

## The Role of ICTS in the Improvement of the Competitiveness of SMEs

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**Abstract:** The sweeping changes in information and communication technology have left their massive effects in different fields of human endeavours not least of which is the field of business management. The pivotal roles played by Small and Medium-scale Enterprises in all economies cannot be overemphasized. SMEs create business opportunities across geographical boundaries and gives impetus to globalization. Conversely, the impact of globalization has compelled SMEs to adopt Information and communication Technology practices to survive and compete with larger firms. This study explored the role of ICT and how the innovation can improve the competitiveness of SMEs. It further explored the significant effect of the innovative technology on performance of SMEs. The study recommends capacity building for SME operators about the benefits of ICT in their business processes coupled with sensitization about its uses and the need for adoption. Findings also revealed that constant usage of ICT by SMEs will impact positively on the bottom-line. The study recommends government assistance in the adoption of ICTs due to the importance of SMEs in the Nigerian economy.

**Key words:** SME's, ICT, customers organizational, performance, nigeria

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### INTRODUCTION

The very basis of existence of most of the SMEs is one of the key personal traits and competence of the operators. The advancements in information technology have brought new opportunities to small scale businesses to conduct their operations more efficiently than the past. The use of the internet and information technology not only changed the way firms do business but also improved their existing processes. Information technology involves business processes spanning the entire value chain electronic purchasing and supply chain management, processing orders electronically, handling customer service and cooperating with business partners. Special technical standards for e-business facilitate the exchange of data between companies. The adoption of information communications technology instruments like the internet and electronic machines in Nigeria businesses has assisted in the incentive to develop new products and new delivery channels, such as home businesses via phone and Personal computer networks allowed businesses to reach new customers outside their market reach and created the opportunity for greater price competition. Up till now, the world has

encountered two big revolutions which have transformed the lives of people in a miraculous way.

These include the industrial revolution of nineteenth century and ICT revolution of 21st century. Nations who did not join the aforementioned revolutions have remained fifty year backward as compared to the other nations. So the importance of technology cannot be over-emphasized in any part of the world. Developing and developed worlds have been facing difficulties in implementing technology in general and ICT in particular. SMEDAN (2010). pointed out certain hurdles faced by introduction of ICT around the globe may also include outdated information systems, lack of top officials managements support, lack of support from governments, unavailability of technical expertise, lack of trained personnel to use information systems. Also in Africa and a country like Nigeria, issues that has to do with high level of illiteracy, epileptic power supply and high cost of doing business is an impediment to the adoption of ICT platforms in most business settings and organizations.

### Literature review

**Information technology and small and medium enterprise:** The small scale industry has come a long way

in recent time. In the late 1960's business transactions are done on manual platforms that attracted a lot of paper documentation and miscomputation of customers' data resulting in economic losses for customers. The complexity of management of accounts makes it pertinent for businesses to come up with good innovation and innovation process to manage financial resources which motivated them to imbibe the culture of information communications technology. Organizations have been moving away from being rule-based systems that focus on regulating employee behavior and procedures to mission-based organizations that emphasize outcome-based measurements. This paradigm shift has allowed the creation of a managerial culture that promotes quality, openness and innovation. Similarly, the dominant paradigm of computing has shifted from an efficiency and automation focus to effectiveness and knowledge management focus. This shift is demonstrated by management efforts to align the technological innovations with the organizational mission. The knowledge management process and organizational learning are becoming essential keys to organizational creativity and innovation (Henard and McFadyen, 2008). Innovative managers take advantage of the opportunities that information technology can provide to add value to existing services and products and create new ones. This can be achieved by adopting an effectiveness-based strategy rather than efficiency-based strategy. Innovative managers use IT not only to streamline the existing business processes of their organizations but as a catalyst to rethink and redesign them establish new ones or create a paradigm shift (Feeny and Willcocks, 1998). An effectiveness-based strategy demands more resources and faces higher resistance, therefore executive level commitment is essential for this strategy to be successful. In order to sustain a high level of quality in their services and products organizations must continuously improve their production and delivery systems. In this context innovative managers rely more on informal networks to establish goals on flexible teams to produce and on customers' feedback to establish criteria for effectiveness (Pyka, 2002; Rodan, 2002). Manager's decisions about IT are critical because the productivity and quality of work life of employees depend on the quality of the systems supporting them. In order for managers to make better decisions they need to have a comprehensive view of their organizations.

## **MATERIALS AND METHODS**

**Managerial roles and performance management:** It is important to note that the experience, qualification and attitude of managers involved in the process of

technological innovation affect the outcome of the process. Managerial activities aimed at managing the process of introducing ICT are essential for its success (Agwu and Murray, 2014). Regarding the introduction of ICT enabled innovations, managers face several challenges. Firstly, managers usually do not have the tools or the time to measure the benefits of the systems they introduce. Secondly often the unintended results of introducing a new system outweigh its planned objectives, study shows that the availability of information technology have significant effect on productivity of the firm and that information communication technology decision making does have significant effect on customer satisfaction which boost profitability of firms. Manager's seems to react, specifically when results are negative. They should learn from the experience and avoid wasting time justifying what happened. Third with ICT continuously changing, managers must learn how to build and maintain flexible ICT infrastructure to support organizational goals. Fourth there is high turnover of trained ICT personnel. Therefore a reward system and adequate incentives must put in place to help retain productive workers. In general managers tend to be somewhat conservative in their efforts to innovate with information technology applications. Most managers may seek only incremental improvements in factors related to task execution, productivity and service delivery when they implement IT in their organizations (Watad, 2000, 2002). They seek very little change in structural arrangements and attributes. Due to the high level of uncertainty of the outcomes of ICT enabled innovation, managers tend to react to external pressure more than to initiate or take advantage of opportunities. However technology awareness and champions are very important factors in changing the organization culture to adopt radical IT based innovation. Agwu and Taylor (2014) stressed that technology awareness by managers determines the relative timing of the introduction compared with other organizations. Usually high awareness corresponds with high tolerance of uncertainty and managers with higher awareness tend to try new ideas. Managers should help their organizations develop technology awareness by organizing seminars and forming relationships with other organizations. In addition since transformation efforts demand resources and faces higher resistance therefore, executive level commitment is essential for IT-enabled innovations to be successful.

### **Basis for adopting information technology in SMES**

**Focal firm:** The first domain is the organization acquiring and deploying the IT resource-the focal firm. Within the focal firm, IT business value is generated by the

deployment of IT and complementary organizational resources within business processes. The application of IT and complementary organizational resources may improve business processes or enable new ones which ultimately may impact organizational performance (Brynjolfsson and Hitt, 2000). The focal firm domain thus comprises the IT resource, complementary organizational resources, business processes, business process performance and organizational performance.

**Information technology resource:** Barney (1991)'s classified firm's resources into physical capital, human capital and organizational capital resources. Physical and capital contains some components of the ICT resource while all three contain components that are complementary organizational resources. Though technical and managerial expertises are often intertwined, they are nonetheless distinct concepts and their conceptualization as such is necessary for precision in describing IT investment impacts. Human IT expertise may be associated with the entire technological infrastructure of the organization or may reside locally within business units and be associated with specific business applications (Agwu and Taylor, 2014).

**Complementary organizational resources:** The synergies between ICT and other firm resources are often regarded as complementary organizational resources. Although it is possible to apply ICT for improved organizational performance with few organizational changes (McAfee, 2002), successful application of ICT is often accompanied by significant organizational change (Brynjolfsson and Hitt, 2000; Agwu and Murray, 2014) including policies and rules organizational structure, workplace practices and organizational culture. The RBV literature provides regarding detailed guidance on the classification of complementary organizational resources..

**Business processes:** According to Davenport (1993), a business process is the specific ordering of work activities across time and space with a beginning an end and clearly identified inputs and outputs. In essence, business processes are the activities residing. Similarly Grant (1991) classifies non-IT resources into five categories physical, human, organizational, reputation and financial. From the perspective of resource-based theory, business processes provide a context within which to examine the locus of direct resource exploitation. Examples of business processes include order taking, PC assembly and distribution. A single firm executes numerous business processes to achieve its strategic objectives, thereby providing a range of opportunities for

the application of information technology to improve processes and organizational performance (Porter, 1985). In the non-enabled organization (Straub and Watson, 2001), ICT not only may improve individual processes but also may enable process synthesis and integration across disparate physical and organizational boundaries (Basu and Blanning, 2003).

**Performance:** Performance comprises business process performance as well as organizational performance. The former denotes a range of measures associated with operational efficiency enhancement within specific business processes such as quality improvement of design processes and enhanced cycle time within inventory management processes. Examples of business process performance metrics used in prior IT business value research include on-time shipping (McAfee, 2002) customer satisfaction (Dudu and Agwu, 2014) and inventory turnover (Chew, 1991). In contrast organizational performance denotes aggregate IT-enabled performance impacts across all firm activities with metrics capturing bottom-line firm impacts such as cost reduction, revenue enhancement and competitive advantage. IT business value researchers have operationalized these measures via operations measures e.g., cost reduction, productivity enhancement, etc. and market-based measures e.g., stock market valuation etc. (Dehning and Richardson, 2002). However the range of potential measures is not limited to financial metrics and may include perceptual measures, usage metrics and others (Tallon *et al.*, 2000).

**Competitive environment:** The second domain in the integrative model is the competitive environment in which the focal firm operates which we separate into two components: industry characteristics and trading partners. Industry characteristics include competitiveness, regulation, technological change, clock speed and other factors that shape the way in which IT is applied within the focal firm to generate business value (Devaraj and Kohli 2003, 2000; Kettinger *et al.*, 1994; Kraemer *et al.*, 2000). In addition to industry characteristics, the competitive environment also includes the focal firm's trading partners. When IT spans firm boundaries, the business processes, IT resources and non-IT resources of trading partners play a role in the IT business value generation of the focal firm (Chatfield and Yetton, 2000; Mukhopadhyay and Kekre, 2002; Williams and Frolick, 2001). We thus include industry characteristics and trading partners in the competitive environment domain.

**Industry characteristics:** The organization of industries concentration, supply chain configuration etc., As well as their salient features-technological change, regulation, IT standards etc., can shape how IT is used within focal firm business processes to create IT business value. For example, the competitive characteristics of strategic factor markets including the IT resource, affect the degree to which firm can enjoy above normal returns (Barney, 1986). Another example is the high degree of unionization in such industries as telecommunications and auto manufacturing that may hamper a firm's ability to substitute IT for labor or to implement complementary work practices such as cross functional work teams. The resulting sub-optimal application of IT may limit IT business value generation. Alternatively in time-sensitive industries such as personal computers and apparel there is ample opportunity to apply IT to reduce cycle times, better manage inventory and improve customer satisfaction (Ghemawat and Nueno 2003; Kraemer *et al.* 2000). The findings of quantitative empirical studies that certain industries attain higher IT productivity impacts and greater cost reduction than others provide further support for the inclusion of industry characteristics in our model (Lewis *et al.* 2002; Morrison, 1997). Industry characteristics apply to all firms in an industry. However the response of industry competitors vis-à-vis information technology is not necessarily uniform. It is thus necessary to account for heterogeneity across industries as well as alternative response strategies among industry competitors to the same set of industry stimuli when examining the role of industry characteristics on IT business value.

## RESULTS AND DISCUSSION

**Trading partner resources and business processes:** Information technology increasingly permeates organizational boundaries, linking multiple firms via electronic networks and software applications and melding their business processes (Basu and Blanning, 2003; Mukhopadhyay and Kekre, 2002; Straub and Watson, 2001). As a result, trading partners increasingly impact the generation of IT business value for the focal firm (Chatfield and Yetton, 2000). For example inefficient business processes and antiquated technology within trading partner firms may inhibit the attainment of IT business value of an inter-organizational system initiated by the focal firm. In some cases, this may give rise to incentives for the focal firm to team with the trading partner for joint improvement (Williams and Frolick, 2001). We therefore adapt our formulation of IT, business processes and organizational complements to the focal

firm's trading partners which provides the conceptual foundation for understanding their impact on focal firm IT business value generation. For example, the ability to partner with external IT units in development and implementation would be included in the human IT resource of both the focal and external organization. Another example is poor work practices within a supplier firm that inhibit its full use of a procurement system introduced by the focal buyer firm.

### **Factors affecting the adoption of ict by SMEs**

**Cultural factor:** National culture is viewed as "The collective programming of the mind which distinguishes the member of one group or peoples from another (Mayer, 2001). Then there comes organizational culture with its pro's and con's. It is often assumed that organizational culture is a subset of national culture. So the national culture is considered as the macro-context and organizational culture as the micro context. It is the preconceived notions and perceptions of individual which can make the difference. They have come from different backgrounds and behave in that way. Kadiri (2012) stated that technology particularly IT is not culturally neutral. Every technology depicts the culture of its manufacturing country. Developing countries cannot easily grasp the new technology as quickly as developed nations do. The reasons behind are very logical i.e., weightage is given to the values of workers in the developed world. Rationalism and individualism are prevailing core concepts of culture in most of the developed countries. The developed world designs the technology by keeping in view demands and aspirations of their cultures. The developing countries find it difficult to cope with pace of changes generated by adoption of new technology. Stanworth *et al.* (2004)) also argue in a very effective manner that every culture has its own way to communicate ideas. So a manager really needs to think in a different way for different cultures. But Agwu and Murray. (2014) were of the idea that IT doesnot actually see culture as a hurdle rather make use of it to reach the minds of ordinary individuals. Culture impacts both how systems are designed and how they are received. Kelley (1994) in his study of transfer of IT to the Arab world" found that successful transfer and adoption of ICT into organizational/business workplaces in the culturally and especially diverse countries requires an understanding of micro-level beliefs, norms and action within the framework of national and international macrostructure. Culture is an independent variable that impacts ICT and is reflected in formal and informal organizations /business. Culture gives people the sense of order they have to their everyday lives. Cultural beliefs and values of different culture differ markedly in term of

how they construct a meaning for technology. Checkland and Poulter (2006) concluded that culture does not necessarily need to be viewed as a barrier that always obstructs technology. Indeed, culturally appropriate technology design and implementation which considers the differential influences of culture on technology, can enhance its transfer. Sherer, (2005) was of the view that along with facilitating the adoption of ICT, culture also has an eye on ICT investment management process as well because with the help of the culture it has become easy for experts to judge that how much investment will be sufficient in a particular area. It helps in avoiding both the under-investment and over investment. According to Fleron (1997) a ground for acceptance of technology can be prepared by training, education, research and administration to employees, to increase their understanding and expertise of new technology. Recipient society may not feel an alien while using the new installation. Values of receiving country should be coincided with the values of new technology. It can be concluded that that culture basically establishes constraints on management as to “What-they-can-do and what-cannot-be-done”. Strong culture of an organization provides better adoption strategies for a new technology than the weak culture. So it can be safely stressed that culture of any organization is a blood stream running all directions, vertically and horizontally and maintaining it’s over all image.

**Human factor:** Szewczak and Snodgrass (2002) argued that lack of user acceptance of any given technology can be an alarming sign for organizations as individuals especially managers play an important role in technology adoption process. So it has forced managers to give priority to individual’s needs and wants (Cavusgil, *et al.*, 2003). Venkatesh and Davis (2000) state that participation of users in the design and implementation of projects is very important because it will serve as a source of trust among producer of technology and its ultimate user. The users are the right people to identify the loopholes in a particular project. This will lead towards an increase in user acceptance and to technological change (Lin and Shao, 2000). Bowonder *et al.*, (1993) in their study, found that user participation facilitates organizational learning by bringing together all dispersed knowledge from the various units within the organizational to one spot where employees can access information, learn from one another and benefits from new knowledge developed by other units. It stimulates the creation of new knowledge and at the same time adds organizational innovation. Watson *et al.* (1994) demonstrated that the basic goal of an organization is to improve the job performance of the employees in furtherance of this the researchers stated

that to achieve this objective managers should first deeply study their corporate culture and make sure that all employees are ready to accept the particular change in technology. Mayer (2001) argued that technological replacement is not the ultimate challenge that managers face rather motivating the humans is a bigger hurdle. Comparably, younger workers seem more cooperative and open to the change in changes in technology. Estrin *et al.* (2003) discussed the issue of lack of technical skills. The researcher states that lack of availability of experienced and skilled employees necessary to adopt new technology can have adverse effects. And the absence of these skills in the employee may slow down the processes of technological change. Many other studies are of the view that managers seem reluctant to go for technological change because they perceive this change as an expense rather than a strategic investment. They also believe that technological change is an un-ending process and will trap them in a continuous expense which they really can’t afford. Estrin *et al.* (2003) have also identified that managers now a days are so much into multiple tasks and responsibilities that they do not have time to experiment new systems.

**Social factor:** This is an era of technological change January 3, 2017 with customers that are quality conscious. Organizations are therefore forced to churn out new products such as Apple, Samsung etc. Yet the habits, tastes, customs, values and culture of a particular country some time do not allow them to go for that change so organizations have to think otherwise. According to Ahmad (2001) social pressure is the basic factor affecting technological adoption and usage. By continuous changes in technology in different areas, needs for skills are also changing. Now jobs require more qualified and skilled personals. This results in re-training of old employees. Those who cannot adapt would easily be replaced by someone more talented. Present day employees are required to continuously update their skills and knowledge base. Madon and Sahay (1996) stressed that the inadequacy of trained personnel are one of the biggest problems of the developing countries, this is because developing countries either do not have trained ICT personnel people and most of the available ones prefer to migrate because of non-friendly environment. In the end it would be right to say that social acceptance of a particular technology is very vital. This will help organizations to attract and retain talented people and to convince them to happily go about adopting new technologies.

**Organizational structural factor:** Chau and Hu (2002) argued that organizational structure is its framework which is usually expressed by its degree of complexity,

formalization and centralization. Every organization is divided into different departments, sections and teams with varying responsibilities and authorities. If it is not properly aligned for implementation of a new technology an organizational structure can prove to be a great barrier in the adoption of new technologies. Brainin and Eraz (2004) are of the view that highly mechanistic-bureaucratic organizations are rigid and they remain less open to new things while organic structured organizations can be highly adaptive to change.

**Political factor:** According to Ayeni (2002) the role of government is also very important in technology adoption and this cannot be ignored. Government policies about tax and tariff subsidies, rules and regulations, restrictions incentives and support to a particular technology play an important role in its acceptance and rejection. Bowonder *et al.* (1993) submits that the general stability of a particular country including both social and political can never be ignored towards technological change. Ahmad (2001) at the same time argue that the general stability of the countries in which the organization operates and the specific attitude of the elected government officials towards adoption of certain technology plays a crucial role in technology adoption decisions. Most advance country like U.S, generally have stable political environment and the officials generally have positive attitude towards adoption of technology but even the U.S firms operating globally face difficulties due to certain restrictions from counties whose stability record is erratic for example Libya, Republic of South Africa and Iran. Due to political restrictions and bans, these countries cannot develop or transfer new technologies and therefore they have to rely on old methods and equipment (Strub and Watson, 2001). Most developing countries have quite erratic political histories.

**Economic factor:** In low and middle income countries, available funds are often not sufficient to buy expensive technology products. These countries mostly rely on the technology donated to them and later problems are encountered when the project is over. Lundvall and Nielsen (2007) has also identified that lack of awareness of available technologies and its uses, capabilities and return on investment are greater barrier to technology adoption. Economic policies in Nigeria are made under influence of external pressures; therefore they do not carry consistency.

## CONCLUSION

The global economy a subset of globalization has becomes increasingly reliant on information and

communication technologies. Information are speedily received and processed and these imparts positively on the organizational well-being. It is therefore important for SMEs to join the wagon. By integrating into the global network chain, SMEs have the opportunity of outwit the conglomerates because they have the option of taking advantage of ICT far more than the bigger firms. Outsourcing is another option for SMEs in cases where they cannot wholly acquire the technologies due to cost and maintenance. SMEs with greater use of ICT and the use of teams, decentralized decision making and wider breadth of job responsibilities are found to have disproportionately higher market valuations. ICT in the new dispensation provides the solid platform on which SMEs of all shapes and sizes can build their business information systems aimed at improving their business processes as well as efficiency in the delivery of goods and services to satisfy the needs of customers. Over the last decades information technology literature rested essentially on the need to initiate new processes, sustain growth and make more profit for the organization.

## RECOMMENDATIONS

There are ample evidences to show that information communication technology has the tendency to contribute meaningfully to SMs development therefore the government and indeed the organized private sectors should assist is in drawing up a drawing up a comprehensive ICT training programme for the teaming SMEs dotted all over the country. The ability of a small and medium scale enterprise to make substantial profit from information technology initiatives is dependent on the capacity to motivate its employees and potential to align the information technology services with the business of customers. Small and medium scale enterprise should therefore strive to provide services that will suit customers' needs. In essence SMEs should learn how to adopt simple technological initiatives to benefit customers. The simple reason is that they stand to benefit in accessing unlimited information intra and inter-businesses connections as well as access to international markets

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