AN EMPIRICAL STUDY ON THE RELATIONSHIP BETWEEN ORGANIZATIONAL FACTORS AND ADOPTION OF ICT AMONG HEALTH RELATED SMEs IN NAIROBI, KENYA

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Abstract
This study examined the effects of various organizational factors on the adoption of ICT by health-related SMEs in Kenya. The sample size was 189 informants comprising of 17 Chief Executive Officers (CEOs) of health-related SMEs and 172 end users. Data was collected using a semi-structured questionnaire and an interview guide. The Logit model was used to predict the effect of Organizational factors on ICT adoption by SMEs. The research findings showed that, quality of ICT systems (X_2), information intensity (X_3), ICT specialization (X_4) and organizational readiness(X_6) were the main organizational factors determining ICT adoption.

Key words: SMEs, Information, Ccommunication, Technology, Adoption, Information intensity, Logit model.

Introduction

Small and Medium Enterprises are often the main drivers of economic growth and their survival and success is crucial to economic stability (Lange, Ottens, and Taylor, 2000). However, as the number of SMEs increases so does competition, which might then result in a decrease in prices, low customer base, or both. This might in turn erode existing profits and create less incentive for people to start SMEs. Adoption of ICT plays an important role in the survival of SMEs because it helps to create business opportunities and combat

pressure from competition. At some level, application of ICT can reduce operation costs by decreasing material procurement and transaction costs resulting in lower prices for intermediate and finished products.

At inter-SME level, ICT has great potential for reducing transaction costs and increasing the speed and reliability of transactions (OECD, 2002; OECD, 2004). It also reduces inefficiencies resulting from lack of coordination between SMEs in the value chain. In fact, adopters of ICT tend to reduce transaction costs, increase transaction speed and reliability, and extract maximum value from transactions in their value chains (OECD, 2002; OECD, 2002).

Despite the potential benefits of ICT, there is still debate on the implication of ICT adoption in terms of complementary investments in skills, organization and innovation, and high investment costs (METI, 2001). While many studies point to the possibility of market expansion as a major benefit for SMEs, it is true that larger businesses also expand into areas dominated by SMEs. Moreover, it is difficult for SMEs to implement and operate an online business as this involves additional costs for training, organizational change, and direct costs of investing in hardware and software solutions.

In the 1970s, Kenya's health sector recorded tremendous growth especially in the public sector. This growth was attributed to the high priority accorded to improvement of the health status of Kenyans and to the socio-economic development of the country (Gakunju, 2003). Improvement in the health sector resulted in improvement of indicators of health status as well. However, this trend of improvement in health status was later reversed. This decline could partly be attributed to inefficiency in service delivery, increased poverty levels, and widespread diseases like malaria and pneumonia.

Although the private sector in Kenya plays a big role in health delivery, it faces several problems like competition, poor service to customers, poor quality, and inefficiency in promoting coverage and access to healthcare (Republic of Kenya, 1989; 1994, and Berman *et al.,* 1995). These shortcomings are partly attributed to shortage of health personnel; poor management of health services; inadequate funding; gaps in laws affecting the private sector and which appear to regulate the quality of inputs only; lack of medical supplies; low level of hospital operational efficiency; and lack of proper public health information and education. These factors have a direct effect on the quality and general efficiency of service delivery and need to be addressed in order to achieve efficiency and effectiveness in the provision of health services (Republic of Kenya, 1989; 1994, Berman *et al.,* 1995, and Mcintyre *et al.,* 2005).

The situation described here for the health sector can be improved by adoption and utilization of ICT (Smith *et al*., 2003, Yamuah, 2005; WHO, 2005a). However, despite the recognition of ICT's profound potential in improvement of health care, access to medical information and coordination of research activities, there seems to be limited investment and utilization of ICT in the health sector. ICT does not feature much in the distribution of health, improvement of operational efficiency, and disease prevention information to the general public (Yamuah, 2005). Our study seeks to examine how Organizational factors affect ICT adoption by SMEs in the health sector.

SMEs and ICT in Kenyan Health Sector
Small and Medium Enterprises (SMEs) play a very important role in the economy in terms of wealth creation and provision of employment opportunities. However, competition from more established firms poses a great challenge to their existence. With the adoption of Information and Communication

Technologies (ICTs), it is envisaged that they can compete more effectively and efficiently in both domestic and international markets. However, Kenya is faced with several developmental challenges including poor public health (Mwabu, 1995, and Noor *et al.,* 2003). To the majority of Kenyan consumers, health services are important features within lifestyle choices. Therefore, health providers need to give timely and up-to-date services. This can be achieved mainly through adoption of ICT. However, most health-related SMEs are faced with the critical decision of whether or not to adopt ICT (Payne, 2005).

There is need for SMEs in Kenya, particularly those in the health sector, to adopt ICT. The perceived benefits of ICT have motivated a few SMEs to adopt and invest in it. However, many SMEs in the health sector are yet to adopt and implement ICT in their daily operations due to several barriers relating to organizational factors (Sun and Zhang, 2005). Kiarie *et al.,* (2006) noted that voluntariness has significant influence on computer use. However, all the SMEs sampled in the study had adopted ICT; hence the study ignored the views of those that had not adopted. In addition, the findings were likely to be biased given that all informants were employees. The study also ignored the inputs of SME owners or managers who are the key decision makers regarding the adoption of any new innovation by their enterprises. Specifically, this study addresses this gap by: analyzing the benefits of adoption of ICT by SMEs in Kenya, establishing the extent to which health related SMEs in Kenya have adopted ICT and determining the organizational factors influencing ICT adoption by SMEs in the health sector.

Literature Review
This study considers organizational factors previously identified as being potential driver of ICT adoption in SMEs such as SME size, quality systems, information intensity, specialization, management support, voluntariness, and organizational readiness and how they facilitate the adoption of ICT by SMEs. The size of the SME is a determining factor in the decision to adopt ICT. Igbaria *et al.,* (1996), Thong (1999); Premkumar and Roberts (1999), Ling (2001); Rashid and Al-Qirim (2001); Teo and Tan (2002); Mutula, and Brakel, (2006); Alberto, and Fernando, (2007) note that the size of the SME is one of the key parameters hindering adoption of the Internet technology by enterprises. Large enterprises have the resources and the infrastructure necessary to facilitate the adoption of innovations. Small enterprises, by contrast, are less apt to adopt ICT because they often lack resources. This situation is brought about by such factors as operating in a strongly competitive environment, major financial constraints, lack of professional expertise, and greater sensitivity to external forces (Thong, 1999, Ling, 2001, Rashid and Al-Qirim, 2001 and; Teo and Tan, 2002).

Another variable affecting ICT adoption is system quality, which is an important driver behind user satisfaction, end-users' intention to use, and actual usage, which are in turn the key drivers behind net benefits (DeLone and McLean, 2003). Organizational readiness for Internet adoption is personified in the SME owner. SMEs do not see Internet adoption as an IT issue but as a business one. SMEs that are attracted to Internet commerce tends to be more entrepreneurial, risk takers, innovative, and invariably creative (Poon and Swatman 1999). A second organizational readiness factor is the requirement for SMEs to have adequate IT in place to access the Internet. The reactive or proactive approach of owners/managers to rapid technological changes in the marketplace is crucial to ICT adoption and implementation; managerial commitment and perceptions of ICT benefits are key features in this process (Poon and Swatman, 1999).

Moore and Benbasat (1991) have argued that behaviours are directed more by the perception of voluntariness than by actual voluntariness because users may still feel some compulsion to adopt ICT even

when the setting is not strictly compulsory. Venkatesh *et al.,* (2003) assert that voluntariness has been treated as binary by some authors while others have treated it as a continuous variable. The problem with a binary view is that it ignores differences in the requirement to use different functions of the system. For example, it might be mandatory to use Lotus Notes email but optional to use the discussion databases. Therefore, the requirement to use the system among different employees might make it challenging to think of voluntariness in strictly binary terms.

Furthermore, Moore and Benbasat (1991) and Agarwal and Prasad (1997) have suggested that in practice users might perceive different degrees of voluntariness in using an innovation. Therefore, voluntariness may be empirically ordinal but is sometimes treated as a binary concept (either mandatory or voluntary) in academic research. Voluntariness in technology acceptance has been examined in multiple ways. When use of a system is perceived as mandatory in the organization, the intention of using the system may be predicted by subjective norms. This view of voluntariness observes that attitude is more important when adoption is a matter of individual choice and less so when organizational pressure is applied (Venkatesh and Davis, 2000).

Whilst health is an increasingly information-intensive sector where ICT adoption can significantly contribute to improved quality of service, efficiency, and accessibility, there seems to be little uniformity in how these factors affect ICT adoption particularly in African countries and more so in the health sector in Kenya. This observation supports the argument of Iacovou *et al.*, (1995) and that of Fallon and Moran's (2000) that there is an obvious lack of empirically rigorous data and focused research on this topic.

There seems to be few studies that have examined the influence of Organizational factors on ICT adoption by SMEs in Kenya. This study attempts to fill the gap in existing literature by considering the fact that less developed countries are not alike and there was need to investigate the common factors influencing ICT adoption for Kenya and other developing countries. However, due to practical considerations, including the scarcity of data and the existing empirical evidence, the study selected from the literature the factors to be tested. These factors were SME size, quality systems, information intensity, specialization, management support, organizational readiness, and voluntariness.

Conceptual Framework for the Study
Organizational factors collectively affect the resources of the business in relation to adoption of ICT innovations. Increased incorporation of ICT within SMEs directly affects the functionality of the SME; hence increasing productivity and profitability of the business. The core organisational variables predicting ICT adoption are borrowed from the TAM model of Davis (1989) and the Unified Theory of Use and Adoption of Technology (Venkatesh *et al.,* 2003).
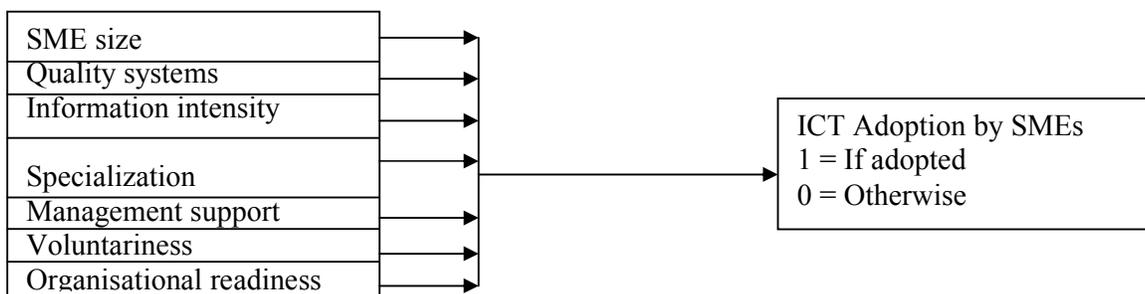

Figure 1: Conceptual Framework showing relationship between Independent and dependent variables.
Source: Adopted from Rashid and Al- Qirim (2001) and modified by the researchers (2012)

Based on the above conceptual framework the following hypothesis was developed:

H1: There is statistically significant relationship between Organizational factors and adoption of ICT among the health related SMEs in Nairobi, Kenya.

Methodology
This study used a cross-sectional descriptive survey research design using quantitative approach to data collection, analysis and reporting though some elements of qualitative approach of data collection were used. Orodho (2003), Malhotra and Birks (2003); Mugenda and Mugenda (2003), Saunders *et al.*, (2007) note that no single approach exists in isolation and can be mixed and matched to achieve optimal results of the study.

The empirical model used for this study was logit model adopted from the proceeding explanation based on the study by Karki and Bauer (2004) and is stated as follows:

$$Ln\left[\frac{P}{1-P}\right] = f(X_1, X_2 \ldots X_7)$$

The linear form is given as follows:

$$Ln\left[\frac{P}{1-P}\right] = \alpha + \beta_1 x_1 + \beta_2 X_2 + \beta_3 X_3 + \ldots + \beta_7 X_7 + \varepsilon_I$$

Where:

X_1 = SME size
X_2 = Quality of ICT systems
X_3 = Information intensity
X_4 = ICT specialization
X_5 = Management support
X_6 = Organizational readiness
X_7 = Voluntariness
ε_I = Error term

The target population was 17 health related SMEs in Nairobi which has a total of 1,431 employees. A census of the 17 CEOs of the identified hospitals was carried out. Simple random sampling method was then used to choose the required sample size of 172 respondents which was determined by considering a 12 percent of the target population. The 172 informants were obtained to represent the entire population. A semi-structured questionnaire was used to collect both quantitative and qualitative data. The informants were also given the opportunity to provide any other information that they considered as critical in influencing ICT adoption in the SMEs. An interview schedule was administered to all 17 CEOs to obtain more detailed information relating to the survey data collected using the questionnaire as recommended by Gay and Airasian (2000). However, before the final data collection, pre-testing was carried out with ten employees to test the data collection instruments for face validity and content validity.

Data Analysis
The three objectives were analyzed using descriptive statistics, multiple response analysis and Logit model. Descriptive statistics was used to summarise the benefits of ICT adoption, Multiple response was used to analyse the extent of usage where frequency of usage was tested using Chi-square. The logit model was used to predict the effect of the organizational factors on ICT adoption by SMEs in the health sector. The overall

fit of the model was tested using the log likelihood and the associated Chi-square statistics following Field's (2005) method. The contribution of each predictor variable was tested using Wald statistic.

Before testing the fit of the model, however, multicollinearity analysis was performed to establish the possibility of a collinearity problem of the predictor variables having some explanatory power over each other. Menard (1995) has suggested that a tolerance value of less than 0.1 almost certainly indicates a serious collinearity problem. Furthermore, Field (2005) has suggested that if the variance inflation factors (VIFs) are more than 10 then there is cause for concern about multicollinearity. Nevertheless, as Field (2005) argues, there is no way of knowing which variable to omit. Bowerman and O' connel (1990) have recommended that one could use factor analysis and report the resulting factor scores as predictor but there is need to acknowledge the unreliability of the model as unsatisfactory. All analyses were carried out with SPSS 11.5. Finally, the qualitative data from the interviews and the open –ended questions was analyzed through content analysis where the researcher grouped together common themes and drew inferences as recommended by Glesne (1998).

Results and Discussion

Response Rate
Out of the 172 questionnaires distributed, 136 were correctly filled and returned. In addition, all the 17 CEOs were interviewed, which represents a response rate of 81 percent. Mugenda and Mugenda (2003) argued that a response rate of 50 percent is adequate, a response rate of 60 percent is good, and a response rate of 70 percent is very good. Therefore, the 81 percent response rate reported for this study formed an acceptable basis for drawing conclusions.

Descriptive Analysis
Table 1 presents descriptive statistics of the informants' characteristics in terms of demographic information such as sex, age, distribution within the organization, working experience, and the highest completed educational level.

Table 1. Characteristic of the Informants

	Classification factor	**Frequency**	**Percentage**
Sex	Male	65	47.8
	Female	71	52.2
	Total	**136**	**100**
Age	Less than 20 Years	1	0.7
	21-30 years	71	52.2
	31-40 years	55	40.4
	41-50 years	4	2.9
	Over 50 years	5	3.7
	Total	**136**	**100.0**
Distribution within organization departments	Purchasing	10	7.4
	IT/IS	18	13.2
	Marketing	8	5.9
	Admissions	35	25.7
	Discharge	18	13.2
	Nursing	9	6.6
	Accounts	17	12.5

	Customer Care/ Receptionist	5	3.7
	Lab technologist	5	3.7
	Medical record officer	4	2.9
	Debt collection	1	0.7
	Pharmacist	4	2.9
	Data analysis	1	0.7
	Audit	1	0.7
	Total	**136**	**100.0**
Working experience	1-5 years	87	64.0
	6-10 years	41	30.1
	11-15 years	3	2.2
	16-20 years	4	2.9
	Over 20 years	1	0.7
	Total	**136**	**100.0**
Highest academic level	Diploma	99	72.8
	Bachelor's	36	26.5
	Master's	1	.7
	Total	**136**	**100.0**

From Table 1, 47.8 percent of the informants were male while 52.2 percent were female. One informant was less than 20 years and the age range 21 to 30 had 52.2 percent of the informants, 40.4 percent of the informants were within 31 to 40 age range, 2.9 percent were within 41 to 50 age range, and 3.7 percent were over 50 years old. Informants' responses on their working experience showed that 64 percent were in their first five years of working, while 30.1 percent had 6 to 10 years of experience. The most experienced employee had worked for over 20 years (0.7 percent). The distribution of informants by departments was as follows: Admissions (25.7 percent), IT/IS (13.2 percent), Discharge (13.2 percent), Accounts (12.5 percent). Debt Collection (0.7 percent) Data Analysis (0.7%), and Audit (0.7 percent) were the least represented departments.

Benefits of ICT adoption by SMEs in the Health Sector

The results of an inquiry into benefits derived from adoption of ICT are shown below.

Table 2. The benefits derived from adoption of ICT by SMEs

Dichotomy label	Frequency	Percent
Improvement in information storage and retrieval	122	12.2
Improvement in communication	123	12.3
Reduction in business cost	94	9.4
Improvement in business efficiency	122	12.2
Improvement in contact with patient	109	10.9
Improvement in stock control	117	11.7
Reduction in administration burden	99	9.9
Improvement in customer service	121	12.1
Reduction in workforce	90	9.0
Total	**997**	**100.0**

The study found out that SMEs adopted ICTs so as to reach new customers and markets, improve customer services, strengthen relationships with business partners, and reduce costs. The most important benefits of ICT, as indicated by informants, were improvement in communication (12.3 percent); improvement in information storage and retrieval (12.2 percent); improvement in business efficiency (12.2 percent); improvement in customer service (12.1 percent); improvement in stock control (11.7 percent); improvement in contact with patient (10.9 percent); reduction in administration burden (9.9 percent); reduction in business cost (9.4 percent); and reduction in workforce (9 percent). Furthermore, two CEOs indicated that investing in a corporate website that provides information on products or services could enhance the quality of service delivery to customers and attract new ones. In addition, since ICT applications can store information for a long time, hospitals are able to keep track of their treatment records and compile statistics that could be useful in research. Furthermore, medical personnel could have instant access to patients' medical history irrespective of which health facility patients had visited in the country. Using ICT, it is also possible to digitize all medical data such that a patient can receive test results via mobile phone thus reducing the number of visits to the doctor. This finding concurs with OECD (2002; 2004) study which revealed that ICT adoption was driven by the need to reduce transaction costs and accelerate business transactions.

However, one informant indicated that ICT undermines the quality of the doctor-patient relationship by de-personalizing the patient through transfer of information in shared electronic files and networked computers. This observation has implications on the ethics of the medical profession, which requires them to maintain confidential their clients' information.

Despite the informants' knowledge of the numerous benefits of ICT adoption, it was found that some SMEs were still using paper-based memos in their operations. This implies that SMEs were still reluctant to replace the manual way of doing business with ICT applications and were operating parallel systems thereby incurring double costs. The following is therefore an explanation of the factors that influence the ICT adoption in these organizations, categorised into individual factors, organizational factors, technological factors, and external environmental factors.

Extent of adoption of ICT by health-related SMEs in Kenya

The SMEs in the health sector have continued to make significant progress in the adoption of ICT. The extent of ICT adoption for the seventeen sampled SMEs was empirically analysed using a mean measure of usage frequency across a set of nine ICT applications as shown in Table below.

Table 3. Opinion of the informants on usage frequency of ICT applications

	Rank	Mean Rank	Std. Deviation
ICT applications is mainly used for marketing development	1	5.72	0.4696
ICT applications is mainly used for inventory tracking	2	5.72	0.4696
ICT applications is mainly used for strategic planning purposes	3	5.35	0.4926
ICT applications is mainly used for external communication	4	5.25	0.4964
ICT applications is mainly used for internal communication	5	5.12	0.4999

ICT applications is mainly used for purchasing & supplies	6	4.63	0.4974
ICT applications is mainly used for discharge	7	4.46	0.4911
ICT applications is mainly used for admission	8	4.39	0.4878
ICT applications is mainly used for administrative purposes	9	4.36	0.4859

n   = 136
Chi-Square = 110.275
Df   = 8
Asymp. Sig. = .000

The ranking of ICT applications from the most widely used was as follows: marketing development (5.72), inventory tracking (5.72), strategic planning purposes (5.35), external communication (5.25), internal communication (5.12), purchasing and supplies (4.63), discharge (4.46), admission (4.39), and administrative purposes (4.36). In that order, scores were significantly different on the Friedman two-way ANOVA test ($p < 0.001$). These findings support Igbaria *et al*., (1996) and Al-Gahtani and King's (1999) studies, which revealed that ICT adoption and usage were frequently measured using user self-reporting. The high ranking of ICT application in marketing development and inventory tracking showed that SMEs were more interested in reaching new customers and markets. Thus ICT was used as a marketing tool and also as a tool to safeguard the utilization of the available stocks.

The adoption and use of ICT improves the overall efficiency of SMEs since ICT applications make paper records obsolete and enable the storage of all patients' information in electronic form. The study sought information on the distribution of the modes of communication within and without the SMEs.

Regression Analysis

The previous section has presented descriptive statistics based on the informants' perception of the Organizational factors influencing ICT adoption by SMEs in the health sector. However, to investigate the effects of the factors on ICT adoption on health services provision, there was a need to empirically analyse the data using the Logit model. Before presenting the regression results of the organizational factors of ICT adoption, collinearity tests results are discussed. Regression analysis was used to estimate collinearity and results are;

Table 4. Results of Collinearity Statistics

Predictor Variables	Collinearity Statistics	
	Tolerance	**VIF**
SME size (Number of employees)	0.674	1.484
Quality of ICT systems	0.640	1.562
Information intensity	0.695	1.439
ICT specialization/alignment	0.605	1.652
Management support	1.000	1.000
Voluntariness	0.812	1.232
Organizational readiness	0.799	1.251

All the predictor variables in this study had their VIFs less than 10 and a tolerance value of more than 0.1, thus ruling out any possibility of multicollinearity (Menard, 1995 and Field, 2005). However, management support had both VIFs and tolerance value equal to one and hence was dropped from regression analysis.

Effects of Organizational factors on ICT adoption on provision of health services

A Logit regression was used to predict the effects of the Organizational factors on ICT adoption. The variables used in the model were as follows: SME size, quality of ICT systems, information intensity, ICT specialization, voluntariness and organizational readiness. Table 5 below presents the logit model estimation results on factors affecting the probability of ICT adoption.

Table 5. Logit Regression Results

	β	t=β/ S.E.	Wald	*P*-value
SME size (Number of employees)	-1.898	-0.40	1.607	.205
Quality of ICT systems	-12.923**	-3.03	9.193	.002
Information intensity	8.605*	2.07	4.288	.038
ICT specialization/alignment	5.088*	2.22	4.918	.027
Voluntariness	1.749	1.03	1.063	.303
Organizational readiness	4.526*	2.17	4.732	.030
Observations (n)		136		
Nagelkerke R Squared		.786		
Model Chi-square	(20 df)	89.779		.000
Classification Rate		94.9%		
-2 Log likelihood		40.003		
Hosmer and Lemeshow Chi-square Test	(8 df)	1.804		.986
Total # steps	10			
Notes: ** p ≤ 0.01, * p ≤ 0.05				

From Table 5 the likelihood ratio, chi-square of 89.779 with 20 degrees of freedom (df) and a P-value of 0.001 shows that the model as a whole is significantly sound. The -2Log likelihood is 40.003, which shows that the model fits the research data. The Nagelkerke R Squared was 0.786 implying that 79 percent of the changes in ICT adoption are explained by the variables identified. The classification rate was 94.9 percent which shows the sensitivity of prediction hence an overall success rate of 94.9 percent. Hosmer and Lemeshow chi-square test of 1.804 with 8 degrees of freedom (df) and P-value of 0.986 is non-significant indicating that the data fit the model well. This is in agreement with Andy's (2005) study.

The Wald chi-square statistic, which tests the unique contribution of each predictor variable in the context of the other predictor variables, has four variables meeting the conventional 0.05 standard for statistical significance; quality of ICT systems (p = 0.002).   Information intensity (p = 0.038), ICT specialization/alignment (p = 0.027), and organizational readiness (p = 0.030) were statistically significant. These results imply that ICT adoption in the health-related SMEs is strongly influenced by these four variables.

The coefficient of quality of ICT systems was negative but significant, which implies that the poorer the quality of systems, the less the probability of adopting ICT applications. This is in agreement with the observation by DeLone and McLean (2003) that system quality is an important driver behind user satisfaction, adoption, and actual usage.

The coefficient of information intensity was positive and significant, which indicates that adoption of ICT increases with increase in the intensity of information. This implies that SMEs with high information intensity were more likely to adopt ICT. The positive and significant coefficient of ICT specialization or alignment was as expected. This implies that the more the ICT applications were specialized or aligned the more likely the SMEs were to adopt them. The coefficient of organizational readiness to adopt ICT was expected to be uncertain but it turned out to be positive and significant. This implies that SMEs which had organizational readiness were more likely to adopt ICT. This result is consistent with the findings of Iacovou (1995), Poon and Swatman (1999), and Thong (1999) that SMEs need to have adequate IT resources in place to adopt ICT.

The effects of size of SME on ICT adoption as observed in this study are different from earlier findings such as Igbaria *et al*., (1996), and Premkumar and Roberts (1999). In the Igbaria *et al.,* study, the sample contained only firms with 20 to 100 employees, while in Premkumar and Roberts' study; the sample consisted largely of micro-businesses and not SMEs. The sample for the present study consists of SMEs with 10 to 250 employees. In addition, the Kenya government has zero-rated taxes on computers and other ICT hardware and therefore all levels of organization whether small or large can access and use ICT facilities.

The results of this study show that the coefficient of voluntariness; is not statistically significant. Hence the variable does not influence ICT adoption by SMEs. However, given that the majority (81.6 percent) of the SMEs sampled had adopted ICT; they seem to have taken appropriate measures to deal with the variables. For instance, SMEs had invested in secure payment services such as PayPal and other systems that guarantee security of credit payments. This implies that SMEs are becoming more proactive in their ICT investment decisions. This observation seems to concur with the findings in Table 3 in which informants' ranked use of ICT applications in strategic planning as number three out of its nine applications.

Conclusion

The study concludes that four variables namely: quality of ICT systems (X_2), information intensity (X_3), ICT specialization (X_4) and organizational readiness(X_6), had statistically significant influence on adoption of ICT. Therefore, these five variables were the main organizational factors determining ICT adoption among the health related SMEs in Nairobi. In addition, the findings have highlighted that there was increased adoption and usage of ICT applications in different processes in health-related SMEs across nine ICT applications. The key driving forces of ICT adoption were the perceived benefit

Theoretical, Managerial and Practical Implications

The study focused on relatively unexplored area in health-related SMEs within the health sector in Kenya. Therefore, the current empirical study is significant for two reasons. First the study contributes to empirical literature on Organizational factors of ICT adoption by revealing four significant factors influencing ICT adoption by health related SMEs namely: quality of ICT systems (X_2), information intensity (X_3), ICT specialization (X_4) and organizational readiness(X_6). Secondly, the study contributes to the body of knowledge by developing and testing a "force entry" Logit model. The model prediction had an overall

classification rate of 94.9% which suggests that the model can be used as a guide for ICT adoption by SMEs in the health sector in Kenya. However, given the diversity of the SME sector, the application of the model in different contexts can produce interesting results with crucial academic and managerial implications.

Regulatory bodies like Kenya Bureau of Standards and Kenya Medical Practitioners and Dentists Board should ensure all SMEs in the health sector are operating using quality ICT systems since quality of ICT systems was found to be a significant predictor of ICT adoption. This could improve the quality of health care significantly and motivate the non-adopters to adopt. In addition, this will improve the safety, quality, and efficiency of patient care by enabling access to electronic health records and supporting clinical practice, service management, research, and policy through availability of appropriate evidence and data.

Health-related SMEs need to lobby the Government through the Ministry of Higher Education to ensure that Kenyan Universities offering degrees in Medicine incorporate, within their curriculum, short courses on medical informatics and ICT for health management since information intensity was found to be a key factor influencing ICT adoption. This will be crucial in managing the volume of information they handle on daily basis.

As the country embarks on the implementation of the Vision 2030, the Government, through the Ministry of Finance, should provide financial incentives to the SMEs in the health sector. This will not only enable acquisition of the necessary healthcare supplies but also the necessary healthcare-related ICT applications that are specilised to the health sector. This will be in line with the findings of this study that ICT specialization/alignment was a significant predictor of ICT adoption.

There is need for national capacity building in the use and application of a variety of ICT applications. To this end, the Government should incorporate compulsory training in computer applications and other aspects of ICT in the national curriculum from primary school to the tertiary level of education. This is because the findings of this study show that organizational readiness to be a significant predictor of ICT adoption. Thus, the training will prepare labour force ready for absorption in the job market. This will enable SMEs to employ staff who already have ICT skills thus, leading to organizational readiness. In addition, the Government, particularly the Ministry of Education, should mainstream ICT in all the subjects offered in schools. This includes ICT components in business, geography, mathematics, and biology. This will provide potential employees with ICT skills. This will enhance organizational readiness that was found to be a significant predictor of ICT adoption.

Finally, for the SMEs sector to contribute positively towards achieving Vision 2030, the Government should stimulate ICT adoption through providing financial incentives. This will enable the sector to be proactive and to set aside enough resources (both financial and technological) that are necessary to achieve organizational readiness.

Future Research Direction
Future research could build on the results of this study to enrich the existing knowledge of the Organizational determinants of adoption of ICT by SMEs. Such studies, for example, could consider changing the sample size and sampling procedures used in this study to validate the study, and also to produce more knowledge in this area. The study could also be extended to public health related institutions and large firms which have more complicated organizational structures and store larger volumes of data.

Furthermore, this study concentrated on a sample of physically able persons but future research could cover the relationship between socially excluded groups like disabled persons and ICT adoption.

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