

Full Length Research Paper

The magnitude of barriers facing e-commerce businesses in Kenya

James N. K. Kinuthia and David M. Akinnusi*

Department of Business, Al Baha University, Saudi Arabia.

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The aim of the paper was to examine comprehensively, the internal and external factors of organisations which affect the future of electronic commerce (e-commerce) and the magnitude of these constraints in Kenya, using the systems framework. The research methodology used a questionnaire survey (internet survey) to collect data from 137 e-commerce businesses out of which 74 or 54.01% usable questionnaires were received. The businesses ranged from very small to large organizations cutting across all major industry sectors, consisting of the following forms of ownership: local, government, multinational and joint ventures with foreign ownership. The findings of the study established the following barriers in order of decreasing magnitude: economic, social, telecommunications infrastructure barrier, legal/political, individual and organizational barriers. The first three variables are positively but moderately correlated with each other, while with the exception of telecommunications infrastructure, others are poorly correlated with individual and organisational barriers. As expected, the latter two correlate moderately with each other. The regression analysis suggests that telecommunications infrastructure barriers hold the key to unlocking the gordian knot of e-commerce in Kenya, as a decrease in this area would have multiplier effects on the other barriers. The study recommended that the government has a vital role to play in reducing the first four barriers, which are all external to organisations, while at the organisational level, organizations should set (e-commerce) goals and objectives that are well spelt out; build human organisational capital structures to facilitate good working relationships and provide training on e-commerce to minimise resistance and blocking of new changes in organizations.

Key words: E-commerce, barriers, magnitude, internal and external factors, internet, Kenya, systems.

INTRODUCTION

Kenya with a population of 38.6 million (2009 Census <http://www.eac.int/statistics/>), is an East African country that is the regional hub for finance and trade. As such its development is crucial not only for its own citizens but also for that of the regional population of 129.5 million (2009 Census <http://www.eac.int/statistics/>). Given the fact that e-commerce or the exchange of products and services and payments through telecommunications

systems is rapidly expanding around the world, the capacity of the country to support e-commerce and the opportunities in this field can be said to be very important in determining the country's continued position as a regional hub. It is therefore, important to examine the nature and magnitude of barriers militating against e-commerce adoption and diffusion in Kenya in its role as a regional hub for trade and finance in East Africa.

*Corresponding author. E-mail: davidmakinnusi@gmail.com.

The concept of electronic commerce (e-commerce) is about using the Internet to do business better and faster. In Kenya, more opportunities of e-commerce can emanate from challenges created by non-tariff barriers to trade within the East African Community (EAC). While the EAC Customs Union has achieved its main aim of removal of customs duties on internal trade, non-tariff barriers on trade remain a challenge (EAC Trade Report 2010). Kenya can overcome this challenge by the use of e-commerce, but the nature and barriers to the adoption and diffusion of e-commerce looms large and requires investigation.

LITERATURE REVIEW

In this section, the term e-commerce and its significance is explained. This is followed by a discussion on the studies that have been conducted on e-commerce in Kenya. The section concludes by presenting a systems framework of factors acting as barriers to e-commerce growth and usage.

Definition of e-commerce

E-commerce has been defined in many different ways. From the variety of definitions offered, the following are the key attributes of e-commerce: e-commerce is technology mediated exchanges between parties as well as electronically based intra-organisational activities which facilitate such exchanges (Rayport and Jaworski, 2001: 3; Kurato and Hodgetts, 2001: 14; Sanayei, 2003; Rwigema and Venter, 2004; Chinweike, 2008).

E-commerce, thus, refers to conducting business via electronic media, and most commonly, the Internet. The internet or world wide web (WWW) is a network of millions of computers linked around the world through telecommunications systems, allowing for almost instantaneous transfer of data.

Several researchers such as Lane et al., (2004); Pare (2002); Darley (2003) and Rwigema and Venter (2004) argue that the Internet has transformed the way in which business is done in the following ways: It (i) transcends the boundaries of time and space allowing business to be conducted at any and all the time in any and all locations across the world; (ii) allows penetration of global markets without incurring logistical costs of access; (iii) allows organizations to offer their products and services in different locations without having to set up separate sales infrastructure in each location; (iv) allows small businesses to compete more effectively with big businesses; and (v) allows buyers and sellers to communicate and connect and reduces transactions and information costs.

A research for the Institute of Economic Affairs (Kenya) on the Kenya telecommunications sector by Mureithi (2002) concluded that electronic commerce in Kenya could contribute significantly to the competitiveness of the

commercial sector, then being forced to compete globally by trade liberalization, by enabling businesses to access larger markets using the Internet.

The Kenyan situation

The Government of Kenya recognises that ICT offers enormous opportunity to exploit e-commerce and the importance ICT services play in economic, social and political spheres. To that end it prepared a National ICT Master Plan, covering the period 2008-2012, which outlines the roadmap and implementation strategy to make ICTs more accessible and affordable to the wider population and hence to catapult Kenya into a knowledge and information society status. The country aims to establish itself, in the medium to long term, as the hub of industrial and financial activities in the East, Central and Southern African region (Government of Kenya, 2008). The ICT Master Plan (2008-2012) aims to achieve the following objectives:

- a) Enhance Kenya's economic competitiveness through utilization of abundant human resources in Business Process Outsourcing (BPO);
- b) Develop a Knowledge-based society and thereby enhance the quality of life for ordinary citizens;
- c) Ensure universal access to ICT for sustainable development through Digital Villages throughout the country; and
- d) Strengthen Kenya's learning opportunities and thereby developing capacity to meet future technological challenges.

To achieve the above objectives, the Government hoped to implement the following strategies:

- a) Put in place initiatives to ensure broadband is available at the most affordable cost to as many Kenyans as possible
- b) Development of Digital Content
- c) Leveraging on digital technologies to unlock new opportunities to do business and for the delivery of services.
- d) Expand infrastructure that will make Kenya the ICT hub for Africa;
- e) Develop Rural ICT Centres to ensure appreciation of technology throughout the country;
- f) Aggressively reform and enhance ICT research and development in all institutions of higher learning through development of industrial incubation centres (Hardware and Software development) to ensure linkages between industry and the academia;
- g) Revamp and extend e-government services throughout the country to ensure exemplary service delivery to citizens;
- h) Encourage ICT entrepreneurship by providing the necessary enabling environment for entrepreneurial growth; and

i) Allocate sufficient resources for human resource training and development for the ICT industry (with special emphasis on BPO).

During the launch of Vision 2030 in 2008, H.E. President Mwai Kibaki observed that ICTs would play a key and leading role in national development efforts, underpinning the recognition by the Government that efficient and adequate ICT infrastructure is a prerequisite for sustainable ICT sector growth. However, the current state of infrastructure is still a major hindrance to the country's full exploitation of the economic, social and commercial potential of the sector, and to enable the achievement of universal ICT access in every part of the country, various policy initiatives are being implemented to address the situation.

Studies on e-commerce in Kenya

According to Kraemer et al. (2002), Goyal (2006) and Gikandi, and Bloor (2010), a global explosion had been witnessed in research to investigate factors influencing the adoption and effectiveness of e-commerce in retail businesses. However, little had been done to establish these factors in electronic banking (e-banking) in developing countries. Gikandi and Bloor (2010), therefore, carried out a research with the aim of investigating the factors that influence the adoption and effectiveness of e-banking in retail banking in Kenya. The study showed that e-banking was the way forward in reducing costs and remaining competitive in comparison with conventional banking practices. But they noted that the main question was how to establish it without severe organizational problems. In Kenya, no study had been carried out to establish the factors influencing the adoption and effectiveness of electronic retail banking. The study by Gikandi and Bloor (2010) was thus designed to identify these factors.

Gikandi and Bloor (2010) study came up with an array of factors which tended to inhibit the adoption of e-commerce in Kenya. One of these is the lack of resources and that this was one of the reasons why banks had resulted to alliances in order to pool resources. Another was the constant change in technology and time available to develop systems. They noted also that a major challenge was the lack of spread of accessibility and use of Internet by the general population, especially in the rural areas.. They observed that e-banking introduced new risks requiring new risk management strategies, including Internet security, customer and legal related issues. The study concluded by emphasizing the role of Kenya Government in achieving a secure environment for e-banking activities. The government needed to put in place clear laws, rules and regulations, provide relevant technical training to the regulatory authority to empower them to enforce the laws effectively. Thus, organisational, governmental and

developmental issues were identified as constraints to the adoption of e-commerce in the banking sector in Kenya.

Using Kenya as a case study, Musau et al. (2011) pointed out that the emerging ICT technology could create solid improvement in offering better services to all nations. This would enable the citizens of the countries to access e-services from the governments based on their trust of the systems. In their report, Musau et al. (2011) stated that things have not been as planned in Kenya because majority of the people do not trust e-government services.

Using a case study of a local public independent e-marketplace in Kenya, Sakari (2006) examined the critical success factors of business to business (B2B) e-markets from an African perspective. He explored the actual strategies adapted by the e-marketplace in building liquidity and capturing value using a conceptual framework for the analysis on the critical success factors proposed by Jijian Li and Liwei (2005). Most of the results agreed with theories of success factors and supported the view that strategic factors, functional factors and technical factors were critical elements for the success of a given e-market, with building liquidity and creating value as pillars of success (Iulta, 1999; Jijian and Liwei, 2005; Brunn et al., 2002).

Kongongo (2004) studied the readiness status of one of the leading manufacturing enterprises in Kenya by assessing the e-business strategy and the level of investment in technology which are indicators of the organization's readiness for e-business, on the one hand, and a focus on the extent of automation of both the supply and demand chain, which are indicators of execution of e-business strategy, on the other hand. The research indicated that although the organization was internally ready for e-business, external impediments had limited the extent to which it could reap the benefits of value chain integration; the pre-requisites for e-business success were largely internal rather than external, hence organizations could achieve a lot by improving their own internal readiness before extending the scope of their e-business initiatives.

Noting that e-commerce involves buying and selling online, encompassing all sorts of pre-sale and post-sale efforts, cutting across every functional field of business and eventually penetrating practically every aspect of management, and representing a new universe of value creation for consumers and organizations, Kolawole (2001) in his study on reinsurance companies in Kenya pointed out that this necessitated new approaches to market research, advertising, customer support, public relations, product purchasing and distribution, production management, recruiting, knowledge distribution and financial transactions. The result of the research served as a guide on how reinsurance companies could most effectively develop and implement their e-commerce strategy. It also served to provide useful materials that

would be of use to companies, of all sizes, that were about to take their first steps in electronic commerce.

Kaburia (2004) examined the e-Payment alternatives that existed in Kenya and the world, and the extent of use of e-commerce and e-Payment methods in Kenya. The objectives of the study were, firstly, to find out if the lack of suitable e-Payment alternatives in Kenya was a barrier to organizations and their customers in exploiting the enormous potential of e-commerce and, secondly, to examine the challenges faced by providers and consumers of e-Payment and e-commerce services in Kenya. The research studied three samples: one of individuals, another of organizations, and another of commercial banks and payment service providers. It found out that lack of suitable e-Payment alternatives was a critical challenge to the growth of e-commerce in Kenya. An e-Payment model suitable for individuals in Kenya was proposed. Ngila (2007) assessed whether Kenya was ready to adopt the use of a mobile phone as an electronic wallet, that is, a single electronic card scheme integrated into mobile phone using radio frequency identification technology (RFID) and third generation data network to retrieve and transmit stored details. The research measured whether employed Kenyans perceived technology to be useful and easy to use, and whether there were any cultural practices, policy and technology that could support or hinder the adoption of this technology. The research combined the technology acceptance model (TAM) by Davis et al. (1999), one of the more widely accepted theoretical frameworks that has been used to measure technology adoption, with Culture-Policy-Technology (CPT) theoretical frameworks developed by Bajaj and Leonard (2004) from the University of Tulsa, to assess how ready Kenya was to adopt the use of a mobile phone as an electronic wallet. The research established three findings. Firstly, found that majority of employed Kenyans walked around with more than one electronic or non-electronic card in their wallets. Secondly, it found that most employed Kenyans were uncomfortable carrying many cards as this made their wallets disorganized and raised levels of insecurity and, thirdly, that Kenyans did not perceive technology to be useful and easy to use. The research recommended the introduction of technology oriented subjects in schools to educate people on the benefits of mobile commerce and technology to change Kenyans' perception towards technology; passing and strictly enforcing consumer protection laws; implementation of policies and legal frameworks to support the adoption of RFID technology.

Kisonzo (2001) studied the effects that electronic commerce had on the different sectors of the Kenyan economy to understand the situation relating to electronic commerce and to make a comparative analysis between Kenya and the rest of the world. While in other countries, statistics existed that helped businesses understand the potentials of e-commerce, none existed in Kenya at the

time of the study. The research found that there was very little electronic trading taking place in Kenya then. Many people did not know anything about it. Those who knew about it had been hindered from implementing it due to reasons beyond their control, namely, lack of security on the Internet, use of international credit cards, high costs of infrastructure, lack of knowledge and inexistence of laws governing trading on the Internet. The research recommended policies requiring various actions to be taken by government. It required the government to enact laws to govern Internet based trading; investment by the government in education of its people on how to harness the benefits of the Internet for trade; implementation of a clear government policy promoting electronic commerce in Kenya; providing an enabling environment making telecommunications services available and affordable; publicizing electronic trading through any available means such as public rallies, electronic and print media; and the government participating in international joint projects to benefit from affordable linkages with other countries.

In summary, all the studies reviewed above are concerned with exploring the facilitating and/or militating factors relating to the adoption and usage of e-commerce in Kenya, with the results indicating serious internal and external factors of varying degrees of magnitude. However, none has taken a comprehensive look as is being proposed in this study. This study, therefore, intends to appraise both internal and external factors and obtain a sense of their magnitude in constituting barriers to the future of e-commerce in Kenya.

The range of factors acting as barriers to the adoption and usage of e-commerce are legion and can be classified into macro-, meso- and micro-factors, and are illustrated in Figure 1, using a systems framework (Nadler and Tushman, 1980). The macro-factors relate to environmental issues such as the role of government in installing appropriate laws and regulating bodies and capacitating them to do their work. It also involves mobilising the citizenry by way of communication and education and providing internet and telecommunications infrastructure in collaboration with other nations, as emphasized by several studies (Kisonzo, 2001; Ngila, 2007; Gikandi and Bloor, 2010). The meso-factors emanated from the studies by Kolawole (2001) and Kongongo (2004) which showed that organisational readiness is a major factor in e-commerce adoption and usage. They recommended that for organisations in Kenya to reap the full benefits of e-commerce, they have to transform themselves, their strategies, processes, the skills and attitudes of their employees.

Finally, whether as consumers of e-commerce or as employees in e-commerce organisations or as citizens, individual characteristics such as receptiveness to change, level of knowledge and skills about the e-commerce technology and processes do greatly influence the adoption and usage of e-commerce. In this regard,

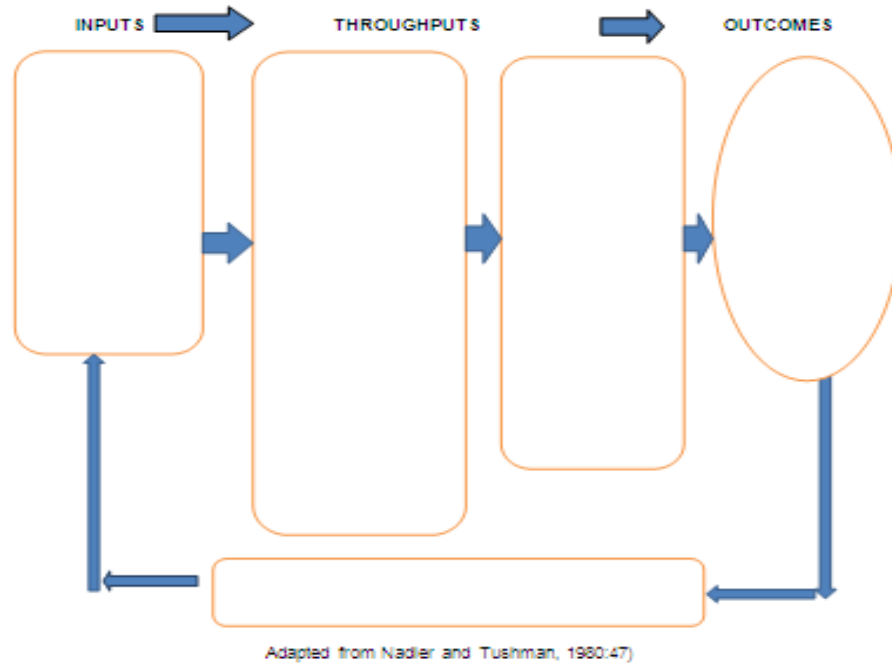


Figure 1. A systems framework of macro-, meso-, and micro factors acting as barriers to e-commerce adoption and usage.

the general educational system, emphasizing orientation to technology in general and internet technology in particular, allaying fears and building trust through socialisation and educational processes, would go a long way in raising the awareness, acceptance and usage of e-commerce in Kenya by its citizens. The next section provides details of the methodology used in this study.

Aims of the research

The aim of the current research is to examine comprehensively the internal and external factors which affect the future of e-commerce, the magnitude and relationship between these barriers in the context of Kenya.

Research objectives

The research objectives are:

- a) To examine the relevant economic, social, technological, legal/political, organisational and individual barriers to the adoption and diffusion of e-commerce in Kenya;
- b) To assess the relative magnitude of these barriers
- c) To examine the relationship between the barriers
- d) To make recommendations as to how to counter these barriers.

METHODOLOGY

For this study, the research was based on primary and secondary data (Saunders et al; 2000). A quantitative research method was used whereby a questionnaire survey (internet survey) was used to collect data from primary sources comprising a sample of businesses which use e-commerce in Kenya. A questionnaire was considered suitable for this study because: it was objective; using a questionnaire was relatively quick to collect information; and it was affordable to collect information from a large group using a questionnaire.

The self-administered questionnaire was constructed by the first author for this study on the basis of the information derived from the literature review. It was an internet survey, administered in December 2011. The questionnaire used a 5-point Likert scale, ranging from Strongly Agree (5) to Strongly Disagree (1). A copy of the instrument is shown in Appendix 1. The measures are briefly below.

Measures

Economic barriers

Four items measured the economic situation and sample items include "Prevalence of e-business practices is widespread in Kenya" and "Business environment is conducive in Kenya". The Cronbach's Alpha is 0.83.

Social barriers

The social variable was measured by five items, sample items being: "Customers navigate the web quite easily" and "There is a

Table 1. Summary of alpha coefficients.

Construct	Cronbach Alpha	Number of items
Economic situation	0.8345	4
Social situation	0.7972	5
Telecommunications infrastructure	0.8596	8
Legal and political environment	0.8821	6
Organizational barriers	0.9206	8
Individual barriers	0.8110	4

national inclination to business innovation and entrepreneurship". The Cronbach's Alpha is 0.79.

Telecommunications infrastructure barriers

The telecommunications infrastructure is measured by eight items, with the following as samples: "Connectivity speeds to the internet are fast" and "Internet penetration beyond urban areas is good". The Cronbach's Alpha for this measure is 0.86.

Legal and political barriers

The legal and political environment variable is measured by six items, of which the following are sample items: "There exists suitable legal framework and regulatory guidelines for commercial transactions to handle cyber crimes" and "The government enforces improving of ICT skills of the workforce in the country". This item variables yields a Cronbach's Alpha of 0.88.

Organisational barriers

Organisational barriers were measured by eight items of which the following are samples: "The organizational culture moves with the times"; "Training is always provided before new changes are implemented"; "The organization has sufficient working capital to support new initiatives". The Cronbach's Alpha for the items is 0.92.

Individual barriers

Individual barriers are measured by four items, two samples of which are: "Employees' habits do not block new changes" and "New changes are seen as job enriching". The Cronbach's Alpha for this variable is 0.81.

Reliability and validity

To ensure the research findings met the requirements of validity, the questions in the questionnaire were formulated on the basis of the literature review in order to test what was intended to be studied (Neuman, 1997). For face validity, the questionnaire was designed bearing in mind the current situation as concerns the barriers impeding adoption and usage of e-commerce in Kenya. The questionnaire also covered the entire body of barriers to adoption and diffusion of e-commerce in Kenya to ensure content validity.

The questionnaire was pilot-tested among five randomly selected companies and suggested minor changes were effected before the final questionnaire was sent via e-mail to 137 randomly selected e-commerce businesses, excluding those included in the pilot

study; 74 or 54.01% usable questionnaires were returned.

Table 1 presents the summary of Alpha Coefficients of the measures, all of which achieved acceptable levels of internal consistency. The secondary research data, based on the literature review was analysed and information about the past, current and likely future environment in the country was gathered to form a picture of the research. From this, the opportunities and challenges facing e-commerce in the country were extrapolated.

Data analysis

SPSS software package was used to process the research data gathered from the questionnaires. For this study, descriptive statistics were used to summarise the data in the form of frequency tables, means and standard deviations, etc.

For inferential statistics, the main method was correlation. Correlation analysis provided an assessment of the degree of association between the factors that impacted on e-commerce adoption and usage while a regression analysis was conducted to reveal the weights of the individual factors.

FINDINGS

Organisational characteristics

In order to capture the general information of the respondents, issues such as title/position, industry, type of organization, size of the company and annual turnover were captured in Section A of the questionnaire. The following organisation characteristics were obtained.

Title distribution of the respondents

According to Figure 2, 22% indicated that they held positions as I.T/ E-commerce managers while 19% said that they were C.E.Os. On the other hand 59% stated that they held other positions in the organizations, but relied on the internet in their daily work.

Industry distribution

The findings in Figure 3 show that 28% of the respondents indicated that they were in the information communication and technology industry while 11% stated that they were in the finance/banking/insurance and hospitality/tours industry, respectively. On the other hand 5% indicated that they were in retail, education and health industry. A further 35% stated that they were in other industries. The survey covered a broad range of sectors critical to the economy, as also confirmed by Figures 4 and 5.

Type of organization

According to Figure 4, majority of the organizations (68%) were private/locally owned while 18% were government

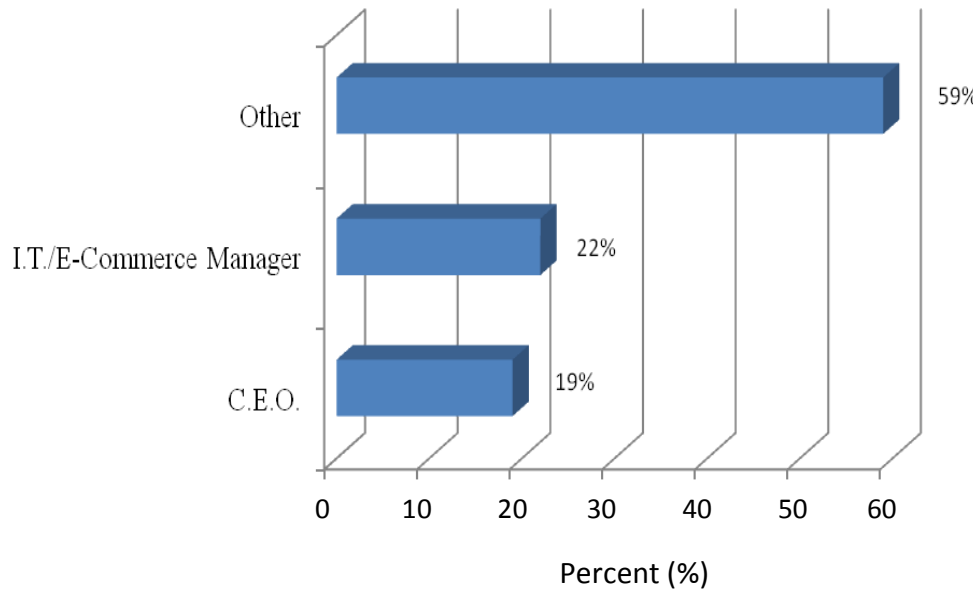


Figure 2. Title distribution

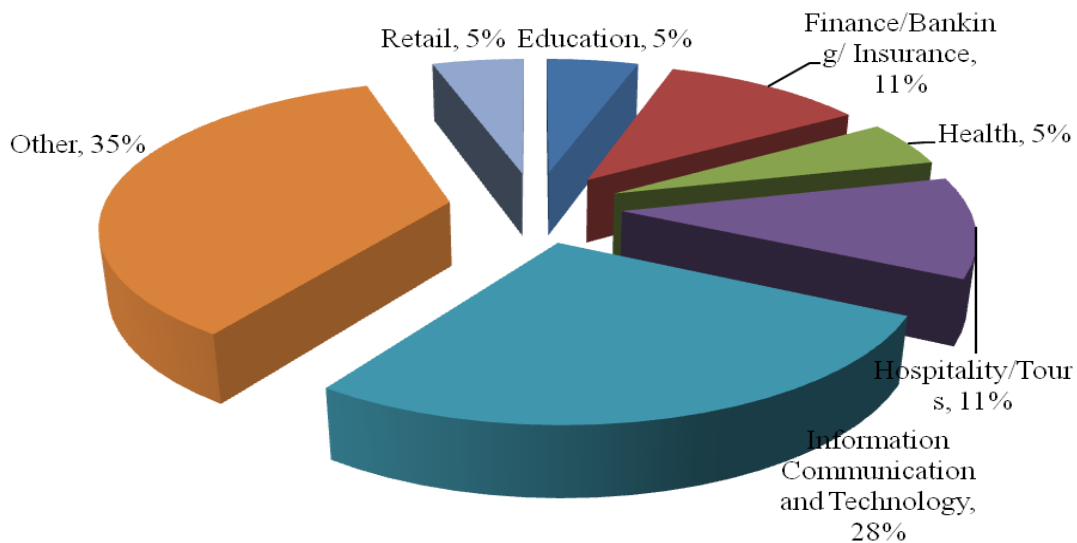


Figure 3. Industry distribution.

owned. Further 11% of the respondents stated that their companies were local with foreign ownership (joint venture), while 3% indicated that their organizations were multinational.

Size of the company

Figure 5 shows that 35% of the respondents indicated that their companies were medium (10 and 50 employees) and small (5 and 10 employees) respectively.

On the other hand, 30% indicated that their organizations were large (over 50 employees).

Annual turnover

Figure 6 shows that 8% of the respondents indicated that their annual turnover was USD 100,000-1,000,000 while 3% stated that their annual turnover was over 5,000,000 and less than 100,000, respectively. A big percentage of 68% did not indicate the turnover of their organizations.

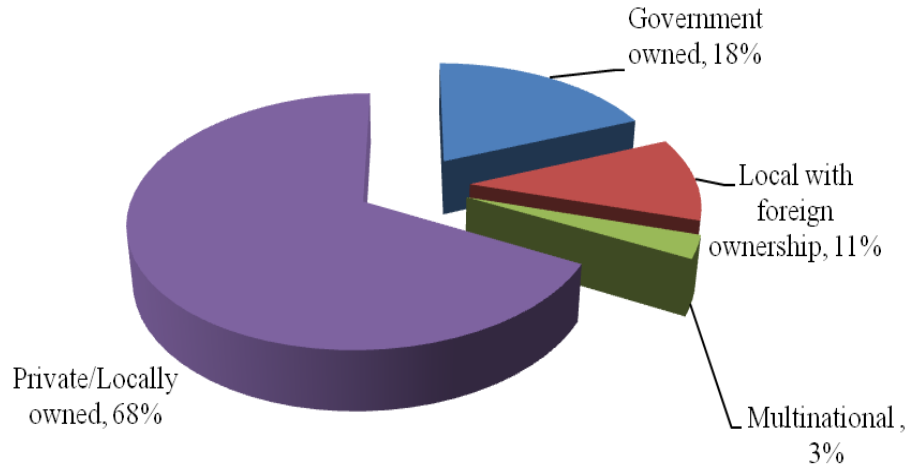


Figure 4. Types of organization.

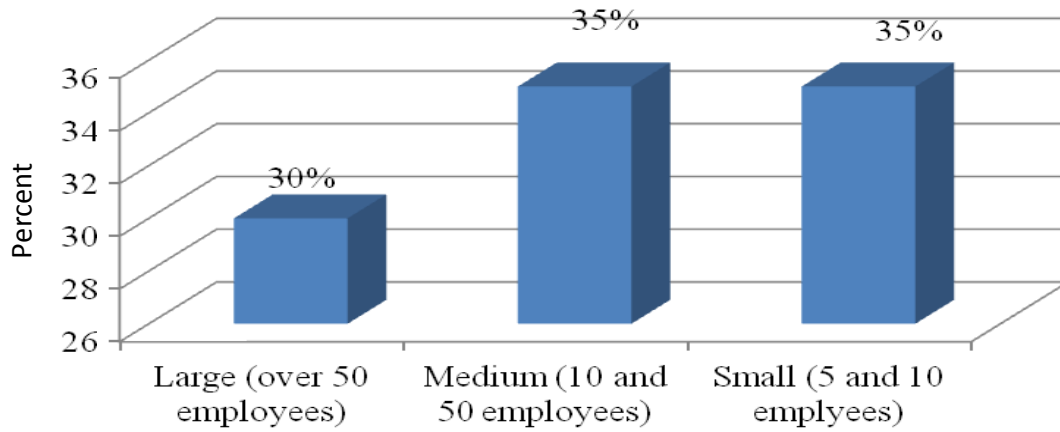


Figure 5. Size of company.

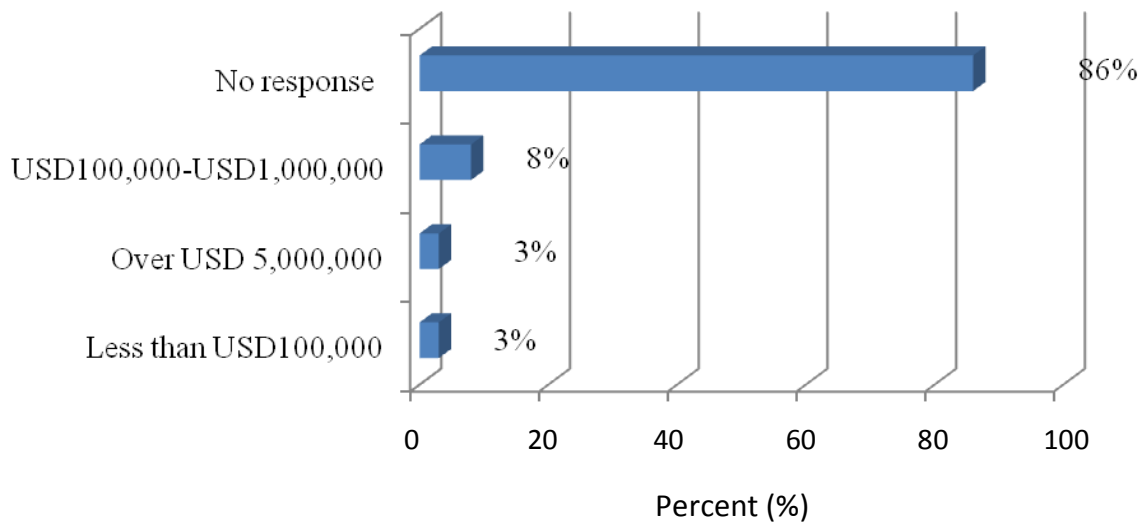


Figure 6. Annual turnover.

Table 2. Overall means and medians.

Variables	Mean	Median	Std Deviation
Economic situation	1.8595	1.8000	0.706794
Social situation	1.9243	2.0000	0.781602
Telecommunications infrastructure	1.9865	1.8889	0.622205
Legal and political situation	2.1892	2.1667	0.800173
Individual barriers	2.5811	2.6000	0.809258
Organizational barriers	2.8211	2.8750	0.903004

Table 3. Correlation analysis of the relationship between the e-commerce barriers.

	Economic situation	Social situation	Telecommunication s infrastructure	Legal and political barriers	Organizational barriers	Individual barriers
Economic situation	1	0.147	0.218	0.605(**)	-0.084	0.176
Social situation	0.147	1	0.132	0.253(*)	0.085	-0.025
Telecommunications infrastructure	0.218	0.132	1	0.342(**)	0.248(*)	0.145
Legal and political situation	0.605(**)	0.253(*)	0.342(**)	1	0.042	-0.047
Organizational barriers	-0.084	0.085	0.248(*)	0.042	1	0.355(**)
Individual barriers	0.176	-0.025	0.145	-0.047	0.355(**)	1
N	74	74	74	74	74	74

**Correlation is significant at the 0.01 level (2-tailed). *Correlation is significant at the 0.05 level (2-tailed).

The magnitude of the barriers

Overall means and medians of the perceived barriers are shown in Table 2. The lower the mean, the higher the perceived barrier. Thus, the most formidable barriers in order of magnitude are the economic, social barriers and telecommunication infrastructural barriers. These are all external barriers. The legal and political barriers are also perceived as moderate barriers, whereas the least perceived barriers are individual and organisational barriers.

Responses to the open-ended questions corroborated the quantitative measures. The biggest barriers cited by the respondents included: online security and cyber-crime (39%), internet connectivity speeds, and internet reliability (26%). Others cited taxes and tariffs (12%), internet cost (7%), internet interruption (3%) as barriers. Other barriers mentioned were communication costs, starting capital, and inability to attract strategic partners. Further there was the issue of infrastructure - poor roads, costly and erratic power supply. Poor service from government and local authorities (3%) were also mentioned as barriers to e-commerce. Bureaucracy and lengthy procedures (6%) during the initial stages of establishing online businesses also featured as barriers. Lastly some of the respondents indicated that internet was costly and responses were often slow especially in outer and remote stations far away from urban areas.

Some respondents indicated that they had to contend with customers who were not well versed with web technology.

The relationship among the barriers

Table 3 presents the correlation analysis of the factors acting as barriers to e-commerce adoption. The table shows that economic, legal and political and telecommunication infrastructure barriers, all external or macro factors are moderately and positively correlated with each other but are poorly correlated with organisational and individual barriers, implying that the two sectors – organisational and its external environment – are more or less independent of each other. On the other hand, organisational and individual barriers are moderately and positively correlated. It is important to note the positive correlation between organisational barriers and telecommunication infrastructural barriers, which means that as improvements in communications infrastructural development take place, there is greater likelihood that organisations barriers will diminish.

The following regression analysis model was obtained from the study findings:

$$Y = 0.275 + 0.322X_1 + 0.147X_2 - 0.277X_3 + 0.619X_4 + 0.164X_5 - 0.067X_6 \quad p=0.001,$$

whereby, Y is the magnitude of barriers facing E-Commerce, X_1 is economic situation, X_2 is social situation in Kenya, X_3 is telecommunications infrastructure, X_4 is legal and political environment barriers and X_5 is organizational barriers while X_6 is individual barriers. The model illustrates that when all variables are held at zero (constant), the value of the magnitude of barriers facing E-Commerce would be 0.275. However, holding other factors constant, a unit increase in economic situation barriers in Kenya would lead to a 0.322 increase in the magnitude of barriers facing E-Commerce, a unit increase in social situation barriers in Kenya would lead to a 0.147 increase in barriers facing E-Commerce. However, a unit increase in telecommunications infrastructure barriers would lead to a 0.277 decrease in the magnitude of barriers facing E-Commerce. Furthermore, a unit increase in legal and political environment barriers would lead to a 0.619 increase in E-Commerce barriers. Thus, the telecommunications infrastructure appears to hold the key to unlocking the barriers to e-commerce adoption and usage in Kenya. The results confirm that the barriers under consideration contribute individually and jointly to the magnitude of the barriers facing e-commerce in Kenya.

DISCUSSIONS

In accordance with the research objectives, the study findings have confirmed that the economic and social situations, telecommunications infrastructure, legal and political environments present the most formidable barriers to the adoption and diffusion of e-commerce in Kenya, whereas, by comparison, organizational and individual barriers pose less serious barriers to e-commerce businesses in Kenya. The findings of the study explain why e-commerce has developed at a slow pace resulting in e-businesses that do not fully capitalise on the opportunities brought about by the internet. These study findings are in agreement with previous studies which have been conducted on the development of e-commerce in Kenya and elsewhere in Africa. Jobodwana (2009) cited numerous factors which account for ICT underdevelopment such as the lack of basic economic infrastructure, reliable power supplies and national electrification; inadequate transport and basic telecommunication infrastructure; absence of skilled ICT personnel; lack of political will or initiative on the part of government; political instability; economic mismanagement; and poverty generally. Some of the challenges to e-commerce development identified by Kakooza (2009) included regulation, legislation on e-commerce and jurisdiction. According to UNCTAD 2003 Report, some of the reasons which had limited the development and adoption of ICT by developing countries included insufficient telecommunications infrastructure and Internet connectivity; absence of

adequate legal and regulatory frameworks; and shortage of requisite human capacity.

From the general comments of the respondents, the study findings indicated that e-commerce development is all the more depressing in far flung locations in the country. This indicates the existence of the digital divide between the urban and the rural Kenya, and also the low internet penetration in the latter.

RECOMMENDATIONS

For Kenya to develop e-commerce, it has to consider its role as a regional hub of economic, social and political economies of East and Southern Africa. In this context, the country has to develop its telecommunications infrastructure for it to achieve meaningful e-readiness that would make it competitive as a financial and technological hub. The government should create a business environment which is conducive to and encourages widespread prevalence of e-business practices countrywide. Costs of Internet connectivity should be made affordable which would further encourage penetration of Internet beyond the urban areas. The connectivity to the Internet and its speed should be enhanced by linking the country to the East African Submarine Cable System (EASSy) and other submarine fibre optic cables in the Indian Ocean connecting Africa to the outside world.

The government should implement in full the ICT Master Plan and enforce its overall policy statement on Internet pertaining to technical, economic and political perspectives. This will, among other things, create an enabling environment for e-business start-ups and incubation projects. A legal framework and regulatory guidelines for commercial transactions to handle cyber-crimes should be enacted and implemented in liaison with the neighbouring countries to ensure conformity.

At the organizational level, organizations should set e-commerce goals and objectives that are tied to their strategies. Training on e-commerce should be provided before new changes are implemented. This would attune employees' habits and thus minimise resistance and blocking of new changes in the organizations. It is necessary to conduct more studies like this, covering major sectors of the economy and the barriers peculiar to the sectors, using multiple methods of data collection.

Conclusions

That the external environment of organisations pose the most formidable barriers to e-commerce activities is the major finding of this study and it is a wake-up call for the government to intensify and accelerate the implementation of its well-crafted ICT Master Plan, upon which national and regional opportunities on e-commerce

greatly depend. Organisations themselves have to be e-commerce ready and individuals, as consumers and citizens, should also brace themselves to accept and use e-commerce, which is arguably the most innovative technologies of all time.

Conflict of Interests

The author(s) have not declared any conflict of interests.

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REFERENCES

- Chinweike U (2008). An E-payment system for local E-commerce. MSc Thesis. University of Nairobi.
- Darley WK (2003). Public policy challenges and implications of the Internet and the emerging e-commerce for sub-Saharan Africa: A business perspective. *Information Technology for Development*, 10(1):1–12.
- Gikandi JW, Bloor C (2010). Adoption and effectiveness of electronic banking in Kenya. *Elect. Commerce Res. Applications*. 9(4):277–282.
- Goyal KA (2006) Impact of Globalization on Developing Countries (With Special Reference To India), *Int. Res. J. Finance Econ.* ISSN 1450-2887 5:2006. <http://www.eurojournals.com/finance.htm>.
- <http://sru.soc.surrey.ac.uk/SRU35.html> accessed 23rd November 2011
- <http://www.analytictech.com/mb313/principl.htm> accessed 21st January 2012
- <http://www.eac.int/statistics/> accessed 4th October 2011
- <http://www.e-aseantf.org> accessed 4th October 2011
- http://www.icbl.hw.ac.uk/tdi/cookbook/info_questionnaires/index.html accessed 21st January 2012.
- <http://www.knbs.or.ke> accessed on 4th October 2011
- <http://www.newagepublishers.com> accessed 20th June 2012.
- <http://www.robabdul.com/individual-and-organizational-barriers-to-change-management-resistance.asp> accessed 5th January 2012
- Jobodwana ZN (2009). E-Commerce and Mobile Commerce in South Africa: Regulatory Challenges. *J. Int. Commercial Law Technol.* 4(4):287–298.
- Kaburia PT (2004). E-payment systems and alternatives for developing countries. MSc Thesis. University of Nairobi.
- Kakooza ACK (2009). Embracing E-Commerce in Uganda: Prospects and Challenges. *University Law Review*, 1:2.
- Kenya National Information and Communications Technology Sector Master Plan 2008 – 2012.
- Kisonzo SM (2001) The impact of electronic commerce on business in Kenya. MSc Thesis. University of Nairobi.
- Kolawole FR (2001). E-commerce: an implementation framework for re-insurance with a model web site. MSc Thesis. University of Nairobi.
- Kongongo TO (2004). An assessment of organizational B-2-B e-business readiness and status: the case of a multinational manufacturing enterprise. MSc Thesis. University of Nairobi.
- Kraemer KL, Jennifer GJ, Jason DJ (2002) Impacts of Globalization on E-Commerce Adoption and Firm Performance: A Cross-Country Investigation.
- Lane MS, Van Der VG, Delpachtra S, Howard S (2004). An Electronic Commerce Initiative in Regional Sri Lanka: The Vision for the Central Province Electronic Commerce Portal, *The Electronic J. Info. Syst. Developing Countries* 16:1-18.
- Mureithi M (2002). Telecommunications policy in transition: mainstreaming Kenya into the global information economy, *Institute of Economic Affairs*.
- Musau F, Cheruiyot W, Mushi JC (2011). Trust and Its Challenges Facing E-Government Programs in Kenya. In *Computer and Management (CAMAN)*, 2011 International Conference on pp. 1–4.
- Nadler DA, Tushman ML (1980) "A Model for Diagnosing Organizational Behaviour" *Organizational Dynamics*. Autumn, pp.35-51.
- Neuman WL (1997). *Social Research Methods: Qualitative and Quantitative Research Approaches*. Boston: Allyn and Bacon.
- Ngila S (2007). Mobile phone as an electronic wallet : A case study of Kenya. MSc Thesis. University of Nairobi.
- Pare D (2002). B2B e-commerce services and developing countries: disentangling Myth from reality. In *Association of Internet Researchers International Conference*. Prentice Hall. pp. 13–16
- Rwigema H, Venter R (2004). *Advanced Entrepreneurship*. Cape Town. Oxford University Press – Chapter 18.
- Sakari C (2006). African perspective on critical success factors for B to B electronic market places. MSc Thesis. University of Nairobi.
- Sanayei A (2003). Globalisation and e-business. *Iranian J. Information Sci. Technol.* 1:1.
- Saunders M, Lewis P, Thornhill A (2000). *Research Methods for Business Students*. Second Edition. London: Prentice Hall.

APPENDIX 1

* Required

Please complete the following questionnaire. The project aims to understand the magnitude of barriers facing e-commerce businesses in Kenya. Your identity and responses will remain anonymous.

SECTION A:**ABOUT YOUR COMPANY**

Company name: *

E-mail: *

Your Name: *

Your Title/Position: *

- C.E.O
- IT/E-Commerce Manager
- Other:

Town/County: *

Please answer the following questions by choosing the most appropriate answer.

1. In which industry is your company? *

- Information Communication and Technology
- Education
- Finance/Banking/Insurance
- Health
- Manufacturing
- Hospitality/Tours
- Retail
- Other:

2. What is the type of your organisation? *

- Private/Locally owned
- Government owned
- Multinational

- Local with foreign ownership (Joint Venture)
- Other:

3. What is the size of your company? *

- Very small (1 and 5 employees)
- Small (5 and 10 employees)
- Medium (10 and 50 employees)
- Large (over 50 employees)

4. What is the annual turnover (in US Dollars) of your organisation?

- Less than USD 100,000
- USD 100,000 - USD 1,000,000
- USD 1,000,000 - USD 5,000,000
- Over USD 5,000,000

Using the 5-point scale given below, please rate the statements in sections B, C, D, E, F and G by choosing the appropriate rating KEY: 1 - Strongly Disagree (SD) 2 – Disagree (D) 3 – Neither Agree nor Disagree (U) 4 – Agree (A) 5 – Strongly Agree (SA)

SECTION B:

The economic situation in Kenya. *

	SD	D	U	A	SA
The level of e-literacy in Kenya is high	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Business environment is conducive in Kenya	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Business and industry function efficiently in Kenya	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Prevalence of e-business practices is widespread in Kenya	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Your revenue comes from on-line business	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Connectivity speeds to the Internet are fast	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Internet penetration beyond urban areas is good	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Power and transport networks support business well	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Privatisation, deregulation and trade liberalisation have created an accommodating climate for business	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

SECTION E:

Legal and political environment in Kenya. *

	SD	D	U	A	SA
There exists suitable legal framework and regulatory guidelines for commercial transactions to handle cyber crimes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The government encourages creation of new firms based on new technology products and services	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The government enforces improving of ICT skills of the workforce in the country	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
There is an enabling environment for e-business start-ups and incubation projects	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The government encourages and supports use of electronic documents and has developed infrastructure for e-payments, e-contracting, customs and taxation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

An overall policy statement on e-commerce exists in the country covering technical, economic and political perspectives

SECTION F:

Organisational barriers. *

	SD	D	U	A	SA
The goals and objectives of our organisation are well spelt out	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The organisation has sufficient working capital to support new initiatives	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Resources are allocated fairly to all departments	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The organisational structure facilitates good working relationship	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Internal communication channels are well laid down	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The top management supports and encourages innovative ideas	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Training is always provided before new changes are implemented	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The organisational culture moves with the times	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

SECTION G:

Individual barriers. *

	SD	D	U	A	SA
Employees' habits do not block new changes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Job security is not threatened by new changes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
New changes are seen as job enriching	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Employees handle all new situations with an open mind	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Level of literacy contributes to support of new changes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>