

# ICT Resources and User Training and Awareness as Determinants of ICT Policy Implementation in SMEs in Kenya

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**Abstract:** The purpose of the research is to discuss ICT resources and user training and awareness as the key determinants and challenges facing SMEs in implementing ICT policy through a survey of small and medium sized enterprises (SMEs) in Kenya. Despite the assumption that the integration of ICT in all departments in a company influences the entire company system, most research focusing on ICT policy is generally limited to the study of variables at national level. In contrast to these studies, the objective of this research is to explore determinants of ICT policy implementation from a company perspective guided by the COBIT 5 enterprise enabler model. More particularly, it examines the SMEs ICT policy implementation from both the management's perspective and that of other employees. Furthermore, it studies the relationship between ICT policies and the actual use of ICT by employees.

**Keywords:** ICT resources and user training and awareness, ICT policy, SMEs, determinants, implementing.

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## 1. INTRODUCTION

### 1.1 Background of the Study:

The concept of information and communication technology (ICT) starts with policies relevant to ICT systems that support all business areas, which are the basis for fulfilling the strategic goals of the company. ICT can be leveraged for development, but harnessing this potential depends on an enabling ICT policy for their production, diffusion, and use.

Information and Communications Technology (ICT) is an increasingly important tool in the delivery of services. Levy and Powel (2005) noted as the company grows, ICT becomes more complex and therefore it becomes very important to manage and control their effectiveness through policies.

The emphasis is no longer the technology, but rather the transformation of services to reflect the needs of the customer whilst, at the same time, reducing the cost of providing those service. This transformation is very challenging requiring the SMEs to find new and better ways to serve their customers and improve efficiency and service delivery. This has therefore exposed the SMEs to new risks and vulnerabilities as well as an increased reliance upon ICT infrastructure.

Internally, more and more use is made of the valuable information resources available through the Internet. Combined with the data on the network, these resources offer invaluable opportunities for sharing information and for working in partnerships. However, they also offer potential windows into the company data, email accounts and other valuable and often confidential information.

This therefore implies that all staff within an organization share responsibility to operate their systems in a way that minimizes the vulnerability of their services to the public or external customers. These should therefore be set out in detail in the ICT policy that needs to be implemented in the organization.

This research provides a snapshot of ICT resources and user training and awareness as the key determinants of ICT policy implementation by SMEs to provide a basis for the implementers. This is because most companies are undertaking ambitious ICT reforms as a key function in enhancing their business to further rejuvenate or transform their business portfolio. According to the Kenya national ICT policy, the rapid advancements in the field of ICT and the resultant explosive growth of the information services sector have radically changed the world's economic and social landscape. The advancements in the sector therefore will require companies to implement ICT policy in order to be able to mitigate the balance between the benefits and risks of expanded ICT use in a way that is consistent with the company's strategy or goals.

ICT enabled many SME's to provide their information and services online enabling their customers to transact their business electronically. Most SME's has now websites enabling anybody who has interest on this companies to obtain more information online and to easily and effectively conduct their business just with a click of a button from wherever they are at any time. SMEs are also focusing on using modern ICT to deliver services that better meet the needs, demands and satisfaction of their customers and to enable them participate more fully in the development and delivery of services aimed at enhancing user and client satisfaction, service quality and transparency. The increasing demand for modern ICT therefore poses the need for implementation of ICT policy by companies to respond to the complexity brought about by sharing of information and collaboration across organizational boundaries both within the company and their clients for a more responsive, transparent and accountable company. The use of ICT in SMEs has significant benefits as follows: it reduces cost of doing business, enhances quality of service delivery, there is increasing capacity of the company, improved decision making, transparency, improved efficiency and improved access to information.

According to Labelle, (2005) he reaffirms that ICTs enhance all forms of information exchange. He continues to note that, observation, learning and decision-making are facilitated, and business transactions are expanded and speeded up with ICTs. Opportunities can be identified and acted on more easily. Markets operate more efficiently and are more accessible. These lead to business-related efficiencies and faster turnover, increased productivity, especially in the services sector, and profitability.

Pharm, (2010), with the fast development of ICT, e-commerce, and globalization, small and medium enterprises (SMEs), which are the most majority and flexibility in the business world, become more and more important. Their operations are responsible for generating more than 50% of the GDP of the whole world. Different from the large enterprises, SMEs are faster, easier to change and adapt in accordance with market demand and economic pressures.

### **1.2 Statement of the Problem:**

Grandon and Pearson (2004) notes that the field of ICT is marked by a lack of research on the implementation of ICT policy on SMEs. There has been various debates and much work carried out on national ICT policy. The focus on National policy has led to less attention on company ICT which has led to lack of expertise and interest by ICT professionals. The national ICT policy talks good of the adoption of e-commerce but this also need to be castigated to SMEs because they are the driving force of the economy.

It has also been difficult for researchers to isolate trends in ICT from more general economic and organisational change drivers, such as the changing work paradigm. Moreover, research has often failed to examine the role of management support, technical skills, ICT infrastructure and user awareness within single integrated studies. This research therefore seeks to carry out its study from a company perspective.

More successful, qualitative researches need to be carried out on case studies on SMEs in order to get a sense of strategic direction in ensuring better utilization of ICT.

### **1.3 Objectives of the Study:**

- a) To find out the influence of ICT resources on the implementation of ICT policy
- b) To investigate the importance of user training and awareness on the implementation of the ICT policy.

## **2. LITERATURE REVIEW**

The realization and evolution of Information, Communication and Technology (ICT) has arguably begun in the late 1970s and early 1980s, following the emergence of, first the minicomputer and, later the microcomputer (Yusuf, 2013). At early stages, the Information Technology was the single most dominant notion in terms of economic development and growth.

However, despite the fact that IT expansion created significant economic opportunities, keeping it as discrete sector was not in economic terms wise and as such, emerged the significance of increasing communication technologies as well as information processing technologies – a shift from IT to ICT. Following was the intense placement of large volumes of investment to entice and stimulate all possible means of ICT infrastructure and development.

Today, the result is clear, ICT shapes every aspect of our lives and is paradoxically taking on a hitherto unseen dimensions whereby communication technologies are becoming forces of social change – bringing the virtual and physical worlds more closer than ever before in a more dynamic fashion. Considering the rapid evolution of ICT and government policies and strategies in place, the future of ICT is promising at large in every imaginable sector and field.

It is widely recognized that SMEs are very important for economic growth and jobcreation in both developed and developing countries (Aris, 2006; Mutula & Brakel, 2006; Tan & Macaulay, 2007). Researchers argue that SMEs play a major role in poverty alleviation in developing countries and also stimulated domestic and regional economic growth in national and regional economies (Berisha-Namani, 2009). They help to diversify economic activity and are flexible to changing market demands (Ongori, 2009).

There have been many discussions over the importance of this sector to the economy although there is evidence to suggest that small firms do play a major role in the world economy' (Timmons, 1994) and that they constitute the bulk of enterprises in all world economies (Storey, 1994). In Kenya, SMEs also play a significant role in terms of economic development as they provide the cornerstones on which Kenya's economic growth and stability rests (Ojukwu, 2006). The Federal Office of Statistics reveals that about 97% of the entire enterprises in Kenya are SMEs and they employ an average of 50% of the working population as well as contributing up to 50% to the country's industrial output (Ihua, 2009).

There exists some of previous studies carried out on ICT policy implementation in SME's relating to the determinants which have pushed most companies in the recent past to adopt the process. For example, according to the Australian Bureau of Statistics of 2003 on the usage of ICT within SMEs, the results showed that the levels of internet usage as an application which was at 64% for micro businesses, 75% for small enterprises and 92% for medium business. Furthermore the percentage of SMEs with a web site was significantly less with only 14% of micro businesses, 32% of small firms and 56% of medium enterprises. This indicates that a large potential exist for the promotion to and adoption of high end ICT systems creating the necessity of implementing ICT policy to govern the SME's on how they should function.

In Kenya, the government has given a number of incentives for uptake and adoption of ICT in the country. This has been boosted by the national ICT policy and strategy as well as zero rating on all computer accessories. However, there is very little in the country awareness or effort that recognizes ICT's strategic potential. The OECD report (OECD, 2004) on European SMEs found that while SMEs are generally positive about ICT, they are often constrained by other factors such as lack of management support, ICT infrastructure, computer literacy and different computer applications required to run their companies effectively. The fact that SMEs often compete by differentiating their products and services through quality strategies, chubert and Leimstoll, (2007) implies a real opportunity to innovate using ICT. Most SMEs has picked up and wholly embraced this particular innovations to spur their business growth although the constrain of implementing an ICT policy is of a great challenge. This constrains are some of the issues that this research will seek to identify.

The other key element is the harsh business realities of the costs involved in purchasing the required computer applications or technologies, ICT infrastructure and the ICT illiteracy among the SME owner/managers. This in some cases has led to SME owner/managers finding themselves repeatedly dependent on ICT outsourcing in dealing with technology problems and implementation challenges. When this is assessed together with a combination with high levels of distrust of ICT consultants and vendors, there seemed to be a general picture of helplessness and frustration for the SME managers. Due to this setbacks, the researcher in this study will want to unravel the perceived lack of management support as the hindrance to ICT policy implementation.

Knol and Stroeken (2001) notes that within this context of resource constraints, SMEs tend to behave opportunistically driven by concerns of cost effectiveness rather than any strategic and policy considerations. Therefore, managers are keen to establish value for money and often question if new ICT can help meet their business needs better.

Previously, SMEs faced various problems when it came to introducing ICT particularly in Kenya. However, there seem to be a growing need by small enterprises, beginning to pick up the usage of ICT across all sectors and embracing e-commerce as an alternative in increasing sales and service delivery to their customers. This therefore means that policies need to be put in place to mitigate the risks that come with the ICT usage as well as guide users on the best practices for effective use of the systems.

### 3. RESEARCH METHODOLOGY

#### 3.1 Research Design:

This study adopted a descriptive cross-sectional survey design. According to Cresswell and Clark (2007), a combined descriptive cross-sectional survey research design is used when seeking to gather information, summarize, present and interpret it for the purpose of clarification. This design was therefore chosen as the study sought personal views, opinions, attitudes, and perceptions about ICT resources and user training and awareness as determinants of ict policy implementation in smes in Kenya.

#### 3.1 Target Population:

The study targeted SMEs in Nairobi County and its environs within Kenya. The respondents therefore included all staff or employees of their respective companies' grouped in three categories of the management, ICT professionals and the other staff members.

#### 3.3 Data Collection:

Questionnaires and face-to-face interview was used in collecting data from the target population. Margaret, B and Bernsten, R. (2009) Survey questionnaires often collect data that can be analyzed at a single level of analysis (i.e., all cases have only one response for each variable) or at multiple levels of analysis (i.e., the number of case varies across respondents; e.g., from each respondent, the enumerator would collect data about all family members, parcels, crops, transaction). All interviews were set up by requesting appointments in advance. In some cases where it was difficult to directly get in touch with the research participants; interviews were requested through online survey.

#### 3.4 Data analysis:

After data collection, the data was converted into some amounts of statistical information that can be understood and interpreted so that they can be used effectively. The questions were measured using Likert scales statements, to which respondents were required to state their level of agreement or disagreement. In order to use the Likert-scale for interpretation, weighted mean to represent each question was computed. Weighted mean is the average wherein every quantity to be averages has a corresponding weight. These weights represent the significance of each quantity to the average. To compute for the weighted mean, each value will be multiplied by its weight. The products will then be added to obtain the total value. The total weight will also be computed by adding all the weights. This statistical treatment is called data processing which includes operations such as; data editing, data coding, data classification and tabulation. Linear Regression analysis was used to determine the strength of the relationship of the independent variables and the dependent variable.

### 4. RESULTS AND DISCUSSIONS

The results are based on response from 132 respondents out of the 150 who participated (88% response rate).

#### 4.1 ICT policy Implementation:

To assess implementation of ICT policies among the studied SMEs, respondents were asked to rate their agreement on a likert scale on how well their organization implemented ICT policies. Majority of the respondents (48%) agreed with the statement that their organization implemented ICT policies very well. On the other side 14% disagreed while 38% were neutral on the statement.

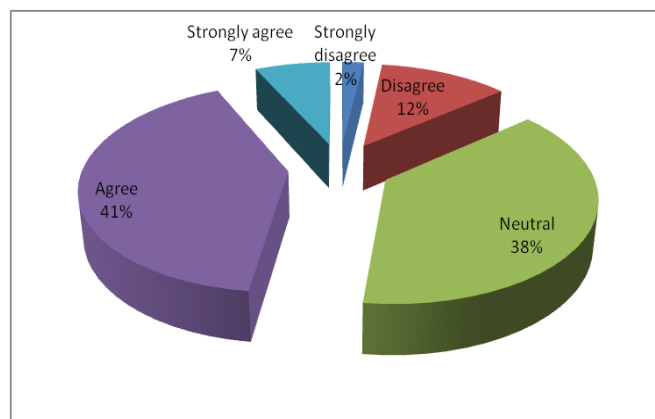
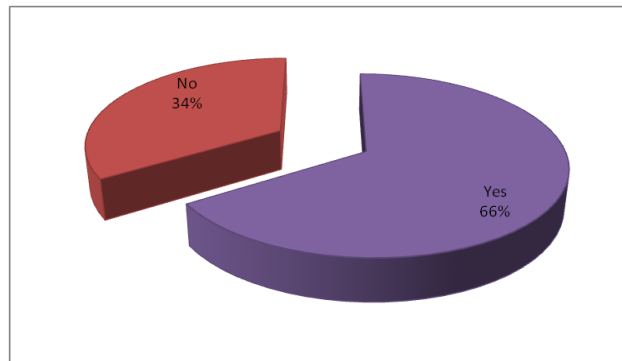


Figure 1: ICT policy Implementation

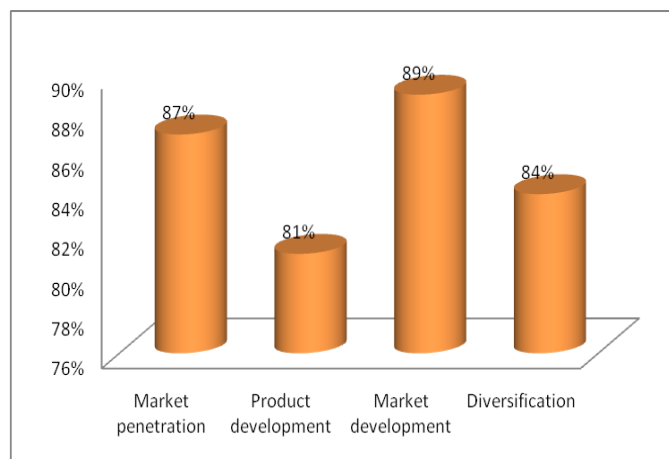
**4.2 ICT Resources:**

Respondents were asked whether they had computer network infrastructure where majority (66%) were positive.



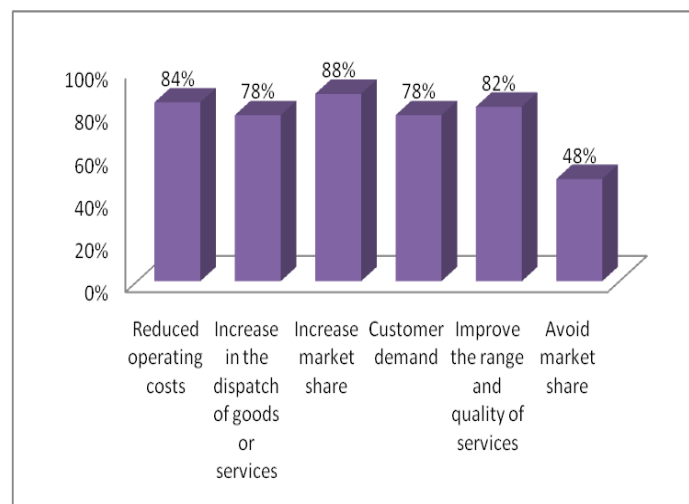
**Figure 2: Computer network infrastructure**

Respondents were asked to rate importance of e-commerce to four business intent on a five likert scale. The responses were averaged per statement. Respondents rated e-commerce to be very important to the four business intent with each scoring above 80%. Market development was rated the highest at 89% followed by Market penetration at 87%.



**Figure 3: Importance of e-commerce**

Respondents were also presented with a list of six statements and asked to state the importance of each in encouraging the use of e-commerce. Respondents were observed to rate high the importance of increase market share-88%, Reduced operating costs-84% and Improve the range and quality of services-82% in encouraging the use of e-commerce.



**Figure 4: Factors encouraging the use of e-commerce**

To assess use and frequency of use of ICT resources respondents were presented with eight different activities and asked to rate how regularly they used internet on them. Responses were on a five point likert scale with responses ranging from 1-less regularly to 5- more regularly. The responses were average and converted to a percentage for easy interpretation. From the responses email was the highest rated at 86% followed by Chatting/Dating-78% and Social Networking-77%. Online banking and Personals/Job search was the least rated at 43% and 51% respectively

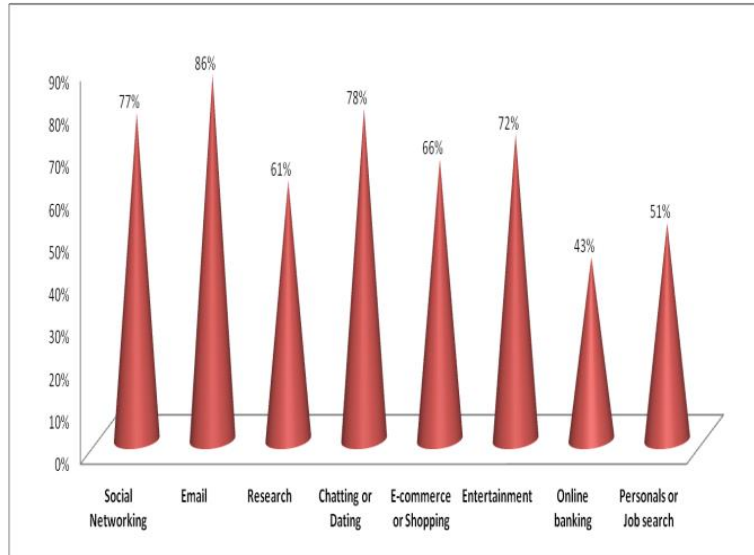


Figure 5: Use of ICT resources

#### 4.3 User Training and Awareness:

Respondents were asked whether they had ever attended an ICT policy awareness training/programme/workshop where majority (56%) reported yes. A further question on the importance of the training/programme/workshop in understanding the company ICT policy was posed. Most of the respondents (80%) were of the opinion that the training was important.

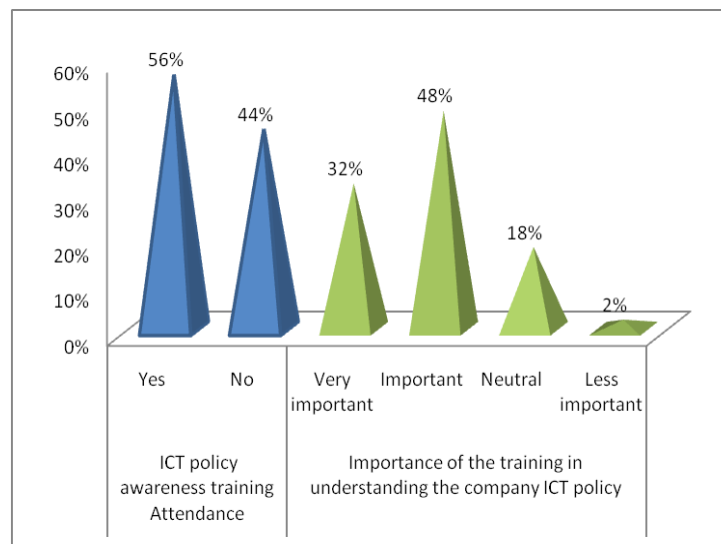


Figure 6: ICT Training and Awareness

To measure user training and awareness and its influence on ICT policy implementation respondents were presented with five statements on likert scale and asked to state how much they agreed with each statement. The statements were on a likert scale with responses ranging from 1-strongly disagree through 3-neutral to 5-strongly agree. The responses were averaged per statement. Averagely the respondents agreed with most statements with an average score of 74%. Respondents agreed unanimously that ICT is very important for the company-88% and that ICT is very important for their current job responsibilities -82%. On the other hand respondents were observed to disagree with the statement that they are often trained in ICT course/application/system.



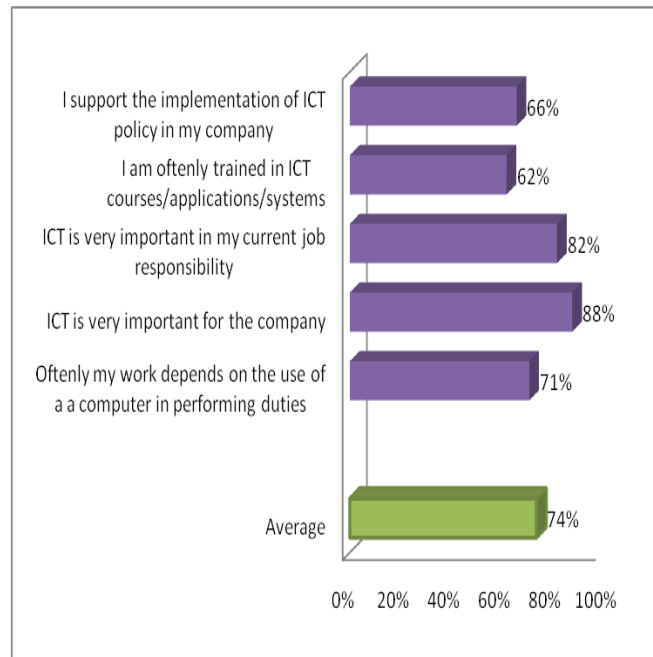


Figure 7: User Training and Awareness

#### 4.4 Regression model:

A regression model containing the four independent variables (ICT resources and training and awareness) was ran to predict ICT policy implementation.

An R2 value of .723 indicates that 72.3% of the variation in ICT policy implementation can be explained by the model. Hence ICT resources and training and awareness can explain 72.3% of the variation in ICT policy implementation while other factors not studied in this study can explain 27.7%.

Table 1: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.850 <sup>a</sup>	.723	.9692	.05992

a. Predictors: (Constant) ICT resources and training and awareness

To determine how best the regression model fits our data, Analysis of Variance on the coefficient of determination (R2) was calculated. An F value of 37.590 (df=4, 326 and P<.001) shows that the model is suitable at 95% confidence level.

Table 2: ANOVA

Model	Sum of Squares	df	Mean Square	F	Sig.	
1	Regression	34.632	4	8.658	37.590	<.001 <sup>a</sup>
	Residual	75.087	326	.230		
	Total	109.718	330			

Table 3 displays the coefficient of the regression model of ICT policy implementation on ICT resources and training and awareness. From the table all the coefficients of the model were significant at 5% level of significance. Therefore, ICT policy implementation can be predicted using the following equation:

$$Y=1.672+.160X1+.136X2$$

Where;

Y is ICT policy implementation

X1 is the ICT resources

X2 is is training and awareness

**Table 3: Coefficients**

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	1.672	.235		7.130	.000
	ICT resources	.160	.064	.151	2.525	.012
	Training and awareness	.136	.039	.168	3.479	.001

a. Dependent Variable: ICT policy implementation

## 5. CONCLUSION

Firms who perceive use of ICT as beneficial, non-complex, compatible and of low risk to use are more likely to adopt ICT in day to day business. This is compatible with previous studies illustrating that the main barriers to ICT policy adoption and implementation are simply the concern that the ICT would not lead to more efficiency, lower costs or more revenues. Consistent with previous research, this study has also revealed that ICT resources, skills and knowledge can crucially increase its adoption.

## 6. RECOMMENDATIONS

Based on the results from the study, SMEs should conduct a thorough Strategic Plan. This is to illustrate how market forces can compel the SMEs to make radical shifts in their organizational environment and culture. SMEs should also align ICT Plans with Business Plans. Conduct reengineering studies and develop strategic ICT plans to align key ICT needs with those of the business.

To researchers and academicians the study recommends that replica studies be done on the factors affecting the implementation and the strategic exploitation of ICT's potential to transform service delivery; the appropriateness of different ICT models and systems for different firms, contexts and software applications.

## REFERENCES

- [1] Chandran, E. (2004). Research Methods: A quantitative approach with illustrations from Christian ministries. Nairobi, Kenya: Starbright Services Ltd
- [2] Cooper, D.R. & Schindler, P.S. (2011). Business research methods (11th ed.). New Delhi: Tata McGraw-Hill Publishing Company Limited.
- [3] Cramer, D. & Howitt, D. (2004). The SAGE dictionary of statistics. London: SAGE Publishers Ltd.
- [4] Davis F. (1989). Perceived Usefulness, Perceived Ease of Use and User Acceptance of Information Technology. MIS Quarterly 13, 319-340.
- [5] European Commission, (2003). Commission Recommendation Concerning the Definition of Micro, Small and Medium-sized Enterprises. Retrieved from <http://europa.eu/eurllex/pri/en/oj/dat/2003/1-12>.
- [6] Gibbs S., Sequeira J. and White M. M. (2007). Social Networks and Technology Adoption in Small Business, International Journal of Globalisation and Small Business. 2, 66-87. Interscience Enterprises Ltd.
- [7] Kumar, R. (2005). Research methodology: A step by step guide for beginners (2nd ed.). London: Sage publications.
- [8] Levy, M. and Powell, P. (2005). Strategies for Growth in SMEs. The role of Information and Information Systems. Burlington: Elsevier Limited.
- [9] Mugenda, O. M., & Mugenda, A.G. (1999). Research Methods: Quantitative and Qualitative Approaches. Nairobi, Kenya: Acts Press.
- [10] Mugenda, O. M., & Mugenda, A.G. (2003). Research methods: Quantitative and qualitative approaches. Nairobi, Kenya: Acts Press.
- [11] OECD (2004). ICT, E-Business and SMEs, Paris: Organisation for Economic Co-operation and Development.
- [12] Rogers, E., M. (2006). Diffusion of Innovations, (4th ed.). New York: Free Press.
- [13] Tarafdar, M. & Vaidya, S.D. (2006). Challenges in the adoption of e-commerce technologies in India: the role of organisational factors. International Journal of Information Management, 26, 428-441.