products to adopt based on the concrete benefits they can bring to its core business, the ICT capacity of its employees, and the financial resources available. Most people are familiar with basic ICT such as fixed phone lines, mobile phones, fax, computers, and basic document processing software – like Microsoft Office. Advanced communication technology, however, is more complex. Advanced communication technology relies primarily on the Internet and the intranet, which allow people within the firm to share files with each other over the same network. Having Internet connectivity enables firms to do faster research, set up websites, conduct e-commerce, and set up video conferences. One of the most revolutionizing developments in advanced communication technology is Voice over Internet Protocol (VoIP). VoIP includes all types of voice communication transmitted through the Internet, whether it is between computer and computer or in hybrid form between computer and regular phone. It competes directly with traditional fixed line and mobile phone operators. Users only pay for their dial-up, broadband, or wireless Internet connection. Most complex of all is advanced IT. It is often very expensive, sophisticated and takes more time to implement by a firm. SMEs can sign up for one or all available services. In order to reduce costs, some firms opt to outsource this component or use an Application Service Provider (ASP) that provides functional software capabilities over the Internet.

Information and Communication Technology (ICT) can play a very important role because it can help SMEs both create business opportunities and 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.

V. Factors Affecting ICT Adoption in Nigerian SMES

The importance of ICT in organizations whether it is service or manufacturing cannot be over emphasized. It is also note worthy that the type and volume of product an organization produce determine the relevant ICT facilities and the capital spent to adopt and make available to the workers to discharge their specialized duties. The explosive growth of ICT as a strategic tool is needed by today's organization in order to adopt new, more powerful techniques to reduce inefficiencies and improve growth and development via commitment to work. In order to understand the overall role of ICT at the organizational level, it is useful to begin by thinking about the qualitative impacts of ICT application and use in organization's production processes (Ajayi, 2002).

Nigeria as a developing nation, the application and use of ICT in organizations is still very slow compare to other African countries, this corroborate with the finding of Kolawole, Adeigbe, and Hilary (2014), noted and concluded that most of organizations in Nigeria are Non-Intensive ICT users (that is, such organization of course have some ICT facilities such computer, LAN, WAN, mobile and land phones) but could not afford internet and VSAT which could give them access to the outside world. The reason according to Ojukwu, (2006) is due to cost, fear of fraudulent practices and lack of facilities necessary for their operations. E-HOB has not been firmly rooted in Nigeria due to the inability of many households to afford terminals and all accessories required for effective connection, high capital investment required for its operations, low level of economic development, ineffectiveness of Telecommunication service provider and epileptic supply of power supply”.

Kapurubandara and Lawson (2006) have categorized internal and external barriers that impede adoption of ICT by SMEs in a developing country. The internal barriers include owner/manager characteristics, firm characteristics, cost and return on investment, and external barriers include, infrastructure, social, cultural, political, legal and regulatory. Lal (2007) investigated the adoption of ICT in SMEs in Nigeria and found that one of the major factors inhibiting ICT diffusion and intensive utilization is poor physical infrastructure. In developing countries some of the ICT challenges include legal and regulatory issues, weak ICT strategies, lack of research and development, excessive reliance on foreign technology and ongoing weaknesses in ICT implementation. Adebayo, Balogun and Kareem, (2013); Adenikinju, (2005); Sajuyigbe and Alabi (2012); Lal (2007); Apulu and Emmanuel, (2011) and Apulu and Latham (2011) amongst others, identified more factors that affect the adoption of ICT by SMEs in Nigeria. These factors include: lack of infrastructural facilities, lack of funds, cost of implementation, lack of awareness, lack of appropriate government policies, lack of skills and training, cultural factors, electricity constraints, corruption, low levels of education, illiteracy, lack of proper information, and so on. Adenikinju (2005) advocates that problems relating to the SMEs sector in Nigeria and its development have been handled inappropriately by the government and highlight problems such as infrastructural and cultural factors, as acting against the effective development and exploitation of ICT in Nigeria. Lal (2007) also pointed out that the major factors that affect the adoption of ICT are infrastructure, cost of purchasing computer equipment, government support and management support respectively. Sajuyigbe and Alabi (2012) asserted that lack of finance, lack of electricity, lack of computer skill personnel and lack of government support are the major factors that hinder adoption of ICT by SMEs. Apulu and Emmanuel, (2011) also found that characteristics of the firm and industry sector are contributory factors to the adoption and exploitation of ICTs in SMEs.

In the work of Richard and Richard (2001), on ICT in Small-scale Enterprises in Africa (Botswana) noted that the size of an industry influences ICT intensity within an organization. They further asserted that the intensity of ICT in any organization is a function of the organizational annual turnover. Be that as it may, the status of organizations in Nigeria need to be examined in respect to availability, accessibility and affordability of relevant ICT facilities to different organization as regard to the size and what they produce/ or service render for the entire public and the global world (Adebayo, Balogun and Kareem, 2013). It is possible to access what is available and then can you really need to ask what the price of what you can access is. Thus availability, access and affordability of ICT facilities by organizations are naturally the first steps to consider when discussing on the application and use of ICT as a tool for industrial/ organizational and national development especially in Nigeria. With a mix of visionary government ICT policy and profit-motivated private-sector competition, eventually, the issue of affordability becomes less important even though availability and universal access to ICT facilities are assured compared to what was obtainable in Nigeria 4-5 years ago when most SMEs in Nigeria could not afford relevant ICT facilities

VI. Conclusion and Recommendations

The small-scale enterprises often target grassroots business and finance. They exist to provide much-needed capital and impetus to small business groups. In so doing, they necessarily require the services of ICT. In any case, it is generally believed that ICT facilities make work faster and better, speed up operations, eliminate duplication and reduce paper work e.t.c. regrettably however; the SMEs in Nigeria betrayed an appalling lack of ICT facilities, hence limited application of same. Expectedly, their services and operations were being hampered due to this abysmally low ICT application. It is equally regrettable that this state of affairs exists in spite of a National Policy on Information Technology.

Overall, however, lack of ICT infrastructure (due to poor funding and sundry reasons) seems to stand between Nigeria SMEs and better services accruing from ICT. Based on its findings the study recommends as follows:

- a. Nigeria should strive to strongly position itself to meet up with the requirements of ICT infrastructure, with specific reference to the SMEs. The present state in terms of ICT facilities is, to say the least, deplorable, and the trend needs to be urgently reversed.
- b. The SMEs and to, as a matter of necessity, equip themselves adequately with all ICT facilities, not just basic office tools. For example, such relevant ICT gadgets as Internet facilities, video conferencing facilities, facsimile, e-mail, telex, e.t.c.
- c. Computers at all SMEs should necessarily be connected to the information super highway. In the same vein, all SMEs should henceforth enjoy the services of Local Area Network (L.A.N.) in order to facilitate and enhance communication from within and without.
- d. The SMEs should urgently ensure that all or, at least, most of their staff henceforth have access to personal or shared access to computers which have been hooked to the Internet.
- e. Government should extend the hand of assistance to SMEs, particularly with a view to improving their funding and financing capacity.
- f. The energy sector needs to be urgently over-hauled to ensure constant and uninterrupted electricity supply, lack of which greatly and severely hampers day-to-day operations of the SMEs (particularly ICT services).
- g. The SMEs should train or engage the services of expert personnel to man their ICT facilities.
- h. The National Policy on ICT should be amended to embrace government directly procuring or subsidizing ICT facilities for SMEs.

Based on that, increasing the e-readiness of medium sized firms would require heavy investment in human capital, to be complemented by raising awareness and upgrading levels and types of connectivity. For small firms, priority should be directed to increasing awareness of the role of ICT, together with improving e-infrastructure and human capital. It would be beneficial for small and medium firms to work in clusters in order to benefit from economies of scale. There is a wide scope for public/private partnerships to raise the level of e-readiness for small and medium enterprises in the economy. Such projects should be placed as priorities on the development plan and donor support agenda.

A final point emerging from this study is that the SMEs are low on their e-readiness not only because of the low level of their e-infrastructure, but because of the more serious barriers related to awareness and human capital. By the same logic, SMEs development in general and their e-readiness in particular will be affected by traditional old economy challenges such as financing issues, legal infrastructure, policy setting and the business environment. One might then extend the micro e-readiness concept to include such old economy challenges that will affect SME e-readiness. Given that the Information Society entails maintaining a smooth interaction between “new” and “old” economy, as well as developing the “e” and the “non-e” components, a comprehensive micro index for e-readiness is a challenge that is worth pursuing. This will be the subject of future research.

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