

**THE INFLUENCE OF ADOPTION OF INFORMATION
TECHNOLOGY AS A STRATEGIC TOOL FOR COMPETITIVENESS BY
THE MINISTRY OF TRANSPORT AND INFRASTRUCTURE IN KENYA**

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DECLARATION

This research project is my original work and has not been presented for the award of degree in any other university or institution for any other purpose.

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This research project has been submitted for examination with my approval as University supervisor.

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DEDICATION

I dedicate this work to my wife Rossy for her patience as I stayed late on the reading table putting this report together, my children CJ, PJ and BJ for the joy they gave during my study breaks on Sunday evenings. Their continuous support, prayers and encouragement were a source of strength during my study.

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ABSTRACT

Information technology (IT) has become one of the most critical factors for organizations to leverage efficiency, competitiveness and innovation. This study sought to establish the influence of information technology as a strategic tool for competitiveness in the Ministry of Transport and Infrastructure in Kenya. The research design was a case study. The study used primary data which was collected using an interview guide. The respondents were policy makers and senior officers in the ministry. The data was analyzed using content analysis. The study found high usage of information technology with noted numerous benefits like reduced costs in supply chain management, efficient communication, improved security as arising from the application of biometric authentication scanners in all entrances and exists to monitor when users report to and leave from work place. The study further established that IT has enabled the ministry to better manage both human and technical resources, introduce tracking system to manage its fleet of vehicles, plant and equipment while Government Human Resource Information Systems (GHIS) has made it possible for employees to receive their pay-slips electronically via computers and smart-phones. In addition, the system has an online leave application module. Easy access to information both to staff and customers was noted as one of the major cost reduction area as the ministry continued to move closer a full paperless organization. Integration of various departments through network connectivity was also found to be a source of great competitiveness for the ministry. The study thus established that adoption of information technology as a strategic tool had greatly influenced the competitiveness of the Ministry of Transport and Infrastructure in Kenya.

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CHAPTER ONE: INTRODUCTION

1.1 Background of the Study

Globalization and internationalization have significantly increased competition in various sectors of the world economy. These phenomena have been greatly accelerated by the recent rapid developments in information technology. Information technology (IT) has thus become one of the most critical factors for an organization to increase its efficiency, competitiveness and innovation (Kalkan *et al.*, 2011). However, merely investing in the state of the art IT cannot ensure the realization of these benefits to an organization. Rather, only if the IT strategy has been properly aligned with the business strategy of an organization, then the competitive advantages can be materialized, and hence the performance of the business can be uplifted (Hussin and Suhaimi, 2011). In order to be successful, organizations must be strategically set. They must understand how changes in their competitive environment are unfolding. They should actively look for opportunities to exploit their strategic abilities, adapt and seek improvements in every area of the business, building on awareness and understanding of current strategies and successes.

In an increasingly globalized economy, information technology is one of the key determinants of competitiveness and growth of firms and countries (Hussin and Suhaimi, 2011). Firms are becoming more competitive on the basis of their knowledge, rather than on the basis of natural endowments or low labor costs. It is becoming increasingly apparent that the role of traditional sources of comparative advantage (a large labor force and abundant natural resources) in determining international competitiveness is diminishing. The competitive and comparative advantages of countries are gradually being determined by access to information technology and knowledge. In order to survive and thrive in this growing competitive international market, companies, government departments and countries must be flexible and be able to meet the needs from customers by providing a lower-cost product or service and continually improving on the cost, quality, and reliability of products and/or services rendered (Jiang *et al.*, 2012).

The Ministry of Transport and Infrastructure (MoTI) finds itself quite strategically placed to play a key role in the country's competitiveness regionally, continentally and globally. This is because Kenya's economy remains the most vibrant within the family of East African countries and through the port of Mombasa the country remains the undisputed gateway to Eastern and Central Africa which has recently grown to cover even the newest state of the Republic of South Sudan. The vibrancy is aided by the presence of good ports at Mombasa and Lamu, well maintained airports that are reasonably well connected by good road and railway network. Thus the competitiveness only becomes leveraged enough if these components of transport and infrastructure are integrated in a way that makes their operations not only efficient but also cost effective and customer friendly in order to fend-off the challenges coming from the ports of Dar-es-salaam in Tanzania and Durban in South Africa. Effective integration can only be achieved on attainment of an environment where information and data is created, transferred and warehoused in a seamless manner not only between the various business units but also between the organization and its customers.

1.1.1 Concept of Strategy

A strategy is a framework through which an organization can assert its vital continuity whilst managing to adapt to the changing environment to gain competitive advantage (Ansoff, 2002). It is a mediating force between the organization and its environment through which consistent streams of organizational decisions are developed to deal with the environment. On the other hand strategic management is a systematic approach to the major and increasingly important responsibility of general management to position and relate the firm to its environment in a way which will assure its continued success and make it secure from surprises. Gole (2005) proposes that strategic management is a process, directed by top management to determine the fundamental aims or goals of the organization, and ensure a range of decisions which will allow for the achievement of those aims or goals in the long-term, while providing for adaptive responses in the short-term. The three core areas of corporate strategy as outlined by Gole (2005) encompasses: strategy analysis, strategy development and strategy implementation. Strategy must be judged on its performance and effectiveness to meet the overall vision, mission and objectives. A strategy is not an end by itself but a means to attain the stated goals.

A company's strategy consists of the business approaches and initiatives it undertakes to attract customers and fulfill their expectations, to withstand competitive pressures and to strengthen its market position. These strategies provide opportunities for the organization to respond to the various challenges within its operating environment. Firms also develop strategies to enable them seize strategic initiatives and maintain a competitive edge in the market (Porter, 1985). The core of a company's marketing strategy consists not only of its internal initiatives to deliver satisfaction to customers but also includes offensive and defensive moves to counter the maneuvering of rivals, actions to shift resources around to improve the firm's long term competitive capabilities and market position, and tactical efforts to respond to prevailing market conditions. Strategy helps to achieve success whether in business or otherwise, success in this context refers to the realization of objectives that are desired. Effective strategy is formulated around four factors namely: the goals and objectives are simple, consistent and relate to the long term; there is profound understanding of the competitive environment; there is an objective appraisal of the resources available and; that there is effective implementation (Hitt *et al.*, 2008).

1.1.2 Organizational Competitiveness

Competitiveness is the ability of companies, industries, regions, nations, and supranational regions to generate, while being and remaining exposed to international competition, relatively high factor income, and factor employment levels on a sustainable basis (Gulati, 1999). Porter *et al.*, (2006) believes that competitiveness is the underpinning of prosperity, based on productive potential of a nation's economy, which in turn is ultimately set by the productivity of its companies determined by sophistication of company operations and strategy and quality of microeconomic business environment. A firm's sustainable competitiveness derives from its ability to assemble and exploit an appropriate combination of resources. It is achieved by continuously developing existing and creating new resources and capabilities in response to dynamic market conditions (Barney, 2007).

A competitive industry is one that possesses the sustained ability to profitably gain and maintain market share in domestic and foreign markets (Traill and Pitts 2007). Thus, sectoral competitiveness has its own role to play between business and national competitiveness. While business competitiveness mainly depends on the institutional design of the particular

company, national competitiveness, broadly speaking, depends on the history and political economy of the country. Regional competitiveness, as the authors cited above show, is a bit more difficult to grasp, but can be as different from the national average as the institutional framework of regions may deviate within a nation. Within the context of economic globalization in the international market, every country is trying to generate competitive advantage in various sectors to improve the international competitiveness of their product and expand market share. Industrial competitiveness is a country's specific industry's ability to be able to provide the need to meet product demand to the international market and gain profits continuously, by its more advanced capacity and production efficiency compared with other countries in the free trade international market (Zhao and Wen, 2004).

Global competition demands a higher level of capacity to maintain or increase steadily the performance of the business. Managers or owners of management skills are very limited and therefore must be improved so that companies are able to successfully implement business strategies that will improve their competitiveness (Vos, 2005). However, there are several disagreements about the competitiveness measurement due to the used indices. Also, studies of competitiveness have a tendency to use economic parameters as synonymous, as trade performance and real exchange rates, terms of trade, relative labor costs, growth in GDP per capita and growth of productivity factor (Ezeala-Harrison, 2005). Competitiveness can be measured through seven indices: nature of competitive advantage, capacity for innovation, the brand extension, restriction of the regulations of the environment, quality in the education of mathematics and science, quality in the education system, and ease of access to credit (Ezeala-Harrison, 2005). Another study of the measurement of business competitiveness presented by Fendel and Frenkel (2005), did not specify how the performance measurement should be done but noted it to have eight rates for their calculation namely; physical infrastructure, human capital, efficiency of goods market and work, efficiency of financial market, technological development, opening and market size, sophistication of business, and innovation, thereby reducing its application.

1.1.3 Information Technology

According to Muneesh (2003), information is knowledge that one derives from facts placed in the right context with the purpose of reducing uncertainty regarding the alternative courses of action in the process of decision making. Availability of information regarding the alternatives improves the odds in favour of making a correct decision. Information is recognized as one of the most important corporate resources. It is a source of corporate strength as it enables the management to outmaneuver business rivals at critical stages. Information as a corporate resource has some distinct characteristics key among them being: value addition, just as value is added to product along the process; specific cost, thus requiring efficient usage; shared value to those involved in the attainment of the organization objectives; security risk requiring protection without hindering seamless flow among various users; user specific; and time value meaning it must get to the user in a timely manner while at the same time redundant and obsolescent parts are removed or updated.

Information technology refers to hardware, software, procedures, personnel, and data employed in the production, dissemination, and utilization of information, both formal and informal, in an organization (Diez et al., 2009). While traditionally IT has included only “formal” information systems, such as reporting systems generated by a database, increasingly IT is used to facilitate informal interpersonal communication. The key technologies include computers, computer-controlled devices, and telecommunications networks; also included are electronic mail (E-mail), teleconferencing, voice mail, and facsimile transmission. Information technology not only consists of tangible pieces of equipment and programs but also represents the capacity of the organization to produce, disseminate, and digest information (Almajali and Dahalin, 2011). Information technology has been used in a number of ways including the mechanization of information processing, the augmentation of knowledge work, and the support of coordination in the organization.

Information Technology (IT) has transformed the entire corporate strategy of many firms and as a consequence, their business and functional strategies have had to be revised. While this may be disastrous for some companies, if a company excels at this then it would have dramatically positioned itself as a leader in the 21st century (Raymond and Bergeron, 2008).

Information technology along with electronic commerce has transformed the common market space to the boundary-less world of cyberspace. This rapid response to change has put more pressure on information system departments to develop new systems faster and to demonstrate superior existing systems. Information technology increases the ease of connection between individuals, organizational units, and even different organizations (Silvius, 2009). Applications such as electronic mail, voice messaging, and facsimile transmission facilitate the communication and coordination of information required for organizational product and service processing. The bigger the organization, the more complex the requirements might be needed. Some terms used for this class of applications are: interpersonal computing, coordination technology, groupware, and computer supported groups.

1.1.4 The Structure of Government of Kenya and the Ministry of Transport and Infrastructure

As currently established, the Executive of the Government of Kenya consists of eighteen ministries headed by Cabinet Secretaries and a State Law Office headed by the Attorney General (Appendix II). Ministry of Transport and Infrastructure (MoTI) is among the key Government departments created by bringing Roads Department in the former Ministry of Roads to the former Ministry of Transport following the Government's effort to rationalize its operations in accordance with the Constitution of Kenya 2010 that limited the number of ministries to a maximum of twenty two and a minimum of fifteen.

The ministry consists of two departments namely Transport and Infrastructure and is mandated to undertake the following operations: development, standardization and maintenance of roads; rail transport and infrastructure management; maritime transport management; civil aviation management and training; national transport and safety policy. The ministry comprises of several institutions that undertake transport and infrastructure activities in the country. The Ministry therefore handles a range of operations of varying complexities in varying environments, interacting with equally varying customers thus managing complex processes involving big volumes of information and data transfers and warehousing.

1.2 Research Problem

Since the advent of information technology, many organizations world over have injected massive investments in the development of their technological capacity without realizing optimum returns on such investments. Information systems and information technologies are the backbone of any organization doing business regardless of their size, age, complexity whether public or private. It is therefore imperative that these technologies be leveraged maximally so that a company can compete in today's global environment (Raymond and Bergeron, 2008). One of the principal tasks of an organizations management is ensuring that an organization competes effectively in the marketplace and this can be achieved through development of adoption of information technology as a strategy.

A sound business strategy is central to the success of an organization as well as creation of a superior value. It is therefore imperative that for an organization to be assured of its long term sustainability, its management should endeavor to come up with appropriate strategies to face the challenges present in its operating environment (Hunt and Morgan, 2009). One of the strategies that an organization can undertake is to adopt the use of information technology as a strategic tool in order to ensure that there is faster communication and reduction of costs. What matters is not a company ownership of hard assets but rather its ability to fully utilize them to capture the worldwide business opportunities (Nadkarni and Narayanan, 2007).

Government's dependence on information technology has accelerated during the last two decades. Developments in technology have created opportunities for government to deliver greater efficiency, while keeping pace with citizens' rising expectations about how they want to engage with government and access public services and information online. IT has however not been implemented fully in government ministries and this hampers effective discharge of services to the citizens. The country's economy largely depends on transport and infrastructure and thus in order to ensure that the country remains competitive in the region, the ministry has to ensure that it effectively adopts information technology as a strategy.

Several studies have been done in the area of information technology as a strategic tool on organizational competitiveness. Onchwari (2012) who researched Information technology and competitiveness of commercial banks in Kenya established that commercial bank's

overall performance was influenced by information technology adoption specifically in marketing, credit, finance, Information Communication Technology departments, customer relations and human resource departments. The study revealed that adoption Information Technology enhanced competitiveness as it enabled the bank to practice a robust retail-banking, automated banking and other financial services, and retain customers through strengthening customer relationships.

Similarly, Yegon (2012) worked on the impact of information technology on organizational performance at the Kenya Commercial Bank Group and established that some of the internal benefits of information technology included cost reduction, improved customer services, process and people efficiencies and better employee performance. Other studies done on area of information technology include, research on the role of information technology in strategic management at the Power Technics Limited Kiroga (2011). The findings of the study were that adoption of IT has enormous contribution and influence to the strategic management of the organization. He also found that the firm was able to maintain highest level of efficiency thereby enabling it to cut cost on the day to day operations. He observed that the firm majorly used information technology in the following ways; gathering of information from various organizational stakeholders, sharing of information with various organizational stakeholders, analysis of information, evaluating changing strategies, implementation of strategy and strategy control and evaluation.

The findings indicate that there is no study that has been undertaken on the influence of adoption of information technology as a strategic tool on the competitiveness by the Ministry of Transport and Infrastructure in Kenya. This research therefore seeks to establish how the adoption of information technology as a strategic tool has impacted on the competitiveness of the Ministry of Transport and Infrastructure in Kenya.

1.3 Research Objectives

The objective of the research was to establish the influence of adoption of information technology as a strategic tool for competitiveness by the Ministry of Transport and Infrastructure in Kenya.

1.4 Value of the Study

The findings of the study was of value to the ministry's policy makers as it informed them to what extent has the Ministry used or can use information technology as a key success factor to attain competitiveness for effective discharge of its mandate. Other ministries may also use the findings to know the extent to which they can leverage information technology as a strategic tool for competitiveness.

This study also creates a monograph which could be replicated in other sectors of the economy. Most importantly, being a new ministry managing huge national investments and interacting with various other sectors of the economy, it is hoped that the findings would be valuable to the academicians, who may find useful research gaps that may stimulate interest for further research in future. Recommendations were made on possible areas of future studies.

The study also adds value to the studies and practice on stakeholder relationship and more so the transaction cost theory in the sense that the study looked in more detail on the benefits of adopting information technology as a strategic tool for competitiveness.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

This chapter provides a review of literature related to the study. An overview of theoretical foundation of the study, organizational competitiveness, determinants of strategic utilization of information systems and the influence of information technology on competitiveness will be discussed.

2.2 Theoretical Foundation of the Study

Various theoretical approaches in the field of business administration have tried to explain the link between information technology, value creation, and obtaining and maintaining competitiveness. This study is anchored on Resource Based Theory. The resource-based view regards the firm as a cognitive system, which is characterized by idiosyncratic and context-dependent competences that are core to strategic purpose. These are conditioned by hierarchical capabilities, or sets of routines, involved in the management of the firm's core business processes that help to create value. Competences typically involve the development of specialist expertise, and firms may become locked into a trajectory that is difficult to change effectively in the short to medium-term (Amit and Schoemaker, 1993). The premises of the resource-based view is that successful firms develop distinctive capabilities on which their future competitiveness will be based; which capabilities are often idiosyncratic or unique to each firm, and may also be tacit and intangible in nature like knowledge (Teece *et al.*, 2007).

Competitive asymmetry and pre-emption potential are the primary factors that contribute to sustaining an IT-enabled competitive advantage (Feeny and Ives, 2006). Generic lead-time affects how long a firm has before competitors can respond with a similar application. Selection, implementation, and adoption of the appropriate IT is a necessary condition for the success of such a strategy. During the last fifteen years strong evidence and managerial belief have shown that information technology is effectively deployed a firm gains superior performance (Sambamurth, 2000).

The theoretical argument that sustainability is possible can be attributed to certain IT resources and capabilities that are difficult to imitate. When an IT-enabled strategy is combined with such resources and capabilities, firms will be able to gain a sustained competitive advantage through barriers to entry, switching costs, and mobility barriers (Dyer 2007). These may include managerial IT skills, technical IT skills, and IT infrastructure.

IT-enabled strategy is a corporate strategy that uses IT at its core to support and enable major economic activities performed by the firm. Theoretical and empirical evidence indicates that companies implementing an IT-enabled strategy are able to gain a competitive advantage over their direct competitors (Andersen, 2011). The IT Infrastructure consists of all type of communication technologies and computers as well as the shared applications and the databases (Bharadwaj, 2000). In contrast with the aforementioned studies, this resource is considered as the base of a sustainable competitive advantage. Following Broadbent and Weill (2007), although the individual elements that form the IT Infrastructure of the company are available in the market, the integration of those components to develop this infrastructure, adjusted to the strategic context of the company, is a complex process and imperfectly understood.

2.3 Competitiveness for Sustainable Performance

Competitiveness for sustainable performance is achieved through constant improvement and upgrading. It allows the maintenance and improvement of the enterprise's competitive position in the market that enables business to survive against its competition over a long period of time.

Competitiveness has become a prominent business and government concern in the era of globalization. Competitiveness is a multi dimensional concept in the sense that being competitive requires superiority in several aspects. Competitiveness depends on the capacity of domestic industries to innovate and upgrade (Djankov and Hoekman, 2011). According to Porter (1990), competitiveness depends on strong domestic rivals, aggressive home-based suppliers and demanding home markets. It calls for domestic firms to adopt highly efficient

and productive methodologies such as faster innovations, effective marketing strategies and most appropriate labour-capital-resource combinations in production activities.

Besides costs, quality and flexibility, fast delivery and good service are competitive priorities (Davis, 2001). Delivery is related to the speed factor, because it entails supplying products quickly, while service involves the way products are delivered and accompanied after sales. He also points to another priority, consisting of offering products that do not harm the environment and that are produced by processes with the same characteristic. Starting from the notion of critical factors for competitiveness, it is possible to note the close relationship they have with a firm's success. Knowledge of the competitiveness factors will allow the organization to work in harmony with the demands of its environment, structure itself correctly, reduce uncertainties and perform better. The critical factors of information and communication technologies that improve national competitiveness have been categorized into the following three dimensions (Blanke and Geiger, 2008): Creating an information society for all, that measures the extent to which an economy has harnessed the new information and communication technologies for sharing knowledge and enhancing the productivity of its industries; Developing an area for innovation, research and development in order to make countries to have the necessary framework to ensure that they are ahead of innovation in products and processes; Building network industries in telecommunications, utilities and transportation aimed at improving efficient functioning of markets.

2.4 Determinants of Strategic Utilization of Information Systems

Information technology (IT) has been generally recognized as one of the greatest human inventions of modern times. When it was first conceived, its original intention was to automate manual and pre-computer mechanical processes in order to reduce the errors that occur in such processes as a result of fatigue and inconsistencies in human nature and character. However, strategic utilization of IT was definitely going to be driven by several other determinants as discussed below.

2.4.1 Technological Factors

The technological factors relates with the perceived characteristics of technology. The technological factors that are found to have impact on IT utilization, IT effectiveness or IT adoption include IT facilities, IT integration, IT structure, IT competency and user-technical support. Information technology infrastructure is generally considered to be the foundation of shared IT capabilities that enable the development of IT applications and the support of business processes. Ang et al., (2001) noted that IT facilities are influential in determining the success of IS adoption and implementation. IT facilities are said to be related to IT competitiveness i.e. utilization Djankov and Hoekman (2011). IT structure relates to the extent to which IT are structured or dispersed throughout an organization and influences competitiveness of IT in organizations as it determines the degree to which IT is centralized or decentralized. Centralized IT denotes that the allocation of all IT resources to one particular business unit that provides IT services to the whole firm (Neumann, 2004). In contrast, decentralized IT gives individual business units autonomy over their own IT resources without any major considerations over other units unless it is essential to the overall organization policy. Previous studies on IT competitiveness have shown that decentralized IT environment is strongly related to IT use and success (Ang *et al.*, 2001).

Another study in an e-government computing environment found strong co-relation between distributed IT structure and four dimension of IT competitiveness i.e. information quality, systems quality, service quality and perceived usefulness (Hussein, 2004). Information technology personnel should be well-versed in the combination of technical competencies, boundary competencies and functional competencies (Kobelsky *et al.*, 2008). Technical competencies denote a set of measures of technical capabilities such as programming, understanding software development process and knowledge of operating systems. Boundary competencies relates to the importance of IT personnel having skills and knowledge to assume roles outside their area of training or original competencies which include project management and business process support. Functional competencies is concerned with the ability of the IT personnel to understand the business processes they are to support and apply the appropriate technical solution to a given business problems. IT personnel facilitates boundary spanning and help organization react to changes as well as providing necessary

connectivity and modularity that enable rapid organizational response to changes (Leckey et al., 2011). In the same research, the findings reveal that IT personnel contribute significantly to the extent of IT implementation. The identified elements among the critical user support include participating in design planning, software upgrades, IT staff response time, improved personal productivity, user training, documentation, development support, hardware standards, hardware upgrades, system downtime, system response time and cost-effectiveness (Kobelsky *et al.*, 2008).

2.4.2 Organizational Factors

The organizational factors that are found relevant and have contributing effect towards strategic IT utilizations include firm size, top management support, functional integration, slack resources and information intensity. Prahalad and Krishnan (2002) revealed that firm size is one of the most researched factors in organizational adoption of technology. Studies conducted in Malaysia also confirmed that firm size has contributing effect on technology implementation (Neumann, 2004). The reason why larger organizations are more inclined towards technology adoption could be associated with their resource capabilities. Financial performance was found to be closely related to firm size. However, it was argued that organizational size per se has no compelling rationale linking it to innovation adoption; rather it serves as a proxy for other variables, such as slack resources, education and professionalism, specialization, and scale (Blanke and Geiger 2008).

The role and impact of top management support has been vastly researched in diverse IT implementation setting. Past studies done in Malaysia have shown that top management support is influential in ensuring the success of the implementation of internet, public management information systems, enterprise resource planning, and accounting information systems (Rivard *et al.*, 2004). High degree of managerial support for IT implementation will not only demonstrate commitment and continuous support for the project but also develop appropriate implementation environment by providing necessary resources such as time, space, equipment and people. The organization is divided into multiple divisions or departments through a process of differentiation (Weill and Aral, 2006). Differentiation transpires due to the need of organizational units to focus on a different set of conditions outside of the firm coupled with the needs to specialize. Specialization leads to differences in attitude of managers, along the four dimensions of goals,

time orientation, interpersonal orientation, and structural formality. Hence, specialization increases the challenge and problems of functional integration (Leckey et al., 2011).

2.4.3 Environmental Factors

Past studies have investigated various environmental factors that contribute to the adoption and implementation of various IT. Among the factors explored are environmental uncertainty and external pressure. The degree of uncertainty in the environment can arise from heterogeneity of products and services, dynamism of the environment, and perceived environmental competitiveness in the environment (Tung and Rieck, 2005). Environmental heterogeneity creates the need for organizations to compete less on cost effectiveness due to many dissimilar products/services, but more on innovation and differentiation of products and services (Davis, 2001). It is argued that in order to function in highly uncertain environments, organizations engage in greater sensing and search, and hence uncertainty has been found to be positively related to technological adoption and utilization (Leckey *et al.*, 2011). The study further assert that adoption and utilization decision, in particular, is likely to be viewed as a way to cope with uncertainty, as it provides a structured means of sensing the environment, gathering information, identifying alternatives, and quantifying unknowns.

External pressure influence the firm's adoption of IT via competitive pressure from trading partners (Iacovou *et al.*, 2005). External pressure can stem from a variety of sources, including competitors, the government and consultancy firms. If a firm's competitors, suppliers or customers are adopting some types of IT, this results in pressure for non-adopters to also adopt similar IT. This pressure is caused by the perception that adopters will have certain competitive advantages by using certain systems. Depending upon the intensity of the pressure, the type and need for implementing IT varies across organizations

2.5 Influence of Information Technology on Competitiveness

A strategic IT helps organization gain competitiveness through its contribution to the strategic goals of an organization and/or its ability to significantly increase performance and productivity. Turban *et al.*, (2006) believes IT enabled companies tend to gain

competitiveness thus benefit greatly at the expense of those that are subject to competitive disadvantage.

They said competitiveness in the digital economy is even more important than in the old economy. The impact of the digital economy is revolutionary for some organizations.

Frequent changes in technologies and markets and the appearance of new business models can introduce radical changes in industry structure and the nature of competition can shift rapidly (Afuah and Tucci, 2003). At the same time, the digital economy has not changed the core business of most firms. For most businesses, internet technologies simply offer the tools, sometimes very powerful tools, which can increase their success through their traditional sources of competitiveness be it low cost, excellent customer service, or superior supply chain management.

Organization IT should be considered as technologies helping manage and optimize the company's business processes, ensure partial or full automation of the personnel activities, optimization of resource management, improve quality of the company's activities and ensure important information management for adopting decisions (Rogers et al., 2011). Bhatnagar (2006) believes the advances in IT have affected the lives of most of the human beings in their day-to-day lives, but the strategic IT may deliver a product or service that is at a lower cost, that is differentiated, that focuses on a particular market segment, or is innovative. With the passage of time, the technology has evolved immensely and so have the opportunities.

Information technology is being used in the business activities for improving the efficiency and effectiveness of the people and the business on the whole. When an IT-enabled strategy is combined with certain IT resources and capabilities that are difficult to imitate, firms will be able to gain a sustained competitiveness through barriers to entry, switching costs, and mobility barriers (Mata *et al.*, 2005). A combined analysis of various authors in the business administration area show an emphasis on the following factors that determine competitiveness; quality, cost, flexibility and reliability (Stevenson, 2001).

Information technology may also play an important role in reducing the transaction costs associated with the provision of public goods and with redistributive transfer payments. Citizens, especially in developing countries, typically incur private costs (often substantial) in availing of government-provided services (Dedrick *et al.*, 2004). Reducing these costs require the internal use of IT by government, as well as enabling the beneficiaries of government services particularly the economically disadvantaged to access IT resources. While governments may invest in such front-end interfaces with citizens as has been the case in developed countries, the cost of doing so for governments in developing countries may be prohibitive. Such governments typically already have difficulties in raising sufficient resources through taxes and user charges for traditional public sector activities. However, successful examples of implementation of ‘e-governance’ initiatives do exist.

Information technology-based knowledge management creates a flexible competitive advantage that is hard to imitate, because it goes beyond the limits of physical resources, which are rigid and easy to imitate, and extends to an exclusive aspect of the organization that is difficult for others to appropriate (Machado-da-Silva and Barbosa, 2002). Therefore, the firm acquires a competitive advantage by means of the relationship of knowledge with the ability to innovate and to configure a flexible structure capable of reacting favorably to the frequent changes in its environment. The study of competitiveness factors is important to achieve the most suitable method for developing products and processes, with the use of the best practices and at the lowest possible costs, to make high quality products and get them to market quickly so as to satisfy consumers’ needs. Mastery of the critical factors is indispensable for an organization to perform better and thus meet its goals.

Information technology increases the ease of connection between individuals, organizational units, and even different organizations (Ciemleja and Lace, 2008). Applications such as electronic mail, voice messaging, and facsimile transmission facilitate the communication and coordination of information required for organizational processing. Information technology helps remove the constraints of time and place in decision-making (Dedrick *et al.*, 2004). Technology removes organizational boundaries by enabling easy asynchronous communication between different locations so that time of day and time zone are not a

constraint. Technology speeds the processing of information so that timely decisions can be made, tasks can be performed rapidly to take advantage of new opportunities, and the firm can respond to changing market conditions. Appropriate IT strategy remains the best strategy for receiving complaints and general feedback from customers enabling the creation of a learning organization hence avoiding the heavy downstream costs from negative publicity from unsatisfied customers.

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

This chapter presents the methodology that was adopted in the research. The areas covered under this section include the research design, data collection and analysis techniques that were used in the study.

3.2 Research Design

The research design was a case study. A case study is an in-depth investigation of an individual, institution or phenomenon. The approach allowed the researcher to collect in-depth information, more depth than in cross-sectional studies with the intention of understanding situations or phenomenon. It also helps to reveal the multiplicity of factors, which have interacted to produce the unique character of the entity that is subject of study (Mugenda and Mugenda, 1999).

The study was used to identify the influence of adoption of information technology as a strategic tool on the competitiveness of the Ministry of Transport and Infrastructure. The reason for this choice was based on the knowledge that case studies are the most appropriate for examining the processes by which events unfold, as well as exploring causal relationships and also they provide a holistic understanding of the phenomena.

3.3 Data Collection

The study used primary data which was collected using an interview guide. An interview guide is a set of questions that the interviewer asks when interviewing. The respondent informants were strategic policy makers in the ministry namely the Infrastructure Secretary, Chief Engineer (Roads), Head of information technology, Head of procurement and supply chain. The researcher also interviewed one development partner namely the representative of the European Union. In total five interviewees were interviewed in the study.

The choice of the informants in this study was very important as their interactions with the organization, perceptions, and both short term and long term objectives vary a great deal. The

same set of questions was used to capture the response depending on the aspect of the informant's involvement with the ministry. The questionnaires were structured to aid the flow of the conversation.

3.4 Data Analysis

The data obtained from the interview guide was analyzed using content analysis. Content analysis is the systematic qualitative description of the composition of the objects or materials of the study (Hsieh and Shannon, 2005). It involves observation and detailed description of objects, items or things that comprise the object of study.

Content analysis, as a class of methods at the intersection of the qualitative and quantitative traditions, is used for rigorous exploration of many important but difficult-to-study issues of interest to management researchers (Carley, 2003). This approach was more appropriate for the study because it allowed for deep and detailed probing of accounts in changing conditions. This was relevant because organizational objectives usually occur in myriad of circumstances. Furthermore, one of the unique characteristics of qualitative research was that it is usually conducted in the environment where the events occurred. This provided the ideal opportunity to trace the process and sequence of events in the specific settings.

CHAPTER FOUR : DATA ANALYSIS AND INTERPRETATION

4.1 Introduction

The research objective was to establish the influence of information technology as a strategy on competitiveness of the Ministry of Transport and Infrastructure in Kenya. This chapter presents the analysis, findings and discussion.

4.2 Background Information

This part of the interview guide was intended to assess the capacity of the respondents to answer the questions on the interview guide and also whether they are versed with the subject matter of the study. The demographic information considered in this study included the respondents' present job cadre at the ministry, level of education, length of continuous service and the number of years that the respondents had been working with the ministry.

The respondents comprised the top and middle level managers of the ministry. In total; the researcher interviewed five out of the six intended respondents. Two of the respondents were not available during the interview. All the respondents interviewed had university degrees with two of them having attained postgraduate level. The respondents consisted of Chief Engineer (Roads), Infrastructure Secretary, Assistant director, Supply Chain Management Services, Director – European Union Technical, Senior ICT Officer. The duration that the respondents have been working in the ministry varied although majority indicated that they have worked in the ministry for more than nine years.

4.3 Influence of IT in the Ministry's Competitiveness

The set of question under this area of the interview guide were tailored in establishing whether information technology has an influence on the competitiveness of the ministry. This is in the recognition of the role that information technologies play in the present changing operating environment. The technological capacity of the ministry was established to have resulted in the implementation of information technology which has simplified work in the ministry. This has resulted in operations being done online thus giving the stakeholders a chance to interact with the ministry without being physically there.

The respondents also noted that procurement of goods and services has been made simpler as online procurement was introduced and this has greatly reduced the cost of stationery and time thus increasing efficiency and effectiveness in procurement process. The devolution of services to the counties necessitates instant and effective mode of communication between the head office and offices in the counties. It was indicated by the respondents that the usage of information technology has resulted in faster communication and also rapid response on various issues by the officers in the counties and this will enable the officers and the ministry to discharge its functions within the stipulated period.

An organization's success or failure is highly determined by effective and efficient utilization of resources at its disposal, such as human, material, financial, and information resources. Among these four resources, the human resource is the most important part and crucial of all resources for the survival of an organization. The interviewees noted that the ministry has enacted biometric authentication scanners in all entrances and exists to monitor when users report to and leave from work place. The system is capable of producing comprehensive periodical attendance reports based on various parameters such as, per employee, departments, and sections. This will enable the ministry to know the employees who makes technical appearance and thus take action.

On the question of how the ministry translate the strategies and action plans into action and then into acceptable results, this study established that information technology has played a key role in the achievement of strategic objectives and performance of the ministry as the procurement procedures are now automated, i.e. raising requisition, approvals, issuing quotations and orders, payments. This has significantly eliminated paper work and human effort leading to fast and efficient operations. The operations of the ministry cannot be without its fair share of challenges as the introduction of the G-pay through the IFMLS system which has the ability to increase performance and productivity has always been tempered with the shutdown of the system especially when commitments are due to be affected and these affects the realization of the intended objectives by the ministry.

On the effect of IT on the ministry's optimization of resource management, the respondents noted that there has been prudent management of resources and this includes the Government Human Resource Information Systems (GHIS) which has made it possible for employees to receive their pay-slips electronically via computers and smart-phones. In addition, the system has an online leave application module. The positive impact of this to the ministry is huge cost cutting in stationery budget and maintenance of printers. There is also improved quality of service to internal customer since pay slips are received immediately the pay roll is closed unlike before when they waited for printouts. In order to ensure that the ministry vehicles are used only for the intended purpose and avoid misuse the ministry introduced tracking system to manage its fleet of vehicles, plant and equipment. This system has enabled the ministry to exercise complete control of all moving equipments, reduce consumption of fuel, maintenance costs as well as the possibility of misuse and accidents.

IT infrastructure can develop new products and services that have a high degree of knowledge component therein with addition of skill enhancement may lead to significant improvement in productivity and competitiveness. The respondents agreed that the use of e-platform operations have reduced cost of paper and process costs while at the same time communication costs have also been reduced as a results of e-document. IT has become a key determinant of organizational competitiveness and a wide range of technological developments propel this evolution. The respondents noted that the adoption of IT enabled strategy by the ministry has resulted in improved international access to information and interaction with external players like World Bank and foreign development partners. IT has further improved communication with international players. At the same time the respondents noted that the adoption of IT enabled strategy has enabled the ministry to reduce on both its overhead and administrative costs e.g. advertisement costs, e-procurement, fleet management system and GHRIS.

Organizations have to develop new strategy-making capabilities to cope in the future competitive environment. The interviewees were asked how the adoption of IT-enabled strategy helped the ministry gain competitiveness. They said that the ministry has enhanced its operating environment with IT and this has resulted in offers having a follow in which there is no need for cumbersome process of payment certificates. The ministry faces

challenges in the maintenance of roads which has been largely attributed to overloading by the large trucks. In order to curb this challenge, the ministry has introduced mobile weighing bridges, introduction of new rules on axle system of weighing and container trading systems. Communication has further been made easy by emails, processing of payments takes less time since processes are now automated, use of biometric authentication system make it easy for management to analyze employee's attendance trends and make better and informed decisions.

Today, most organizations in all sectors of industry, commerce and government are fundamentally dependent on their information technologies. The information revolution is sweeping through each sector of the economy. The interviewees were in agreement that the costs incurred by the ministry in any financial year runs into billions of shillings and the adoption of IT by the ministry has greatly influenced the costs as it has drastically reduced. The reduction can be attributed to running of advertisements via ministry website instead of print media which was very expensive. Tenders and other documents for public consumption are posted in the ministry website where it can be downloaded for free. IT has also enabled payment of goods and services by the ministry and this minimizes errors in payment system. On the adoption of IT by the ministry through leverage by e-government, the interviewees noted that the ministry has always adopted National e-governments guidelines and standards in implementing all its information technology strategies and this pushed the ministry to invest more in IT export and has enabled improved performance in the delivery of service.

IT is becoming a key determinant of organizational competitiveness and a wide range of technological developments propel this evolution. IT influences the structure and innovativeness of an organization and this has been witnessed in the ministry as IT department domiciled in the ministry has coordinated with the departments in delivery of service. IT has been embedded in the structure of the ministry to improve flexibility and ability to respond to changes in the environment. Public relations are equally fully IT-enabled and therefore able to show the importance in a daily basis with the relevant technical departments. Relationship between the ministry and its key agencies and other departments has been enhanced through adoption of IT.

IT has a vital role in organizations operation and financial and non-financial aspect such as decision making. Selection, implementation, and adoption of the appropriate IT is a necessary condition for the success of such a strategy. On whether the adoption of IT has increased the ease of connection between individuals, the interviewees noted that the adoption of IT by the ministry resulted in increased ease of connection between individuals and various entities and agencies in the ministry as more documents and information can be shared electronically across the board. It was further noted that the ministry has put in place a messaging and collaboration system that support use of emails and instant messages. Employees use official emails addresses for internal and external communication. Integration of social media into ministry website has greatly changed communication between customers and policy makers. By integration of social media customers are able to send comments and receive feedback promptly. IT adoption was found to have improved integrity due to reduced direct contacts with customers. Payment conducted electronically reducing cases of fraud and bribery and improved security through the adoption of biometric systems. Overall, it has resulted to cheaper way of doing business albeit computer literacy needs addressing.

4.4 Discussion

Information technology (IT) has long been recognized as one of the most critical factors for an organization to increase its efficiency, competitiveness, innovation. However, merely investing in the state of the art IT cannot ensure the realization of these benefits to an organization. The study established that the ministry has embraced information technology that has resulted in online procurement which has reduced costs, enhance communication and enactment of biometric authentication scanners in all entrances and exists to monitor when users report to and leave from work place. This is consistent with the findings of Silvius (2009) who posits that IT increases the ease of connection between individuals, organizational units, and even different organizations. Applications such as electronic mail, voice messaging, and facsimile transmission facilitate the communication and coordination of information required for organizational product and service processing.

In an increasingly globalized economy, information technology is one of the key determinants of competitiveness and growth of firms and countries. A firm's sustainable

competitiveness derives from its ability to assemble and exploit an appropriate combination of resources. It is achieved by continuously developing existing and creating new resources and capabilities in response to dynamic market conditions (Barney, 2007). The study found out that IT has enabled the ministry to better monitor both human and technical resources, introduce tracking system to manage its fleet of vehicles, plant and equipment while Government Human Resource Information Systems (GHIS) has made it possible for employees to receive their pay-slips electronically via computers and smart-phones. In addition, the system has an online leave application module. RBV depicts companies as a collection of resources and capabilities required for product or market competition. Resources are the physical capital, human capital, and organizational capital owned or controlled by a firm that can be used to conceive of and implement strategies (Barney, 1991). The premises of the resource-based view is that successful firms develop distinctive capabilities on which their future competitiveness will be based; which capabilities are often idiosyncratic or unique to each firm, and may also be tacit and intangible in nature (such as knowledge) (Teece *et al.*, 2007).

The study found out that IT has greatly influenced reduction of transaction costs as witnessed by running advertisements via ministry website instead of print media which is very expensive. Tenders and other documents for public consumption are being posted in the ministry website where it can be downloaded for free. The results are consistent with Jiang *et al.*, (2012) findings that in order to survive and thrive government departments and countries must be flexible and be able to meet the needs from customers to providing a lower-cost product or service and continually improving on the cost, quality, and reliability of products and/or services rendered. Porter (2001) noted that IT and the Internet can dramatically reduce the costs of obtaining, processing and transmitting information, thus changing the way firms do business. IT adoption can reduce the cost of marketing, advertising, and business operations. Cost reductions induced by the IT come from less expensive product promotion, cheaper distribution channels, and direct savings. Further, the decrease in distribution costs can be expressed as a reduction in overhead expenses such as inventory, retail space, and personnel. Additionally to reducing the costs of existing business activities, the IT can help promote cost leadership by providing valuable new services inexpensively (Ghosh, 1998).

CHAPTER FIVE : SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter summarizes the findings and analysis of chapter four on the influence of information technology on the ministry of transport and infrastructure competitiveness. It sets out to discuss the summary of the findings, draw conclusions, and make recommendations.

5.2 Summary

The study shows that the operating environment and technological capacity of the ministry has influenced the adoption of IT which has resulted in instant communication, online procurement which has reduced cost of stationary and time to a base minimum hence increasing efficiency and effectiveness in procurement process, and enactment of biometric authentication scanners in all entrances and exists to monitor when users report to and leave from work place. The adoption of IT enables the ministry to achieve its strategic objectives as the ministry is able to increase performance and productivity through IFMIS system and at the same time avail all the procurement procedures online from raising requisition, approvals, issuing quotations and orders, payments etc. This has significantly eliminated paper work and human effort leading to fast and efficient operations.

The study found out that the ministry resources are the driving force behind its competitiveness and therefore its management will result in the achievement of intended objectives. The ministry was found to have used IT to introduce tracking system to manage its fleet of vehicles, plant and equipment. This system has enabled the ministry to exercise complete control of all moving equipments, reduce consumption of fuel, maintenance costs as well as the possibility of misuse and accidents. At the same time Government Human Resource Information Systems (GHIS) has made it possible for employees to receive their pay-slips electronically via computers and smart-phones. In addition, the system has an online leave application module which result in reduction of financial resources used in stationery budget and maintenance of printers

The study found out that IT has enabled the ministry to deliver services promptly as it has improved international access to information and interaction with external players like World Bank and foreign development partners. IT has also further improved communication international players and local payers as well. Service delivery in the ministry was found to have been enhanced as IT has greatly influenced reduction of transaction costs as witnessed by running advertisements via ministry website instead of print media which is very expensive. Tenders and other documents for public consumption are posted to ministry website where it can be downloaded for free. The government has been at the forefront in automating its activities and therefore the ministry has adopted national e-governments guidelines and standards in implementing all its information technology strategies and this has pushed the ministry to invest more in IT which has enabled the ministry to improve its performance in the delivery of service

5.3 Conclusion

Information has emerged as an agent of integration and the enabler of new competitiveness for today's enterprise in the global marketplace and because strategic IT supports or shapes competitive strategies, IT can be used to support a variety of strategic objectives, including creation of innovative applications, changes in business processes, links with business partners, reduction of costs, acquiring competitive intelligence, and others. From the findings, IT plays a major role in the ministry's achievement of its strategic objectives as it has made communication easier for employees and other stakeholders. The adoption of online procurement which has reduced cost of stationary and time to a minimum hence increasing efficiency and effectiveness in procurement process while at the same time reducing human traffic in the ministry.

The government has been automating its services and this has ministry has adopted national e-governments guidelines and standards in implementing all its information technology strategies which has had an impact on the ministry service delivery. The resources at the ministry disposal are important to service delivery and the ministry has used IT to enactment of biometric authentication scanners in all entrances and exists to monitor when users report

to and leave from work place, and introduce tracking system to manage its fleet of vehicles, plant and equipment.

5.4 Limitations of the Study

The study was undertaken on the Ministry of transport and infrastructure alone and there was no room for comparison of the findings with other ministry. Secondly, the study was undertaken when the ministry is still reorganizing itself after the merger of several previous ministries and therefore the whole ministry has not fully integrated into one. The limitations however did not affect the data collected to undertake the study.

5.5 Recommendations

This study makes several recommendations for policy implementation and also suggest for further research.

5.5.1 Recommendation for Policy and Practice

The study established that the ministry has implemented IT which has resulted in online procurement, availing of pay slips online and communications with stakeholders. It is recommended that the ministry should continue adopting IT in other sectors in order to ensure that all its operations are automated so that the ministry achieves its strategic objectives.

Secondly, the study found out that the ministry has been relying on the national e-governments guidelines and standards. It is therefore recommended that the government should emphasize to all other ministries the need to implement IT so that they can improve service delivery to the general public. The biometric registration by the government should act as a start to ensure that they have all the information of all the civil servants and at the same time it should be updated whenever an employee resigns, dies or dismissed in order to reflect the true number of employees.

Lastly, the study established that the ministry has used IT to manage its resources in order to improve service delivery, it is recommended that the ministry should come up with policies that will ensure that the resources are fully maximized.

5.5.2 Suggestions for Further Research

The study was done on the ministry of transport and infrastructure only. Government ministries may be similar in mandate but the size, location, political interference and strategic intent may differ. A similar study should therefore be done on other ministries in Kenya. This will shed more light on the usage of information technology as strategic tool for competitiveness.

REFERENCES

- Almajali, D., & Dahalin, Z. (2011), Applying the Triangulation Approach in IT – Business Strategic Alignment and Sustainable Competitive Advantage. *IBIMA Business Review Journal*, 1–13.
- Amit, R. & Zott, P. J. H. (2001), Strategic Assets and Organizational Rent, *Strategic Management Journal*, 14(1), 33-46.
- Andersen, T.J., (2011); Information technology, strategic decision making approaches and organizational performance in different industrial settings. *The Journal of Strategic Information Systems* 10(2), 101–119.
- Ansoff, H. I. (2002), *Corporate strategy*. McGraw-Hill.
- Barney, J. B. (2007), *Gaining and sustaining competitive advantage*. New York: Addison-Wesley.
- Barney, J., (1986), Strategic factor markets: expectations, luck and business strategy. *Management Science* 32(10), 1231–1241.
- Bharadwaj, A. S. (2000), A Resource-Based Perspective On Information Technology Capability And Firm Performance: An Empirical Investigation, *MIS Quarterly*, 24(1), 169-196.
- Bhatnagar, A., (2006), *Strategic Information Systems Planning: Alignment of 'IS/IT' Planning and Business Planning*, Unitec New Zealand.
- Broadbent, M. & Weill, P. (2007), Management by Maxim: How Business and IT Managers Can Create IT Infrastructures”, *Sloan Management Review*, 38(3), 77-82.
- Davis, M., (2001), Relational governance as an interorganizational strategy: An empirical test of the role of trust in economic exchange. *Strategic Management Journal*, 16, 373-392.

- Diez, E., Benova, E. & Brian S. M., (2009), A review of the factors which influence the use and usefulness of information systems. *Environmental Modelling & Software*, Vol.24, No. 5, pp. 588-602.
- Djankov, S., and Hoekman, B. (2011), Conditions for Competition and Multilateral Surveillance, *The World Economy*, 21, 1109-28.
- Gole, R. (2005), Responding to the competitive challenge of the 1990s, *International Journal of Contemporary Hospitality Management*, 2(3), 1-3.
- Grant, R. M. (1991), The Resource-Based Theory of Competitive Advantage: Implications for Strategy Formulation, *California Management Review*, 33(3), 114-135.
- Gulati, R. (1999), Does familiarity breed trust? The implication of repeated ties for contractual choice in alliances, *Academy of Management Journal*, 38, 85-112.
- Hitt, M.A., Ireland, R.D., & Hoskisson, R. E. (2008), *Strategic Management: Competitiveness and Globalization Concepts*, South-Western, London.
- Hussin, H., & Suhaimi, M. A. (2011), *Information Technology and Business Alignment in Malaysia SMEs*.IIUM Press.
- Kalkan, A., Erdil, O., & Cetinkaya, O. (2011), The relationships between firm size, prospector strategy, architecture of information technology and firm performance. *Procedia Social and Behavioral Sciences*, 24, 854–869.
- Kiroga (2011), Role of information technology in strategic management at the Power Technics Limited.
- Kobelsky, K., Hunter, S., and Richardson, V. J. (2008, Information technology, contextual factors and the volatility of firm performance, *International Journal of Accounting Information Systems*, 9(3), 154-174.

- Leckey, G. T. Y. L., Osei, K. A., & Harvey, S. K. (2011), Investments in Information Technology (IT) and Bank Business Performance in Ghana, *International Journal of Economics and Finance*, 3(2), 133-42.
- Mata, F. J.; Fuerst, W. L., & Barney, J. B. (2005), Information Technology and Sustained Competitive Advantage: A Resource-based Analysis” *MIS Quarterly*, 19(4), 487-505.
- Mugenda, O. M., & Mugenda, A. G. (1999), *Research Methods: Quantitative and Qualitative approaches*. Nairobi, Acts Press.
- Munesh, K., (2003), *Business Information Systems*, New York USA McGraw-Hill/Irwin.
- Neumann, S. (2004), *Strategic Information Systems—Competition through Information Technologies*. New York: Macmillan.
- Onchwari (2012), Information technology and competitiveness of commercial banks in Kenya. *Unpublished MBA Project: University of Nairobi*.
- Porter, M.E. (1990), *Competitive Strategy*, London: Collier Macmillan Publishers.
- Porter, M. (1985), *Competitive advantage: creating and sustaining superior performance*. New York: The Free Press.
- Porter, M., Ketels, C., & Delgado, M. (2006), The microeconomic foundations of prosperity: findings from the business competitiveness index, *The Global Competitiveness Report 2006-2007*, World Economic Forum.
- Prahalad, C., & Krishnan, M., (2002), The dynamic synchronization of strategy and information technology, *Sloan Management Review*, 43(4), 24-33.
- Raymond, L., & Bergeron, F. (2008), *Enabling the business strategy of SMEs through e-business capabilities: A strategic alignment perspective*. *Industrial Management & Data Systems*, 108(5), 577–595.

- Silvius, A. J. G. (2009), *Business and IT Alignment: What We Know and What We Don't Know*. International Conference on Information Management and Engineering, 558–563.
- Stevenson, W. J. (2001), Explaining the swollen middle: Why most transactions are a mix of "market" and "hierarchy". *Organization Science*, 4(4): 529-547.
- Teece, D., Pisano, G., Shuen, A., (2007), Dynamic capabilities and strategic management. *Strategic Management Journal* 18 (7), 509–533.
- Yegon (2012), The impact of information technology on organizational performance at the Kenya Commercial Bank Group. *Unpublished MBA Project: University of Nairobi*.

APPENDIX I : LETTER OF INTRODUCTION

George Chiaji
P.O. Box 51424 - 00200
NAIROBI

July, 2014

Dear Respondent,

RE: DATA COLLECTION

My name is George Chiaji, a student at the University of Nairobi. I am currently conducting a study entitled; **INFLUENCE OF INFORMATION TECHNOLOGY AS A STRATEGY ON COMPETITIVENESS OF THE MINISTRY OF TRANSPORT AND INFRASTRUCTURE IN KENYA**, in pursuance of a degree in Master of Business Administration (MBA) at the School of Business.

In this regard, I am kindly requesting for your support in terms of both your valuable time and accuracy in responding to the questions I will ask as contained in the interview guide attached. Your cooperation will be highly appreciated while I undertake to exercise highest level of confidentiality and anonymity both during and after the exercise. Thanks in advance.

Yours sincerely,

George Chiaji

APPENDIX II: INTERVIEW GUIDE

THE INFLUENCE OF ADOPTION OF INFORMATION TECHNOLOGY AS A STRATEGIC TOOL FOR COMPETITIVENESS BY THE MINISTRY OF TRANSPORT AND INFRASTRUCTURE IN KENYA

Introduction

The objective of the study is to establish the influence of information technology as a strategic tool on the competitiveness of the Ministry of Transport and Infrastructure in Kenya.

Section A: Respondent Background Review

- What is your designation? _____
- What is your highest level of education? Diploma Degree Masters
- How long have you been involved with the Ministry? _____ Years
- What is your involvement level with the Ministry?
 - Strategic Policies and decision making
 - Operations and Business unit staff
 - Development Partner staff

Section B: Influence of IT in the Ministry's Competitiveness

1. How has the ministry's technological capacity, organizational and operating environment influenced the adoption of the IT in its operations?

2. Has the ministry's strategic goals and ability to increase performance and productivity been influenced through the adoption of the information technology in its operations? How has this been influenced?

3. How has the ministry's optimization of resource management and improvement of quality of activities been affected by the adoption of IT in your operations?

4. Has the capacity of the ministry to deliver a service that is at a lower cost, and focused on a specific market segment been affected through the adoption of the information technology in your operations? Please expound.

5. How has the adoption of IT-enabled strategy in the ministry combined with IT resources helped the ministry gain sustained competitiveness through barriers to entry and mobility barriers? Please expound.

6. Has the operating environment been enhanced through adoption of the IT? How has it been enhanced?

7. Transaction costs associated with the provision of public services and with redistributive transfer payments can also influence the ministry's competitiveness. How has the adoption of IT influenced competitiveness towards this end?

8. Has the adoption of information technology by the ministry been leveraged by the e-government concept. Please expound.

9. Has the ministry's ability to innovate and to configure a flexible structure capable of reacting favorably to the frequent changes in its environment been affected by the adoption of information technology? Please expound?

10. Has the adoption of IT increased the ease of connection between individuals, organizational units, and even different organizations by the ministry?

11. What other factor(s) not covered above has been influenced in the ministry by the adoption of IT? Please expound.

THANK YOU FOR YOUR TIME

**APPENDIX III: LIST OF THE MINISTRIES IN THE GOVERNMENT
OF THE REPUBLIC OF KENYA**

1. Interior and Coordination of National Government
2. Devolution and Planning
3. National Treasury
4. Defense
5. Foreign Affairs
6. Education
7. Health
8. Transport and Infrastructure
9. Information, Communication and Technology
10. Environment, Water and Natural Resources
11. Land, Housing and Urban Development
12. Sports, Culture, and the Arts
13. Labour, Social Security and Services
14. Energy and Petroleum
15. Agriculture, Livestock and Fisheries
16. Industrialization and Enterprise Development
17. Commerce, Tourism and East Africa Region
18. Mining

(Government of Kenya Website)