

THE DIFFUSION OF INFORMATION AND COMMUNICATION TECHNOLOGIES IN THE INFORMAL SECTOR IN KENYA

WAKARI GIKENYE

Department of Library and Information Science
University of Nairobi
Nairobi, Kenya
wagikeny@yahoo.com

DENNIS N. OCHOLLA

Department of Information Studies
University of Zululand
KwaDlangezwa, South Africa
Ochollad@unizulu.ac.za

ABSTRACT

The informal sector plays a key role in the economies of developing countries, through the creation of jobs; the production of affordable goods and services; and poverty reduction. However, the sector faces many challenges which include limited access to markets, lack of finance, and lack of access to new and changing technology. The purpose of this article is to report on the current diffusion of information and communication technologies (ICTs) in the informal sector in Kenya by showing the current access, use, impact and its potential. This study used a combination of quantitative and qualitative approaches. The survey research method was used to collect data by using structured and unstructured questionnaires from a sample of 390 micro and small enterprises (MSEs) participants. Data was obtained from different clusters of MSEs in Nairobi Province and Central Province in Kenya. The study found that over 70 per cent of the MSEs studied had between one and five employees, and mainly relied on themselves and fellow traders for business information. Their use of computer-based ICTs was found to be low with the majority of those studied using relatively inexpensive mobile phone technology. The researchers observed that government involvement in making the ICTs more accessible to the MSEs is yet to be felt, and more needs to be done in promoting their use and providing infrastructure that can support the use of ICTs.

KEYWORDS

informal sector, information and communication technologies, micro and small enterprises, social informatics, community informatics, mobile phones, Kenya

1 INTRODUCTION

Although information and communication technologies (ICTs) are the catalyst for large and modern businesses in the world, they are poised to take a leading role in the informal sector as well. The informal sector enterprises in Kenya and in other developing countries are usually started as survival outfits which are hurriedly set up, with little capital; they also lack awareness of and knowhow on the potential of ICTs and are hardly reaping the benefits of ICT use. Their very small size of operation, lack of capital and expertise do not enable them to acquire and use ICTs. The purpose of this article is to report on a recent study that investigated the diffusion of ICTs in the informal sector in Kenya and to discuss and explore various ways in which micro and small enterprises (MSEs) can use and benefit from ICTs. Many research studies have been carried out in Kenya on the informal sector by, for example Lundvall, Ochoro and Hjalmarsson (2001), Bigsten and Duverall (2004), Kimuyu (1997), and Ongile and McCormick (1996), to name a few, but little has been covered on the diffusion and potential of ICTs in the informal sector. Opiyo and K' Akumu (2006) have researched ICT application in one market centre in Nairobi where the focus was on the spatial design of buildings which would enable businesses to share ICT infrastructure. Migiro (2006) carried out research on the diffusion of ICTs and e-commerce adoption, specifically in the manufacturing sector. The two research studies focused on specific and specialised areas of ICTs and the informal sector in Kenya and may not be applicable to a wide range of informal sector enterprises that exist in Kenya.

1.1 INFORMAL SECTOR

The informal sector, otherwise referred to as MSEs or small and medium enterprises (SMEs) (Gikenye 2012; Ikoja-Odongo 2002:10), is a prevailing reality in many parts of the world that cannot be dismissed. MSEs or SMEs do not have a universal definition. Existing definitions are based on size, personnel, capital, nature and status of employment, activities, skills requirements, in accordance with organisational and operational regulations, and locational terminologies (Barasa & Kaabwe 2001:332; Ikiara 1991:310; Mutula & Van Brakel 2006:402). In Kenya, for example, the term 'micro enterprises' is commonly used to refer either to enterprises with one to five employees, or to those with one to nine employees (Migiro 2006:35; Opiyo & K' Akumu 2006:243). The Kenyan government has defined the informal sector as 'enterprises comprising between 1–50 employees and up to Kenya Shillings 5 million in turn over' (GoK 1989:164).

Figures for the United Kingdom (UK), as indicated by Ramsey et al (2003:262), are one to nine employees for micro enterprises, 10–99 employees for small enterprises, and 100–250 employees for medium enterprises. The European Union (EU) has referred to SMEs as those with fewer than 250 employees, which figure is also adapted for use in the UK (Ritchie & Bridley 2005:206). There are more MSEs than there are medium enterprises in the Kenyan industrial sector (GoK 1992:4). In the current study, we used one to nine employees in our definition of MSEs because one to five employees would have limited the study to only very small enterprises and denied the inclusion of others that are also part of the sector.

According to Bangasser (2000:8), the concept of the ‘informal sector’ was first formally recognised and popularised in a study that was carried out by the International Labour Office (ILO) in Kenya in 1972. Bangasser (2000:8) describes how the ILO (1972:5) noted the country’s use of employment statistics that only represented the formal sector and omitted business units which supported a significant proportion of the population. The ILO study further viewed the activities in the informal sector as characterised by ease of entry; reliance on indigenous resources; family ownership of the business/enterprise; small scale of operation; and labour intensive. The informal sector’s skills were acquired outside the formal school system and in the unregulated and competitive markets (ILO 1972:6). More holistically – in a report of the ILO’s Director General (1991:3–4) – the definition of the informal sector is penned as:

very small scale units producing and distributing goods and services, and consisting largely of independent, self-employed producers in urban areas of developing countries, some of whom also employ family labor and/or a few hired workers or apprentices; which operate with very little capital, or none at all; which operate a low level of technology and skills; which therefore operate at a low level of productivity; and which generally provide very low and irregular incomes and highly unstable employment to those who work in it. They are informal in that they are, for the most part, unregistered and unrecorded in official statistics; they tend to have little or no access to organized markets, to credit institutions, to formal education and training institutions, or to many public services and amenities; they are not recognized, supported or regulated by the government; they are often compelled by circumstances to operate outside the framework of the law, and even where they are registered and respect certain aspects of the law, they are almost invariably beyond the pale of social protection, labor legislation and protective measures at the workplace.

Most informal sector studies concur that developing countries are dominated by informal sector enterprises that make a major contribution to employment creation, and that they exist primarily due to the inability of other sectors of the economy, such as agriculture and the formal/modern sector, to provide employment opportunities to a rapidly expanding labour force (Barasa & Kaabwe 2001:332; Bigsten, Kimuyu & Lundvall 2004:332; Ikoja-Odongo 2002:10; Migiro 2006:35; Mutula & Van Brakel

2006:402). Informal sector workers create activities for themselves that provide them with an income to enable them to survive (ILO 1991:9).

The informal sector is commonly referred to as the 'jua kali' or small scale and jua kali enterprise (SSJKE) sector in Kenya, which literally means 'under the hot sun' in Kiswahili. This is because some enterprises carry out their operations in the open. Jua kali is also indicative of the difficult conditions in which they work (GoK 1989:164; Orwa 2007:1). The informal sector in Kenya is characterised by activities, such as shoe-making and repair; street hawking; tailoring; hair salons; traditional medicine practices; *matatu* (taxi) services; textile trading, including second-hand clothes dealers; groceries and food kiosks; as well as skilled occupational activities. The sector not only offers employment to the owner and his/her family, but also to others outside the family.

1.2 INFORMATION AND COMMUNICATION TECHNOLOGY

Rao (2004:261) has defined ICTs as the set of artifacts that facilitate the capture, storage, processing, transmission and display of information by electronic means. Positively, ICTs are viewed to offer remarkable opportunities for the alleviation of poverty and the creation of employment. They also have the potential to expand a country's economy by making economic enterprises more accessible to local and global markets; improving access to market information; providing information for better and competitive prices; as well as lowering transaction costs (Rao 2004:261; Shiels et al 2003:312). They can also be exploited by small enterprises to create a list of contacts and to make use of available information to start and sustain new business ventures. For example, Moyi (2003:222) and Shiels et al (2003:312) note that they have the potential to link small sellers and buyers to the daily market prices of commodities in different places, giving them the potential to change their negotiating power for the better. Cohen and Kallirro (2006:45) agree that ICTs can radically change the competitiveness of organisations, and note how electronic commerce has reduced the cost of trading among companies and also helped to tighten their relationships and collaboration.

ICTs can contribute to economic development by improving transport efficiency, thereby facilitating the distribution of economic development. ICTs have become an important feature in the global transformation of social, economic and political life (Donner 2004:4; Hafkin & Taggart 2001:1; Migiro 2006:40). They have already reduced the cost of conducting business in many parts of the world. The Internet especially is liberating because it enables businesses to access global markets (Opiyo & K' Akumu 2006:243). ICTs have thus played a vital role in changing approaches to business by making it possible for business enterprises worldwide to establish direct links with customers, suppliers and distributors, and thus to facilitate faster and more efficient service delivery and transactions (Amoako 2000; Castells 1999:3; Hafkin & Taggart 2001:1).

The lack of familiarity with new and changing technology, awareness, skills and understanding of ICTs are some of the challenges faced by the informal sector enterprises (Mutula & Van Brakel 2006:404; Opiyo & K'Okumu 2006:244). In Kenya, for example, Opiyo and K'Okumu (2006) and Orwa (2007) have observed that informal sector businesses largely operate with hardly any ICTs like fax machines, email or the Internet, and the same has been observed in Uganda (Ikoja-Odongo & Ocholla 2004:54). These challenges are responsible for the lack of sustained growth in the sector in Kenya (Migiro 2006:25; Opiyo & K'Okumu 2006). The global technological change in ICTs offers the informal sector an opportunity to tap into international markets, but the workers in the informal sector have to first embrace change and new ways of doing things if they are to benefit from the kind of opportunities offered by ICT use (Hafkin & Taggart 2001:1).

2 THEORETICAL BACKGROUND

This study was informed by three related theories. Firstly, the Diffusion of Innovations (DoI) theory, that was conceived by Rogers as a general diffusion model in 1962 as reflected in details elsewhere (see Gikenye 2012). According to Rogers (2003), the DoI theory is the process by which the diffusion of an innovation takes place, and gains acceptance among members of a certain community. The innovation could be a technological idea, artefact or technique that is communicated through certain channels over time among members of a social system. The new ideas imply many possibilities as well as uncertainties (Rogers 2003:5). Rogers (2003:16) and Clarke (1999:para. 8) list five important characteristics of an innovation that influence its diffusion, namely: relative advantage, compatibility, complexity, trialability and observability.

The successful diffusion of a new idea is often difficult and many innovations end up taking a long time before they are successfully diffused (Rogers 2003:7). Some innovations, however, are diffused quite fast. A fitting example is the diffusion of the Internet by Americans (Rogers 2003:219) and the mobile phone in developing countries where they have overtaken many older technologies (eg computer, fax, television and fixed line telephone). Rogers (2003:282–287) identifies five different adopter categories, namely: innovators, early adopters, early majority, late majority, and laggards.

The DoI theory provides a broad framework for the study of diffusion of business tools, including e-business and e-technologies, because it processes the basic components of technological innovation (Migiro & Ocholla 2005:284; Minishi-Majanja & Kiplangat 2005:211). It has also been applied in a wide variety of situations that involve the diffusion of innovation, including ICTs (Harris 2002:7).

The DoI theory, however, seems to be more concerned with the rate of diffusion and the decision-making processes of receivers than with the conditions that bring about the slow/fast rate of diffusion. It is also overly concerned with and preoccupied by the

superiority of technology in bringing about fast diffusion. The DOI theory is, therefore, technologically driven rather than socially driven and does not consider why fast diffusion does not occur in some communities or among members of a community. Pacey (1983) refers to this as technological determinism, and contends that the society is not pulled along by the power of technology, rather social organisation is highly important in determining the diffusion of technological advances. The social constructivism approach, which is opposed to technological determinism, posits that technology is not neutral and is not designed and developed separately from politics, economics and power (Oostveen 2007:2).

Other limitations of the DoI theory, as pointed out by Chiware and Dick (2008:146), Minishi-Majanja and Kiplangat (2005:211) and Mugodi and Fleming (2003:508), are that it seeks to explain individual decisions rather than collective adoption behaviour, which is more likely to be the case in business settings. Mugodi and Fleming's (2003:508) study gives an example of South Africa's platinum mining sector finding that those who had not adopted ICTs in their work were not necessarily laggards. But the miners realised that the technology was not fully usable in the mining areas due to lack of the necessary infrastructure. The theory is also limited in providing guidance on how to accelerate the rate of diffusion (Clarke 1999:para. 13; Lyytinen & Damsgaard 2001:13).

Secondly, we considered the Social Construction of Technology (SCoT) theory, which is an approach of social constructivism that was formulated by Pinch and Bijker in the mid-1980s. According to Pinch and Bijker (1987), technology and its constituents are products of the social, political, economic and cultural environment in which they are found. They identify four related components of the framework of the social construction of technology, namely:

- The relevant social groups which interpret the artefact.
- Interpretive flexibility is the way in which different social groups understand the technology.
- The closure mechanism occurs when one meaning of the specific social group becomes dominant as the use stabilises.
- The technological frame concept refers to the way the socio-cultural and political context of a social group influences the meaning of an artefact (Oostveen 2007:9; Pinch & Bijker 1987:26).

The SCoT theory has been criticised by Miles (in Williams and Edge 1996:31) who contends that the social shaping of technology should reconsider its critique of technological determinism in order to retain some concepts about technology's determinate effects. The SCoT theory is quite relevant to the current study as it lays emphasis on the societal conditions as influencing the diffusion of innovations. The SCoT theory can be used to explain why computer technologies have not diffused widely, among the informal sector enterprises, despite their perceived superiority.

Thirdly, the Actor-network Theory (ANT) also became quite complementary. ANT was developed as a critique to the SCoT approach due to the SCoT's neglect of the influence of technology on social relations. ANT was developed by Latour, Callon and Law (Callon 2001), and its main tenet is the concept of heterogeneous elements all working together in a network to maintain social order. The actor-network approach places emphasis on both the social and technical actors, who are treated as inseparable for the maintenance of social order. The approach rejects the primacy of the human element in a socio-technical scenario and sees development of technology in terms of relationships formed between human and non-human elements in 'actor-networks'. It does not view technical knowledge as privileged, but rather as part of a configuration of relationships (Mackay & Gillespie 1992:687).

Taylor and Murphy (2004:280) confirm that it is simplistic and naive to view ICTs as the keys to the knowledge economy, or that they will assure competitive advantage for all economies; thus, they argue that the technical fixes and the 'one-size-fits-all' technology prescription could be missing the point. They cite several barriers to SMEs' entry into the digital economy:

- Lack of awareness of the potential of ICTs to enhance SME operations.
- Lack of the necessary ICT skills' base to engage with the digital economy.
- The initial cost may be considered to be too high.
- Most small firms do not have the luxury of resources for experimentation with ICTs.
- Some SMEs occupy small and defined niche markets which are entirely local and do not need global connectivity through the Internet.

The three theories considered, namely the DoI, SCoT and ANT, have attempted to progressively improve on each other. The DoI theory, although relevant to the study, can only be used at a general level to represent a new innovation or idea. But it does not explain why the diffusion of new innovations or ideas does not take place as expected and emphasises the innovation's assumed superiority. It is this techno-centric aspect that the social constructivism approach, with SCoT and ANT, attempts to improve on. The SCoT theory attempts to counter the technical determinism that is inherent in the DoI theory by placing more emphasis on social aspects and has been criticised for being socially deterministic at the expense of technology. ANT offers a more balanced approach by considering both the technical and the social aspects as equal actors in a network that work together for successful diffusion of an innovation.

3 PURPOSE OF THE STUDY

The overall aim of the study was to investigate the diffusion of ICTs in the informal sector in Kenya. In this article we attempt to answer the following research questions:

- What is the level of ICT use in the informal sector in Kenya and what is its impact?
- What types of ICTs are being used in the informal sector in Kenya?
- Which subsectors are using ICTs in the informal sector in Kenya and what is their impact?
- What are the problems or challenges that block the awareness and use of ICTs in the informal sector in Kenya?
- What is the role of government in creating the necessary infrastructure for the use of ICTs in the informal sector in Kenya?
- What strategies, suggestions and recommendations can be made towards the use of ICTs in the informal sector in Kenya?
- What model can be used to map ICT access, use and impact in the informal sector in Kenya?

4 METHODOLOGY

The study specifically focused on MSEs in two provinces in Kenya, namely Nairobi Province and Central Province. Data for the study was gathered through a literature review, a field survey, and personal observation. Structured and unstructured questionnaires were used to solicit information from MSE participants drawn from the two provinces. A combination of purposive and probability random sampling was used to generate the sample frames of MSE clusters and respondents, respectively. The sample of respondents for Nairobi Province was drawn from the central business district in the city of Nairobi, two markets (Gikomba market and Kenyatta market) and a horticultural products' depot next to Jomo Kenyatta International Airport in Nairobi Province. Two urban centres and two market centres were selected from Central Province, namely Kiambu and Thika towns and Kabati and Makutano market centres in Muranga District. Questionnaires were administered to a sample of 390 MSE participants comprising owner/managers and selected employees. For each enterprise in the sample, the questionnaire was administered either to the owner/manager or to a representative employee.

The respondents were mainly young, secondary school leavers and tertiary level education graduates who had been unable to secure jobs in the formal sector. The relative ease of entry into the informal sector has made it a fall back for those leaving school and training institutions as well as those exiting from the formal sector due to lay-offs and restructuring. Almost half of the MSE participants (48%) were in the age range of 25 to 35 years. They represent the youth and young adults (men and women) at the beginning of their productive age, who need to support themselves having failed to secure jobs in the formal sector (GoK 2010:78).

Of the respondents, 27 per cent were below 25 years, which means that since this age category were still fresh from school and still dependent on their parents they had not entered the informal sector in as big a number as the 25–35 age category. Perhaps they were still pursuing some additional courses which they hoped would land them formal sector jobs. Only 1 per cent were above 45 years, which means that some in this category may have graduated to bigger enterprises, while others may have given up on informal sector activities.

Contrary to other MSE studies that have shown women to be the active majority in the MSE sector, there was no significant female dominance in the current study (51.8% female and 48.8% male respondents). This might be explained by the rising unemployment rate in Kenya, which affects both men and women and therefore results in both genders seeking work in the informal sector. For example, Singh and Belwal's (2008:124) study in Ethiopia found that 65 per cent of the informal sector enterprises were owned and run by women. In the same country, Amha and Ageba (2006:306) found much higher figures, with 94 per cent of the females being active owners of MSEs. In another study, in five of the nine countries studied by Liedholm and Mead (1999 in Ndemo & Maina 2007:119), women outnumbered men as owners and operators of MSEs: Botswana (75%), Lesotho (73%), Swaziland (84%), Zimbabwe (66%) and South Africa (62%).

The completed questionnaires were reviewed to determine their usability: 97 per cent (377) of the questionnaires were answered; 1 per cent (4) of the questionnaires were incomplete; and 2 per cent (9) of the questionnaires were not returned.

5 RESULTS

The results are captured in sections 5.1 to 5.6.

5.1 WHAT IS THE STATUS OF THE INFORMAL SECTOR IN KENYA?

The study found that over 70 per cent of the enterprises had between one and five employees; only 5.6 per cent had between six and ten employees; and less than 1 per cent had more than ten employees. Almost all of the MSEs (over 99%) fell within the study's quantitative definition of MSEs (based on one to nine employees). However, because of the observed differences between the microenterprises, the study considered other qualitative aspects of differentiation based on the type of premises, related infrastructural facilities and the number of years of operation.

Over 55 per cent of the surveyed MSEs were managed by owners or part owners with no employees, while the rest (45%) were run by employees.

5.2 WHAT IS THE LEVEL OF ACCESS TO ICTS IN THE INFORMAL SECTOR IN KENYA?

The study found that the MSEs were mostly started and operated with very little capital. This does not allow such enterprises much room for growth and encourages them to do little more than survive. Despite the business potential attributed to ICTs, most of the ICTs – especially the computer-based ones – were not accessible to the surveyed MSEs due to their inability to afford them. The MSE traders also lacked the necessary skills to exploit the potential of ICTs such as computers and the Internet. The majority were also found to be lacking in awareness of ICTs and their economic potential to the extent that they thought that the Internet and other computer-based facilities were not relevant to them or their businesses.

The surveyed MSEs were also found to have limited access to formal information sources, and relied mainly on their personal/tacit knowledge, fellow traders, acquaintances, friends and relatives, mobile phone contacts, and customer reactions. These sources of information are mainly oral-based with little information stemming from formal sources (such as mass media, the Internet, government agencies), or printed sources like books and magazines.

5.3 WHAT IS THE LEVEL OF ICT USE IN THE INFORMAL SECTOR IN KENYA?

The level of ICT use in the informal sector in Kenya was found to be different for the different categories of MSEs, with the overall use of computers and other related equipment like scanners, printers, the Internet and email standing quite low at 23 per cent for the surveyed MSEs. ICTs were mainly used by permanent and stable MSEs which were found to occupy permanent premises.

The results of the field survey showed that most of the surveyed MSEs did not use ICTs like computers, the Internet and email. In stark contrast, the use of mobile phones and the related use of mobile money transfer services was very high, at 90 per cent, among the informal sector workers. The mobile money transfer services were heavily used for business transactions, and for saving money.

The majority of the surveyed MSE traders, with the exception of those who fell in the first category (relatively stable and permanent MSEs), carried on as if the ICT developments had nothing to do with their lives and/or their businesses. Only 26 per cent (96) of the respondents owned a computer; 15.1 per cent (57) owned or used a landline; 4.8 per cent (18) owned a printer; 4.2 per cent (16) owned a scanner; and 2.7 per cent (10) owned a fax machine. Sixteen per cent of the respondents (59) reported using a computer for typing, while 23 per cent used one for email. Less than 1 per cent reported using a computer for printing and record keeping purposes.

Table 1: Types of ICTs being used in the informal sector in Kenya (n = 377)

Type of ICT and use (n = 377)	Frequency	Per cent (%)
Mobile phone (communication)	342	90.7
Computer and Internet (email)	87	23.1
Computer (typing)	59	15.6
Scanner	53	14.1
Fax	43	11.4
Computer (printing)	1	0.3
Computer (record keeping)	1	0.3

The mobile phone was the most highly used ICT among the surveyed MSEs largely because of its many uses as represented in Table 2.

Table 2: Different uses of the mobile phone by MSE traders

Use of mobile phone (n = 377)	Frequency	Per cent (%)
Use it for money transfer services	345	91.5
For contacting customers	299	79.3
For telling time	276	73.2
For ordering goods and services	275	72.9
For social communication/networking	271	71.9
Use it as a radio	185	49.1
For improving my business	190	50.4
Use it as a camera	178	47.2
For accessing the Internet	173	45.9
For sourcing raw materials	23	6.1

Ownership and use was reported to be over 90 per cent. Its successful diffusion is primarily due to its affordability, flexibility, and ease of use. Its oral-based functionality appeals to the oral and informal nature of African traditions, not just for business transactions, but also for social communication (to keep in touch with friends and relatives).

The rapid adoption and use of the mobile phone and the money transfer services in Kenya since 2001 and 2007 respectively has exceeded all expectations, with a mobile phone subscription of over 25.3 million as of June 2011 (from more than 22 million reported in September 2010), and with a mobile phone penetration of 64.2 per cent per 100 inhabitants. The mobile phone is also heavily used for money transfer services, with 17.3 million registered mobile money transfer subscriptions in the country for the same period (Communication Commission of Kenya 2010/2011).

Computer technologies, on the other hand, are only used by a few enterprises because the earnings, business space and infrastructure do not support these ICTs in the case of most MSEs. The participants also lacked the skills to exploit the benefits of computers and were also unaware of the potential of computers to improve their businesses.

5.4 WHICH SUBSECTORS ARE USING ICTS IN THE INFORMAL SECTOR IN KENYA AND WHAT IS THE IMPACT?

The various subsectors in the surveyed MSEs used different types of ICTs according to their size and their ability to afford the various types of ICTs. Since the mobile phone is used most in the sector, the impact of ICTs could be judged largely from the mobile phone perspective as reflected in Table 3, which should therefore should be considered with caution.

Table 3: Impact of ICT use

Responses (n = 377)	Frequency	Per cent (%)
Faster transactions & communication with customers and suppliers	128	34
Helps get supplies faster	60	15.9
Helps bring more customers leading to more business income	44	11.7
They simplify work and make it much easier to carry out business activities	39	10.3
They bring business opportunities	37	9.8
They are convenient/genuine, save time and money by reducing distances travelled	16	4.2
They are good for business records and stock control	15	4
They facilitate access to more information through telephone contacts and the Internet	7	1.9
They are educational, help to increase technical knowledge and advertising space	4	1.1

Over 90 per cent of the surveyed MSEs used mobile phones to run their businesses. The stable and more permanent MSEs, especially those involved in the export of horticultural products and automobile spare parts and electronic shops, also used computers, fixed line telephones, as well as email and the Internet. According to their responses, the traders were able to access more information from the Internet for their businesses and reported that computers were good for keeping business records as well as for stock control. Some respondents also viewed the Internet as a good avenue for advertising and marketing their goods.

The responses showed that the mobile phone was put to different uses by the MSE participants and it was clear that it had made a difference in the running of MSEs (see Table 2). The mobile phone has become a very handy tool for running businesses with one to five workers where one or two people have to perform most of the tasks required to run the microenterprise. A large number of the MSEs (over 70%) were found to have less than five employees, with 35 per cent of the MSEs running with just one employee. Many in this group reported being able to spend more time at work, since some tasks which they used to have travel to accomplish, they can now do without having to leave their business premises. Previously, this would at times require closing the business for some time until their return, for those who run their businesses single-handedly.

The mobile phone has made it possible to make payments, order goods and only leave the premises to collect the goods when they are informed that they are ready for collection. This has brought a great deal of convenience and savings in money, time and labour through reduced journeys. The mobile money services have in addition made it possible to make payments for goods and services without having to leave the work premises.

The MSE participants reported being highly impressed with the genuineness of the mobile phone technology, that is, its ability to handle money transactions instantly and without the fear that it will be lost in the process, as well as its speed and convenience in simplifying work in the course of doing business.

5.5 WHAT ARE THE CHALLENGES WITH RESPECT TO ICTS IN THE INFORMAL SECTOR IN KENYA?

Informal sector enterprises are generally unable to afford relatively expensive ICTs such as computers and Internet connectivity. Entrepreneurs lack the capacity to use ICTs due to a general lack of education, skills and awareness. Since the majority of the MSEs are started primarily for survival purposes as a result of the participants' failure to get formal sector jobs, lack of proper preparation and enough capital further affects the survival and growth of these enterprises. Moreover, the size of their operations is too small and the vast majority of them do not have the necessary space or permanent infrastructure to support ICTs like computers.

The increasing level of unemployment as the school leavers in Kenya continue to join the workforce, coupled with a formal sector that has been unable to absorb labour since the 1970s, has resulted in stiff competition among the MSEs. This has led to the duplication of goods and services, resulting in even lower earnings that do not allow growth for the MSEs to acquire ICTs like computers.

Other challenges are the high cost of access to telecommunications; lack of a government policy overseeing ICTs; underutilisation of existing technologies; poor communications infrastructure (eg, Internet connectivity); ignorance of ICT benefits; limited access to appropriate technology and key technological infrastructure (eg, electricity); and resistance to change.

5.6 WHAT IS THE GOVERNMENT'S ROLE IN IMPROVING ACCESS TO ICTS IN THE INFORMAL SECTOR IN KENYA?

E-readiness is an assessment of how ready a country is to participate in the networked world. The government plays an important role by creating an environment that can support the effective use of ICTs. Governments are also involved in creating stable environments for the creation and development of businesses, promoting innovations, and nurturing business culture (Chiwere & Dick 2008:149).

The Kenyan government recognises that ICTs are the foundation of modern economic development and has initiated major steps to promote their use. One of the government's main initiatives has been to improve ICT infrastructure in order to bridge the digital divide and lower the cost of communications. The government is also levelling the ground through the development and implementation of policy and regulations aimed at attracting investment within the sector (GoK 2008:25). For example, the liberalisation of the telecommunications sector is one of the main reasons behind the success of mobile phone adoption in Kenya. The government has also made efforts to reduce the cost of Internet access by investing in terrestrial and undersea fibre optic cables, and to roll out broadband wireless connectivity in rural areas through various wireless technologies (GoK 2008:25).

While the significant progress and efforts made in the expansion and modernisation of the country's information sector and in the government's attempts to provide affordable Internet services to all Kenyans through the fibre optic cable and the zero-rating of computers are commendable, it appears that they are yet to be felt by the MSEs.

There is also disparity in the distribution of communication facilities between rural and urban areas and between high income and low income groups. A great deal therefore remains to be done in awareness raising, capacity building and increased income distribution, which would result in per capita incomes that can give the MSEs operators the ability and confidence to invest in and use ICTs for their benefits. The government needs to be better coordinated in its efforts to help informal sector traders improve their businesses, especially with respect to ICT access.

6 CONCLUSION AND RECOMMENDATIONS

The study has shown that informal sector enterprises play a big part in the lives of many Kenyans by providing a source of livelihood and affordable goods and services and making a considerable contribution towards the Gross National Product (GNP). However, most MSEs are mainly started for survival purposes, with little room for growth or expansion. It was also noted that the MSEs operate in difficult circumstances

and lack adequate capital, and the relevant information and infrastructure which would enable them to acquire the relatively expensive technology, like computers which have been widely predicted to have high potential for business growth. Furthermore, they also lack awareness about ICTs and their benefits and potential for business.

The MSEs have, however, been able to access and experience the benefits of mobile phone technology. The rapid adoption of the mobile phone has been as a result of immediate benefits, such as saving time and money, and the welcome and relatively cheap and quick way that it allows people to communicate and perform business transactions. The mobile phone has come to be relied on heavily in the business operations of MSEs due to its relative affordability, ease of use and the fact that the technology does not require a high level of education and skills. Its oral orientation has also made its awareness, adoption and benefits spread quickly and widely. Seen in light of Roger's DoI theory, the perceived advantage of the technology has led to its faster adoption and diffusion. Mobile phone technology alone, however, has its limits and cannot replace investment in infrastructural facilities such as power, roads and water, without which it would also be ineffective.

Aker and Mbiti (2010:24) give an example of a trader who might be able to obtain better price information from the market for goods through a mobile phone, but then fail to transport them to the market because of bad roads, or a trader may receive many orders for his goods, but then fail to satisfy his/her customers due to lack of electricity and water. The government therefore needs to develop the necessary infrastructure, like electricity, roads and water, as a matter of priority. Internet connections should also be affordable, a general public awareness campaign and training should also be put in place.

The study also noted that access to formal information sources is limited and the MSE traders rely mainly on informal sources of information, for example from fellow traders or their personal/tacit knowledge, or from acquaintances, friends and relatives, mobile phone contacts, and customer reactions. There was little information stemming from formal sources such as the Internet or government agencies. Without formal sources of information, adequate and crucial information on sources of credit and finance options for business growth and expansion will continue to elude the MSE entrepreneurs.

The government's efforts to make ICTs (eg, the Internet) accessible to its citizens without addressing other aspects like infrastructure and the ability to afford these tools, might explain why the efforts have not made much impact on the informal sector. Attempts to advance ICT use need to be accompanied by coordinated changes in other aspects that make it possible to adopt ICTs.

In the light of ANT, which belongs to the school of social constructivism, all actors need to work together in a network (coordinated efforts) to render them effective in the process of the diffusion of innovations. Based on the outcome of the current study, the study recognises that on their own, the superior nature of ICTs and their potential

benefits are not enough to bring about the rapid diffusion of technology. The survey data and the literature review, combined with the interpretation of theoretical perspectives in the study, show that the superiority of technology, like the computer and the Internet, does not automatically bring about the successful diffusion of technology, neither does technology diffusion take place in a vacuum. It is the societal conditions, such as the socioeconomic and political factors that exist in the society to which a particular technology or innovation is introduced, that influence its adoption and diffusion.

The diffusion and use of ICTs by MSEs in Kenya can effectively take place when other aspects in the business environment are addressed in a coordinated way. We recommend focusing on the following six areas: improved business premises and infrastructure; provision of enabling policies; improved distribution of economic resources; improved skills and training to enable the use of ICTs and facilitate awareness; provision and dissemination of information; and change of mental attitudes that will give users the confidence and ability to appreciate the benefits of ICTs.

Thus, firstly, proper business premises and infrastructural facilities like electricity, water and roads, are basic necessities that should be availed or facilitated by the government for all business activities to run smoothly. Currently these facilities are not adequately provided.

The market stalls should have the basics, like electricity and water, as well as affordable Internet connectivity, and can be developed by the government in the various urban and market centres where MSEs are found. The study therefore recommends that the Kenyan government commits to supply these basic necessities for progress to be made in improving the informal sector with respect to the use of beneficial ICTs.

Secondly, regarding enabling policies, a comprehensive policy framework to guide activities that can bring about the successful diffusion of ICTs should not only be in place, but also fully implemented. The National ICT Strategy for Education and Training published in 2006 has noble goals as it seeks to facilitate sustained economic growth and poverty reduction; promote social justice and equity; mainstream gender in national development; empower the youth and disadvantaged groups; stimulate investment and innovation in ICT; and achieve universal access (GoK 2006:2). These noble and fitting goals need to be properly and fully implemented within proper timelines in order to bear fruits.

Thirdly, better distribution of resources is fundamental in order for the MSEs to grow, prosper and be sustainable; the government needs to institute a mechanism for the improved distribution of national economic resources. This would improve opportunities for the growth of the enterprises to the degree that the traders could afford and have the confidence to acquire and use various types of ICTs.

Fourthly, there is a need to improve skills and know-how as this makes it possible to raise awareness about ICTs and how to use them. Awareness and the training of MSE

workers can be done through their associations and the various clusters. More inclusive and effective ICT training, however, needs to be introduced in the education system, both at the primary and secondary school levels. The study therefore recommends the national introduction of ICT learning in schools so that awareness and skills on ICTs can be fostered as early as possible by all.

Fifthly, information provision and dissemination is also essential. The need for relevant and timely business information cannot be overstated. The study found that the MSE respondents rely mainly on informal sources of information and customer reaction in their decision making processes, which are inadequate as sources of business information. The study recommends that the government introduces structures that would provide the MSEs with the right kind of information required for business decision making. The information can be channelled through the MSEs' and SMEs' various associations, such as the curios and crafts' or the metal workers' associations.

Lastly, the required changes in attitude and mental orientation, as Lal and Peedoly (2006:32) rightly contend, are that MSEs require more than infrastructural and financial facilitation for the successful diffusion of ICTs: they also require an overhaul of the small business mindset and more investment in capacity building. This can come about with the consistent and gradual growth of the MSEs, whereupon the changing reality would lead them to a gradual general change in their approach and outlook to business.

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