



ICT ADOPTION IN SMEs IN TANZANIA: AN EVALUATION

Wahid Bakari Hamad

Assistant Lecturer,

Ag. Head of ICT

ICT Unit - Academic

Institute of Social Work

P. O. Box 3375, Dar es Salaam Tanzania

+255655-335667/ 0773-988889

w.hamad@isw.ac.tz/hamadwahid58@gmail.com

Certificate in Information Technology (2005)

Advanced Diploma in Information Technology (2008)

Postgraduate Diploma in Business Administration (2009)

Master of Science in Information System (2012)

ABSTRACT

The aim of the study is the evaluation of Information and Communication Technology (ICT) adoption in Tanzania Small and Medium-sized Enterprises (SMEs). The paper also seeks to highlight the status, usage, benefits as well as the challenges influenced by the adoption ICT applications to support businesses.

The study used a case study as a research design. The questionnaire was administered to 136 respondents selected from Dar es Salaam region for the study. Factor analysis (Descriptive statistics) employed to derive analysis of data using a Statistical Package for Social Scientists (SPSS).

The findings revealed that, ICT adoption and use has provided evidence that SMEs has successfully beneficial and improving the firms' operations by adding value to products and services, cutting costs and improving efficiency, providing better customer service and increase a SMEs competitive advantage. The study also shows that SMEs use computers for business transactions, accounting and marketing operations. Also SMEs use of the Internet (email) for communications, product and market and use of the website technology to offer information to customers.

On other hand, lack of management support and perception of and attitude on ICT, support and commitment and ICT knowledge are the key basics challenges impeding ICT adoption and use in some of the SMEs.

The government and professional trade organizations (such as SIDO, TIRDO, CAMARTEC, TEMDO) to put more motivation and concerted efforts on increasing awareness and affordable ICT related products, services, solutions and relevant professional advice for SMEs in the rural areas and urban areas for the development.

Keywords: SMEs, ICT, Adoption, Benefits, Challenge, Uses, Status.

INTRODUCTION

Use of Information and Communication Technologies (ICT) is one of the most important factor on the revolution of economic system in the world today for smooth running of businesses (Said, 2014). In many countries ICT is a tool that is used to promote economic development (Apulu & Ige, 2011). According to Lucchetti and Sterlacchini (2004) appropriate use of ICTs is a driver of economic growth. Organizations which recognized that information, knowledge and their intelligent application are the essential factors of success in the new economy take advantage of ICT to achieve high level of efficiency and effectiveness (Handzic, 2004). ICT is largely applied through mobile phones, I-pads, laptops, desktops connected with internet services (Martin et al, n.d). Mutula and Van Brakel (2006) concur that information is an important asset that gives Small and Medium Enterprises (SMEs) a competitive advantage in the new economy. ICT plays a critical role in enabling informed decision-making process, making it easy for SMEs to access information and make good competitive decisions (Modimogale and Kroeze, 2011). The ability of SMEs to survive in an increasingly competitive global environment is mainly predicated upon their capacity to leverage information (ICT) as a resource (Mutula and Van Brakel, 2006).

SMEs often do not have a budget for it. The other problem with regard to the cost of ICT is that SMEs may invest in unnecessarily big solutions due to sale pitches, hype of specific products or market patterns without considering their real need. Often they could have purchased a less complicated, smaller package or programme to meet their needs, and thus paid less. This would be like a farmer buying a 10-ton truck to deliver 200 kg of vegetables – it will work, but be inefficient and a waste of money. These are the kind of things that give SMEs the impression that the adoption of ICT is very expensive. (Modimogale and Kroeze, 2011).

The South African Government has set up organizations (SETAs) to try to increase ICT skills. The assumption is that, it would change the owner-managers' attitudes towards ICT and its value and SMEs would get expertise to work with (Modimogale and Kroeze,2011). Similarly, the government of Tanzania and Zanzibar have embraced e-government approach to streamline its activities as well for the easy running of business. The practice of e-government is an opportunity to SMEs to easily access information that will enable them to run their business effectively. (Said, 2014). However, prior ICT literature has shown that only a small number of studies focused on the adoption and use of ICT in SMEs. Moreover, it has been found that in spite of the exponential growth of ICT within SMEs, the rate of its adoption by these businesses has remained relatively low. Large organizations have noticeably profited more than SMEs in both ICT-enabled improved sale and costs savings (Said, 2014; Morteza, Tang, Mohammad and Norzima, 2012).

The aim of this research is to achieve a better understanding of ICT adoption in SMEs through (1) evaluating the benefits and challenges and (2) the status and uses of ICT adoption by SMEs in Tanzania.

RESEARCH OBJECTIVE

The objective of research was specifically focused on the following:

1. To examine the status and uses of ICT adoption by SMEs in Tanzania
2. To examine the benefits and the challenges of ICT adoption by SMEs in Tanzania.

REVIEW OF RELATED LITERATURE

Proposed framework of ICT adoption in SMEs

This study guided by an integrated framework established and used to classify several issues and factors associated to the process of ICT adoption within SMEs. This framework simply consists of different aspects of internal and external ICT adoption factors (Drivers, influencing factors and barriers) and does not categorize adoption factors based on being drivers or barriers of ICT adoption in SMEs. The relevancy of the framework to this study is based on the fact that ICT and the related technologies will be used in enhancing the process of ICT adoption within SMEs, provided that there is greater performance expectancy, ease of use, social influence and availability of resources Morteza, Tang, Mohammad and Norzima (2012).

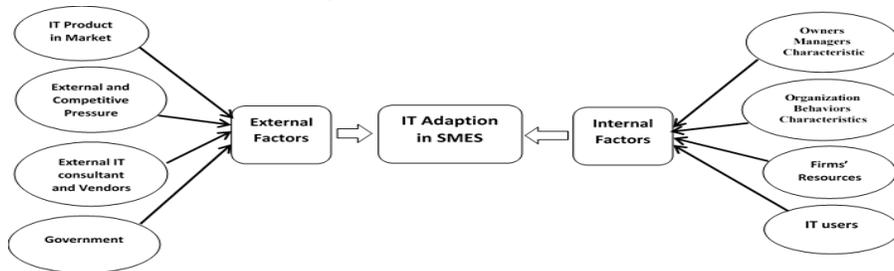


Figure 1. Proposed framework of ICT adoption influencing factors in SMEs context. Morteza, Tang, Mohammad and Norzima (2012)

ICT adoption in SMEs

Consideration of ICT vendors has moved recently to SMEs offering them a vast range of solutions, which were formerly adopted by large Firms only (Ramdani & Kawalek, 2007). Despite this initiatives, most SMEs still under-utilize the potential value of ICT adoption by only restricting them to administrative tasks (Brock, 2000). ICT implementation is crucial to the survival and growth of the economy in general, and small business sector in particular (Martin & Matlay, 2001). Many SMEs in South Africa's, Kenya, Rwanda, Botswana, Nigeria and Tanzania remain impoverished because they have no access to basic infrastructure, competitive capital and opportunities for economic growth and development, as results managing the speed of change of technology become difficult (Hassan, Ogundipe, 2017; Mwai2016; Yusuf 2013; Habib, 2011; Ndekwa 2014; Kabanda 2011; Herselman 2003). It is hard today to imagine SMEs operating without some use of ICT (Blackburn & McClure, 1998). Recognizing that, the government of the Republic of Tanzania has been actively supporting SMEs with expanding, growing and

prospering their businesses economic environment and promoting the adoption of latest technologies Ndekwa (2014).

Benefits of adopting ICT in SMEs

ICT provides many benefits at different levels operational level, tactical level and strategic level. Findings from South Africa, Oman, Kenya, Cameroon and Zanzibar show that use of ICT in SMEs can improve communication, ability to exchange data, teamwork, customer relations, visibility of services, market share, and competitive advantage (Hassan and Ogundipe, 2017;Mwai2016; Yusuf 2013; Said, 2014; Habib, 2011; Ion and Andreea, 2008; Ashrafi and Murtaza, 2008;Love et al. 2004). Ion and Andreea, (2008) argue that ICT can be used as a business tool to improve data management, decision making, ability to exchange data, response time to queries, and control of cash-flow Said, (2014). Said, (2014)further argue that use of ICT at planning level improves response to changes, service quality, decision making, teamwork, pro-active culture, planning times, integration with other business functions, effectiveness and efficiency, reduce time to prepare cost plans and time to compile tenders. In order to achieve benefits from using ICT, both ICT technical skills and managerial skills related to ICT are neededIon and Andreea (2008).

Challenges of adopting ICT in SMEs

Many SMEs in developing countries like Botswana, South Africa, Kenya, Uganda, Nigeria and Rwanda are stumbling with number of barriers that make it difficult for SMEs to adopt ICT. These include: Lack of knowledge about the strategic use and potential benefits of ICT, awareness, willingness, readiness and knowledge(Morteza, Tang, Mohammad and Norzima, 2012; Ongori and Migiro, 2010; Mutula and Brakel, 2007; Migiro, 2006; Martin, 2005; Martin and Matlay, 2000).Lack of necessary IT skills-base, lack ICT infrastructure, management support (Hassan and Ogundipe, 2017;Mutula and Brakel, 2007); Perceived high setup cost (cf. Jackson, 2007; Herselman, 2003; *Hassan, Ogundipe,2017*); Ever-changing ICT environment (MacGregor and Vrazalic, 2006). The limitations negatively affect the business plan of strategically adopting ICT (Said; 2014; Ndekwa, 2014).

Actual of ICT in SMEs

In many countries like Malaysia, Kenya, New Zealand, and Tanzania many SMEs use ICT tools such as Tally and Quick book in Accounting System (Ndekwa, 2015; Tijani and Mohammed, 2013; Ismail and Zin, 2009). Also, SMEs use World Wide Web such as Web sites and e-mail to communicate faster and cheaper with both its suppliers and clients (Mwai 2016; Ndekwa, 2015). SMEs use Websites for product marketing and e-commerce (Kiveu, 2008). Mobile phone is another ICT tool that is mostly used in SMEs. Mobile phones offer a quick, efficient and affordable way of communication in SMEs. (Mukhebi et al, 2007). Such transactions include m-banking, m-payments and mobile money transfer (Kiveu and Ofafa, 2013). M-internet is a fast growing technology that can be used for mobile commerce to facilitate online marketing, communication, networking, and market research (Kiveu and Ofafa, 2013).

RESEARCH METHODOLOGY

Basically this study is quantitative. Factor analysis (descriptive statisticsand KMO) was employed using SPSS toexploit in-depth analysis and establishing the relationship and strength

of association among the factors influencing adoption of technology among SMEs Field, A. (2005). This study used case study as a research design. Stratified sampling was used to acquire 136 respondents who are owners and employees from SMEs in Dar es Salaam Region (Ilala, Temeke and Kinondoni). By using Stratified sampling, the SMEs were divided into groups (strata) by breaking them down into small and medium enterprises. Then stratification was done on each strata to establish proportionality (Monette, Sullivan & Jong, 2005). A random sampling technique was then used to choose a subset of individuals (a sample) from a larger set (a population). Each individual from respective SME was chosen randomly and entirely by chance, such that each individual had the same probability of being chosen at any stage during the sampling process, and each subset of k individuals had the same probability of being chosen for the sample as any other subset of k individuals (Yates, David, Daren, 2008). Pilot study was conducted prior the main study in order to test the correctness of research instrument before actual data collection. The questionnaire was administered to capture data from selected SMEs.

FINDINGS AND DISCUSSION

ICT usage in SMEs

Six variables were loaded on Factor analysis to examine the status and uses of ICT adoption by SMEs in Tanzania whereby all the variables are strongly correlated. This implies that the analysis can be done using the Factor analysis. More specifically, the factor analysis results indicate that the variables are valid and acceptable, as the KMO measure of Sampling Adequacy is 0.843 and Bartlett's Test of Sphericity was significant (0.000). Table 1 below illustrates a detailed descriptive statistics of the results extracted from SPSS.

Table 1: Respondents' Responses on status and uses of ICT adoption by SMEs in Tanzania

	Mean	Std. Deviation
Use of the website technology to offer information to customers	2.3429	1.10992
Use of ICT in accounting	2.4000	1.00587
Use of ICT for marketing	2.3429	1.37076
Use of the Internet for product and market	2.2857	1.22646
Use of the Internet (email) for communications	2.2571	1.09391
Use of ICT for business transactions	2.8286	1.40348

Source: Field Data (2017)

The results from Table 1 above show that ICT are used for: business transactions with the mean score (2.82), accounting with mean score (2.34), marketing with mean score (2.34), Internet (email) for communications with mean score (2.25), Internet for product and market with mean score (2.28) and website technology to offer information to customers with mean score (2.34). Based on the descriptive statistics above ICT use with the highest mean score is business transactions whereas, the ICT application with lowest mean score is Internet for product and market.

The findings of the study are aligned with other studies done by (Ndekwa, 2015; Kiveu and Ofafa, 2013; Tijani and Mohammed, 2013; Ismail and Zin, 2009; Mukhebi, et al, 2007) who argue that SMEs use computer for Accounting operations, marketing and business transactions. Also use of internet enabled services such as websites technology to offer information to customers, E-mail for communication and product marketing(Minges, 2003; Kiveu, 2008; Mwai 2016; Ndekwa, 2015) for correspondence, document exchange, technical advice, managing projects, arranging meetings, and exchanging research ideas to enhance customer relationship. From the observations made, majority of the SMEs mainly from Ilala district has high adopted and usage rate of ICT compare to others districts.

The finding point out that ICT are used for business transactions, such as m-banking, m-payments and mobile money transfer (Kiveu and Ofafa, 2013) whereas,SMEs use Internet (email) for communications, correspondence, document exchange, technical advice and arranging meetings(Minges, 2003; Kiveu, 2008; Mwai 2016; Ndekwa, 2015).

Benefits of adopting ICT in SMEs

Seven variables were loaded on Factor analysis to examine the benefits of ICT adopting in SMEs whereby all the variables are strongly correlated. This implies that the analysis can be done using the Factor analysis. More specifically, the factor analysis results indicate that the variables are valid and acceptable, as the KMO measure of Sampling Adequacy is 0.794 and Bartlett's Test of Sphericity was significant (0.000). Table 2 below illustrates a detailed descriptive statistics of the results extracted from SPSS.

Table 2: Respondents' Responses on benefits of adopting ICT in SMEs

	Mean	Std. Deviation
ICT helps SMEs' to improve decision-making process	1.5294	.50098
ICT helps SMEs' to achieve competitive advantages over the competitors	1.5221	.65509
ICT makes SMEs' succeed in global business environment.	1.6912	.66125
ICT help SMEs' to be more profitable and success in business operations	2.1324	.85035
ICT improves SMEs' quality of work, product or services and simplify work	1.9118	.99978
ICT helps SMEs to gain customer trust and ensure the firms' sustainability	2.0515	.88040
ICT helps SMEs to acquire reliable ICT product, lower production, labour costs and broaden market reach	1.8897	.62861

Source: Field Data (2017)

The results from analysis in Table 2 show that, ICT helping SMEs' to: make more profitable with a mean score of (2.13),improve decision-making process with mean score of (1.52),achieve

competitive advantages with a mean score of (1.52), succeed in global business with a mean score of (1.69), quality of work, product or services and simplify work with a mean score of (1.91), gain customer trust and sustainability with a mean score of (2.05), acquire reliable ICT product, lower production and labour costs and broaden market reach with a mean score of (1.88). Based on the results from descriptive statistics above ICT help SMEs to be more profitable and success in business operations as depicted with the highest mean score whereas, the ICT help SMEs to achieve competitive advantages over the competitors as shown with lowest mean score.

These findings are aligned with many other related studies, (Modimogale and Kroeze, 2011; Mutula and Van Brakel, 2006; Matambalya and Wolf, 2001) who show that the competitiveness of SMEs is driven by their usage of ICT to provides faster and extra reliable goods and services and attain competitive advantages. Moreover, the findings from studies done by (Mwai 2016; Ndekwa 2015; Morteza, Tang, Mohammad and Norzima 2012; Ongori, and Migiro, 2010; Nguyen 2009; Ion and Andreea, 2008; Carbonara, 2005; Mutula and Brakel, 2006; Levy et al., 2001) they also argue that ICT plays a critical role in the informed decision-making process, making it easy for SMEs to make good competitive decisions, lower production and labour costs, add value to products/services and broaden market reach, both locally and globally. Based on the observation, the finding show that, ICT helps SMEs to be more profitable and successful in business operations that can influence SMEs to gain customer trust and ensure the firms' sustainability. Also, ICT helps SMEs to achieve competitive advantages over the competitors by improving the decision-making process of the firms'.

Challenges facing SMEs in adopting ICT

Five variables were loaded on Factor analysis to examine challenges faced by SMEs in adopting ICT whereby all the variables are strongly correlated. This implies that the analysis can be done using the Factor analysis. More specifically, the factor analysis results indicate that the variables are valid and acceptable, as the KMO measure of Sampling Adequacy is 0.794 and Bartlett's Test of Sphericity was significant (0.000). Table 3 below illustrates a detailed description statistics of the results extracted from SPSS.

Table 3: Respondents' Responses on challenges facing SMEs in adopting ICT

	Mean	Std. Deviation
Poor supportive infrastructure, limited imported machines and inadequate support from government	3.669	1.12253
lack of management support and commitment	4.235	.90460
ICT make the quality of works, usage become challenging	2.330	.60925
lack of capital, poor in-built attitude, risky technology and low skilled labor as operators	3.242	1.17692
lack of awareness, willingness, readiness, knowledge and IT	2.272	1.07129

Source: Field Data (2017)

The results from analysis in Table 3 show that, the ICT adoption among SMEs face the number of challenges including lack of: management support and commitment influenced with mean score of (4.23), supportive infrastructure, limited imported machines and inadequate support from government with the mean score of (2.27), challenging the quality of works, usage with a mean score of (2.33), capital, in-built attitude, risky technology and low skilled labor as operators with a mean score of (3.24) and awareness, willingness, readiness, knowledge and IT skills with a mean score of (3.66).

Based on the results from descriptive statistics above the challenges with highest mean score is lack of management support and commitment where, the challenges with lowest mean score is lack of awareness, willingness, readiness, knowledge and IT skills.

From the interpretations made above, the finding of these studies show that, the management support and commitment to any business or organization are the important influences of successful adoption and use of ICT. The finding is supported to the data presented by the literature prior to commencement of this (Hassan and Ogundipe, 2017; Ndekwa, 2014; Said, 2014; Said, 2014; Morteza, et. al 2012; Ion and Andreea 2008; Mutula and Brakel, 2007; cf. Jackson, 2007; Mutula and Van Brakel, 2007; MacGregor and Vrazalic, 2006; Martin, 2005; Herselman, 2003; Shiels et al 2000) show that successful ICT adoption require management's support and commitment. However, there are other supporting factors include users' ICT knowledge, lack of necessary IT skills-base, lack ICT infrastructure, perceived high setup cost, ever-changing ICT environment and perceived behavioral control over ICT to winning advantage of it (Hassan and Ogundipe, 2017; Mutula and Brakel, 2007; cf. Jackson, 2007; MacGregor and Vrazalic, 2006; Herselman, 2003). The finding of these analyses endorse that, in achieving benefits from using ICT, both ICT technical skills and managerial skills related to ICT are required.

Further, the finding of these analyses show that, the awareness, willingness, readiness, knowledge and IT skills among the SMEs owners has rapidly growing and taking place the use of ICTs in the last decade. The finding contrary to the data presented by the literature prior to commencement of this study (Morteza, Tang, Mohammad and Norzima, 2012; Ongori and Migiro, 2010; Mutula and Brakel, 2007; Migiro, 2006; Martin, 2005; Martin and Matlay, 2000) who argue that, lack of awareness, willingness, readiness, knowledge and IT skills are key challenges impeding the majority of SMEs. As a results the desire for growth and familiarity with administration directly affect the process of ICT adoption. However, this finding is supported by the current study done by Msuya, Mjema, Kundi, (2016) who argue that the awareness, readiness, knowledge and IT skills of owners-managers on the benefits of ICTs to their businesses has increased in this period and that resulted in over 56% adoption rate. Therefore, these finding confirm the strategic adoption and use of ICTs by some SMEs for their business operations.

CONCLUSION

In general, it seems that SMEs that show commitment on ICT are most likely taking a better chance of becoming commercially successful (Taylor and Murphy, 2004). Results of this study reveals that ICT adoption in Tanzania SMEs has increased and that results most the SMEs use ICTs as a strategic communication and marketing tool. In addition to that, the successfully adoption and use of ICT in SMEs ICT helps to be more profitable in business operations by improving quality of work, product or services, simplifying work, lower production and labour costs.

On other hand, limited application of technology by the SMEs poor management support, commitment, satisfactory capital, in-built attitude, risky technology and high level skilled labor as operators results poor competitive decisions, high production costs, less value to products/services resulting failure to survive in a competitive environment that directly affect SMEs. To determine the source course of the problem a follow up investigation need to be carried out.

RECOMMENDATIONS

In general, the recommendations for SMEs to successfully adoption of ICT and overcome the challenges in their businesses. The researcher of this study recommend the following:

SMEs have to capitalize in training their staff and management on the benefits of ICT and its urgent. This will help SMEs to measure ICT as a useful area for development like other areas such as finance or human resources. The government and professional trade organizations (such as SIDO, TIRDO, CAMARTEC, TEMDO) to put more motivation and concerted efforts on increasing awareness and affordable ICT related products, services, solutions and relevant professional advice for SMEs in the rural areas and urban areas for the development, more productive and competitive. There is a need for policy makers to understanding the current state of affairs of the impact of ICT on SMEs for the development of the country particularly Tanzania and the SMEs themselves in promoting industrialization.

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