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Barriers of ICT Innovation towards Sustainable Growth of SMEs: a Case Study of Ghana

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Abstract:

Many businesses and organizations in recent times have adopted the use of ICT in performing their business activities. ICT is widely acknowledged to enhancing the performance of firm's activities one way or the other. ICT Innovation helps companies in keeping track of demand and supply to meet customers' satisfaction as well as quick access to changes in the world market. The introduction of ICT has also led to intense competition within the domestic and global market which has made innovation the significant factor of firm's level of competitiveness and sustainability.

Despite the significant roles ICT plays in firm's competitiveness and sustainability, SMEs in emerging economies, especially Ghana has little or nothing to write about as compared to the developed economies. Since SMEs are considered to be the engine of economic development for both developed and developing economies, there is the need to enhance ICT Innovation among SMEs to compete in recent highly competitive market trend. This research, therefore, takes into investigation factors that affect ICT Innovation among SMEs in Ghanaian and proposing of policy recommendations in addressing these issues.

To identify the barriers of ICT Innovation among SMEs in Ghana, the research carried a qualitative method by selecting four SMEs with 70 respondents for case studies. The findings indicated some inhibitors of ICT innovation among SMEs in Ghana such as, lack of fund, a high cost of ICT setups and maintenance, unfavorable government policies and so on. The study also made some policy recommendations to SMEs stakeholders and Shareholders such as how to acquire to funds, creating ICT awareness for owner/managers, embracing Interdepartmental collaboration, Public-Private Partnership, training of employees and so on. This study shows that effective implementation of these factors will go a long way in enhancing ICT Innovation towards sustainable development of Ghanaian SMEs.

Keywords: Information Communication Technology (ICT), Small and Medium Enterprises (SMEs), Innovation, Development, Ghana.

1. Introduction

The introduction of information technology has led to stiff competition within the local and international market making innovation a significant factor of the firm level of competitiveness and sustainability. In recent times, the significance of innovation has been strengthened by knowledge transfer, globalization, and the flow of information and rapid development of new technologies. Despite the rapid development in new technologies to facilitate and promote economic growth, most SME's in Ghana find it very challenging implementing these strategies, regardless of its availability of application, due to lack of finance, lack of skills, poor infrastructure, general and policy constraints and so on. According to (Rahman H, and Ramos, I. (2013) the productive entities have been most affected by problems specific to the transfer of technology are the SME's. Small and Medium enterprises play a vital role in contribution to developments in private sectors for sustainable growth of an economy which cannot be underestimated. In both developed and developing economies small and medium enterprises are considered as an engine for economic growth. According to World Bank (2010) both the developed and developing countries are strongly engaged in and continue to seek pragmatic ways of improving SMEs activities. SME's do not only contribute to the growth of national GDP but also contribute to the reduction of unemployment (Abor & Quartey, 2010).

In developed economies such as the United States and Canada, SME's comprises of a major number of registered companies. In a developing economy such as Ghana, regardless of limited data on the growth and development trends of SME's, data available from the registrar general department shows almost 92% of companies registered are small and medium firms. Also, SME's contributes 85% of manufacturing employment and also providing 70% of the country's GDP. This clearly verifies that SME's contributes significantly to the economic growth, development, employment, and income. Research in India shows that, there are about 30 million SME operators and have served as the primary source of innovative activities in the country in both manufacturing and services sectors, creating 1.3 million jobs yearly.

In addition, SME's being a source for job creation and employment; it also leads to investment opportunities, capacity building to individuals and firms, provision of niche professional services, and potential source of revenue for government (Sowa et al, 1992). SME's promotes competition and entrepreneurship, which means that there should be a support from the government to enhance a nation's economic growth and development. The employment rate among SME's is considered very high compared to large firms due to its labor intense and efficient use of a resource, with a little amount of financial support. The ability to stimulate the development of sustainable SME's is crucial to the achievement of rapid economic growth and development within any economy. In recent years, most SMEs have focused on the significance of the emergence of knowledge-based societies which leads to emerging business opportunities. Most of these SMEs are already demonstrating their know-hows by utilizing the prospects offered by Information and Communication Technology (ICT).

The term ICT has been given several definitions to its explanations. ICT is a general acronym describing technologies that are used to collect, store, edit and passing on information in various aspects. ICT contributes massively to the national GDP of a country. Also it increases market competitiveness of a country's products and services. Information and Communication Technology (ICT) help improves standards of living, promotes effectiveness of international economic integration, and improve management and biodiversity utilization. Effective adaptation and utilization of ICT enables SMEs to improve on their internal process, improve their products and services through effective communication to meet their customers' demand that enables them to reduce cost. Also, enhance promoting and distributing their products through the effective use of E-business. ICT is considered to be a core factor in improving the business of SMEs. The next section aims at outlining the literature review by Scholarly works and reviewing articles that have been conducted related to this research studies.

This study, therefore, focuses on examining the challenges affecting SMEs in adopting ICT Innovation in Ghana. This study is organized into the following sections, section 2 focus on the literature review on ICT adoption by SMEs, section 3 focus on the methodology use for this study, Section four gives a detailed explanation of the study results and discussion, while section five and six focus on policy recommendation and conclusion.

2. Literature Review

2.1. Definition of SMEs

Small scale enterprises have numerous standards that define them. However, the most frequently used criterion is the size of the company personnel. The results are quite confusing due to different size ranges used by various official resources to define SMEs. The World Bank since 1976 - has defined SME's as firms with fixed assets (excluding land) less than US\$ 250,000 in value are Small Scale Enterprises.

According to NBSSI definition of SMEs, a firm can be considered as a small and medium enterprise if it employs less than 10 employees and has a fixed asset including plants and machinery not exceeding 10 million Ghana Cedis. This definition from the National Board for Small Scale Industries is limited and poses some form of inconsistency to be adopted universally due to a number of reasons that includes the frequent depreciation of the local currency and also the process of valuing these assets according to the Ghana Enterprise Development Commission (Kayanula and Quartey, 2000). In China, MSMEs are classified as an enterprise with employee size of 1 to 3000 and total assets of ¥ 40 to 400 million and business revenues of ¥ 10 to 300 million with regards to the type of industry. The term MSME in Kenya stands for "micro, small and medium enterprises". Employees numbering 1 to 10 are classified as Micro Enterprises, 10 to 50 as Small while 150 to 1000 as Medium. SMEs in Nigeria are defined by the Central Bank of Nigeria as small and medium enterprises based on the asset and number of employees. The criteria are an asset value between N5 million and N500 million, with employees between 10 and 100. Companies in UK are defined as being SMEs when it meets two out of three criteria, which is it has a turnover of less than £25m, it has less than 250 employees, and it has gross assets of less than £12.5m.

2.2. Information and Communication Technology (ICT)

The term ICT refers to Information and Communication Technologies, which provides information access by the use of telecommunications. ICT is related to Information Technology (IT), but emphasizes mainly on communication technologies that include a wireless network, the internet, cell phones, and other communication devices. Jim Riley (2012) stated that there is no universally accepted definition of ICT, due to its concept, application and method involved which regularly develops on nearly daily basis making it difficult to keep up with the changes since the happen so fast. Mohammad Razani (2013) defines ICT as an umbrella term which comprises of any communication tool or application such as radio, cellular phones, television, computer and network hardware and software, satellite systems, as well as different services and applications associated with them. Such application ranges from, video conferencing, distance learning, telemedicine, e-commerce, e-government, e-health, e-education, and e-environment. Information and Communication Technology (ICT) offers benefits for a broad range of business operations. ICT utilization helps reduce costs in

transaction and increase the speed and consistency of transactions for both business-to-business (B2B) and business-to-consumer (B2C) transactions. It also makes the management of a firm's resources more organized through specialized software such as Enterprise Resource Planning (ERP) System and others. ICT helps the smooth transfer of information by increasing the efficiency of business processes for instance, data processing, documentation, and other back-office functions. Gradually modern ICT applications such as CRM (Customer Relationship Management) and KMS (Knowledge Management System) allows firms to retain, share and make use of their secured information, knowledge and know-how that leads to time-saving, enhance efficiency and reduce duplication of work.

2.3. Factors affecting ICT Adoption in Ghanaian SMEs

Small and medium enterprises play significant roles in the development of national economies, despite this fact, there are a lot of hurdles that affect the growth and development of SME' in Ghana. These numbers of factors includes, lack of credit facility for small and medium enterprises, inadequate infrastructure, low managerial skills, low technological levels/upgrading, weak institutional and regulatory framework and globalization, (Asare, 2014). SMEs in Ghana is recently exposed to better opportunities for expansion and diversification across the sector than it used to. While developed global markets may be declining based on financial and economic crises prevailing; the Ghanaian market size keeps growing making opportunities within Africa more attractive for SMEs in food processing, in manufacturing, pharmaceutical, Agro and IT and service industry, among others, with reduction in transportation difficulties.

3. Methodology

This research employed qualitative research method, in this study four SMEs were selected for the case studies with a total of 70 SMEs respondents. Interviewed respondents comprised of owner/managers, IT managers, production managers, marketing managers, human resource managers, administrative managers, and financial managers, with the aim of investigating a single topic in all the firms, to help to make achievable generalizations of some of the research conclusions. These four case studies contributed significantly to identifying constraining factors affecting the ICT Innovation in Ghanaian SMEs. A survey method was used to perfect the case study in a way of collecting the right sample. In the first phase of the research, a survey was conducted by which 30 SMEs were identified to be interviewed. Semi-structured interviews were carried out in the second phase of the research with the 30 SMEs from which four SMEs were chosen. The research used a cross-case investigation of richer theory building.

A decision was made to control the scope of this study to SMEs that met certain pre-set criteria established by the researcher. All firms had to fit Ghana's definition of SMEs as defined by the National Board for Small Scale Industries (NBSSI), which defines it by the number of employees and turnover. In addition, all the selected cases are all operating in Accra and were chosen based on their level of ICT utilization and were also thought to be the most applicable to the research survey as recommended by Stake (1995). In addition, the four selected companies were the most appropriate based on their understanding of the topic and vast knowledge about the subject in general, hence were considered them as SMEs that were likely to produce the most valuable data (Denscombe, 2007). Also, the mission statements of the four companies were deemed as criteria because, interestingly, their aims, to use various ICT, carrying out their businesses, were specified in their mission statements. A mission statement defines a company's business and provides a clear view of what the company is trying to accomplish for its customers (Thompson and Strickland 1996 in Bart and Hupfer, 2004)

4 Results and Discussion

4.1. Reasons for non-adoption of ICT

All 70 SMEs respondents were asked by the researcher to comment on the barriers for adopting ICT. The respondents gave a wide range of reasons with regards to their decision on adopting ICT as indicated in Table 1. To identify the main reason behind SMEs, non-adoption of ICT, responds from the 70 respondents indicated from their questionnaire was, high cost of setup and maintenance, frequent electricity outage, lack of Skilled and trained personnel, ICT unsuitable for business, lack of financial support from banks. There were several reasons given as illustrated in the table below with the most pertaining being high cost of setup and maintenance, as well as frequent electricity outage.

Reasons for Non-adoption	Number of SMEs Respondents	Percentage (%)
High Cost of Setups and maintenance	68	97.14
Frequent Electricity Outage	65	92.86
ICT Unsuitable for business	59	84.29
Lack of Knowledge, Skilled and Trained Personnel	55	78.57
Lack of financial Support from Bank	63	90
Unfavorable market regulation Policies by Government	43	61.43
Online Fraud	35	50
Poor ISP services	37	52.86

Table 1: Rationales for SMEs' non-adoption of ICT
Source Field Study, 2013

4.2. Discussions

The results from survey conducted identified several factors inhibiting effective adoption and utilization of ICT among SMEs in Ghana. Below highlight more on the issues presented by the participants in the survey.

4.2.1. High Cost of Setup and Maintenance

Insight from the survey showed that, high cost of setup and maintenance served as a major hindrance in ICT adoption among Ghanaian SMEs. Setting up and maintaining ICT, such as internet connectivity, computer, and other telecommunication tools require a lot of funds in the country. Setting up a computer-based system requires a lot of money.

4.2.2. Frequent Electricity Outage

A result from the survey indicates that, most SMEs in Ghana are reluctant in adopting ICT simply because of instability of electricity in the country. Four the past four years now, Ghana has been without stable electricity. In big cities like Accra, Kumasi, and Tema, most SMEs are forced to purchase power plant or generator to run their daily business. This has also led to high cost of fuel in the country, and at the end most business end up shutting down their business for several days since they can't afford the high cost associated with purchasing of power generators and fuel.

4.2.3. ICT Unsuitable for the Type of Business

Most of the SMEs involved in this study revealed that reasons associated with not engaging in utilizing ICT for their business operations is based on the perception that, ICT does not suit the nature of their business. Most SMEs in the country use ICT as a medium for communication instead of medium for e-commerce activities. ICT not suitable for the business holds a great influence for SMEs aiming to adopt ICT. According to Braunerhjelm (2010), SMEs will not make use of ICT unless these significant support the need for establishing and maintaining a more advanced ICT-based system. SMEs in Ghana therefore needs to know the importance of the efficient utilization of ICT in their business operations to enable them compete with large firms.

4.2.4. Lack of Knowledge, Skilled & Trained Personnel

Another outcome of the survey suggests that owners/ managers who have ICT knowledge and skills were more likely to adopt and utilize ICTs as compared to their counterparts who lack ICT knowledge and skills. The finding corresponds to (Kiveu, 2013), that owner/manager of SMEs plays significant roles on ICT adoption. In addition to the results from the survey, Owner/Manager academic qualification has been known to influence ICT adoption, the higher the academic qualification the more likely the firm is to adopt and utilize ICT.

4.2.5. Owner/Manager Lack of Awareness

The survey indicated that some owner/managers lack awareness of the significance related to utilization of ICT within firms. Chibelushi and Costello (2009) mentioned that a lack of awareness can hinder SMEs from understanding the importance related to more recent and sophisticated technologies, which can further enhance SMEs' efficiency and productivity. According to Levy et al. (2003), the major factor in increasing investment in IS/IT depends on the owner's enthusiasm. Costello et al.'s (2007) mentioned that owner/managers' personal characteristics are very essential in technology adoption and utilization, therefore an owner's enthusiasm for technology is a crucial motivator for the adoption of ICT which corresponds with the survey.

4.2.6. Unfavorable Market Regulation Policies by Government

Despite the role SME's plays in the economic development of the country, little has been done to pass laws and policies that will shield these SME's from large firms, both domestic and multinational companies who turn out to enjoy the large amount of resources due to government discrimination policies which deters most SMEs in embracing technology.

4.2.7. Online Fraud/ Lack of Security and Trust

However, from the study it showed that customers are reluctant doing business transactions online with these small firms due to the high rate of internet fraud in the country. Since there is lack of security and trust, most of the SMEs are also unwilling to deal with customers online. This corresponds to the study of Li and Soumi (2007), identifying security risks such as fear of fraud and risk of loss, as inhibitors to e-business adoption. In this case, since Ghanaian SMEs continue to adopt ICT, the issues of online fraud as well as lack of security and trust need to be well addressed by financial security agencies in the country.

4.2.8. Poor Services from Internet Service Providers (ISP)

From the study, it indicated that with the availability of several Internet connections and communication tools at a moderate price as well as quality internet service will have a great impact on Ghanaian SMEs. This will enable them make a good selection on types of ICT tools and operators based on their needs and expectations. Fixed telecommunication networks for accessing internet is the most common form of communication used by small firms. Despite the significance of fixed telecommunication networks for basic functions, SMEs that want to adopt e-commerce or e-business operations need broadband availability such as fiber, DSL, and so on. Also poor internet connectivity discourages most SMEs in adopting ICT.

5. Policy Recommendations

5.1. Banks Support

The importance of ICT innovation among SME's in economic development of a nation can never be underestimated, analyzing its characteristics and contribution. The study recommends that, financial institutions should make access to credit easy as well as reduction of interest rate, long term loans, offering special training for SMEs in terms of accounting techniques and record keeping helping encourage SME's in achieving their innovative performance.

5.1.1. Government Funding Schemes

The government of Ghana should therefore create special bodies within the local government and ministry of trade to liaise with financial institutions and NGOs to financially support SME's sectors in the country and put into plans easy accessibility of government financial schemes especially in the country. Also SME's owners should be encouraged to come together to form business associations to help them assist each other financially.

5.1.2. Creating Awareness ICT for SMEs Owners/Managers

The government of the country and other NGOs should provide special training programs to educate SMEs owner/mangers on the significance of adopting or enhancing on ICT Innovation. This can help Owner/managers also educate their employees on the significance of ICT Innovation in their organization.

5.1.3. Enhanced Power Supply

In this current technological era, electricity or energy is considered to be the backbone of the development of any country's economy. Currently, Ghana is experiencing high level of electricity crisis, also referred to as "dumsor" which is having a massively bad effect on the nation's economy, industries as well as the people of the country for the past five years. The most disturbing part of this problem is that, the government of the country seems to be clueless about its causes and solutions. To help deal with this current situation, the government of Ghana and other private bodies should come together to build mini hydro-electric dams on most of our rivers across Ghana, also the government and these private bodies should put in place other forms of producing power such as biogas, solar, wind, and coal rather than reliant on only hydro and thermal.

5.1.4. Reform Government regulatory policies and e-governance

The Governments and the private sectors must play major roles in easing content availability across all stages and support local development of new content, which includes content from public sources. Within the SMEs sector, the governments must consider and strike a balance to shield intellectual property rights, and their interests in promoting access to information and new ideas in order to adopt and utilize ICT which in turn help promote innovation.

5.1.5. Enhanced ICT Knowledge, skills and Trained Personnel

SMEs in Ghana lack the objective information with regards to the benefits and costs of adoption of ICTs. The government and private bodies must play a role, by providing information about services, and when necessary improve coordination of government information on the benefits of adoption and use of ICTs. Lack of ICT knowledge, skills and trained personnel are also widespread barriers to an effective application once adoption decisions are made. The Government must provide numerous support programs and measures with the aim of increasing ICT skills between different SME sectors in the country. Also the government of Ghana should provide basic ICT skills in both public and private sectors. In addition must play the part of conjunction with education institutions, business, and individuals in providing the support to encourage ICT skill formation at higher bodies, and vocational training.

5.1.6. Improve ISP Services

A major component in ICT development, adoption and utilization is Broadband connectivity. Broadband increase the contributions of ICT to economic growth, promoting efficiency, facilitating innovation, and so on. The development of quality Internet Services providers will help promote effective competition and continue to stress liberalization in infrastructure, network services and also applications across various technological stands. Quality Internet service will help promote investment in new technological infrastructure, content and applications, which can take a technology-neutral stance within competing and developing technologies to support innovation and choice of ICT expansion.

5.1.7. Tackle Online Security and Trust

There is the need for the government and private bodies to create a regulatory infrastructure to help improve on online trust, security, privacy and consumer protection issues in the country. The most important is by establishing a culture of security to promote trust in the utilization of ICT, effective administration of privacy and consumer protection laws, as well as fighting cyber fraud and spam. To effectively tackle these issues stated above, there is the need for collaboration between the Ghanaian government and other international security bodies, to help strengthened cross-border co-operation among all stakeholders.

5.1.8. Upgrading Educational System

Also, upgrading the educational system of the country by introducing ICT related courses into schools' curriculums from basic to tertiary institutions. This can help provide the ICT Innovative skills needed in the economy, as well as to, expose students, teachers and academicians to work in the private sectors. This can be done, through dual vocational training, mobility programs, and combined studies. Such exposure could lead to greater generation and assimilation of relevant knowledge and know-how for the country.

6. Conclusion

The results of this research have identified some barriers of ICT adoption and led to some suggestions for owner/managers who have already adopted sophisticated ICT tools as well as those putting in efforts in adopting modern ICT tool. This calls for a commitment on the side of owner/managers in motivating ICT Innovation and its effective utilization. It is also recommended that, the Ghanaian government, NGOs, and other policy makers should assist and educate SMEs in the country on the importance of introducing ICT applications and systems in their business activities to help improve and compete in the digital world. Using the framework developed in this study will lead the growth of SMEs in Ghana by attracting more business partners both local and international. The recommendations and strategies from this research can be used by SMEs stakeholders and shareholders in Ghana and SMEs other developing countries. Also, the recommendation in this study will assist SMEs not only in Ghana but other developing countries to identify both positive and negative influential factors on ICT adoption and its effective utilization.

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