

## ADOPTION AND USE OF INFORMATION AND COMMUNICATION TECHNOLOGY (ICT) BY SMALL ENTERPRISES IN THIKA TOWN, KENYA

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### **Abstract**

Information and communications technology (ICT) has assumed a critical role in facilitating socio-economic development in many countries. The contribution of ICT to enterprise development has been recognized and many countries including Kenya have made deliberate efforts in integrating ICT into small enterprise (SE) development agenda. However, the adoption and use of ICT by small enterprises has been below expectations. The study sought to determine factors affecting the adoption and use of ICT by (SEs) Kenya. The study was conducted through a survey questionnaire covering a stratified sample of 78 respondents drawn from 390 SEs in Thika. Both qualitative and quantitative methods were used to analyze data. Chi-square tests were conducted to establish the relationship between variables. Results indicated that most SEs use basic communication tools such as mobile (75%), internet (34.6%). Adoption and use of ICT tools has not been well embraced by SEs. Most SEs are characterized by weak financial capacity and hand-to-mouth financial existence. The chi-square value was 7.890 with 0.049 significance level, indicating a statistically significant relationship between financial capacity and ICT adoption and use. SE operators perceive the cost of ICT to be very high, with a negative effect on adoption and use. Communication infrastructure was also found to have a significant effect on adoption and use, having a chi-square value was 21.65 with a 0.001 significance level. The level of knowledge and education also has significant effect on adoption and use having a chi-square test value of 16.063 and a 0.013 significance level. The study concludes that adoption and use of ICT has not been well embraced by SEs. All the variables under study have a statistically significant effect on ICT adoption and use. To help improve ICT adoption and use by SEs in Kenya, the Government should develop an appropriate programme to encourage ICT adoption and use by SEs, eliminate all taxes on ICT, establish a special fund to support ICT adoption; support training programmes to develop the capacity of SEs to embrace ICT; invest in appropriate communication infrastructure for SEs, and there should be deliberate efforts by Government to encourage SEs to invest in basic ICT tools to help improve their business and make them more competitive.

**Key words:** Information and communication technology, small enterprise, adoption and use, infrastructure, financial capacity, cost, knowledge level

## **1.0 Introduction**

Information and communications technologies (ICT) have assumed a central position in the development agenda of most countries due to their critical role in facilitating socio-economic development (Frempong, 2004). The contribution of ICT to enterprise development has been recognized and many countries including Kenya have made great efforts in integrating ICT into the enterprise development agenda. Kenya has developed and enacted an ICT policy, with the enterprise sector being one of the targeted areas of intervention.

The role of SEs to employment and wealth creation as well as poverty reduction is well pronounced. The small enterprise sector is currently one of the fastest growing, providing much of the needed employment and playing a critical role in poverty reduction programmes. Small businesses also serve as seedbeds for entrepreneurs, contribute to more balanced development and facilitate the process of adjustment in large enterprises, emerging as competent suppliers of products and services previously not available in the market place.

At the sectoral level, small enterprises account for 75% of all new jobs created and 61% of all wage employment in Kenya (ICEG, 1998). Further, the sector contributes 15% of GDP and constitutes 98% of all businesses in the country. However, they operate in an environment characterized by fragmented and incomplete information where awareness of markets, technology, policy, regulations and finance is limited (Kabiru, 1996). This affects entrepreneurial activity since the absence of information impinges on the scope for discovery of profitable opportunities.

In the context of globalization, it is doubtful that the SEs will take advantage of the emerging opportunities in the local and export markets in the presence of imperfect markets and information. Even when entrepreneurs know where to obtain information, the potential of incurring social or economic costs act as deterrents. Information is the basic requirement for enterprise creation, growth and survival; and ICT is capable of easing information gaps in the business sector. ICT enhances SE efficiency, reduces costs, and broadens market reach, locally and globally; resulting in job creation, revenue generation and overall country competitiveness.

Whereas ICT is a key ingredient to the development, growth and survival of vibrant enterprises, its adoption and use by SEs in Kenya is below expectations. A number of factors hinder the use of ICT by SEs and therefore, keep them away from enjoying the benefits of ICT; weak knowledge base, resources constraints and affordability, accessibility and poor infrastructure. The SE sector, in virtually all countries, plays a key role in national economic development strategies by facilitating flow of information, capital, ideas, people and products. Whereas ICT is not a panacea for all development problems, it offers enormous opportunities to reduce social and economic inequalities, particularly those related to income generation, poverty reduction, education, health, environment and gender equity, and thus help achieve broader development goals. ICT will increasingly empower SEs to participate in the knowledge economy by facilitating connectivity; helping to create and deliver products and services on a global scale, and providing access to new markets and new sources of competitive advantage to boost income growth.

### **1.1 Statement of the Problem**

The benefits of ICT adoption and use by SEs range from opportunity and market access to operational efficiencies and making enterprises more competitive and successful. Failure to adopt information and communications technologies has led to high cost of production and hence low profits. Business inter-linkages and networking is greatly hampered to the extent that entrepreneurs do not know about new products in the supply chain or even consumer demands, resulting in market mismatch between demand and supply. In effect, businesses continued to be operate in markets that are no longer profitable due to competitive pricing and hence business collapse.

In the Kenyan situation where SEs are the dominant economic operatives, ICT offers great potential for growth, profitability and competitiveness. As much as the Government is committed to facilitate widespread use of ICT to support the growth of micro and small enterprises, and boost e-business, knowledge on the status of ICT adoption and use and the barriers to adoption are critical starting points. However, ICT adoption and use by SEs in Kenya has been below expectations and is of concern to policy makers, academia and development partners.

## 1.2 Purpose

The purpose of the study was to determine the factors that affect ICT adoption and use by small enterprises in Kenya, in an effort to making appropriate recommendations to improve access and use. Specifically the study sought to determine the effect of financial capacity on ICT adoption by small enterprises in Kenya; assess the influence of cost on adoption of ICT by small enterprises in Kenya; determine the effect of the infrastructure on ICT access and use by small enterprises in Kenya, and establish how knowledge level affects the adoption of ICT by small enterprises in Kenya

## 1.3 Methodology

The study was descriptive in nature, conducted through a survey questionnaire, covering a population of 390 small enterprise operators in Thika Town. A stratified sample of 78 SMEs was used to collect data. There was preliminary analysis involving production of frequency distributions for all the variables and cross-tabulation for categorical data. Qualitative data, consisting of words, was analyzed logically and systematically by organizing data into categories; shaping it into information; interpreting and summarizing the information. Quantitative data was analyzed using measures of central tendency. Chi-square tests were conducted to determine the relationship between variables and their effects on adoption. The objective of this analysis as supported by Kothari (2004) was to make a prediction about the dependent variable (ICT adoption) based on its covariance with all the independent variables (the factors).

## 3.0 Results and Analysis

According to the study findings (Table 1), most proprietors of small enterprises have attained college level education (38.5%) and are therefore expected to be aware of ICT tools. Most business enterprises in Thika town use basic communication tools such as mobile (75%), internet (34.6%) and simple computer based programmes.

Table 1: ICT tools used in the enterprises

Technology/ Gadget	Response			
	No		Yes	
	F	%	F	%
Mobile	13	25.0	39	75.0
Internet	34	65.4	18	34.6
Computer	30	57.7	22	42.3
Radio	50	96.2	02	03.8
Television	50	96.2	02	03.8
Calculator	50	96.2	02	03.8

Source: Survey data, 2010

The access and use of ICT tools has not been well impressed by majority of the enterprises in Thika town. 26.9% of the respondents felt that their access to and use of ICT was very high. Approximately 15% of the respondents also felt that their access and use was high. However, more than 50% of the respondents reported average to very low access and use of ICT tools.

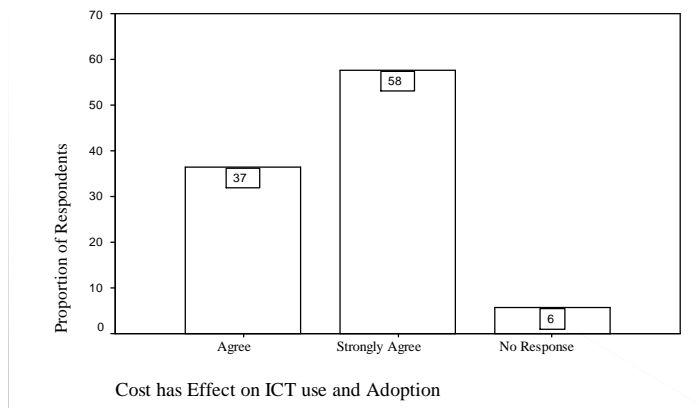
Most businesses entrepreneurs feel like they a weak financial capacity to invest in ICT structures and tools for better management of their business. They felt that their financial capacity is limited to the basic requirements of a business. As shown in Table 2, 56% of the respondents strongly disagreed with the statement "I have set aside a special ICT fund for my business". Consequently, 58% of the respondents either agreed or strongly agreed to the statement "my hand to mouth financial existence" cannot allow me to use ICT tools. This means that most businesses in Thika Town do not consider investment in ICT as a priority. This is partly because their financing options are limited hence they would rather utilize the available funds to stock or expand their business first. The chi-square value of 7.890 has a significance level of 0.049 which is less than the acceptable alpha of 0.05. This establishes a statistically significant relationship between financial capacity and access and use of ICT. This means that financial capacity of the business proprietors affects ICT adoption by small enterprises in Thika.

Table 2: Effect of financial capacity on ICT Adoption

Item	Response			
	SD F %	D F %	A F %	SA F %
1. I have enough money in my business to invest in ICT	19 36.5	14 26.9	14 26.9	05 09.6
2. Hand to mouth financial existence cannot allow me to use ICT	11 21.2	11 21.2	17 32.7	13 25.0
3. I have set aside a special ICT fund for my business	29 55.8	03 05.8	15 28.8	05 09.6
4. Financial capacity of an enterprise has an effect on ICT Adoption	02 03.8	03 05.8	13 25.0	34 65.4

Source: Survey Data, 2010

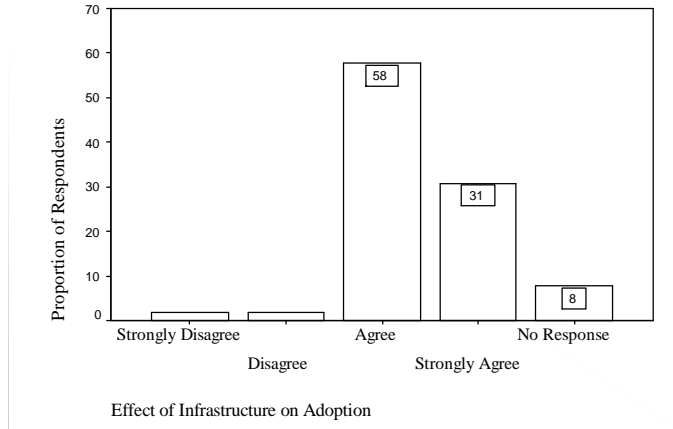
Most business owners believe that the cost of ICT tools is high and it discourages investment in ICT structures and tools hence the poor adoption levels. According to the study findings (Figure 1), majority of the respondents (58%) strongly agree that cost of ICT has an effect on ICT use and adoption in small scale enterprises in Thika town. None of the respondents disagreed with the statement. This means that cost has had a negative impact on the adoption and use of ICT tools in Thika. The feeling is that Taxation on ICT is high and that prices of some ICT tools has been inflated making it unaffordable.



Source: Survey data, 2010

Figure 1: Effect of cost on ICT use and adoption

Although communication infrastructure is a pre-requisite to the use of ICT, most business persons felt that the infrastructure is not well developed to boost ICT adoption. The results in Figure 2 show that almost all respondents felt that communication infrastructure affects the adoption of ICT by small scale enterprises in Thika town. Considering that infrastructure is one of the pre-requisite of ICT adoption, its poor state or lack of it would definitely affect access and use of ICT tools. 46% of respondents agree that internet modems on offer are too expensive. Approximately 30% believe that internet connection requires fixed telephone lines that are expensive to install. On the other hand 60% of respondents feel that ICT infrastructure in Thika is not adequate.



Source: Survey data, 2010

Figure 2: Influence of Infrastructure on access and use of ICT

Cross tabulation was performed with chi-square statistics to establish if there is a relationship between communication infrastructure and access and use of ICT. The chi-square value of 21.65 has a significance level of 0.001 which is far less than the acceptable alpha of 0.05. This establishes a statistically significant relationship between communication infrastructure and access and use of ICT. The level of knowledge on ICT systems as well as education level of the business proprietor was found to have a significant relationship with ICT adoption. More knowledgeable and learned proprietors are more likely to adopt ICT than less knowledgeable and learned proprietors.

Majority of the respondents agreed with the assertion that knowledge level affects ICT adoption and use (Table 3). Only 4% of the respondent disagreed. Further, 46% of respondents do not see the importance of ICT in their business. Approximately 50% of the respondents also do not have prior knowledge on ICT opportunities. However, majority of the respondents agreed with the assertion that they do not understand the importance of ICT. They do not see ICT as necessary in their business.

Table 3: How knowledge level affects adoption

Statement	Response							
	SD		D		A		SA	
	F	%	F	%	F	%	F	%
1. Do not see the importance of using ICT in my business	15	28.8	11	21.2	12	23.1	12	23.1
2. I have no prior knowledge on ICT Opportunities	15	28.8	08	15.4	15	28.8	12	23.1
3. I do not understand the importance of ICT use in my Business	21	40.4	09	17.3	09	17.3	11	21.2

Source: Survey data, 2010

Cross tabulation with chi-square test was performed to determine if access to and use of ICT has a relationship with level of education of the proprietors of enterprises. The chi-square test value was 16.063 with a significance level of 0.013 (Table 4). The significance level is far less than the acceptable alpha of 0.05 thereby establishing a statistically significant relationship between education level of enterprise proprietor and adoption of ICT.

Table 4: Relationship between level of education and level of ICT adoption

Level of education	Access and use of technology						Total	
	High		Average		Low			
Primary	0	0.0	1	1.9	4	7.7	5	9.6
Secondary	4	7.7	7	13.5	5	9.6	16	30.8
College	9	17.3	5	9.6	6	11.5	20	38.5
University	9	17.3	1	1.9	1	1.9	11	21.2
Total	22	42.3	14	26.9	16	30.8	52	100.0

Chi-square test: Value = 16.063, df = 6, Significance = 0.013

Source: Survey data, 2010

Proprietors with primary level of education reported low ICT adoption while those who had at least college level of education reported high access and use of ICT tools. This implies that level of education significantly affects the access and use of ICT among business within Thika Town.

#### 4.0 Conclusions

The access and use of ICT tools has not been well impressed by majority of the enterprises in Thika town, thereby indicating a low level of adoption and use. The entrepreneurs have a weak financial capacity to invest in ICT structures and tools for better management of their business. Their financial capacity is limited to the basic requirements of a business. There is a statistically significant relationship between financial capacity and access and use of ICT, implying that financial capacity of the business proprietors affect ICT adoption by small enterprises in Thika.

Most business owners believe that the cost of ICT tools is high, which discourages investment in ICT structures and tools hence the poor adoption levels. This means that cost has had a negative impact on the adoption and use of ICT tools in Thika. There is a relationship between communication infrastructure and access and use of ICT as supported by a chi-square value of 21.65 with a significance level of 0.001 which is far less than the acceptable alpha of 0.05, indicating a statistically significant relationship between communication infrastructure and access and use of ICT. Some technologies would require landline or LAN systems which are actually designed for larger enterprises.

The level of understanding on various ICT tools hinders adoption. Although most of them are aware of their existence they do not think that such technologies are necessary for their SMEs. Small enterprises which have not embraced ICT attribute the status to their inability to finance ICT infrastructure. The SMEs are operating on a lean capital base that would not allow them allocate some fund to ICT development some actually, operate from hand to mouth. Lack of investment in ICT is attributed to their subsistence financial capacity.

Therefore, the level of education significantly affects the access and use of ICT among business within Thika Town. Proprietors with primary level of education reported low ICT adoption while those who had at least college level of education reported high access and use of ICT tools.

#### 5.0 Recommendations

The Government should make ICT more affordable to SEs by lowering the tax and regulating their prices so as to curtail dealers inflating prices. The Government through the ministries of Trade and, Information and Communication should initiate and support training programmes to develop the capacity of small and medium entrepreneurs in ICT tools.

The Government should source for and invest in communication infrastructure targeting small and medium enterprises. The Government should make deliberate programmes to create awareness on the utility of ICT use in SMEs. Further, SEs should start investing in basic ICT tools to help improve their business management practices in line with global trends. This will make them more competitive and help access global markets.

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