



**FACTORS INFLUENCING ADOPTION OF ELECTRONIC COMMERCE
BY STATE OWNED ENTERPRISES IN KENYA: A CASE OF KENYA
POWER**

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Abstract

Electronic commerce offers considerable opportunities to organizations to expand their customer base enter new products and rationalize their businesses by competing in the global economies. State Owned Enterprises (SOE's) have generally been slow to adopt and evaluate electronic commerce. The SOEs have failed to reach the levels of adoption required to realize the benefits associated with it during formative stages of the enterprises. Many SOEs are unaware of the potential of electronic commerce to enhance their business operations which they consider not applicable to the products and service. Many economies are transferring themselves into knowledge based economies, where information and innovation are competitive instruments. There are a limited number of studies on e-commerce adoption by SOE's. To address the gap in the literature, this study looked at factors influencing adoption of e-commerce by State Owned Enterprises in Kenya. The specific objective of this study was to assess factors that influence adoption of E-commerce by state owned operations in Kenya. To achieve the objective four variables including Organizational factors, Environmental, Technological and Individual factors were used to access its influence on adoption of electronic. The study employed a descriptive research design embracing the use of structured questionnaires. The questionnaires designed were issued to respondents with an aim to collect information on factors influencing adoption of E-commerce by SOE's in Kenya. The data was obtained from 52 members of staff from top management, Information Technology, Operations and other departments, who were all administered with the questionnaires. The research instrument was then pilot tested for reliability and validity. The analysis was done using descriptive statistics such as mean scores, frequencies and percentage. Pearson correlation technique was used to establish the strength and significance of the relationship of Organizational factors, Environmental factors, Technological factors, Individual factors and E-commerce adoption. Field study was done and the data analyzed and discussed to come up with a conclusion which helped the study to give commendation to the

concerned parties. The study found out that Organizational, Technological, Environmental and Individual factors have a positive influence on the adoption of e-commerce by the SOEs in Kenya. This imply that the government has done enough to help the SOEs to adopt of e-commerce and that adoption of E-Commerce led to improved overall customer satisfaction, increased number of customers and increased sales volume. The study thus recommends that in order to ensure overall improved performance, SOE's needs to adopt and utilize E-commerce in their day to day operations.

Key Words: E-commerce, Organizational factors, Environmental factors, Technological factors, Individual factors.

1.0 Introduction

Electronic commerce (e-commerce) has transformed business processes in a number of organizations and will continue to do so in future (Al-Qirim, 2007).(Scupola, 2009; Brand & Huizingh, 2008; Karakaya & Shea, 2008; Wilson, Daniel, & Davies, 2008; Bharati & Chaudhury, 2006) hold the view that innovations have positive impact on business operations and bring with them substantial benefits. Benefits widely associated with innovations includes, improvement in operational efficiency, access to a wider range of markets, greater potential for partnership with suppliers, improved customer services, accessibility and flexibility in administration, and partnership among others (Vaithianathan, 2010).

As long as ICT developments are dynamic, it follows that e-commerce issues in organizations would also draw on this characteristic, thus requiring more reason to establish patterns of e-commerce development and its application in organizations (Bouchet, 2014)). Unfortunately, State Owned Enterprises in Kenya are lagging behind in tapping into the opportunities linked to the emerging technologies and have failed to realize the full potential benefits of e-commerce.

The adoption of e-commerce and related ICTs has shifted from using it merely as a means of creating a sustainable competitive advantage to being an essential competitive weapon for business survival (Gikandi & Bloor, 2010). Hinson and Sorenson (2006) affirms that in the earlier years for instance, business-to-business(B2B) e-commerce figures soared with estimates ranging between \$200 and \$600 billion globally. The swift and incessant growth of e-commerce reportedly brought with it enormous benefits to organizations by providing them with the ability to access entire markets hitherto difficult to penetrate due to high transaction costs and other market access barriers (Turban, 2008)

1.2 Problem Statement

Rapid developments in Information and Communication Technologies, especially the Internet, have brought about a lot of changes in the world, both in developed and developing countries (Jones & Beynon, 2011; Montazemi, 2006) in virtually all walks of life. For businesses, large and small, there is motivation to expand commercial activities beyond the physical boundaries of the organizations into distant geographical regions through the domains of computer networks, telecommunications, satellite broadcasting, digital television and the Internet (Al-Somali, Gholami, & Clegg, 2011). The channels of these networks are mostly through personal computers (PC's) but Internet technology more recently has facilitated the use of devices such as digital cell phones, smart phones, palm-pads and laptop computers (Iddris, 2012).

Studies have been conducted relating to the adoption of e-commerce around the world, most of these studies are concentrated in relatively well-developed economies such as New Zealand (Al-Qirim, 2007). A few studies have also been undertaken in developing countries like Malaysia (Alam, 2009; Alam, 2007). Only a handful of studies, however, have specifically focused on the e-commerce adoption by SOEs in a transition economy (Kapurubandara, 2009). Among the developing countries, Africa has not been sufficiently researched and even then, the available research activity is mainly concentrated on South Africa. In addition, available research is fragmented thus offering limited insight into the true position of the status of e-commerce adoption (Redding & Evers, 2012).

It is clear from the foregoing background that, unlike in the developed countries, little is known about both the e-commerce environment and the key factors affecting influencing its adoption in developing countries such as Kenya (Walter, 2014). This lack of information has invariably led to non-alignment of the potential of e-commerce innovations with developments in business processes (Redding & Evers, 2012 Khanali Lou, 2011). SOE's sector is characterized by slow uptake of e-commerce thus hindering business operations development and efficiency. Ignore (2009), observe that low investment in e-commerce innovations has led to a lag in business transformation and hence growth. Given the above-cited low uptake status, developing countries, and indeed Kenya, have not been able to reap the full benefits derivable from investment in e-commerce.

Kenya power lies at position 115 out of 300 SOE's in Kenya which are yet to fully utilize E-commerce (KAM, 2014). Bureaucratic procedures, individual factors, lack of training poor reward scheme are some of the factors that have discouraged adoption and utilization of e-commerce (Nyoike 2012). Kenya power is characterized by slow uptake of e-commerce thus hindering business operations development and efficiency (KAM 2014). Nyaanga (2007), observe that low investment in e-commerce innovations has led to a lag in business transformation and hence growth. Given the low uptake status, Kenya power has not been able to reap the full benefits derivable from investment in e-commerce adoption.

Existing business processes must be seamlessly integrated with the new electronic form of interaction with suppliers and customers (Kiplagat, 2008). It's mostly the privately owned companies that have benefited from e-commerce utilization with Kenya power showing a slower rate of utilization, this is due to reasons such as bureaucracy, security concerns, and technical expertise (Ongeti, 2014).

Adoption of electronic commerce offers a great opportunity to KP to gain greater global access and reduced transaction costs, provides substantial benefits via improved efficiencies and raised revenues; facilitates access to potential customers and suppliers, productivity improvements, customization of products and services and information exchange and management (Awino & Mutua, 2014).

While E-commerce is enjoying rapid advances in private sectors like Safaricom and Keroche industries, its adoption at Kenya power is lagging behind. This study sought to look at factors that influence adoption of E-commerce by State Owned Enterprises in Kenya to get an in depth analysis on why e-commerce uptake is slow and what can be done to foster its adoption so as to enable SOE's to reap the full benefits of E-commerce adoption.

1.3 Research objective

- i. To assess how Organizational factors influence adoption of electronic commerce in Kenya power.
- ii. To analyze how Environmental factors influence adoption of electronic commerce in Kenya power.
- iii. To determine how Technological factors influence adoption of electronic commerce in Kenya power.
- iv. To examine how Individual factors influence adoption of electronic commerce in Kenya power.

2.0 Research Methodology

The study adopted a case study research design to determine factors that influence adoption of E-commerce by state owned enterprises in Kenya. State owned Enterprises are preferred due to their importance in Kenya towards achieving the economic pillar of Vision 2030. The target population of the study was employees of Kenya Power Nairobi region. Kenya Power has several branches in the country but the target population was its headquarters from where the top management, Information technology and operations team sit. The study population was 600 staff members of Kenya Power during the calendar year 2017. For the study, a case study was desirable because the target population was large and this ensured a high degree of accuracy.

The study used primary data collected by use of structured questionnaires in its analysis. The data was collected using online and drop and pick method. The structured questions were used so as to facilitate in easier analysis as they are in immediate usable form. The data collected was then subjected to analysis using a statistical tool. The study adopted quantitative approach for data analysis. SPSS (V22) statistical software version was used to run descriptive statistics such as frequency and percentages to present the data in form of tables and graphs based on the major research questions. The study then adopted a multiple regression model with 5% level of significance in order to establish the strength of the relationship between the independent variables (Organizational, Environmental, Technological and Individual factors) and the dependent variable (e-commerce adoption).

2.1 Model Specification

For the variables under investigation, it was fit to have the following model to help explain the relationship between the explanatory variables and the main response variable.

$$Y = \beta_0 + \beta_1x_1 + \beta_2x_2 + \beta_3x_3 + \beta_4x_4 + \varepsilon$$

Y is dependent variable (E-commerce adoption)

β_0 = regression constant

x_1 =Organizational factors

x_2 =Environmental factors

χ_3 = Technological factors

χ_4 = Individual factors

e = Error term

2.2 Discussion of Results

2.2.1 Education Level of the Respondents

The study established that 87% of the respondents were university graduates and some held postgraduate Degrees. This is an indication that Kenya Power has invested in employing competent members of staff. This implies that those with higher education are more successful as they have more knowledge and have modern skills making them more conscious of the reality of e-commerce adoption.

Table 1: Length of Service of the Respondents

Indicator	Measure	Frequency	Percentage
Level of Education	Primary	0	0
	Secondary	0	0
	College	7	13
	University	30	58
	Post Graduate	15	29
Total		52	100

2.2.2 Regression Analysis

The study adopted regression analysis so as to test the relationship among variables (independent) on e-commerce adoption. The results presented in Table 1 present the fitness of model used for the regression model in explaining the study phenomena Organizational, Environmental, Technological and Individual factors explained 53.3% of variation in E-commerce adoption.

Table 3: Analysis of Variance

	Sum of Squares	df	Mean Square	F	Sig.
Regression	1.715	4	.429	9.128	.000
Residual	2.249	47	.047		
Total	3.964	51			

Table 3 provides the results on the analysis of the variance (ANOVA). The results imply that Organizational, Environmental, Technological and Individual factors influence e-commerce adoption. This was supported by an F statistic of 9.128 on 4 and 47 degrees of freedom and the reported p value (0.000) which was less than the conventional probability of 0.05 significance levels. This results indicates that the overall model fitted on the data is statistically significance.

Table 4: Regression of Coefficient

Variable	B	Std Error	t	sig
(Constant)	1.828	.290	6.305	.000
Organizational factors	.250	.043	5.814	.007
Environmental Factors	.206	.055	3.755	.005
Technological Factors	.327	.090	3.626	.006
Individual factors	.645	.052	12.404	.005

From Table 4, the specific model was; $Y = 1.828 + 0.25X_1 + 0.206X_2 + 0.327X_3 + 0.645X_4$
 Where X_1 is Organizational factors, X_2 Environmental factors, X_3 Technological factors and X_4 Individual factors and Y is the E-commerce adoption. The result indicates that Organizational, Environmental, Technological and Individual factors have a significant positive effect on e-commerce adoption. This implies that a unit increase Organizational, Environmental, Technological and Individual factors will lead to 0.250, 0.206, 0.327, and .647 respectively increase in e-commerce adoption by state owned enterprises in Kenya.

Discussion of the results

Organizational Factors

Table 4. Shows that an Organizational factor has positive and significant effects on E-commerce adoption. This was supported by a regression coefficient of $\beta_1 = 0.25$ and p-value of 0.007. Thus it was concluded that Organizational factors has a significant effect on E-commerce adoption. This suggests that there is an increase of up to 0.25 units in e-commerce adoption for every unit increase in Organizational factors.

Similar results were shared by Huy and Filiatrault (2012) in a study on the significance of organizational determinants as factors of e-commerce adoption found that employees' knowledge of e-commerce, size of the enterprise, and attitudes of managers towards e-commerce were positive and statistically significant. Other findings also confirm the positive relationship between the attitudes of managers towards adoption (Al-Qirim, 2007).

Bharati and Chaudhury (2010) found out that Organizational influence can motivate employees to adopt an innovation. Training promotes greater understanding, favorable attitude, more

frequent use, and more diverse use of applications. Training positively influences an individual's adoption of innovation (Igbaria 1997; Jasperso, 2009). By training, educating and assisting employees when they encounter difficulties, some of the potential barriers to adoption can be reduced or eliminated (Olatokun & Kebonye 2010).

Environmental Factors

The regression results show that there was a significant relationship between Environmental factors and E-commerce adoption. Similar results were shared in a study by Oliveira and Martins (2009). This finding was supported by the regression coefficient of $\beta_2 = 0.206$ (p-value = 0.005 which is less than $\alpha = 0.05$). Thus it was concluded that Environmental factors has a significant influence on E-commerce adoption. This suggests that there is an increase of up to 0.206 units in e-commerce adoption for every unit increase in Environmental factors.

Similar results were shared in a study by Oliveira and Martins (2009) who noted that there is a positive and significant relationship between competitive pressure and the adoption of e-commerce. If e-commerce directly affects the competition, then the adopter will have an incentive to take up the technology. Intensity of competition is associated with the degree of e-commerce adoption and that competitive pressure is a critical factor influencing e-commerce adoption.

Technological Factors

The regression results support the respondents' opinion that Technological Factors positively influence adoption of E-commerce. This was indicated in the regression coefficient of $\beta_3 = 0.327$ (p-value = 0.006 which is less than $\alpha = 0.05$). Thus it can be concluded that Technological Factors has a significant effect on E-commerce adoption. This suggests that there is an increase of up to 0.327 units in E-commerce adoption for every unit increase in Technological Factors.

This outcome supports results from a study by Jeon, Han and Lee (2006), that the extent of perception of the characteristics of the technology as measured by time saving, effort, economic profitability, cost reduction, and production increase has a significant influence on e-commerce adoption. They also found out that perceived relative advantage and Compatibility are significant determinants of adoption because it deals with perception of the importance of e-commerce in performing various tasks presently and in future.

Individual Factors

Table 4.16 showed that Individual Factors has a positive and significant effect on E-commerce adoption. This was supported by a regression coefficient of $\beta_4 = 0.645$ and p-value of 0.005. Thus it was concluded that Individual factors has a significant effect on E-commerce adoption. This suggests that there is an increase of up to 0.645 units in e-commerce adoption for every unit increase in Individual factors.

Similar results were shared by Talukder and Quazi (2011) who noted that individual factors such as perceived usefulness, personal innovativeness, prior experience, image and enjoyment with innovation have stronger influence on an individual's adoption of E-commerce they also found out that employee's adoption of E-commerce is driven by their social environment.

Innovation used by others in employees' social environment is likely to play an important role in adoption of E-commerce. Social influence is the extent to which members of a social group influence one another's behavior in adoption

Conclusion

The objective of this research was to examine factors influencing adoption of E-commerce by state owned enterprises in Kenya. From the findings of the study, it was concluded that SOE's that had invested on E-commerce adoption had improved on its operations and performance as compared to organizations that have not adopted e-commerce.

The objectives of the study were met which was to determine factors that influence adoption of e-commerce by SOEs in Kenya. Organization, Technological, Environmental and Individual factors have a positive significance on E-commerce adoption in Kenya. The study found out that the use of e-commerce by most of the SOE's for various tasks is on the rise including searching for information, communicating with stakeholders and financial management in the organization. In conclusion, the researcher strongly believes that the theoretical framework and the findings of this research will stimulate practitioners and scholars to examine E-commerce adoption as a key pillar in a given organization. The findings of this study have implications for all government, directors, management, regulators and shareholders.

Recommendations

The study recommends that SOE's should never be complacent but should instead engage in continual innovations in launching new Ecommerce processes and applications. This might call for the need of SOE's to have innovations policy and dedicated E-commerce team which will be able to anticipate emerging customer dynamics and churn out new products and processes accordingly. This calls upon SOEs to come up with e-commerce policies which outlines the strategies and guidelines of applying the same effectively in the organizations. This should be done in a manner in which all the stakeholders are happy. This ensures that they are acceptable, accessible, ethically sound, have a positive perceived impact, relevant, appropriate, innovative, efficient, sustainable and replicable.

There is need to create awareness on benefits of e-commerce in business operations. This will lead to increased sales volumes, increased customer base, increased customer satisfaction and overall business efficiency. Employees should undergo trainings and attend workshops on E-commerce so as to easily appreciate e-commerce application in their business operations. This will go a long in enhancing efficiency and effectiveness in service delivery. The government should enact policies which regulate the ICT industry aimed at reducing the cost of ICT usage so as to increase e-commerce adoption among SOEs

Finally State owned enterprises must be ready to heavily invest in resources such as physical IT infrastructure and relevant E-commerce skills. Physical IT infrastructure is a precursor to executing E-commerce related strategies. E-commerce cannot work on itself in the absence of technical competence in the form of properly skilled staff. SOE's should also develop policies and incentives to curb staff turnover and ensure staff retention. Such policies would be instrumental to maintain institutional memory, avoid leakage and transfer of innovations.

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