

IMPACT OF INFORMATION AND COMMUNICATION TECHNOLOGY ADOPTION ON THE PERFORMANCE OF SMALL AND MEDIUM ENTERPRISES IN RIVERS STATE, NIGERIA

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Abstract

Globalisation and digitalisation have changed the way business is done and how organisations contend with their competitors. This change is been driven by Information and Communication Technology (ICT). The aim of this study is to examine the impact of ICT adoption on the performance of small and medium enterprises in Rivers State, Nigeria, while the specific objectives are to analyse the role of SMEs in economic development; to ascertain the use of ICT by SMEs; to examine ICT adoption in developing countries; to explain the issues affecting the adoption of information and communication in developing countries; and to identify modern ICT tools that enhances the performance of SMEs in Nigeria. This study draws from practical experience and archival materials hence, its approach is content analysis by way of review of data derived from extant secondary sources. The data were collected through the review of relevant published works including books, journals, web sources, structured interviews, commentaries, official documents/publication, professional publications, and such other scholarly writings that are relevant to the study. The study concluded that ICT play a vital role in helping SMEs both to create business opportunities and to combat pressures from competition and that ICT is an enormous subject which covers, amongst others, normal telephones, cell phones, mobile technologies, point-of-sale systems, the Internet, personal computers, networks among others. The study finally recommended that Nigerian government should 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 and that for Nigerian SMEs to remain competitive or to become successful, it is important for owner-managers to understand the critical success factors relating 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.

Keywords: *Impact, Information and Communication Technology, Adoption, Performance, Small and Medium Enterprises*

1. Introduction

Technological innovation has generated considerable interest among researchers and practitioners in recent years. In recent decades, ICTs such as computer terminals, e-mail and the Internet and their adoption and applications have become the major drivers of innovation, growth and social change. Moreover, as the Organisation for Economic Co-operation and Development points out

(OECD, 2010), in times of crisis there must be a focus on the contribution of ICT to innovation and growth. However, although interest in this subject has grown substantially, research on the impact of the effective utilisation of ICT on the performance of SMEs in Nigeria has been less common.

Like many others, Nigeria's economy depends to a large extent on SMEs which constitute about 97% of total businesses in the manufacturing, commerce and service sectors and contribute immensely to the employment of its citizens. As the business environment becomes more complex, there is a need for SMEs to adopt tools that would assist them in 'coping' with the complexities and yet stay competitive (Teo and Tan, 1998). Therefore, there is an increasing need for SMEs to deploy ICT-based systems in their daily business operations to help produce, market and service their products. The use of ICTs can potentially improve communication between individuals and groups in organisations (Apulu et al., 2013).

For Nigerian SMEs to become more advanced, it is imperative they leverage ICT-based systems to facilitate global communications with their suppliers, customers and distributors. According to Teo and Tan (1998), the role of ICT in enabling business transformation is crucial as organisations are able to streamline and coordinate the massive flow of information by redesigning or reengineering their business processes in order to improve productivity and enhance competitiveness. Dyerson et al. (2009), state that the adoption and use of ICT is widely seen as critical for the competitiveness of all SMEs in the emerging global market.

SMEs have played a key role in the economies of both developed and developing countries in terms of income and level of employment. SMEs are often seen as the seeds for a vital entrepreneurial economy, the majority of workforce are employed by these SMEs. The role they play as a major source of innovation and growth has been emphasised in contemporary research (Bravnerhjelm, 2008). Research has also shown that firms that have been able to effectively adopt ICT can provide SMEs with a strategic advantage which can positively influence their competitiveness. The adoption of ICT can provide SMEs with valuable information, increase knowledge, improved performance, improve relationships with customers and suppliers, increase efficiency, reduce cost of production among others (Apulu et al., 2013).

SMEs play a very important role in the economy of many countries and they are essential components for the economic development in Nigeria. It has therefore become vital for issues relating to SMEs to be addressed to ensure measures are put in place that would assist in improving their performance. It is essential that Nigerian SMEs work towards the successful adoption and effective utilisation of ICT which has become an indispensable management tool for large enterprises as well as SMEs. Despite the increasing potential of technology in all aspect of lives, there are a number of Nigerian SMEs that are yet to adopt ICT as a result of some unresolved issues militating against them. This in turn affects the economic development of the country, as a result of their role in economic development (Apulu, Latham, and Moreton, 2013). This study will therefore examine the impact of ICT adoption on the performance of SMEs in Rivers State, Nigeria.

1.1 Aim and Objectives

The main aim of this study is to examine the impact of ICT adoption on the performance of SMEs in Rivers State, Nigeria. The specific objectives are to:

- i. To analyse the role of SMEs in economic development.
- ii. To ascertain the use of ICT by SMEs.
- iii. To examine ICT adoption in developing countries.
- iv. To explain the issues affecting the adoption of ICT in developing countries.
- v. To identify modern ICT tools that enhances the performance of SMEs in Nigeria.

1.2 Research Questions

The following research questions served as guide in this study:

- i. What are the roles of SMEs in economic development?
- ii. What are the uses of ICT by SMEs?
- iii. What are the reason for the adoption of ICT in developing countries?
- iv. What are the issues affecting the adoption of ICT in developing countries?
- v. What are the modern ICT tools that enhances the performance of SMEs in Nigeria?

2. CONCEPTUAL CLARIFICATION

2.1 Concept of Information and Communication Technology

ICT first emerged in the mid-1980s and was described as all communication devices used for radio, networking, and computer-based communications, including desktops, computer games, smartphones, web, card transactions, computer applications, etc. ICT comprises of electronic and technological advances. Computer technology is a medium for storing and manipulating digital forms of information, while information technology allows to transfer and transmit electronic information (Fasiku, 2014; Julta, Bodorick, and Dhaliwal, 2002).

ICT drives most business that business owners now find it very difficult to operate during service downtimes. Through adequate deployment of technology, SMEs can benefit enormously by developing capacities for managing their meagre resources, and as a result, enjoy manageable transaction costs and at the same time enjoy rapid flow of information (Minton, 2003). Sajuyigbe and Alabi, (2012) also argue that ICTs can be beneficial in the areas of strategic management, communication and collaboration, customers' access, managerial decision making, data management and knowledge management.

Rafi and Muhammed (2008) stated that ICT refers to the wide range of computerised information and communication technologies. These technologies include products and services such as desktop computers, laptops, handheld devices, wired or wireless intranet, business productivity software such as text editor and spreadsheet, enterprise software, data storage and security and others. These ICTs enables smooth operation of business process and business information access. ICT also is conceptually defined as any technology that facilitates communication and assist in capturing, processing and transmitting information electronically. ICT tools that are widely available and used includes software applications, internet, fax, e-mails, mobile phones, television, radio which effective means of communicating knowledge and information (Kweku, 2006).

2.2 Concept of Small and Medium Enterprises

The concept of SMEs differs from country to country, and varies across sources documenting SMEs statistics. There is no universal concept for SME businesses, with general meanings ranging from country to country and from one industrial field to another. In Nigeria, SMEs were described

by the National Council on Industry at its 13th Council meeting in July 2001 as follows: the small-scale industry is the industry that has a labour size of 11-100 employees or a total cost of not more than 50 million Naira (N), including working capital, but excluding land costs. However, the medium-scale industry is a labour force of between 101 and 300 employees or a cumulative expense of more than 50 million Naira (N), not more than 200 million Naira(N), including working capital but excluding land costs (Moruf, Akande, and Yinus, 2014).

The National Association of Small and Medium-Scale Enterprises (NASME) in Nigeria describes a small enterprise as an enterprise of fewer than 50 employees and an annual turnover of 100 million Naira (N). A medium-sized business is described as a company with less than 100 employees and an annual turnover of 500 million Naira (N). The Central Bank of Nigeria (CBN) and also the SME Equity Investment Scheme (SMEEIS) describe SMEs as any enterprise with a maximum asset base of 200 million Naira (N) excluding land and working capital, with the number of employees estimated to be no less than ten and not more than 300 (Moruf, Akande, and Yinus, 2014; Akade and Yinus, 2013).

The popular definition of SME is a firm with 0–250 employees; small being less than 50 employees and medium sized between 50 and 249 (Harindranath et al., 2008). However, the Small and Medium Sized Development Agency of Nigeria (SMEDAN) defines SMEs based on the following criteria: a micro enterprise as a business with less than ten people with an annual turnover of less than five million Naira, a small enterprise as a business with 10–49 people with an annual turnover of 5–49 million Naira and a medium enterprise as a business with 50–199 people with an annual turnover of 50–499 million Naira, all excluding land and building. According to Adebambo and Toyin (2011), business environments have been undergoing unprecedented changes and many companies are seeking new ways to compete and maintain their competitive advantage. In today's highly competitive global marketplace, the pressure on organisations to find new ways of creating and delivering value to customers is growing stronger. Currently, ICT is being applied in many organisations in a wide range of areas.

Moreover, in deciding whether a business is an SME, the enterprise's scale in terms of staff, turnover, and the gross balance sheet is not the only consideration to be weighed. An organisation may be very limited in this context; however, if it has access to substantial additional capital (e.g., whether it is owned, connected to, or affiliated with a larger enterprise), it will not be qualified for SME designation. The concept of SMEs distinguishes between three distinct types of enterprises; independent, partner, and connected. Each category refers to a type of partnership that an organisation might have with others. This classification is important to give a good view of an enterprise's economic condition and distinguish those that are not legitimate SMEs. By measuring its data with the benchmarks for these three parameters, the enterprise can be established if it is a micro, small or medium-sized enterprise (Gilaninia, et al., 2012) as follows:

- i Micro-enterprises are classified as firms that hire fewer than ten people and whose annual revenue or annual balance sheet not exceeding 2 million Euro (€).
- ii Small enterprises are classified as firms that hire fewer than 50 people and whose annual turnover or annual balance sheet not exceeding 10 million Euro (€).
- iii Medium-sized enterprises are classified as firms that hire fewer than 250 people, and either has an annual revenue not exceeding 50 million (€) or an annual balance sheet which does not exceed 43 million (€).

2.3 The Role of Small and Medium Enterprises in Economic Development

The role of SMEs in national and economic development is well documented. SMEs are recognised as potential engines for economic and social growth all over the world (Ndiwalana and Tusubira, 2006). While figures may vary, SMEs account for the majority of firms and a corresponding share of employment within developing economies. Ndiwalana and Tusubira (2006) advocate that the SME sector largely exceeds the average economic growth of national economies in many developing countries and contributes significantly to employment creation. In Nigeria, SMEs employ an average of 50% of the working population and contribute about 50% to Nigeria's industrial output (Ihua, 2009; Apulu et al., 2011). Similarly, Aina (2007), states that about 10% of the total manufacturing output and 70% of the industrial employment in Nigeria are by SMEs. Accordingly, governments and development partners alike have recognised the important role that the SME sector plays in the overall development of Nigeria.

2.4 The Use of Information and Communication Technology by Small and Medium Enterprises

ICT is fast becoming one of the main drivers of change in organisations (Adebambo and Toyin, 2011). As technology advances with high pace, Turan and Ürkmez (2010) argue that new ICTs especially the internet, have become a major investment area for small and large organisations alike. ICT is constantly evolving, therefore it could be difficult sometimes to keep up with the changes (Turan and Ürkmez, 2010). ICT here simply refers to a wide range of computerised technologies. Ritchie and Brindley (2005) define ICT as “the array of primarily digital technologies designed to collect, organise, store, process and communicate information within and outside an organisation”. Whereas Barba-Sánchez et al. (2007) view ICT as a collective term for a wide range of software, hardware, telecommunications and information management techniques, applications and devices, that could be used to create, produce, analyse, process, package, distribute, receive, retrieve, store and transform information. Davenport (1993) simply describes ICT as an enabler of organisational change. In contrast, Apulu and Latham (2009) describe ICT as a tool that brings about competitive advantage which in turn, helps to deliver business value in organisations.

In business, ICT is often classified into two broad types of product: the traditional computer-based technologies and the sophisticated/advanced or more recent and fast-growing range of digital communication technologies that allow people and organisations to communicate and share information digitally (Dai, 2009). Apulu and Latham (2011) advocate that the rapid development of ICT has changed the conventional way of conducting business in many organisations.

In recent years the increasing use of ICT has helped SMEs, especially in developed countries, to share and exchange information more efficiently. Adopting new technologies is very important in initiating the movement for a higher quality and competitiveness in the world of SMEs (Turan and Ürkmez, 2010). More recent technologies enable organisations to share and disseminate information between various users simultaneously, customise functionality and achieve higher levels of interactivity (Maneche and Schoensleben, 2004). Furthermore, recent technologies are more sophisticated and help organisations to reduce their operational costs, enhance customer service levels and satisfaction, hence providing higher quality of information for better decision making by managers.

According to Turan and Ürkmez (2010), organisations have developed new means of communications and information flow among their partners and customers resulting in a total paradigm shift in their organisations. ICT can fulfil a number of business needs such as strategic, operational and marketing needs or a combination of all of them (Modimogale and Kroeze, 2009). In addition, the use of ICT in enabling SMEs to partake in the knowledge economy offers enormous opportunities to narrow social and economic inequalities and thus help in achieving broader development goals (United Nations, 2007). Maneche and Schoensleben (2004) state that ICT is vital for a company's external relationships, particularly cross-company workflow. The use of ICTs can provide several significant benefits to SMEs as identified by United Nations (2007), which range from increasing productivity in the production process to connecting SMEs more easily and cheaply to external contacts, whether locally or globally amongst others. Moreover, Ashrafi and Murtarza (2010) identified that ICT helps SMEs to enter new markets, supply new products and services, increase its added value, change business processes, increase performance and productivity of the organisation, employ new business channels and provide rapid response to competitors' activities.

In spite of the increasing use of technology in all aspect of lives, some SMEs in Nigeria appear to have ignored the relevance of ICT in doing business, hence are yet to reap the benefits that ICT has to offer. A recent study conducted by Apulu et al. (2011) ascertained that many Nigerian SMEs that have successfully adopted ICT mainly utilise traditional-based technologies such as standard office applications and user-friendly tools which include telephone and fax. On the other hand, it was identified that only a limited number of these SMEs make use of sophisticated communication technologies that can allow people and organisations to communicate and share information digitally. However, the internet is an exception which the majority of the SMEs' make use of and the service is characterised by very slow transmission due to the poor services provided by the different Internet Service Providers (ISPs) in Nigeria (Apulu et al., 2011).

2.5 Information and Communication Technology Adoption in Developing Countries

A developing country can be described as a one in which most people have a low income and low standards of living with less access to goods and services as compared to most people in higher-income countries (Leslie and Gaskill, 2006). Developing countries face almost insurmountable barriers to accessing the electronic highway (Kapurubandara and Lawson, 2008). ICT can help developing countries tackle a wide range of problems such as health, social and economic problems as ICT can assist in improving access to information and enabling communication (Parliamentary Office of Science and Technology, 2006). ICT can also assist in eliminating poverty, achieving universal primary education and gender equality in developing countries most especially in Africa. Yet, the benefits of ICT are still not fully realised in many developing countries due to so many unresolved issues.

Terero and von Braun (2005) observe that although the use of ICT remains concentrated largely in the developed countries, ICT diffusion is beginning to reach developing countries including the poor rural areas, bringing with it high hopes of positive development outcomes. In Nigeria, ICT is often out of reach to the poor and those mostly in the rural areas. While, technological innovations such as mobile phones and wireless broadband access are playing an important role in accelerating the take-up of ICT, strong inequality still remains.

Developing countries in general are still well behind developed countries in terms of their access to ICT (Terero and von Braun, 2005). According to Ihua (2009), developing countries are lagging behind, probably because the developed nations produce the technology, while the developing nations import it. Mouelhi (2009) advocates that the adoption of ICTs, such as internet, mobile telephony and broadband networks, in many developed countries has been found to have a positive effect on organisations' performance, yet not all countries are taking advantage of the revolution in the same way and at the same pace. Obijiofor et al. (2005) perceive ICT to be a major tool for kick-starting ailing economies and consequently in assisting developing societies to 'catch up' with the developed world. Similarly, Golding et al. (2008) affirm that there is a digital divide which shows that ICT adoptions vary between developed and developing countries with developing countries adopting ICT at a slower rate due to several issues militating against them.

2.6 Issues Affecting the Adoption of Information and Communication Technology in Developing Countries

Issues affecting the adoption of ICT in developing countries are enormous. They range from skills deficiency, economic constraints, lack of infrastructure, lack of funds, confidentiality and security concerns, low level of internet penetration and bandwidth, to inappropriate ICT policies amongst others (e.g., Kapurubandara and Lawson, 2006; Lawrence and Tar, 2010; Omary et al., 2010).

Weiner and Rumiany (2007) note that the implementation of ICT in the developing world is often inhibited because the infrastructure, human capital development and financial resources that are necessary to implement ICT effectively, are either absent or of a poor quality. They argue that ICT policies adopted in developing countries have the ability to increase (rather than decrease) the digital divide within countries, and in so doing make it even more difficult for businesses in rural areas to compete. Weiner and Rumiany (2007) further justify this point by arguing that when new technology is introduced in developing countries, it is usually made available in urban areas that have the required infrastructure and market, thereby making those areas become more competitive. With the rapid advances in technology there is a growing fear that rural areas, which are already hampered by large distances from markets and plagued with poorer quality infrastructure, will be further disadvantaged by their lack of ICT (Kew and Herrington, 2009).

According to Kari (2007) the developing world still lacks the most basic forms of information and communication infrastructure unlike developed countries, where ICT has been used to change the manner in which businesses are conducted, in order to attain some forms of strategic advantage. Prasad (2009) also asserts that lack of scholarly focus tends to hinder the development and use of ICT in developing countries since businesses lack the vital information that could provide directions for the successful use of it.

2.7 Modern Information and Communication Tools that enhances Small and Medium Enterprises performance in Nigeria

Anigbogu et al. (2014) defined ICT as an umbrella term that covers all technical means for processing and communicating information. This involves all digital technology including the computer, the different electronic applications, digital media, broadband technology, laptops, handheld devices (mobile telephony), wired or wireless intranet, business productivity software

such as text editor and spreadsheets, enterprise software, data storage and security, network security and others (Abdullah, 2014).

ICT offers the basis on which SMEs can build their business information systems to fortify their business processes, customer relationships, and efficient delivery of products and services to satisfy the needs of other clients. Modern ICT tools are seen as great potentials contributing to the organisation's sustainable competitive advantage if applied in a relevant way. Business transactions' efficiency and effectiveness can grow due to faster, accurate, and timely information processing. ICT plays an important role in the modern information economy. SMEs need to invest in this economy to compete and progress in the future (Modimogale and Kroeze, 2011; Ladokun, Osunwole, and Olaoye, 2013).

ICT contributes to an effective flow of data in organisations, helps them to get information at any time and achieve the desired goal (Apulu and Latham, 2011). The use of ICT in SMEs facilitates cooperation within an organisation and between one organisation and another (Apulu and Latham, 2010). It is necessary to adopt and apply ICT innovations to improve SMEs' business processes as well as to improve efficiency, profitability, and higher growth potential (Attom, 2013). The low rate of ICT application in emerging economies is due to many impeding factors that limit SMEs' development in the regions. Modern ICT tools that enhances SMEs performance in Nigeria includes computer, digital media, internet, e-commerce, e-banking, m-banking etc.

3. Research Method

This work on the impact of the effective utilisation of ICT on the performance of SMEs in Nigeria draws from practical experience and archival materials hence, its approach is content analysis by way of review of data derived from extant secondary sources. The data were collected through the review of relevant published works including books, journals, web sources, structured interviews, commentaries, official documents/publication, professional publications, and such other scholarly writings that are relevant to the study.

4. Conclusion and Recommendations

The main aim of this study is to examine the impact of ICT adoption on the performance of SMEs in Rivers State, Nigeria. SMEs are vital to the Nigerian economy; hence there is a need for the government to assist in resolving the issues' affecting them since, ICT has become indispensable for all kinds of businesses. There is also a need for more focus and concerted efforts on increasing awareness amongst SMEs, especially with regards to the benefits of ICT adoption, in order for all SMEs to actively participate in the present era of globalisation and furthermore to stay competitive. The government needs to create better awareness programmes that will assist in increasing the rate of ICT adoption amongst SMEs. This could be achieved by organising seminars or induction sessions. Likewise, the government should enforce standardised, consistent and uniform policies that would help to develop the SME sector and, offer relevant professional advice to SMEs thus, assisting non-users to adopt ICT.

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 application. 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 application. This involves the Nigerian government making more funds available to SMEs and putting some structures in place to ensure a successful investment.

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