

Drivers for Information and Communication Technology Adoption: A Case Study of Nigerian Small and Medium Sized Enterprises

Idisemi Apulu (Corresponding author)

School of Technology, University of Wolverhampton
Wulfruna Street, West Midlands, WV1 1LY, United Kingdom
Tel: 44-776-578-5662 E-mail: i.apulu@wlv.ac.uk

Dr. Ann Latham

School of Technology, University of Wolverhampton
Wulfruna Street, West Midlands, WV1 1LY, United Kingdom

Received: December 10, 2010 Accepted: December 21, 2010 doi:10.5539/ijbm.v6n5p51

Abstract

In recent times, the current use of Information and Communication Technology (ICT) in many organizations causes some forms of revolution in their business practices. ICT is increasingly becoming related to organizational values (Rastrict and Corner, 2010). Researchers (e.g. Rastrict and Corner, 2010; Lin and Lin, 2006 and Melville et al., 2004) reveal that there is a growing support for the positive relationship between ICT and its advantages. According to Kapurubandara and Lawson (2006), ICT offers promising opportunities to organizations in order to meet the challenges of an ever-changing environment. ICTs have a remarkable potential to contribute to sustained competitive advantage for businesses, having been identified as key tools in management processes (Ion and Andreea, 2008). Kutlu and Özturan (2009), argue that in Small and Medium Sized Enterprises (SMEs), ICT can be used as a business tool to reduce costs, create stronger links with customers, create innovations and facilitate market niche. Ongori (2009) also states that SMEs are compelled to adopt ICT in their business processes in order to cope with the challenges in the business environment. Thus, this paper intends to identify some drivers for ICT adoption amongst 25 SMEs in Nigeria. The paper is drawn from on-going PhD research.

Keywords: Drivers, ICT, SMEs, Adoption, Nigeria

1. Introduction

There is a rapid development in the use of ICT in organizations. In recent times, ICT is being applied in a wide range of areas in many organizations. It has provided new ways to store, process, distribute and exchange information within companies and with customers (Kollberg and Dreyer, 2006). The recent ICT developments have enormous implications for the operation, structure and strategy of organizations (Buhalis, 2003). Organizations of all types around the globe are currently utilizing ICT, not only for cutting costs and improving efficiency, but also for providing better customer service (Ashrafi and Murtaza, 2008). Spanos et al. (2002) state that ICT has the ability to enhance, coordinate and control the operations of many organizations and can also increase the use of management systems. On the other hand, Ongori and Migiro (2010) state that the impact of globalization has obliged many SMEs to adopt ICT in order to survive in the present competitive era especially in the area of competing with large organizations. Bresnahan et al. (2002) argue that durable productivity gains have been achieved in enterprises that use ICT. ICT helps in the effective flow of data in organizations thereby assisting organizations to obtain information at any given time which in turn, helps these organizations to reach their desired target. In addition, ICT brings about change in businesses and helps to create competitive advantage hence, organizations of all types including SMEs tend to adopt ICT.

Information and Communication Technology (ICT) refers to a wide range of computerized technologies. ICT is any technology that enables communication and the electronic capturing, processing and transmission of information. 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 spread sheet, enterprise software, data storage and security, network security and so on (Ashrafi and Murtaza, 2008). Wangwe (2007), refer to ICT as a myriad of stand-alone media, that includes telephone and mobile telephony, radio, television, video, tele-text, voice information systems and fax, as well as computer-mediated networks that links a personal computer to the internet. ICT is an integrated system that incorporates the technology and infrastructure required to store, manipulate, deliver and transmit information. Adeosun et al. (2009) simply describe ICT as working with computers.

With the use of ICT businesses can interact more efficiently, and it enables businesses to become digitally networked (Buhalis, 2003). ICT removes distance and time constraint in accessing required information flows and hence improves coordination of activities within organizational boundaries (Spanos et al., 2002). It enables the diffusion of organizational data that can be crucial input for effective decision making and control at all levels. ICT helps in organizational planning thereby improving organizational communication and flexibility. Spanos et al. (2002), state that ICT can be used as an enabler to turn data into information. According to Erumban and de Jong (2006), ICT has created a revolution by making the world seemingly smaller and improving potential economic growth. Ongori and Migiro (2010) state that ICTs' adoption in SMEs has assisted to provide a means to access, process and distribute greater amounts of data and information quickly, in order to make thoughtful decisions. Hence, SMEs are embracing the state-of-the-art technologies to enable them penetrate into the international markets and remain competitive.

2. Literature review

2.1 Exploring the Impact of ICT

Adeosun et al. (2009) state that the use of ICT enables strategic management, communication, collaboration, information access, decision making, data management and knowledge management in organizations. ICT causes fundamental changes in the nature and application of technology in businesses. ICT can provide powerful strategic and tactical tools for organizations, which, if properly applied and used, could bring great advantages in promoting and strengthening their competitiveness (Buhalis, 2003). Hengst and Sol (2001), state that ICT enables organizations to decrease costs and increase capabilities and thus assist to shape inter-organizational coordination. The use of ICT can assist to lower coordination cost and increase outsourcing in organizations. ICT is used to exchange information and it provides a medium for learning. Ramsey et al. (2003) note that organizations generally stand to gain from ICT in areas such as reduced transaction costs, information gathering and dissemination, inventory control, and quality control.

Fink and Disterer (2006) argue that ICT not only help organizations to become more efficient and effective but also help them to become competitive. Pavic et al. (2007) state that organizations have the opportunity to achieve a competitive advantage from the advances in ICT through innovation, marketing, efficiency gains, better quality and customer responsiveness. Lal (2004) further states that web-enabled services increases the competitiveness of organizations as they change the relationship with customers and also assist to create stronger link between firms and clients. ICT helps to increase business competitiveness and enhance enterprise performance through indirect cost savings such as labour costs and increased labour productivity and direct cost such as reduction of firm's input (Chowdhury and Wolf, 2003; Love et al., 2006). In order words, it can be said that ICT can influence the performance of an enterprise in multifaceted ways. Hence, ICT can bring about change in organizations and make them more competitive, innovative and also generate growth (Obijiofor et al., 2005).

2.2 The Role and Benefits of ICT in SMEs

The definition of SMEs varies from country to country but is often based on employment, assets or a combination of the two. 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 10 people with an annual turnover of less than 5 million Naira, a small enterprise as a business with 10-49 people with an annual turnover of 5-49 million Naira while a medium enterprise as a business with 50-199 people with an annual turnover of 50-499 million Naira. In Nigeria, SMEs cover the entire range of economic activity within all sectors (SMEDAN, 2005).

In the present knowledge-based economy, it is important for SMEs to adopt processes that enable them to provide services that will bring about competitive advantage. ICT has a significant positive impact on organizational performance (Maldeni and Jayasena, 2009) and is vital to SMEs. Without the use of ICT, modern businesses are not possible as ICT has a significant impact on SMEs operations and is claimed to be crucial for the survival and growth of economies in general (Berisha-Namanil, 2009). ICTs provide opportunities for business transformations (Chibelushi, 2008) and provide SMEs the opportunity to conduct business anywhere

(Jennex et al., 2004). The European Commission (2008), states that SMEs could use ICT in order to grow and to become more innovative. Love et al (2004) also ascertain that the use of ICT offers many benefits to SMEs at different levels (operational level, tactical level and strategic level). The benefit of ICT cuts across all sectors of the economy and all the fields of human activities.

According to Fullanteli and Allegra (2003), ICT offers enterprises a wide range of possibilities for improving SME's competitiveness. It provides mechanisms for getting access to new market opportunities and specialized information services such as distance consulting, continuous training, new advisory modes and so on. Organizations can exchange real-time information and build closer relationships with their customers, suppliers and business partners; customers can receive immediate feedback that allow companies to react fast to changing customers' demands and recognizing new market niches. This implies that organizations that are able to exploit the potentials offered by ICT can handle innovative processes such as Supply Chain Management (SCM), Customer Relationship Management (CRM) and Knowledge Management (KM) more effectively (Fullanteli and Allegra, 2003). Also, Swift (2009) argues that SMEs benefit from the use of ICT as it connects them more easily and cheaply to external contacts. Through the use of ICT infrastructures, SMEs can engage in e-commerce. Electronic commerce will aid them in increasing their efficiency in their day-to-day business operations and sustain their business growth through the opening of new market channels, and to increase the flow of information (Ongori and Migiro, 2010). ICTs enable SMEs to have access to robust business information that leads to organizational effectiveness (Irani, 2002). Hence, ICT is now viewed as a vital resource that enhances the competitiveness of SMEs in any business environment.

3. Research Method

This study adopts a case study strategy. Case studies are the most common qualitative method used in information systems research (Orlikowski and Baroudi, 1991). Sauer (1993) is of the opinion that research in information systems is best done by case study. According to Yin (2003), case study provides an opportunity to study a phenomenon within its natural context. Semi structured interviews were used as tools for collecting data during the study. This enabled the researcher to elicit the respondents' views and experiences in their own words. The interviews focused on the in-depth understanding of the drivers for ICT adoption within SMEs in Nigeria. Interviews were conducted with owner-managers, Heads of IT departments or IT professionals, and some other staff in 25 SMEs in Apapa, Lagos.

Although the interviews were used in order to aid better interpretation of results, the use of documents such as company reports and observations were also important. However, observing the management operations and procedures of the SMEs assisted in providing better information than just relying upon company reports and key informants. This multi-method approach enabled triangulation to take place. The data analysis process of the case study involved identifying patterns in the case study data. This involved arranging data in a chronological order, writing up the data according to phases and themes, in addition to grouping the paragraphs of the same themes and phases together.

Table 1 Here

4. Results and Discussion

The primary details of the SMEs that participated in the interviews are described at the end of the article. Interviewees were asked to state the reasons behind their decisions to adopt ICT (drivers for ICT adoption). The participants gave a wide range of reasons and these reasons have been grouped into some major areas which include:

4.1 Competitive advantage

All the respondents identified the need to have some sort of competitive advantage in their businesses as a driver for adopting/deploying ICT. For example one respondent states that:

"In order to remain competitive as an SME, we must keep at pace with what goes on in the world".

Other respondents also made similar remarks regarding their reasons for adopting ICT.

4.2 Increase profit

Interviewees also believed that the adoption of ICT would assist in increasing profit in their various organizations. According to one company:

"We use ICT to strategize information that we have to get on our sales target which includes the turnovers that has to be used".

4.3 Global reach

In terms of global reach, one company for example decided to introduce ICT to enable them get international prices for customers. The respondent comments:

“We use ICT because our clients like to send us emails and they always want us to reply. They also ask us questions on international prices for petroleum products because they need to know the prices (rates) at every given time and it is only on the internet that you can find this information”.

4.4 Efficiency/Speed

Efficiency was also identified as a reason for ICT adoption. Six respondents decided to adopt ICT in order to become more efficient in their various businesses. Of the six respondents, three respondents stated that their main reason for ICT adoption is to improve their work in terms of speed. One of the respondent comments:

“The decision was due to the stress of manual processing of patients data which is cumbersome. ICT helps us to be efficient. ICT is the technology of the day, the world is a global village hence as a company, we had to move from manual to electronic data processing”.

4.5 Current Trends/Technology of the day

It was noted that some of the participating firms decided to adopt ICT just because it is one of the latest developments. For example, one company described ICT as the technology of the day whilst four other respondents decided to adopt ICT due to the current trends. Respondents also viewed ICT adoption as a tool that could assist them to adapt to their business environments hence, they stated that it was necessary to adopt ICT. One respondent comments:

“The world globally is changing; technology is now at the forefront of every organization. There is no way you can meet up with the current trend of technology if we do not use ICT because everything is going digital. If you use manual systems you will not get enough patronage from people. So you will need to come out and do what people are doing and meet up with the standard of others. We are looking forward to getting the most sophisticated ICT infrastructures for our business”.

Also, another respondent states that:

“ICT is the trend in the business world. For you to stay competitive and add value to your business, you must keep at pace with what goes on in the world and the world today is moving from having to go to meetings and doing your writings in long hand and having to use type writers to write your letters instead of computers. So far, for you to deliver qualitative service, you must adopt ICT. Technology enhances your business and helps to move your business forward. In order words, it makes things easier”.

4.6 Communication

Five respondents gave their reasons for adopting ICT as for communicating with customers. A respondent states that:

“ICT is mainly used in our organization for communication with our customers, suppliers, to get quotation for various products by searching the internet and also to get information from other stake holders in the business”.

4.7 Automation/Computerisation of records

In terms of automation and computerisation of company's records, respondents gave similar reasons for adopting ICT that is, moving from manual processing of data to automated data processing. A respondent comments:

“There were too many paper work with manual processes and obtaining information from files was always difficult but with the adoption of ICT, we are now relieved. We can find information easily unlike manual system”.

4.8 Information storage

Storing information was identified as another reason for adopting ICT amongst the respondents. According to one respondent:

“ICT helps to store information using different ICT equipment”.

4.9 Customer satisfaction

In terms of customer satisfaction, all the respondents' want to provide better customer services to their customers ensuring their customers are satisfied, hence, they decided to adopt ICT. One respondent comments:

“ICT is what is in vogue nowadays. You cannot do without technology. If you are competing with other organizations that are ICT compliant, it is very important that you are able to compete as this will help to satisfy your customers. Information has a lot to do with organizational advantage in terms of customer satisfaction”.

4.10 Reduce cost/saves time

Respondents all stated that ICT helps to reduce operational cost and also saves times. One company comments:

“ICT makes our job move faster; it is efficient and reduces cost. For instance instead of carrying some documents to places which takes time, we just send it via the internet”.

4.11 Online presence

Ten respondents gave the opinion that having online presence helps to attract new customers and generally gives a better profile of their companies, while four respondents stated that technology is now the order of the day. One respondent states that:

“The world globally is changing; technology is now at the forefront of every organization hence there is need to have online presence”.

4.12 Nature of business

The telecommunication companies that participated in the study stated that they decided to adopt ICT due to the nature of their business. They all assumed that without ICT it was impossible to run their businesses. A company comments:

One of the major reasons for adopting ICT in this company is due to the nature of our business as a telecom company. The company works with computers and other ICT infrastructures which help us in the production of recharge cards for mobile phones. ICT infrastructures also help us to load recharge cards, produce and store them. Furthermore, the company uses ICT for information management and to update accounts. Without ICT we cannot work. It is what we use the most”.

4.13 Advertisement

A respondent mentioned that the adoption of ICT helps them to advertise their products and services. The company comments:

“With ICT you can advertise your products and services. If you do not connect or do not have some form of ICT, it is very likely that people may not know you have something to offer. Hence, we use ICT for advertisement”.

Table 2 Here

5. Discussion

The responses obtained from the participants have enabled the researchers to identify some drivers linked to ICT adoption in Nigeria SMEs. ICT has changed the manner in which enterprises market and sell their products. The respondents stated that a major driver for their adoption of ICT is to have some sort of competitive advantage. ICT can be described as a strategy for keeping at pace with current global developments. ICT is often seen as an enabler that will allow smaller enterprises to upgrade the value of their processes and thus gain higher value for their products and services (Drucker and Payne, 2010). Apulu and Latham (2010) state that appropriate use of ICT can assist SMEs gain competitive advantage by reducing costs and improving core business processes. The case studies show that all the SMEs focused on one major reason for adopting ICT which is to have some form of competitive advantage. Therefore, based on the literature review and the case results, it can be said that a major driver for adopting ICT in Nigeria SMEs is to have some form of competitive advantage.

The adoption of ICT can also assist organizations to increase efficiency. Fink and Disterer (2006) argued that ICT not only helps organizations to become more efficient and effective but also helps them to become competitive. Apulu and Latham (2010) also state that the advantage of adopting ICT cuts across all sectors of the economy and that ICT can enable businesses become more efficient, effective and competitive. Furthermore, Pavic et al. (2007) state that organizations have the opportunity to achieve a competitive advantage from the advances in ICT through market efficiency gains, better quality, innovation and customer responsiveness. With ICT high efficiency is obtained in business transactions due to a fast and accurate processing of information (Ion and Andreea, 2008).

Increase in profit has been identified as another driver for ICT adoption within SMEs in Nigeria. ICT can be used in marketing which can help to increase revenue and profit in many organizations. Companies can also build strong relationships with their counterparts from any part of the world by using ICT. Furthermore, some respondents in this study mentioned that one of the reasons behind their decision to adopt ICT was to have global

reach. Ongori and Migiro (2010), state that the impact of globalization has obliged many SMEs to adopt ICT in order to survive in the present competitive era. Based on the study, some respondents described ICT as one of the latest developments in recent times and a driver behind their decision to adopt ICT. Respondents realized that the world is changing globally, hence, it was necessary for them to have ICT at the forefront of their various organizations in order adapt to new business environments. Some respondents also argued that it was impossible to catch up with the latest technological advancements without the adoption ICT. Evans and Wruster (1997) state that ICT increases richness and reach that is, companies communicate, collaborate, conduct transactions with customers, suppliers and distributors via the internet.

Funteli and Allegra (2003), state that organizations can exchange real-time information and build closer relationships with customers, suppliers and business partners with the use of ICT. Customers can also receive immediate feedback from companies. This has been confirmed in the study as most SMEs decided to adopt ICT to enable them communicate with their customers, suppliers, and stakeholders in their field of business. ICT has also provided new ways of storing, processing, distributing and exchanging information within companies and customers (Kollberg and Dreger, 2006). Some of the respondents decided to adopt ICT to enable them computerise their company's records. Respondents thought it was important to move from manual data processing to automated data processing.

Irani (2002) also states that ICT helps SMEs to access robust business information that leads to organizational effectiveness. According to Ashrafi and Mutarza (2008), organizations of all type around the globe are currently utilizing ICT for providing better customer service. In terms of customer satisfaction, all the respondents in the study decided to adopt ICT to enable them provide better customer service to their customers ensuring their customers are satisfied. ICT helps organizations to amply compete with their competitors and it helps to satisfy their customers.

ICT improves business competitiveness and enhances enterprise performance through indirect cost savings such as labour cost and increased labour productivity and direct cost such as reduction of firms input (Chowdbury and Wolf, 2003). According to Brynsolfsson and Hitt (2000), the use of ICT can help to cut down the cost of coordination, communication, information processing and also enable efficient service provision at lower cost. From the case studies, it was stated that some of the drivers for adopting ICT is to save time and reduce cost. ICT lowers logistics cost, postal cost, storage cost and personnel cost. It also brings about quick response time to markets, customers, suppliers, higher flexibility and reduction in delivery time and processing of payment (Jones et al., 2003).

Having online presence is a driver for adopting ICT as identified by some respondents. It provides an opportunity for businesses to offer products and services in the global markets. For example, a company stated that, rather than carrying some documents to places which take time, they send it via the internet. Some respondents also stated that one of the drivers behind their decision to adopt ICT is due to the nature of their business especially the telecommunication firms.

Another respondent mentioned that a major reason for adopting ICT is to advertise their products and services. ICT helps to inform potential customers about a company service. According to Cohen and Kallirroi (2006), ICT is being applied in a wide range of areas within many organizations in recent times. It has radically changed the way businesses are conducted in organizations. Zhouying et al. (2009) state that ICT can help firms to overcome spatial and institutional barriers, cut time, cost of production, increase flexibility, take new marketing channel and employ new ways of doing business. Therefore, it can be said that ICT brings about increased competitiveness.

6. Conclusion

This study has identified some drivers for ICT adoption in Nigerian SMEs and reveals that the key drivers for ICT adoption amongst SMEs in Nigeria are to have some sort of competitive advantage, satisfy their customers, and to save time and cost. Based on the literature review and the case results, it is certain that the adoption of ICT in Nigerian SMEs help these SMEs to grow and increase their competitiveness. The study confirms that ICT adoption in Nigerian SMEs can assist them to easily process and store information, communicate with customers and business partners and so on thereby assisting in their development process. The significance of this study is of value to SME owner-managers and IT professionals as it could encourage them to intensify their efforts in deploying ICT in their various organizations and enlightening employees on the benefits that is associated with the adoption of ICT.

7. Recommendations

It is recommended that Nigerian SMEs develop better organizational capabilities by integrating ICT in their day-to-day activities as it could enable them to effectively benefit from the opportunities that are associated with the use of ICT in the current knowledge based economy. Also, in order for SMEs in Nigeria to keep up with competitions in the present era of technological advancements, ICT awareness should be increased and the Nigerian government should put in place viable frameworks that could support these SMEs.

8. Limitations and Further Research

The study was limited to only 25 SMEs hence further research involving more case studies will be beneficial. Also, further research could focus on collecting and analysing empirical data from SMEs and comparing the results with the findings of this study.

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Table 1. Case profile

SME (Case study)	Type of Business	Number of Employees	Business Age
1	Engineering	43 (Small firm)	12 years
2	Medical/Health	20 (Small)	13 years
3	Telecommunication/Communication	26 (Small)	18 years
4	Whole sale/Retail	90 (Medium)	9 years
5	Hospitality	120 (Medium)	5 years
6	Telecommunication/Communication	16 (Small)	3 years
7	Telecommunications/Communication	16 (Small)	3 years
8	Transport/Clearing and Forwarding/Haulage	15 (Small)	2 years
9	Financial Service/Service Industry	35 (Small)	5 years
10	Manufacturing	80 (Medium)	10 years
11	Transport/Clearing and forwarding/Haulage	15 (Small)	21 years
12	Transport/Clearing and forwarding/Haulage	15 (small)	9 years
13	Others	25 (Small)	2 years
14	Communication/Telecommunication	65 (Medium)	8 years
15	Manufacturing	89 (medium)	7 years
16	Financial service or service industry	25 (small)	4 years
17	Pharmacy/Medical/Health	13 (small)	14 years
18	Others	18 (small)	8 years
19	Oil and Gas/Maritime	14 (small)	2 years
20	Oil and Gas/Maritime	30 (small)	5 years
21	Engineering	29 (Small)	11 years
22	Financial Service/Service Industry	22 (small)	17 years
23	Education	29 (small)	7 years
24	Legal Practice	17 (small)	5 years
25	Oil and Gas/ Maritime	15 (small)	1 year

Table 2. Summary of findings

Drivers for ICT adoption in Nigerian SMEs	Number of Respondents
Competitive advantage	25
Increase profit	1
Global reach	3
Efficiency/Speed	6
Current trends/Technology of the day	6
Communication	5
Automation/Computerisation of records	2
Information storage	2
Customer satisfaction	25
Reduces cost/Saves time	25
Online presence	14
Nature of business	4
Advertisement	1