Barriers To ICTs Adoption In SMEs: Evidence From A Developing Country Perspective

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INTRODUCTION

In this era of globalization, policy makers are confronted with unemployment, job creation, economic growth and international competitiveness. The question is how SMEs will assist in solving these problems posed by the policy makers? Thus SMEs need to adopt ICTs in their business processes in order to be globally competitive. In the last two decades, ICTs has fundamentally altered the way in which businesses are created, operated and managed (Spurge and Roberts, 2005). Thus every business today competes in two worlds, 1) physical world of tangible resources and 2) a virtual world of information. In addition, the most powerful forces affecting world economy and commerce today is the increasing rate of globalization and advances in information and communication technologies (Kaynak et al., 2005). ICTs adoption provides a lot of potential benefits to SMEs.The African continent has not been able to benefit much from the information revolution due to scarce facilities. In the literature, most of the research has been done on ICTs practices in large organizations, but research on SMEs has been under researched, (Fink and Disterer, 2006; Daun et al. 2002; MacGregor; 2004; Galloway and Mochrie, 2005; Ramsden and Bennett, 2005). SMEs really operate in extremely volatile and unpredictable business environment, thus the availability of right kind of information at the right time to SMEs has become a prerequisite for the success of SMEs in this era of globalization. Despite all these in today's world, SMEs, particularly the new ones are seen more than ever as a vehicle for entrepreneurship. SMEs not only contribute to employment creation, social and political stability but play a great role as innovative and competitive power (Thurik and Wennekers, 2004). In addition, SMEs are seen as the lifeblood of any economy especially in boasting productivity, creating employment and prosperity (Martyn et al., 2003). Information communication technologies(ICTs) is defined as the range of soft-ware, hardware, telecommunication and information management technologies, applications and devices that are used to create produce, analyze, process, package, distribute, retrieve, store and transform information(Brady et al.,2002). In this study, ICTs are defined as the set of activities that facilitate the capture, storage, processing, transmission and displaying of information by electronic means (Rao, 2004).

The main purpose of this study was to find out the constraints or factors which impede the process of ICTs adoption by SMEs in developing countries and recommend the best strategies to resolve these barriers to enhance SMEs competitiveness.

This paper will first outline the nature of SMEs, challenges of SMEs, barriers to ICTs adoption by SMEs and strategies to resolve these barriers, the methodology used to carry out the empirical study, followed by analysis of the results. Then the paper concludes by outlining the conclusions and implications, limitations, and future gaps for research.

NATURE OF SMEs

SMEs business tends to be more risky than its larger counterpart. SMEs are subject to higher failure rates and tend to keep less adequate records. In addition, SMEs have small management team, strong owner influence, a close and loyal team, centralized power and control. Similarly, SMEs have informal and inadequate planning and control systems, lack of control over the business environment, limited liability to obtain finance, labour intensive, limited processes and product technology and management swayed by the owner's personal idiosyncrasies (Vrazalic et al., 2002).Similarly, SMEs usually operate in the formal sector of the economy and employ mainly wage earning workers. In addition, SMEs are often classified by the number of employees and or by the value of their assets. This classification varies from one region to another, relative to the size of the economy and its endowments (Lukacs, 2005). Sharma and Bhagwat, (2006) argued that SMEs have personalized management with little devolution of authority, severe resource limitations in terms of management, research and development, finance and marketing, reliance on small number of customers and operating limited markets, flat and flexible structures, high

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inventory potential, reactive and fire fighting mentality and informal and dynamic strategies. Further, Taylor and Murphy (2005) stated that SMEs are not a homogeneous set of business. They vary significantly by size, age, sector, motivation, mode of organisation, ethnic background, location knowledge base, power and control of resources and innovative capacity.

CHALLENGES FACED BY SMEs

SMEs in developing economies are faced with many problems which make SMEs not to compete strategically with large enterprises. For instance, SMEs are faced with backward computer and communication industries, inadequate information resources, poor, information awareness among the public, immature information markets and lack of information policies (Chiware and Dick, 2008;Rao,2004;Oyenyinka,2003).These problems impedes SMEs not to be strategically positioned to compete with large business enterprises. In addition, other challenges faced by SMEs includes lack of financial resources, poor retention of talents, lack of markets for their products, lack of good human resource management practices and stiff competition. These challenges make SMEs not to cope with any changes in the environment. Similarly, SMEs are faced with external challenges like international trade regulations imposed by World Trade Organisation (WTO) that adversely affects SMEs in marketing their products because of quota system. In addition, SMEs have to adhere to International Labour Organisation's standards (ILO). ILO has its own regulations on human capital which SMEs have to abide by.

BARRIERS TO ICTs ADOPTION BY SMEs

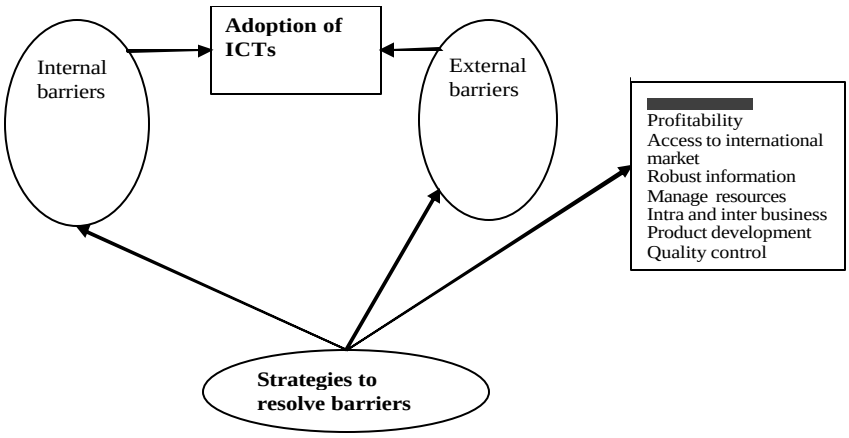
Although they are many benefits which SMEs might gain in ICTs adoption in their business processes like access to international markets, robust information, quality controls, administration, intra and inter business transactions and so on. SMEs have not fully tapped the benefits of ICTs adoption due to barriers to ICTs. Chiware and Dick, (2008) stated that barriers to ICTs usage in developing countries includes 1) lack of physical infrastructure and affordable access to telecommunications, 2) technology extension institutions are weak and 3) Local/supply capabilities and access to international know-how are restricted and domestic demand is low due to underdeveloped public sector services. Similarly, (Oyeyinka, 2003;MacGregor,2004) argued that the most critical barriers to ICTs adoption by SMEs included inadequate access points, connectivity problems as well as lack of affordable computing accessories. Other barriers to ICTs adoption includes lack of telecommunication infrastructure, lack of qualified staff to develop and support ICTs adoption, lack of skills among consumers needed in order to use internet, lack of timely reliable systems for the delivery of physical goods, low income and low computer and internet penetration. In addition Duan et al., (2002) further argued that the major barriers to ICTs adoption by SMEs are lack of adequate technical infrastructure, insufficient awareness of the opportunities offered by latest technology solutions, shortage of competent and experienced workforce, negative attitudes towards ICTs and lack of specialized training. ICTs adoption in SMEs are impeded by internal problems which includes owners / managers characteristics that is ICT literacy of the owner, high level of assertiveness in terms of business decisions process, understanding the benefits of ICT in their business process and able to rationalize the information perceived, control over opportunities and resources, influenced by what others say or do, mistrust of ICTs and simply lack of time (Van-Akkeren and Harker, 2003; Pokharel, 2005 ;Stockdale and Standing, 2004)). In addition, business characteristics has compounded the problems of ICTs adoption in SMEs, organization ICTs readiness, external pressure by customer/supplier dependency, structural sophistication of the business size, sector and status of information intensity. Further Maguire et al., (2007) argued that SMEs have not fully utilized ICTs to gain competitive advantage because SMEs lack the resources and skills to do so. Sharma and Bhagwat, (2006) argued that barriers to ICTs adoption in SMEs include lack of vision, SMEs do not want to change the old style of working, security threat to the business and fear of unnecessary breakdown and managers do not appreciate the benefits of ICTs. Similarly, Esselaar et al., (2007) argued that ICTs adoption in SMEs is hampered by network problems and unreliable infrastructure, lack of financial resources, lack of awareness and knowledge of ICTs, high cost or too expensive ICTs tools, lack of skills and ICT literacy.

CONCEPTUAL FRAMEWORK

Although SMEs face barriers to ICTs adoption process, still they stand to benefit if these barriers are resolved by

putting proper strategies in place by management and other stakeholders. These potential benefits of ICTs adoption includes access to international markets, robust information, inter and intra business transactions, managing resources economically, product development and so on (Fig.1).

Figure: 1. Conceptual framework



STRATEGIES TO RESOLVE THE BARRIERS

Despite challenges faced by SMEs, in the literature, various strategies were advocated to resolve these barriers to facilitate the ICTs adoption process in SMEs.The strategies to overcome the barriers to ICTs adoption by SMEs include partnership between governments, private sector or departments and agencies, industrial and research organizations, public research players and education institutions to come up with strategies of knowledge and innovation infrastructure and access, regulatory, trust and financial infrastructure, skills distribution , access to content and E-government leadership must be addressed by the government to support SMEs in ICTs adoption (Chiware and Dick,2008).The government should support SMEs in terms of training and development of human capital to solve the issue of shortage of skills availability.

ICTs adoption in SMEs facilitates quality delivery services to the clients. The following strategies should be considered along with others. **1. Infrastructure strategy**- the government assists SMEs by offering subsidies and encouraging ICT providers to have special discounts for SMEs at a reduced cost. **2. Human capital strategy** - the government assists SMEs by hosting training workshops that are flexible and tailored to the specific requirements of SMEs. Similarly the government should provide subsidies and grants for training and creating opportunities for firms to try technology hands on. **3. Financing strategy-** government should boost SMEs in ICTs adoption process by increasing affordability of ICTs through grants credits, leasing options and tax incentives. **4. Legal framework strategy**- SMEs will benefit if government takes initiative to establish legal framework to legitimate ICTs usage or adoption in SMEs.This legal policy and regulatory framework would encourage the usage of ICTs in SMEs. The policy should try to remove the restraining forces of ICTs adoption in SMEs and create conducive business environment. In addition, internal barriers will be resolved by the owner's own motivation and experience, access to resources (Money and people), management should focus on profits rather on sales, and this will make SMEs to have financial resource (Taylor and Murphy, 2004).

METHODOLOGY

The Survey Instrument

The questionnaire was the main instrument used for this study. The instrument was developed after going through studies conducted in developed and developing economies. The survey instrument consisted of questions which used the 5-point Likert's scale. The survey instrument was divided into four main parts. Part A dealt with demographics of the respondents and companies. Part B comprised of internal barriers which impede the ICTs adoption by SMEs. Part C dealt with external barriers which inhibit ICTs adoption by SMEs and Part D dealt with the strategies to resolve the barriers to ICTs adoption. The survey instrument was first pilot tested with few academicians, and 10 managers of SMEs/ owners to asses the content validity of the instrument. Their suggestions were incorporated before final distribution and administration of the questionnaire.

Sampling Plan

The research focused on managers/ owners of SMEs in Gaborone, Botswana. The convenience random sampling of 250 managers/owners and employees of SMEs were selected for the study. This was applied to get perceptions of managers/owners about barriers to ICTs adoption by SMEs. Thus the numbers of managers/ owners and employees targeted for the study was (250) but duly completed and returned questionnaires was (n=108) accounted to 43% of the respondents.

RESULTS AND DISCUSSION

Demographics of the Respondents

The demographics of the respondents indicated that the SMEs surveyed, general managers accounted to (39%); marketing managers (35%), finance manager's (20%) and Supervisor 6%. On gender distribution of the SMEs surveyed, males accounted to (54%) and females (46%) respectively. This reflected that most of SMEs are operated and managed by males. Most managers surveyed have experience of less than 10 years (48%) and over ten years (24%) respectively. Most of the managers surveyed at least have diploma qualifications and above (72%).

Features of Sample Firms

The survey indicated that most data was collected from manufacturing and services. SMEs which accounted to 55% and 45% respectively. Most SMEs surveyed are owned by corporations (58%), partnership (18%) and sole proprietorship (24%). This clearly indicated that partnership and corporations accounted to (76%). The SMEs surveyed have been in operation for a period of more than 6 years and above.

In table 1, the respondents were asked to rate the barriers they are facing or have faced in ICTs adoption in their business. The findings showed that lack of legal framework 82(78%) of the respondents agreed that it is a barrier to ICTs adoption in SMEs. The legal framework should specify the deliberate efforts to adopt ICTs in SMEs.Thus this framework should specify how the government is encouraging the use of ICTs in SMEs. In addition, this framework should create conducive business environment for business growth. Similarly, independent law should be in place to highlight on the formation and dissolution of firms. This finding is consistent to (Mutula and Brakel, 2006) stated that legal framework is critical in ICTs adoption in SMEs.On the variable whether lack of infrastructure is a barrier to ICT adoption in SMEs, the results indicated that there is need for good infrastructure to be in place to facilitate the process of ICTs adoption. In the absence of good infrastructure facilities, SMEs will not be able to tap the potential benefits of ICTs adoption. Similarly, limited financial resource is one of the key limiting factors in ICTs adoption in SMEs 70 (67%). Limited financial resources will impede SMEs not to afford the computing accessories, getting the right human capital skills to aid the process and access to connectivity to limited infrastructure. Lack of human capital skills is a barrier to ICTs adoption in SMEs 70 (67%).Human capital availability, internally and externally, is critical to the success of ICTs adoption process in SMEs.This finding is consistent to (Moodley, 2001) who stated that SMEs in developing economies are faced with various obstacles including lack of infrastructure, high cost of internet connectivity, security issues and shortage of human capital skills. On the variable whether managers are aware about the benefits of ICTs adoption in SMEs, the empirical finding indicated that most managers are not aware of the benefits of ICTs adoption in their business processes 68(65%).This finding is consistent to (Rao, 2004) stated that major barriers to ICTs adoption in SMEs is lack of managers' awareness about the benefits ICTs would provide in their business if adopted. There are many benefits which ICTs will provide if adopted in SME, these include access to international markets, access to robust information to aid in decision making process, managing the scarce resources economically, product development and so on. Other barriers includes lack of security and trust in ICTs tools, ICTs tools are expensive, negative attitude of ICTs tools and High cost of maintenance of ICTs tool.

In Table 2, the respondents were asked to rate the strategies which will be used to resolve the barriers to ICTs adoption by SMEs.The results indicated that SMEs need to be financed by the government in terms of giving them grants or giving loans at subsidised interest rates 86(76%).This finding is consistent to (Chiware and Dick, 2008) who argued that SMEs in Namibia needs government support in the adoption process.

Similarly, on the variable whether infrastructure facilities should be put in place as one of the strategies in resolving the barriers to ICTs adoption in SMEs, the results indicated that 90 (86%) of the respondents consented to the strategy. This clearly demonstrated that if infrastructural facilities are in place, ICTs adoption process becomes easier in SMEs.Training of the human capital is critical in resolving ICTs barriers in SMEs.100 (95%) human capital plays a great role in the adoption process. The human capital skills must be available internally and externally. That is if human capital is not available in the organisation, then it should be available in the labour market to be hired to facilitate the adoption process. Others strategies include having good legal framework on ICTs adoption to assist SMEs and partnership strategies by other institutions to facilitate ICTs adoption.

Table 1: Perceived Barriers to ICTs Adoption in SMEs

Variables	Combined scores					
	4 & 5		3		1 & 2	
	No	%	No	%	No	%
Barriers						
ICT tools are expensive	60	57	25	23	20	20
lack of security and trust in ICTs	55	52	24	22	26	26
Resist to change(old way of doing things)	46	44	7	7	52	49
Limited number of resources	70	67	20	19	15	14
Negative attitude towards ICTs	72	67	15	14	18	17
Lack of awareness of ICT benefits	68	65	27	25	10	10
Lack of human capital	70	67	20	19	25	14
Connectivity problems	56	53	32	30	17	17
Lack of computing accessories	57	54	26	25	22	21
Lack of skills among consumers	62	59	15	14	28	27
Poor infrastructure	74	70	15	14	16	16
Lack of legal framework	82	78	5	5	20	17
High cost of maintenance of ICTs tools	57	54	15	14	33	32

Table 2: Perceived strategies to resolve barriers to ICTs adoption

Variables	Combined scores					
	4 & 5		3		1 & 2	
	No	%	No	%	No	%
Financing of SMEs	80	76	10	10	15	14
Infrastructure facilities	90	86	5	5	9	9
Training of human capital	100	95	4	3	1	2
Legal framework	75	71	10	10	20	19
Partnership	65	62	30	28	10	10

CONCLUSIONS AND IMPLICATIONS

SMEs have not fully adopted ICTs in their business processes due to lack of limited resources and skills. These skills apply to both the business and technical areas. However, SMEs need to be assisted by the government in terms of financial resource funding, training of human capital and putting in place the legal framework and ICTs infrastructure facilities to facilitate the process of ICTs adoption.

The findings of this study will provide valuable information to SMEs managers/owners especially on how they will resolve barriers to ICTs adoption in their organisation to facilitate the adoption process in order to be strategically positioned in this era of globalisation. In addition the policy makers, training organisations, SMEs consultants, ICTs experts and academic researchers will benefit from the literature.

The limitation of the study was that the sample size selected was not worthy to generalise the results because it lacked nationwide outlook approach. In future, there is need for nationwide incorporation of SMEs to cross validate the findings. In addition, there is need for triangulation methods to be applied in order to get a clear insight on barriers to ICTs adoption in SMEs.The convenience sampling applied has its own limitations.

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