

**A SURVEY OF THE STRAGIC VALUE OF INFORMATION AND
COMMUNICATION TECHNOLOGY (ICT) AMONG COMPANIES
LISTED ON THE NAIROBI STOCK EXCHANGE**

By

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DECLARATION

This Research Project is my own original work and has not been presented for a Degree Qualification in any other University or Institution of learning.

SIGNED DATE

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This Research Project has been submitted for examination with my approval as the University Supervisor.

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DEDICATION

This work is dedicated to my family members who have encouraged and stood by me throughout my life.

To my mum Anne Nduati, who has always wanted the best for all her children and has been there for them. Her sacrifice to ensure that her children get the best is deeply appreciated.

To my brother and sisters who have encouraged and assisted me in every way they could.

To my friends and colleagues who had to bear long hours without me as I pursued my education, thank you very much for making my dream come true.

ABSTRACT

Information Communication technology plays a significant role in the growth of economies all over the world. The objective of this study was to determine the strategic value of information and communication technology among companies listed on the stock exchange.

The study was a survey based and utilizing primary data collected from the listed companies. The study targeted all the listed companies on the Nairobi stock exchange. The primary data was collected using a structured questionnaire that was administered to the target respondent.

The data was analyzed using statistical package for social scientist with the help of descriptive statistics and content analysis. The study revealed that most companies had less than 5 branches in Kenya, with core businesses being online. Incase of system failure the response time is faster even though there will be no major business loss. For many companies there will be no serious consequences to internal users if the response time is delayed beyond one second but there will be there for external users. Incase of repeated service interruption it will take a shorter duration for serious consequences to be felt. It was found that the current system works provide a cost reduction and the internal systems are invisible to suppliers and customers

The following problems were considered critical to ICT adoption in Kenya; Maintenance of the system, Lack of technological expertise, Training of personnel, Use of pirated software's, Resistance to change, Declaring employees redundant, High initial cost of setting up the system, Systems corruption due to viruses, Frequent changes in technology is very expensive and Frequent failure of systems.

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The Staff of the listed companies who willingly and heartily expended their time and effort to fill in the questionnaires made it possible for me to come up with the research findings.

Finally and most importantly, I wish to express my deep and heartfelt appreciation to the Almighty God who has graciously made it possible for me to cross the important milestone in my life.

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CHAPTER ONE

INTRODUCTION

1.1 Background

Information and Communication Technologies (ICT) is an umbrella term that covers all advanced technologies in manipulating and communicating information. The common usage of ICT encompasses all mediums, to record information (magnetic disk/tape, optical disks (CD/DVD), flash memory etc. and arguably also paper records); technology for broadcasting information - radio, television; and technology for communicating through voice and sound or images - microphone, camera, loudspeaker, and telephone to cellular phones. It includes the wide varieties of computing hardware (PCs, servers, mainframes, networked storage). (Wikipedia)

At the risk of stating the obvious, Information and Communication Technology (ICT) is the backbone of Commerce in today's world. Information and Communication Technology underpins the operations of individual companies, ties together far-flung supply chains, and increasingly, links businesses to the customers they serve (Carr, 2003). In Kenya today hardly a shilling changes hands anymore without the aid of computer systems for all the companies listed on the Nairobi Stock Exchange. Information Technology is a critical resource and is a key contributor to the success of the company.

Information and Communication, Information Technology and Information Systems have in many respects been taken to be synonymous and therefore can be used interchangeably. Information technology (IT) is the study, design, development, implementation, support or management of computer-based information systems, particularly software applications and computer hardware. IT deals with the use of electronic computers and computer software to convert, store, protect, process, transmit, and securely retrieve information (ITAA).

When computer and communications technologies are combined, the result is information technology, or "infotech". Information technology is a general term that describes any technology that helps to produce, manipulate, store, communicate, and/or disseminate information. Presumably, when speaking of Information Technology (IT) as a whole, it is noted that the use of computers and information are associated (Wikipedia, definitions IT)

The role of Information and Communication Technology has developed over the years. The original conception was of automation of existing manual and pre-computer mechanical processes. This was quickly succeeded by the rationalization and integration of systems. In both of these forms, IS was regarded primarily as an operational support tool, and secondarily as a service to management (Roger Clarke, 1994).

Today, an ICT disruption can paralyze a company's ability to make its products, deliver its services, and connect with its customers, not to mention foul its reputation. ICT has deeply transformed today's business world and all businesses use information technology on a large scale. As a consequence, capital expenditure devoted to ICT has increased dramatically over the years and is still tremendous in spite of the current economic situation. Besides ICT tools are no longer considered for low-level employees, but are used intensively by top managers who openly value the supposed competitive edge that they can derive from its usage. Behind all that lies the thought that the pervasiveness of ICT usage has led to it becoming more strategic.

Information and Communication Technology is viewed as a strategic resource. Many companies are looking at how to use Information Systems to achieve some form of strategic advantage over competitors. Information Systems can be broadly looked at as inwardly strategic or outwardly strategic. Inwardly strategic is focused on internal processes where ICT is applied with a view to lower costs, improve employee productivity, improve teamwork and enhance communication. Outwardly strategic application of ICT is aimed at direct competition. The focus is to beat competitors by introducing new services.

Information and Communication Technology may be used to improve the business process. ICT would be useful to reduce the costs of doing business. The outcome will be that efficiency is enhanced. The firm's strategy can be to promote business innovation. ICT is used to create new products or services. The outcome is that new business opportunities are created. The firm may have a strategy of locking in customers and suppliers. Sophisticated ICT applications may be used to link the business to customers and suppliers. The outcome is that valuable customers and relationships are maintained. Such an ICT system would also make switching costs too expensive, thereby locking the parties.

1.1.1 Application of Information and Communication Technology (ICT)

Firms can benefit from ICT in the area of supply chain management through inventory management. Prior to 1980s the information flow between functional areas within an organization and between supply chain members organizations were paper based. The paper based transaction and communication was and still is very slow. During this period, information was often overlooked as a critical competitive resource because its value to supply chain members was not clearly understood. An ICT infrastructure capability provides a competitive positioning of business initiatives like cycle time reduction, implementation, implementing redesigned cross-functional processes. Information flows play a crucial role in strategic planning where the manager is able to reduce inventory and human resource requirement to a competitive level.

Today many companies are keeping large amounts of data related to the behaviour of their customers. Such data can be mined to enable decision making and also the firm profile the type of customers they have. Profiling helps in many ways. A firm is able to know the preferences of the customer and is able to offer better products and services that are in line with the need so customer.

With the advent of the Internet and e-commerce, a customer can be able to do her/his shopping by simply logging on into a website and buying online. Many companies have created 'online supermarkets' through which a customer can order anything and everything that he needs. Indeed there are companies whose whole strategy is based on the creation of these 'online supermarkets'. This saves the company money whereby it does not have to rent huge physical shelf space. The company also employs less staff and deals with less Human Resources issues as the whole system is based on an Information Technology Infrastructure. The 'online supermarket' is virtually working 24hours, 7 days and it does not go down or fall sick. It definitely has a positive impact on the bottom line.

Today, companies are now communicating with their customers electronically. The Electronic Data Interchange (EDI) refers to computer-to-computer exchange of business documents in a standard format. EDI describe both the capability and practice of communicating information between two organizations electronically instead of traditional form of mail, courier, & fax. The benefits of EDI are numerous and include: Quick process to information, better customer service, reduced paper work, increased productivity, improved tracing and expediting, cost

efficiency, improved billing. Through the use of EDI supply chain partners can overcome the distortions and exaggeration in supply and demand information by improving technologies to facilitate real time sharing of actual demand and supply information.

Many companies have now set up Enterprise Resource planning (ERP). Blue chip companies such as Bamburi, EABL, now view ERP system (e.g. Baan, SAP, Peoplesoft, etc.) as the core of their ICT infrastructure. ERP system have become enterprise wide transaction processing tools which capture the data and reduce the manual activities and task associated with processing financial, inventory and customer order information. ERP system achieve a high level of integration by utilizing a single data model, developing a common understanding of what the shared data represents and establishing a set of rules for accessing data.

Information and Communication Technology has resulted in flatter and leaner organization structures. In most companies ICT has made information more accessible at all levels of an organization. A senior manager can be able to access operations of the company through a software application. Long chains of command used to transmit data from the bottom to the top have virtually been eliminated. Top management are now empowered due to ICT. There is better decision making and increased bottom line. Management are able to simulate different situations and hypothesize the outcomes. This predictability enhances planning by management.

1.1.2 Companies listed in the Nairobi Stock Exchange

The Nairobi Stock Exchange (NSE) market was started in the 1920's by the British as an informal market for Europeans only. In 1954, the market was formalized through incorporation into a company. The NSE is regulated by the Capital Markets Authority. The instruments traded include Equities, Preference Shares, Treasury Bonds and Corporate Bonds. The Nairobi Stock Exchange has growth from strength to strength and several privatizations have successfully been completed.

One of the milestones of NSE was when it upgraded its website to enhance easy and faster access of accurate, factual and timely trading information. The website would also be used to boost data vending business. A key milestone of the NSE was the commencement of Automated Trading on 11 September 2006 that saw the implementation of live trading on the automated trading systems of the Nairobi Stock Exchange.

Another achievement of the NSE took place on December 17th, 2007. NSE officially implemented Wide Area Network (WAN) - remote trading platform. In this system, brokers and investment banks trade through terminals in their offices linked to NSE trading engine. The implementation of WAN is envisaged to boost NSE's efficiency and enhance volumes, as trading hours were extended from 9.00 a.m to 3.00 pm, in every trading day.

The NSE is divided into 3 segments which include Main Investments Market Segment (MIMS), Alternative Investments Market Segment (AIMS), Fixed Income Securities Market Segment (FISMS). The different segments have several differences particularly the requirements for companies that want to be listed.

The Main Investments Market Segment (MIMS) requires that the company must have a minimum authorized, issued and fully paid up capital of KShs 50M and net assets of KShs 100M. They must have declared positive profits after tax attributable to shareholders in at least three of the last five completed accounting periods to the date of the offer.

The Alternative Investments Market Segment (AIMS) requires that must have a minimum authorized, issued and fully paid up shares of Kshs 20 million and net assets of Kshs 20 million before seeking listing.. The company must have been in existence in the same line of business for a minimum of 2 years with good growth potential in order to provide a comparative and reliable track record. The company listed on AIMS may only change from this segment after a minimum of one year and on satisfying, the requirements for Main Investments Market Segment (MIMS).

The Fixed Income Securities Market Segment (FISMS) is for companies intending to list their commercial paper or corporate bonds. To be listed, the company must be a limited by shares and registered under the Companies Act (Cap 486). The company must have a minimum authorized, issued and fully paid up share capital of Kshs 50 million and net assets of Kshs 100 million before the public offering of the securities. In the event that the issuer does not have net assets of Kshs 100 million, the issuer must obtain from a bank or any other approved institution a financial Guarantee to support the issue. The company should have made profits in at least two of the last three years preceding the issue of the commercial paper or the

corporate bond. The securities to be listed must be freely transferable and not subject to any restrictions on marketability or preemption rights.

There are 46 companies listed on the Nairobi Stock Exchange (NSE) listed. There are 2 indexes used as a barometer for performance on the Nairobi Stock Exchange. They are the All Share Index (NASI) which is market capitalization weighted; and the NSE 20 Share Index which is a geometric Mean of 20 Companies share prices.(Check Appendix for the listed companies) The companies on the NSE 20-share index operate in different industries; Agriculture (Sasini, BAT,Mumias, Rea Vipingo), Financial Services (Barclays, KCB, Diamond Trust, Standard Chartered), Hospitality & Airlines (TPS Eastern Africa, KQ), Energy & Oil (KPLC, Kengen, Total) , Manufacturing.

Fueled by price declines resulting from rapid improvements in several fundamental technologies, business capital stock of “Office, Computing and Accounting Machinery” have risen from less than 1% of equipment stock to over 5% in only 10 years (1979-1989). (Bureau of Economic Analysis 1993) . In some sectors, such as financial services, computers are the predominant production technology, and even in manufacturing industries, computers have led to significant changes in the way products are produced and delivered (Bylinsky 1994). This has led to a high corporate dependence on Information Technology.

1.2 Statement of the Problem

According to Market Intelligence (2007), in the last 5 years, many institutions listed at Nairobi stock exchange have implemented advanced technological platforms. Studies that have been done on firm competitiveness and Information Technology in Kenyan firms include Nyawange(2001) who researched on the operational strategies used by large manufacturing firms in Kenya. Abwayo(2002) dwelt on the role of Information Technology in the different levels of management on the extent computers are applied in business management in private sector particularly insurance industry.

Defensive ICT is about operational reliability. Keeping ICT systems up and running is more important in the company's current incarnation than leapfrogging the competition through the clever use of emerging technology. Offensive ICT according to Nolan (2005) places strategic issues either over or on the same level as, reliability. Offensive ICT projects tend to be ambitious and risky because they often involve substantial organizational change. An offensive stance is called for when

a company needs to alter its technology strategy to compete more effectively or to raise the firm to a position of industry leadership.

A survey has not been carried of companies listed in the NSE by viewing them through the Defensive and Offensive ICT Lens. It is important to understand how currently companies quoted in the NSE are positioned based on the ICT Strategic Impact Grid as advanced by Nolan(2005). It is necessary to know how to identify the role of ICT in the organization. Does the company rely on cost-effective, uninterrupted, secure, smooth operating technology systems referred to as Defensive ICT or does the company rely on ICT for its competitive edge through systems that provide new value-added services and products or high responsiveness to customers – Offensive ICT. This is the basis of this research.

1.3 Objectives Of The Study

To establish the strategic role of ICT in companies quoted on the NSE companies

1.4 Importance of the Research

In a world where many companies are increasingly relying on ICT, it is necessary for a company's management to understand the full degree of operational dependence on computer systems or the extent to which ICT plays a role in shaping the firm's strategies.

This research will be necessary to the Directors/Owners of a firm to set standards for ICT governance. Many firms on the NSE have embraced ICT and according to past studies capital expenditures of ICT have increased from 18% in the 1980s, to 30% in the early 1990s. Corporate information assets can account for more than 50% of capital spending. It is therefore necessary to monitor the spending and use of ICT to ensure value for money.

This research will assist top management be able to establish business continuity plans for their companies. Recently there have been many natural disasters that have occurred. A company that fully understands the place of ICT in its business model will be able to ensure that disruptions are at

a minimum in case of calamities. Indeed many firms have set up ICT facilities offsite to enable them quickly resume operations whenever the main facilities go down.

The outcome will assist management set performance standards for their ICT Operations. Firms in Defensive ICT mode will set standards which are measured every so often to ensure that the ICT equipment is running smoothly. Measuring such standards ensure breakdowns are at a minimum.

CHAPTER TWO

LITERATURE REVIEW

2.1 ICT and Strategy

The early papers and books focussed on the 'competitive advantage', which ICT could lead to, and were optimistic, even 'upbeat'. It is certainly not contended that these sources were unquestioning, nor that they contained no seeds of the subsequent developments in the theory of strategic application of ICT. They were, however, very positive in the tone in which they discussed ICT's contribution to corporate strategy.

Porter's 1980 and 1985 books proposed that the enterprise's value chain can be used as a framework for identifying opportunities for competitive advantage. A firm's value activities fall into two broad categories: primary and support. Primary activities are those involved in the physical creation of the product, its marketing and delivery to customers, and its support and servicing after sale. Support activities provide the infrastructure whereby the primary activities can take place. These are linked together to form the enterprise's value chain. Competitive advantage in either cost or differentiation is a function of this chain. ICT is spreading through the value chain, transforming the way value activities are performed and the nature of the linkages among them. It enables an enterprise to better coordinate its activities and thus gives it greater flexibility in deciding its breadth of activities.

Benjamin et al (1984) proposed a strategic opportunities matrix for identifying ICT opportunities. They suggested that ICT can be used for strategic purposes not only in the marketplace, but also in internal operations. They claimed that most models overlooked the potential strategic impact of applying ICT to traditional products and processes, or to changing the firm's current way of doing business. The techniques associated with environmental scanning (Aguilar 1967) can be applied to this process.

Porter and Millar (1985) then proposed the use of an information intensity matrix to assess ICT's role. The matrix evaluates the information intensity of the value chain against that of the product.

They suggested that ICT will play a strategic role in an industry that is characterized by high information intensity in both the value chain and the product.

**Table 2.1 Porter & Miller's Information Intensity Matrix
(Porter & Miller 1985)**

| | | Information content of the product | |
|---|------|---|-----------------------------------|
| | | LOW | HIGH |
| Information intensity of the value chain | HIGH | Oil refining | Newspapers Banking Airlines |
| | LOW | Cement | |

Wiseman (1988) broadened the scope of Porter's model. For Wiseman, competitive advantage is "The dominance of one competitor over another or others in an arena, with factors conducive to its success over a period of time". An organization's competitive space generally comprises many different arenas, which may be independent or linked. The organization may possess multiple competitive advantages or disadvantages within or among its arenas.

Wiseman then combined his strategic thrusts framework with an analysis of competitive targets to produce a 'strategic option generator'. The competitive targets are divided into two groups. System (user) targets are those entities involved with using the application; competitive arena targets are those competitors of the enterprise (suppliers, customers, distribution channels, or rival arenas) whose competitive position is affected by the firm's use of information technology and the thrust it supports or shapes.

Table 2.2 Wiseman's Strategic Option Generator (Wiseman 1988, p.152)

| | | Strategic Target | | | | | | | | |
|------------------|-----------------|-------------------|---------|----------|-------|------------|---------------|---------|----------|-------|
| | | Competitive Arena | | | | Enterprise | System (user) | | | |
| | | Supplier | Channel | Customer | Rival | | Supplier | Channel | Customer | Rival |
| Strategic Thrust | Differentiation | | | | | | | | | |
| | Cost | | | | | | | | | |
| | Innovation | | | | | | | | | |
| | Growth | | | | | | | | | |
| | Alliance | | | | | | | | | |

To Porter's and Wiseman's contributions, Earl adds the notions of offensive move and defensive reaction; and use of the strategic measures by the enterprise itself or provision to the target.

Table 2.3 Earl's Procedure for Generating Competitive Strategies (Earl 1987)

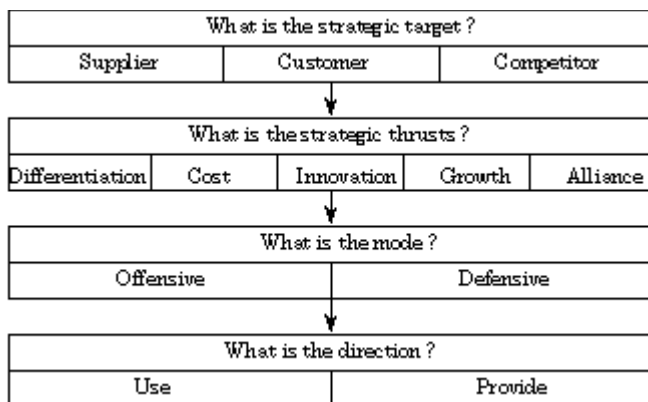
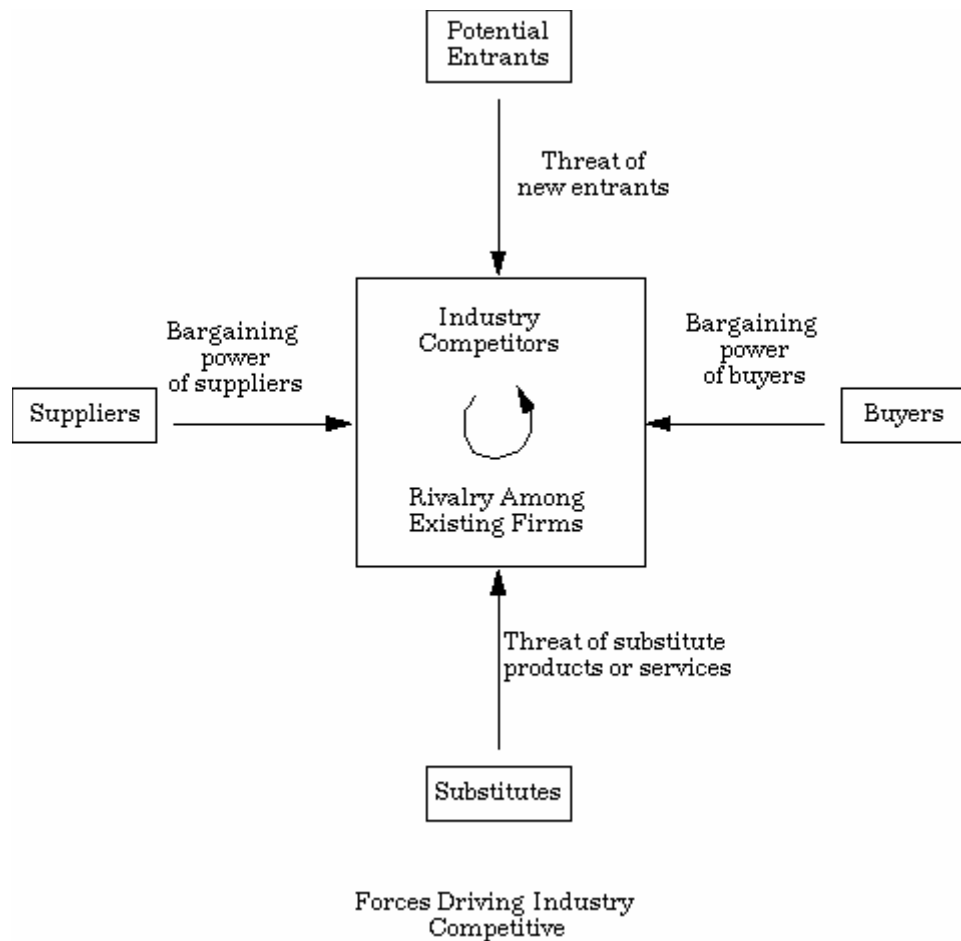


Figure 2.1 Porter's Forces Driving Industry Competition (Porter 1980)



Porter advanced the idea that competition in any industry is rooted in its underlying economic structure, and thus it is more than a superficial game of moves and counter moves among participating firms. This approach is reflected in the framework above.

Parsons(1978) used Porters competitive forces framework to identify six generic categories of opportunities for competitive advantage: These are increase customer switching costs through value-adding ICT-based information or service; decrease one's own switching costs against suppliers; use ICT to support product innovation for purposes of maintaining one's position or deterring potential substitutes; cooperate with selected rivals through shared ICT resources; substitute Information and Communication Technology for labour; and use information to better segment and satisfy customer base.

Competitive strategy is an enterprise's plan for achieving sustainable competitive advantage over, or reducing the edge of, its adversaries. In Porter's view, the performance of individual corporations is determined by the extent to which they cope with, and manipulate, the 'five key forces' which make up the industry structure. These are the bargaining power of suppliers, the bargaining power of buyer, the threat of new entrants, the threat if substitute products; and rivalry among existing firms. Porter's classic diagram representing these forces is reproduced in Exhibit 1. Enterprises, through their strategies, can influence the five forces and the industry structure, at least to some extent.

According to Clarke (1994), during the period following 1985, as experience was gathered and deeper studies were reported on, the literature became somewhat more circumspect. The new materials focussed less on the opportunities than on the processes and the pitfalls. Progressively, a collection of qualifications arose to the initial, relatively 'naive' theory (Miron et al 1988, Karimi & Konsynski 1991, Galliers 1993, Kettinger et al 1994). Associated with this phase were new, and often more ambiguous, case studies, including Philadelphia National Bank (Clemons 1990), CALM (Clarke & Jenkins 1993), Minitel (Cats-Baril & Jelassi 1994) and MSAS Cargo (Ives & Jarvenpaa 1994).

Clarke (1994) found that one series of papers focussed not on companies which adopted a successful leadership role in the application of ICT, but rather on those which followed. They recognised that where one corporation achieved a significant competitive advantage, it quickly became incumbent on its competitors to neutralise that advantage, and hence to avoid 'competitive disadvantage' (Vitale 1986, Warner 1987, Brousseau 1990). The notion of 'competitive necessity' was created to complement that of 'competitive advantage'.

A special case was the phenomenon of 'second-mover advantage', where the first-mover actually incurs a disadvantage. This may arise variously because the pioneer increases the knowledge available about the application (hence driving the risks down); establishes a level of volume (and hence overcomes resistance and drives average costs down); and/or becomes locked into a system which quickly becomes obsolescent (and hence is subject to being overtaken by a well-informed and unencumbered second-mover).

A distinction came to be drawn between 'sustainable' and 'contestable' competitive advantage (Clemons 1986, Feeny & Ives 1989, Ciborra 1992). The thesis was that many kinds of advantage

which can possibly be derived from innovative use of ICT result only in ephemeral advantage, which is quickly neutralizable by second- and later-movers. A distinction needs to be made between the sustainability of the original advantage, and of any derived advantage (such as increased market share).

An enhancement to the Porter framework of competitive strategy was the notion of 'alliance' (Barrett & Konsynski 1982, Gummesson 1987, EDP Analyzer 1987, Johnston & Vitale 1988, Rockart & Short 1989, Wiseman 1989, Konsynski & McFarlan 1990, Ford 1990, Bowersox 1990). This referred to chains or clusters of organisations which collaborate in order to gain competitive advantage over other, similar organisations, or to neutralise the advantage of one or more competitor organisations.

A further idea which has emerged is that innovation in ICT is of strategic importance only if it is compatible with, and preferably leverages upon the company's existing characteristics and advantages (Beath & Ives 1986, Clemons & Row 1987, Ives & Vitale 1988, Hopper 1990). One particularly important facet of this is the notion of 'strategic alignment' of ICT policies and initiatives with the directions indicated by the corporation's senior executives (Henderson & Venkatraman 1989, Earl 1989, Broadbent & Weill 1991).

Bakos (1986) proposed two theoretical links between Information and Communication Technology and Competitive Advantage that can serve as the basis for specific theories that can explain how Information and Communication Technology can improve the competitive strategy of a firm; Bounded Rationality, and the second theoretical link between information technology and industrial economics theory.

Bounded rationality is where extending the bounds of organizational rationality has direct implications for both bargaining power and comparative efficiency. In particular, it affects the cost of search (by improving the generation and evaluation of alternatives), as well as transaction costs in organizational interfaces. According to Williamson (1975), transactions costs arise from environmental constraints, opportunism, and market exchanges with small number of participants, coupled with bounded rationality. Information and Communication Technology can have a direct impact on these variables through its effect on bounded rationality, for example by reducing

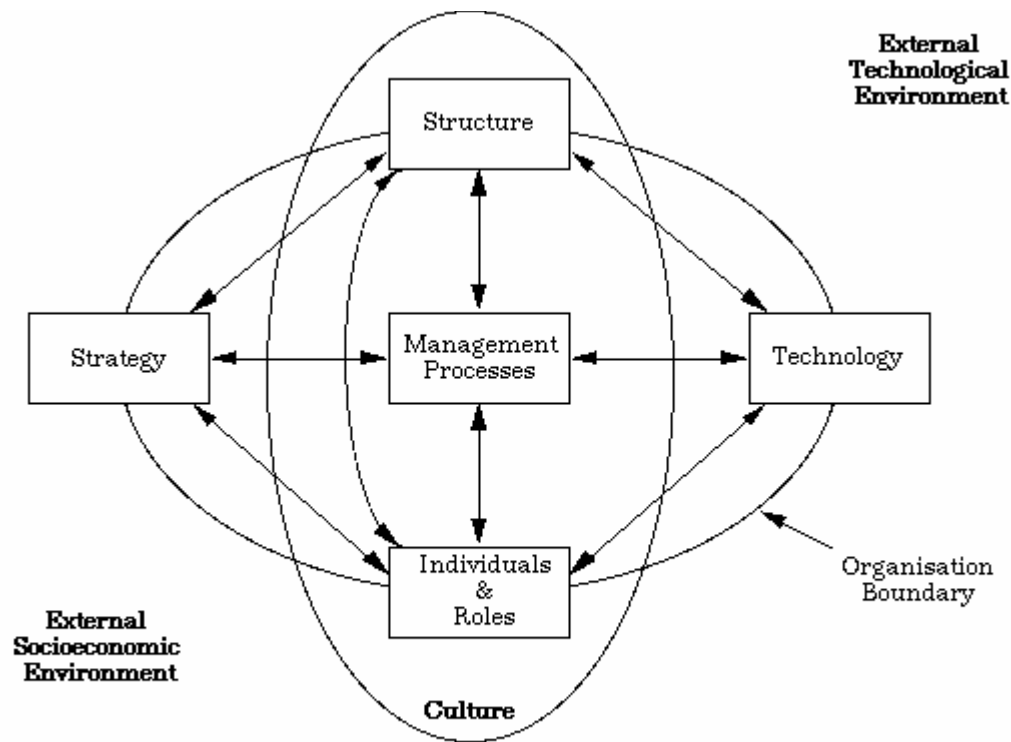
contracting and monitoring costs (thus mitigating the effect of opportunism), improving the generation and evaluation of alternatives (thus mitigating the effect of environmental uncertainty and complexity), and either decreasing or increasing information asymmetries.

Baros(1986) proposed the second theoretical link between information technology and industrial economics theory comes from the effect of ICT on production processes. It is generally accepted that ICT is an inherently flexible technology, improving the adaptability of products, and allowing the realization of scale economies from smaller production runs. It can therefore change the economics of production, and facilitate product differentiation based on unique features. Furthermore, information technology can allow assets to be less specific to particular economic transactions involved, potentially decreasing the costs of switching to alternative customers and suppliers.

Morton (1991) had a different view of ICT factors that and Strategy as in the diagram below.

Figure 2.2 Scott Morton's Five Forces Influencing the Organization's Objectives

(Scott Morton 1991)



Five forces influence the Organisation's objective

According to Morton (1991), organisations are facing the re-conceptualisation of the role of information technology in business. Scott Morton proposes five levels of complexity at which reconfiguration can be applied: Evolutionary levels which refer to: Localized exploitation (within individual business functions. The primary objectives addressed are local efficiency and effectiveness); and Internal integration (between different systems and applications, generally involving not just automation, but also rationalisation, and using a common ICT platform. Efficiency and effectiveness are enhanced by coordination and cooperation within the enterprise)

Revolutionary levels refers to: business process redesign (involving more thorough re-evaluation of the enterprise value-chain and the production process, and more far-reaching change); business network redesign (the reconfiguration of the scope and tasks of the business network involved in

the creation and delivery of products and services. Coordination and cooperation extend, selectively, beyond the enterprise's boundaries); and
business scope redefinition (involving migration of functions across the enterprise's boundaries, to the extent of changing the organisation's conception of the business it is in).

2.2 Modes Of ICT

Table 2.4 Modes of ICT

| DEFENSIVE | OFFENSIVE |
|---|---|
| Factory Mode <ul style="list-style-type: none"> • If systems fail for a minute or more, there's an immediate loss of business • Decrease in response time beyond one second has serious consequences for both internal and external users • Most core business activities are online • Systems work is mostly maintenance • Systems work provides little strategic differentiation or dramatic cost reduction | Strategic Mode <ul style="list-style-type: none"> • If systems fail for a minute or more, there's an immediate loss of business • Decrease in response time beyond one second has serious consequences for both internal and external users • New systems promise major process and service transformations • New systems promise major cost reductions • New systems will close significant cost, service or process performance gap with competitors. |
| Support Mode <ul style="list-style-type: none"> • Even with repeated service interruptions of up to 12 hours, there are no serious consequences. • User response time can take up to five seconds with online transactions • Internal systems are almost invisible to suppliers and customers. There's little need for extranet capability. • Company can quickly revert to manual procedures for 80% of value transactions • Systems work is mostly maintenance. | Turnaround Mode <ul style="list-style-type: none"> • New systems promise major process and service transformations. • New systems promise major cost reductions • New systems will close significant cost, service, or process performance gap with competitors. • ICT constitutes more than 50% of capital spending • ICT makes up more than 15% of total corporate expenses. |

LOW TO HIGH NEED FOR NEW INFORMATION AND
COMMUNICATION TECHNOLOGY

Firms can be either defensive or offensive in their strategic approach to ICT – approaches which according to Nolan(2005) are called modes.

Support mode (defensive) is where firms have both a relatively low need for reliability and a low need for strategic ICT; technology fundamentally exists to support employee activities. In such a case, the company won't suffer terribly if a system goes down.

Factory mode (defensive) is where companies need highly reliable systems but don't require state-of-the-art computing. They resemble manufacturing plants. If the conveyor belts fail, production stops. Companies suffer an immediate loss of business if systems fail even for a minute; a reversion to manual procedures is difficult, if not impossible. Typically factory mode organizations are not interested in being the first to implement a new technology. Business continuity in ICT operations is critical for these firms, disaster recovery and security procedures need to be in place.

Turnaround Mode (offensive) is where companies in the midst of strategic transformation frequently bet the firm on new technology. In this mode according to Nolan(2005), technology typically accounts for more than 50% of the capital expenditures and more than 15% of corporate costs. New systems promise major process and service improvements, cost reductions, and a competitive edge. At the same time, companies in this mode have a comparatively low need for reliability when it comes to existing business systems; like companies in support mode, they can withstand repeated service interruptions of up to 12 hours without serious consequences, and core business activities remain on a batch cycle. Once the new systems are installed, however, there is no possible reversion to manual systems because all procedures have been captured into databases. Companies usually enter turnaround mode with a major ICT project that requires a big reengineering effort, often accompanied by the decision to outsource or move a substantial portion of their operations offshore. Most firms don't spend a long time in turnaround mode; once the change is made, they move into either factory mode or strategic mode.

Strategic Mode (Offensive) is where according to Nolan(2005) total innovation is the name of the game. New technology informs not only the way they approach the marketplace but also the way they carry out daily operations. Strategic-mode firms need as much reliability as factory-mode firms do, but they also aggressively pursue process and service opportunities, cost reductions, and competitive advantages. Like turnaround firms, their ICT expenditures are large.

2.3 Strategic Use Of ICT

Today, ICT is considered of strategic importance in many organizations. The post of Chief Information Officer (CIO) has been elevated in most organizations to that of a senior manager. Indeed ICT in a lot of blue chip firms, is a fully fledged department which is allocated financial and human resources. Many have hired strategy consulting firms to provide fresh ideas on how to leverage their ICT investments for differentiation and advantage (Carr, 2003).

According to Carr(2003), Behind the change in thinking lies a simple assumption: that as ICT's potency and ubiquity have increased, so too has its strategic value. It's a reasonable assumption, even an intuitive one. But it's mistaken. What makes a resource truly strategic—what gives it the capacity to be the basis for a sustained competitive advantage—is not ubiquity but scarcity. You only gain an edge over rivals by having or doing something that they can't have or do. By now, the core functions of ICT—data storage, data processing, and data transport—have become available and affordable to all. Their very power and presence have begun to transform them from potentially strategic resources into commodity factors of production. They are becoming costs of doing business that must be paid by all but provide distinction to none.

ICT is best seen as the latest in a series of broadly adopted technologies that have reshaped industry over the past two centuries—from the steam engine and the railroad to the telegraph and the telephone to the electric generator and the internal combustion engine. For a brief period, as they were being built into the infrastructure of commerce, all these technologies opened opportunities for forward-looking companies to gain real advantages. But as their availability increased and their cost decreased—as they became ubiquitous—they became commodity inputs. From a strategic standpoint, they became invisible; they no longer mattered. That is exactly what is happening to information technology today, and the implications for corporate ICT management are profound.

Carr(2003) argues that when a resource becomes essential to competition but inconsequential to strategy, the risks it creates become more important than the advantages it provides. Think of electricity. Today, no company builds its business strategy around its electricity usage, but even a brief lapse in supply can be devastating. The operational risks associated with ICT are many—technical glitches, obsolescence, service outages, unreliable vendors or partners, security breaches, even terrorism—and some have become magnified as companies have moved from tightly

controlled, proprietary systems to open, shared ones. Today, an ICT disruption can paralyze a company's ability to make its products, deliver its services, and connect with its customers, not to mention foul its reputation. Yet few companies have done a thorough job of identifying and tempering their vulnerabilities. Worrying about what might go wrong may not be as glamorous a job as speculating about the future, but it is a more essential job right now.

Carr(2003) generally believes that most companies are overspending on ICT. He argues that ICT is a commodity and that the key to success, for the vast majority of companies, is no longer to seek advantage aggressively but to manage costs and risks meticulously. If, like many executives, you've begun to take a more defensive posture toward ICT in the last two years, spending more frugally and thinking more pragmatically, you're already on the right course. The challenge will be to maintain that discipline when the business cycle strengthens and the chorus of hype about ICT's strategic value rises anew

There are two basic strategic stances that enterprises can adopt low cost and product differentiation. Firms succeed relative to their competitors if they possess sustainable competitive advantage in either of these two, subject to reaching some threshold of adequacy in the other. Below Somogyi & Galliers (1987) provide examples of applications of Information Technology which are consistent with these two strategic stances, mapped against the particular enterprise activities to which they contribute.

**Table 2.5 Examples of ICT Applications to Porter's Strategic Stances
(Somogyi & Galliers 1987)**

| | Low Cost | Differentiation |
|---------------------------------------|---|---|
| Product Design and Development | <ul style="list-style-type: none"> • Product engineering systems • Project Control | <ul style="list-style-type: none"> • R & D databases • Professional Work Stations • Electronic Mail • CAD • Custom Engineering Systems • Integrated systems to manufacturing |
| Operations | <ul style="list-style-type: none"> • Processes engineering systems • Process control systems • Labour control systems • Inventory management systems • Procurement systems | <ul style="list-style-type: none"> • CAM for flexibility • Quality assurance systems • Systems to suppliers • Quality monitoring systems for suppliers |
| Marketing | <ul style="list-style-type: none"> • Streamlined distribution systems • Centralized control systems • Econometric modelling systems | <ul style="list-style-type: none"> • Sophisticated marketing systems • Market databases • ICT display promotion • Telemarketing • Competition analysis systems • Modelling capabilities • High service level distribution system |
| Sales | <ul style="list-style-type: none"> • Sales Control Systems • Advertising monitoring systems • Systems to consolidate sales function • Strict incentive-monitoring systems | <ul style="list-style-type: none"> • Differential pricing systems • Office-field communication • Custom-sales support • Dealer support systems |

Administration

- Cost control systems
- Quantitative planning and budgeting systems
- Office automation for staff reduction.
- Systems to customers
- Office automation for integration of functions
- Environment scanning and non-quantitative planning systems
- Teleconferencing

Under Porter's framework, enterprises have four generic strategies available to them whereby they can attain above-average performance. They are: cost leadership; differentiation; cost focus; and focused differentiation. Porter's representation of them is reproduced below.

Table 2.6 Porter's Four Generic Strategies (Porter 1980)

| | | Competitive Advantage | |
|-------------------|---------------|-----------------------|-------------------------|
| | | Lower Cost | Differentiation |
| Competitive Scope | Broad Target | Cost Leadership | Differentiation |
| | Narrow Target | Cost Focus | Focused Differentiation |

There are many different bases that exist classified into four major groups (Borden 1964, quoted in Wiseman 1988). ICT can be used to support or sharpen the firm's products through these various attributes. The product which includes: quality, features, options, style, brand name, packaging, sizes, services, warranties, returns. The price which includes: list, discounts, allowances, payment period, credit terms. The place which includes: channels, coverage, locations, inventory, transport; and finally promotion which includes: advertising, personal selling, sales promotion, publicity. Bakos et al (1986) viewed opportunities arising from ICT in three perspectives: that of an organizational

designer trying to improve the efficiency and effectiveness of the current organization; that of an industry insider trying to out-manoeuvre other participants in a competitive game; and that of an outsider investigating whether to enter an industry. These perspectives represent three major strategic views: Internal, competitive and business portfolio. Internal is concerned with the development of efficient and effective organizational structures and processes for achieving goals and objectives. Competitive strategy focuses on competitive moves within the industries in which the organization does business. Business portfolio strategy concerns the choice of which industries to compete in and how to position the organization in those industries.

Bakos (1986) identified four areas of opportunity based on the different categorizations of competitive opportunities created by Information Technology as argued by Parson (1983), Rockart and Scott Morton(1979), Ives and Learmonth(1984). The four areas are: improvement of operational efficiency and functional effectiveness; exploitation of inter-organizational synergies; product innovation with ICT; and acquisition of bargaining advantage over one's customers and suppliers.

Improvement of operational efficiency and functional effectiveness according to Bakos(1986), refers to where systems to improve operations are the traditional focus of Information Technology and central to the support of internal strategy of the firm. These systems can also support the competitive positions of the firm to the extent that they become industry innovations.

Bakos (1986) argued that organizations can use ICT to exploit inter-organizational synergies. Competitive strategies for exploiting synergies with customers or suppliers generally concentrate upon opportunities for better coordination. Through better coordination operations can be more efficient to the benefit of all participants. Coordination can be achieved with information systems that couple functional areas in two distinct firms. For example, one might couple the production planning system of a firm with the order entry system of suppliers to lower the amount of inventory in process and the turnaround time of new orders. Methodologies to identify opportunities for cooperative systems may be quite similar to those used to improve operational efficiency and functional effectiveness; the main difference is that the unit of analysis becomes two organizations instead of just one (Cash et al, 1985).

Information and Communication Technology is providing firms with unique opportunities for product innovation. In many industries, from automotive to consumer electronics, information technology is being built into existing products to enhance their value. In Banking, Insurance, and consulting, the technology is providing a development and delivery vehicle for new service-based products. The technology can provide an important means for differentiating existing products and developing new unique ones.

Baros(1986) argued that an important tactic for improving one's bargaining position relative to customers is to provide unique and valuable information and services that require idiosyncratic changes to the customer's organization, and thus making switching costs to a competitor more costly. Information Technology can facilitate unique information or service offerings, previously unavailable and potentially of very great value to customers. The higher the perceived value of these offerings, and the more complex and idiosyncratic the interface is for the customer, the higher the switching costs imposed on the latter.

Every supplier is a customer of another supplier in an unbroken value-added chain. Thus, the opportunity to gain bargaining advantage can be pursued by one's suppliers to the firm's disadvantage, unless tactics are devised to avoid the problem. Two specific tactics present themselves; avoid becoming dependant on supplier-controlled information and services, and create an efficient "electronic marketplace" between one's own organization and its suppliers.

CHAPTER THREE

RESEARCH METHODOLOGY

3.0 Introduction

This chapter focuses on the research methodology that the researcher used in collecting the data for the study, discusses the research design, data collection techniques, and the data analysis of the study.

3.1 Research design

The study utilized a census survey as it was targeting the companies listed in the NSE. In this case the researcher predominantly used a questionnaire. The advantage of questionnaire is that a large sample size can be used. It is also cheaper and quicker to carry out. The results from questionnaires are also easy to quantify. In some instances we may interview the respondents.

3.2 Population

The target respondents were 46 listed companies at NSE. These companies are publicly listed and are obligated to regularly publish their financial reports.

3.3 Data Collection Methods Instruments

The techniques that was used for data collection was both primary and secondary data. These was obtained in following way: The primary data is that data that is obtained from the respondents. These are: obtained from use of the following: Structured questionnaires Was used where there was open and close-ended questions. Open-ended questionnaires are those questions that give the respondent a complete freedom of response the way he/she feels about what is being asked. These questions give the respondent to express his/her opinion freely by filling in the questions

asked. Close-ended questionnaires are questions that are accompanied by a list of possible alternatives to choose from. The respondent has to choose from the alternatives given by the researcher by putting a tick appropriately.

Some of the data required was secondary. In order to determine the investment of the companies in ICT, the researcher referred to company records. The researcher obtained the data from reports and document analysis of actual records within NSE companies.

3.4 Data Analysis Techniques

The data collected was analyzed using statistical package for social sciences (SPSS) and Excel spreadsheet for quantitative and written explanation was provided while for the qualitative data the information was listed and used to draw conclusions on the research questions in the study.

CHAPTER FOUR

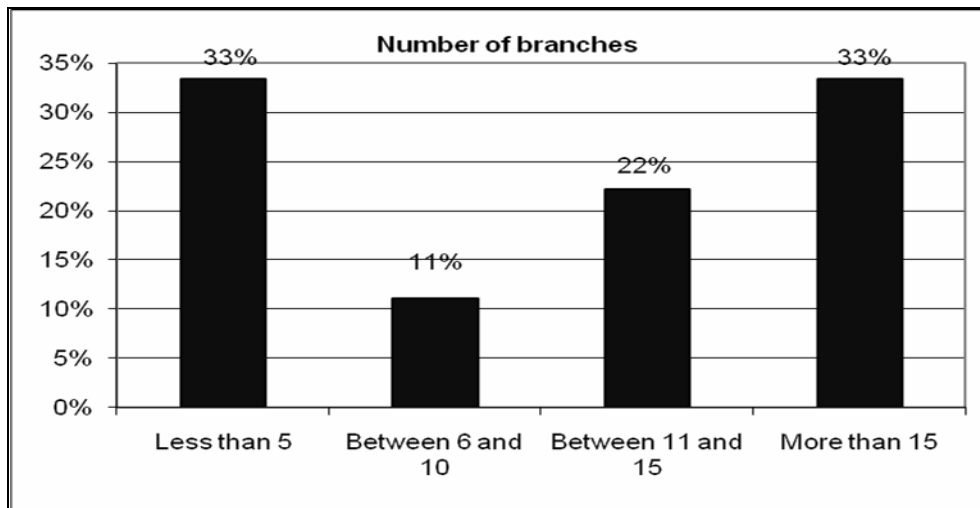
DATA ANALYSIS

4.1 Introduction

A total of 40 questionnaires were issued to various to various ICT managers for the companies listed on Nairobi Stock Exchange. Out of these, 28 questionnaires were completely filled while there was no response in some questionnaires and some were incomplete therefore excluded from further analysis. This represented a responsive rate of 70%, which was considered sufficient for analysis.

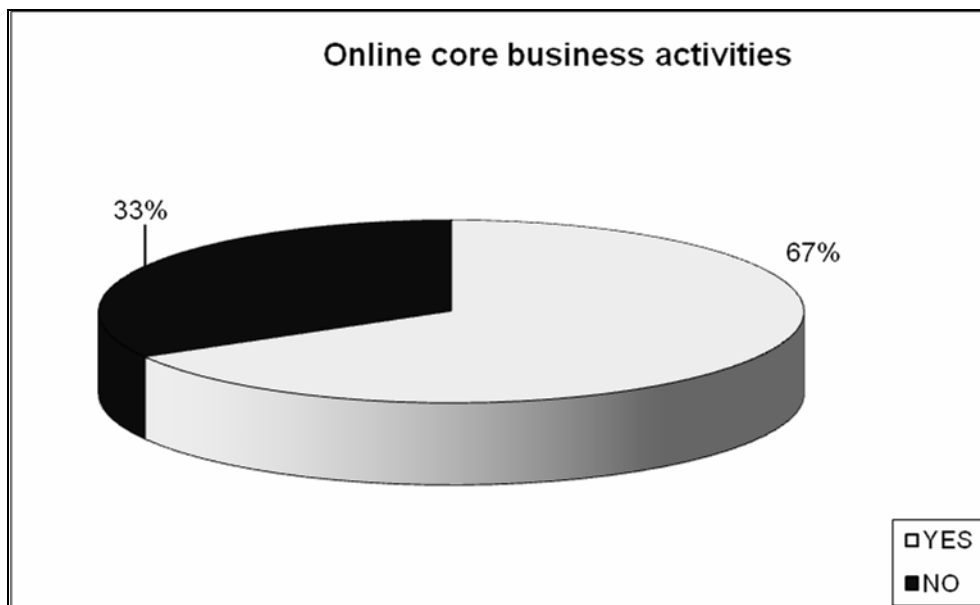
4.2 Quantitative Analysis

Table 4.1 Number of branches in Kenya



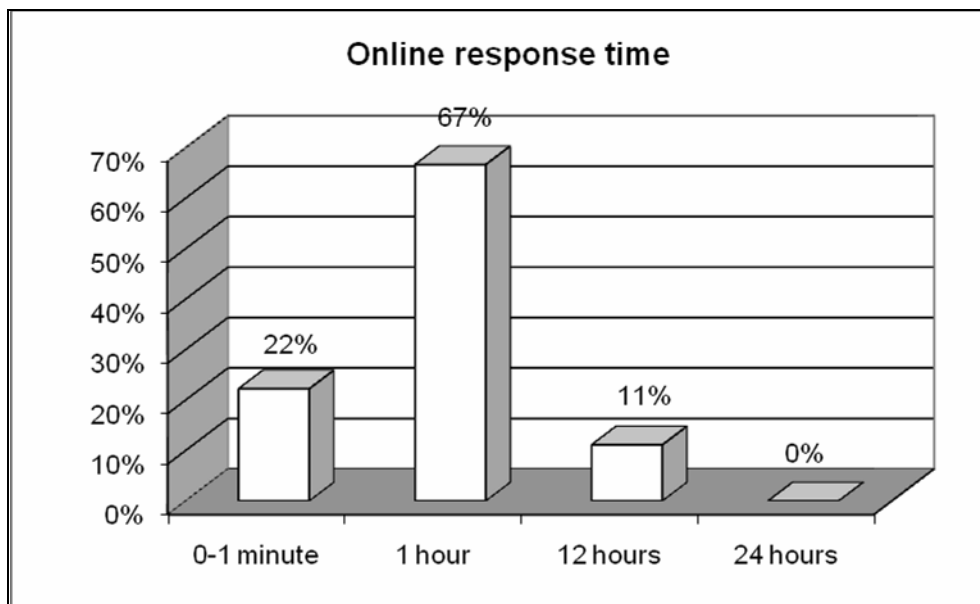
The researcher sought to find out the number of branches that the respondents had in Kenya as presented in Table 4.1, 33% indicated less than 5 and more than 15 respectively, 22% had between 11 and 15 while 11% had between 6 and 10 branches.

Figure 4.1 Online of core business activities



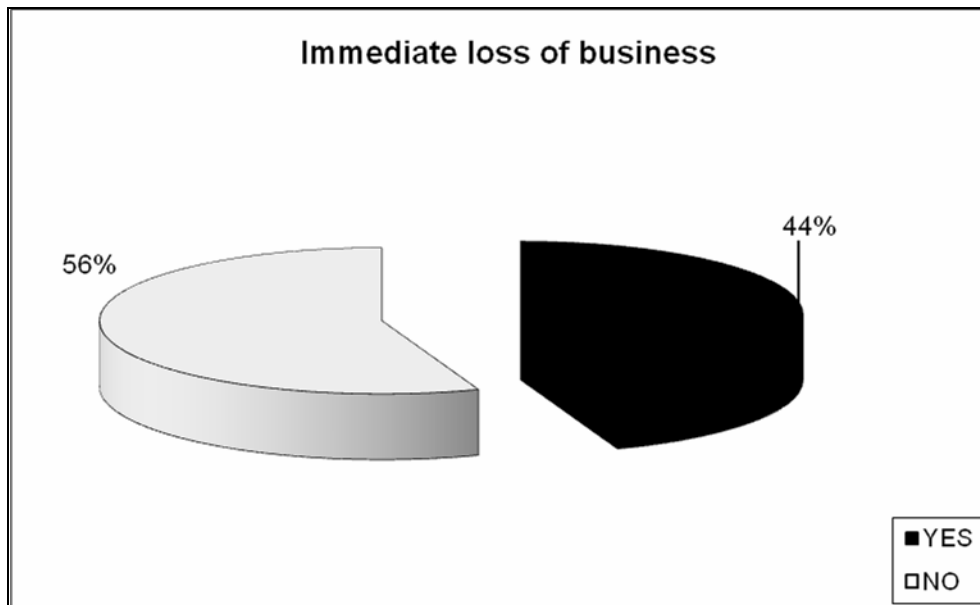
The researcher inquired to find out whether the core business activities were online, 67% of the respondents agreed while 33% said they are not as shown in Figure 4.1

Table 4.2 Duration of response time



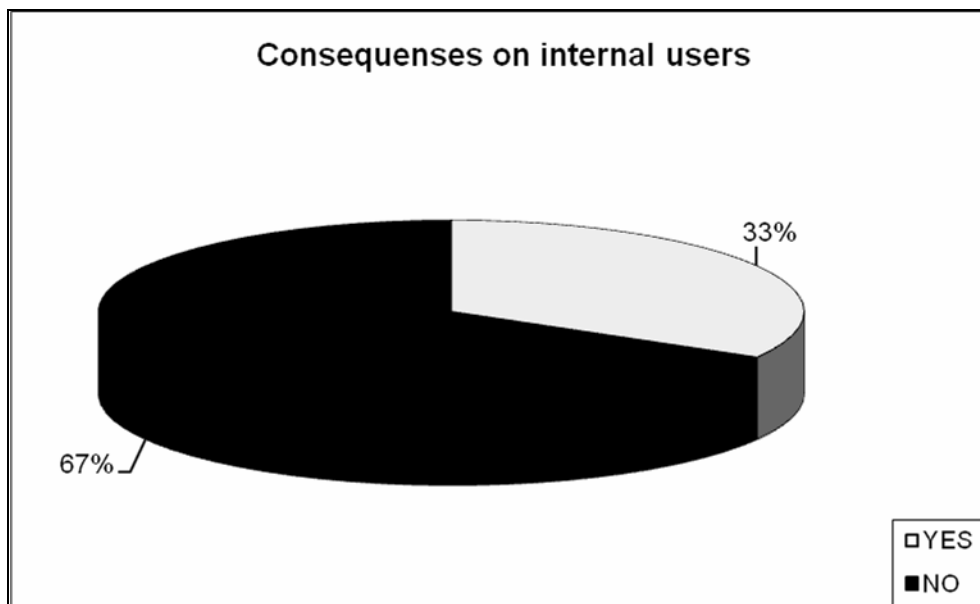
From Table 4.2 its clear that 67% of the respondents indicated that it takes less than one hour for online response, 22% indicated 0-1minute while 11% indicated 12 hours.

Figure 4.2 Immediate loss of business



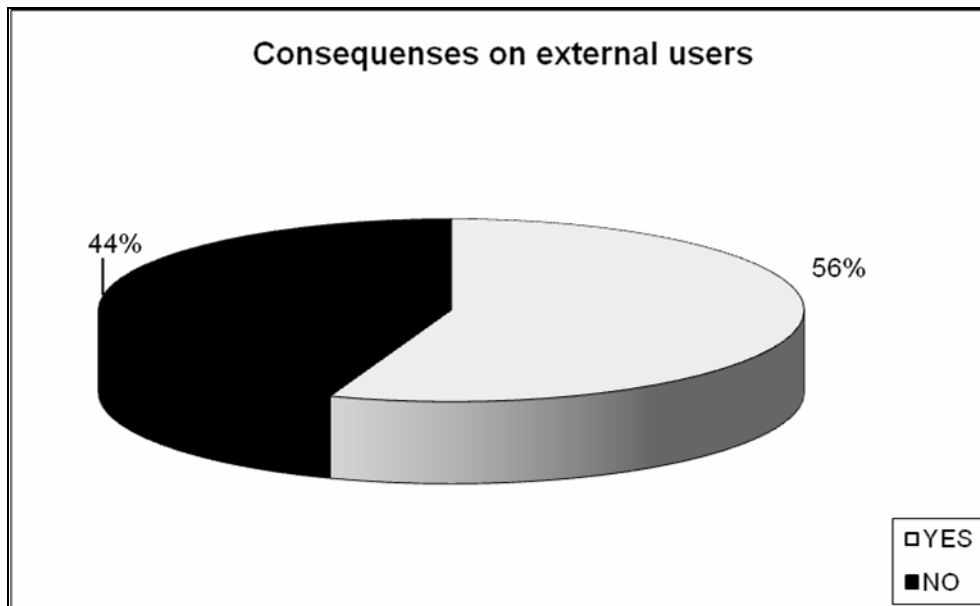
44% of the respondents said there will be immediate loss of business if the system fails for a minute while 56% of the respondents said there will be no loss of business

Figure 4.3 Effect of response time to internal users



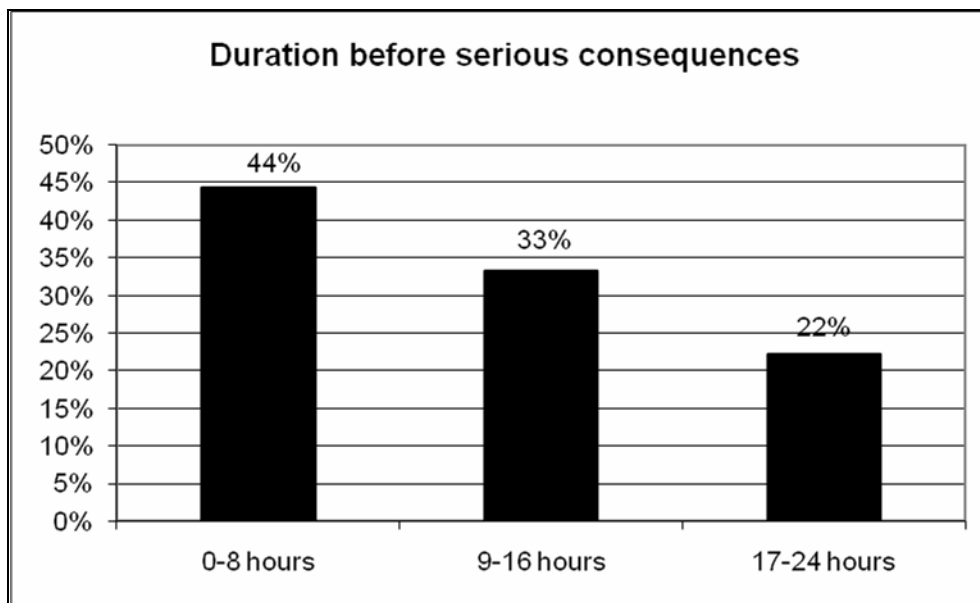
67% of the respondents said there will be no serious consequences to internal users if the response time is delayed beyond one second while 33% of the respondents said it will have serious consequences to internal users.

Figure 4.4 Effect of response time to external users



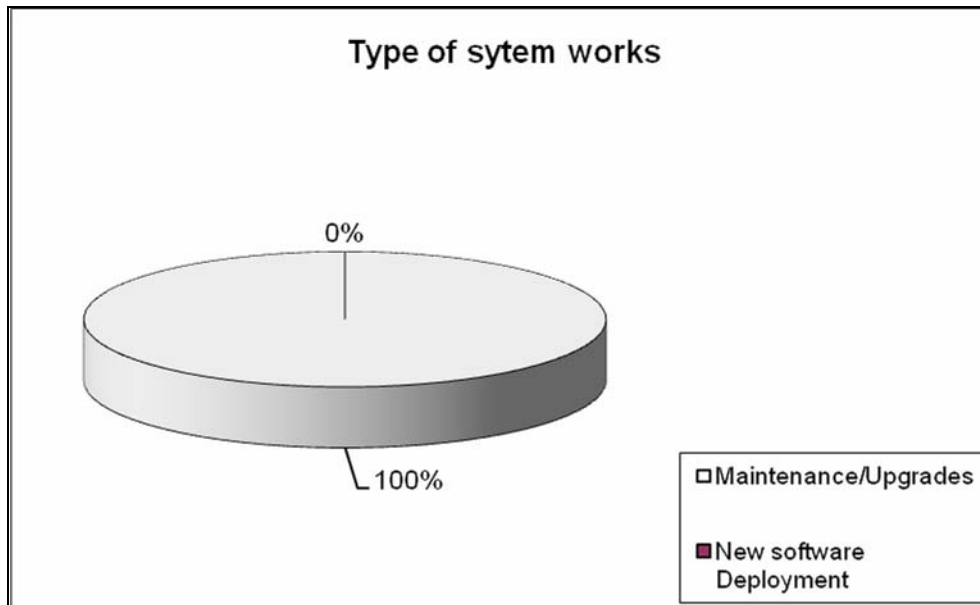
The respondents indicated serious consequences to external users by 56% if the response time is delayed beyond one second while 44% indicated lack of serious consequences

Table 4.3 Duration before serious consequences



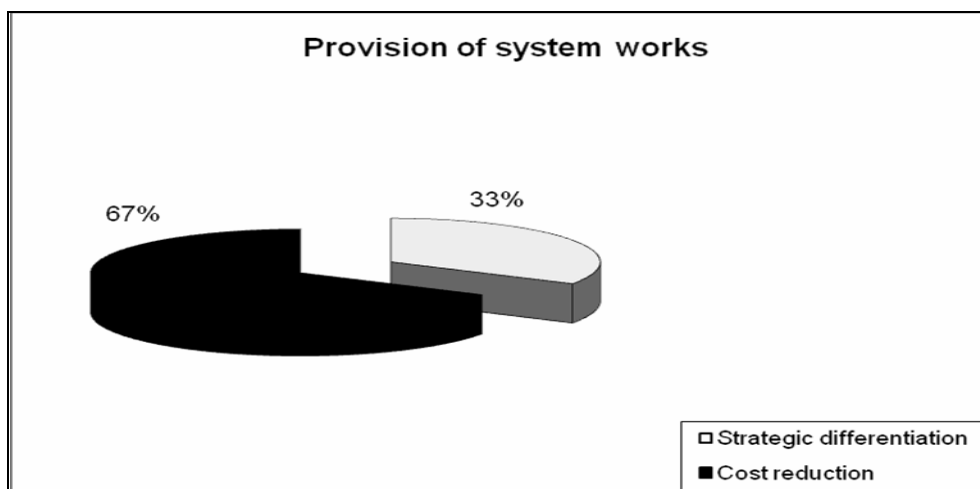
The researcher sought to find out the duration it will take before serious consequences are felt in case of repeated service interruptions, 44% indicated 0-8 hours, 33% said between 9 to 16 hours while 22% said between 17-24 hours.

Figure 4.5 Type of system works



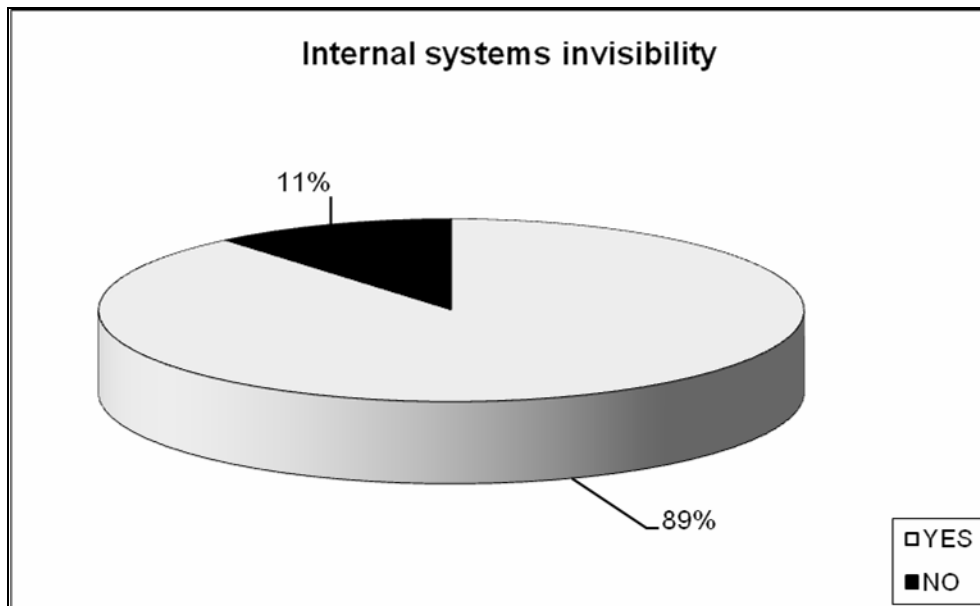
All the respondents indicated that maintenance/upgrades are being carried out in their companies currently

Figure 4.6 Provision of system works



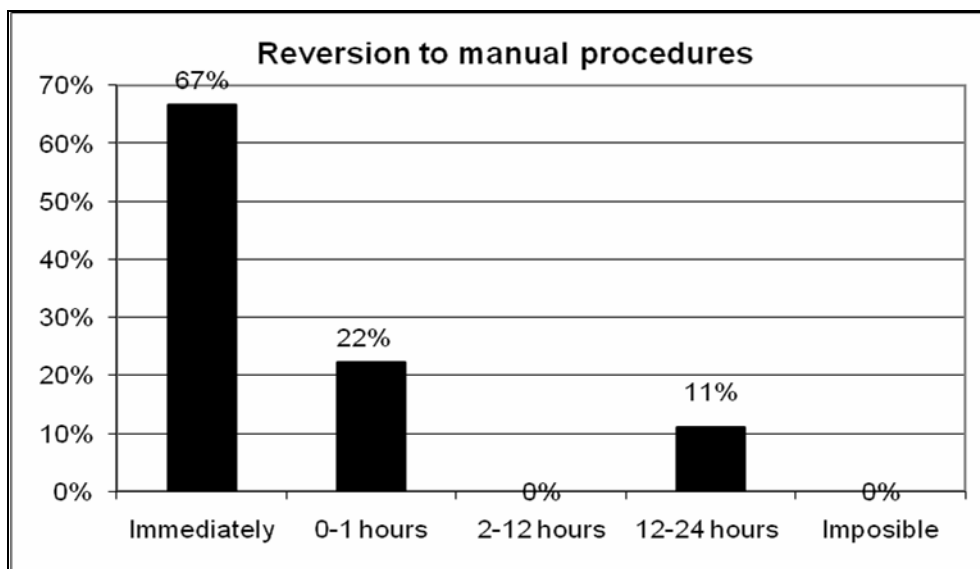
67% of the respondents indicated that the current system works provide cost reduction while 33% said it provides strategic differentiation.

Figure 4.7 Internal systems invisibility



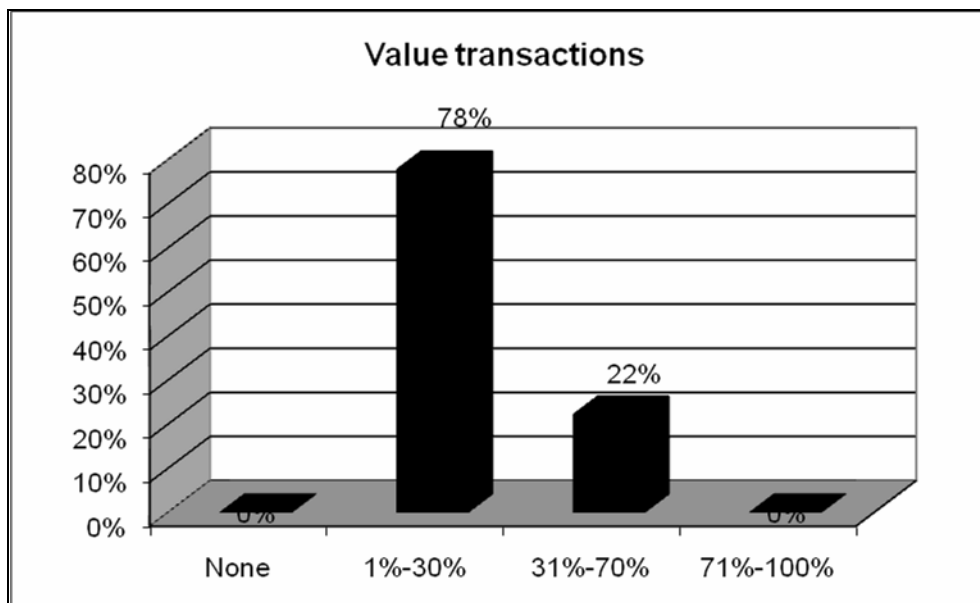
Majority of the respondents, 89%, indicated that internal systems are invisible to suppliers and customers while 11% said they are visible to suppliers and customers.

Table 4.4 Reversion to manual procedures



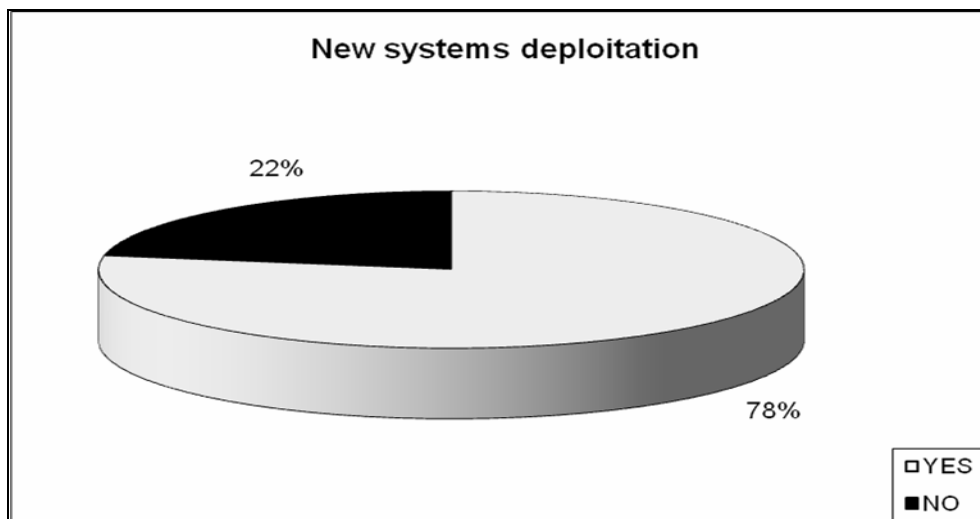
The researcher sought to find out how fast the respondents will revert to manual procedures incase of systems crash. 67% indicated immediately, 22% said 0-1 hour while 11% said between 12-24 hours.

Table 4.5 Value of transactions that can revert



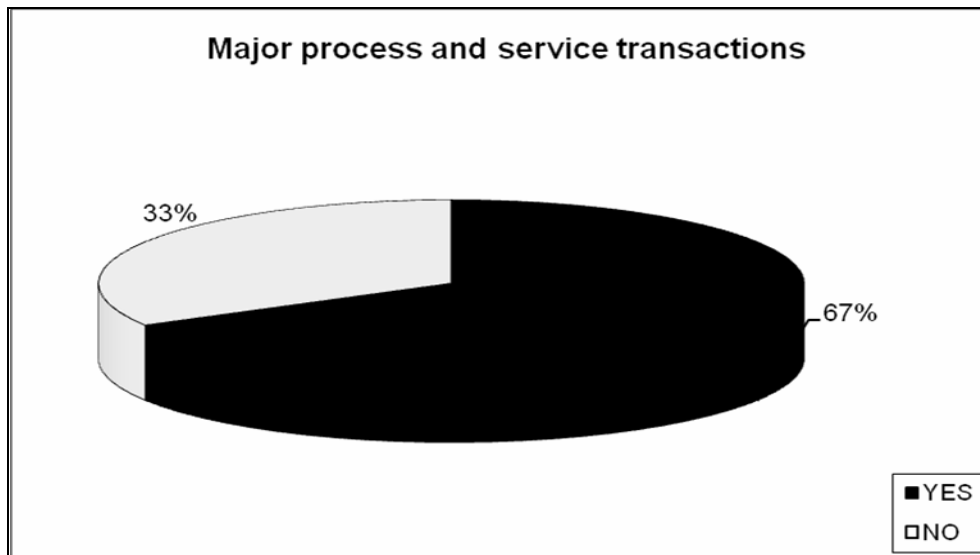
78% of the respondents said 1-30% of the value transactions can revert to manual system, 22% said between 31-70% can revert.

Figure 4.8 Process of deploying new systems



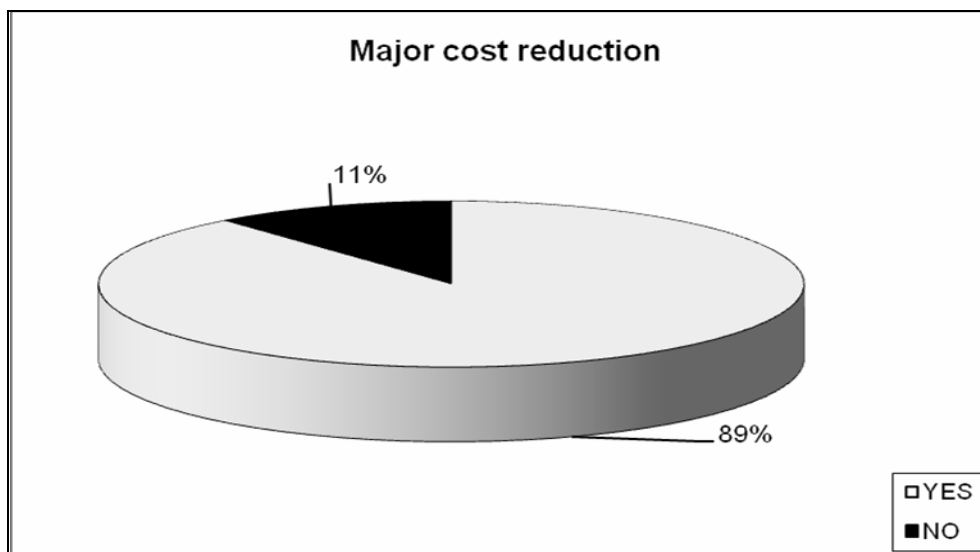
78% of the respondents indicated to be in the process of deploying a new system while 22% said they are not planning to deploy a new system.

Figure 4.9 Major process and service transactions



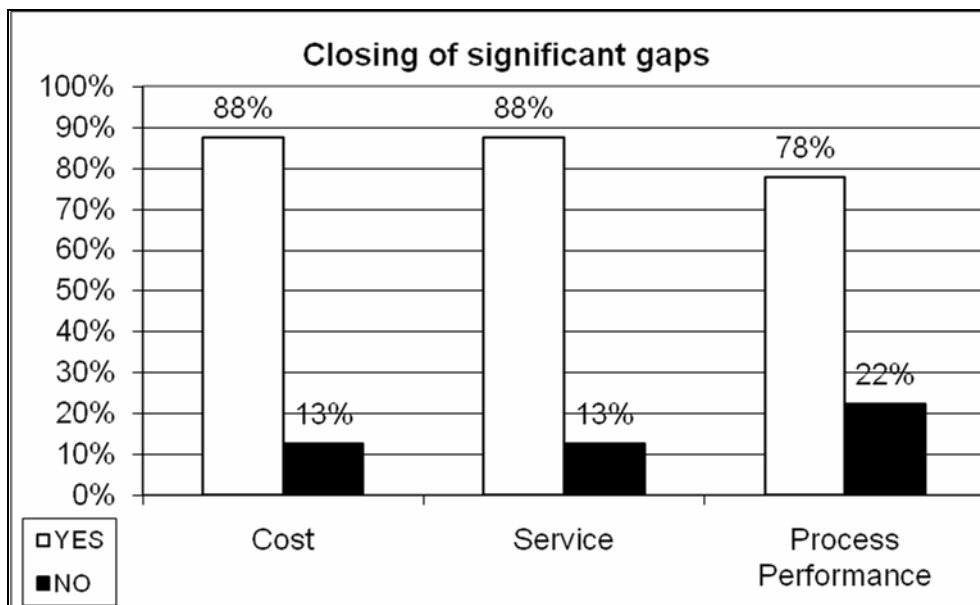
67% of the respondents indicated that there will be major process and service transactions when the new systems are deployed while 33% of the respondents said there will be no major process and service transactions.

Figure 4.10 Major cost reduction



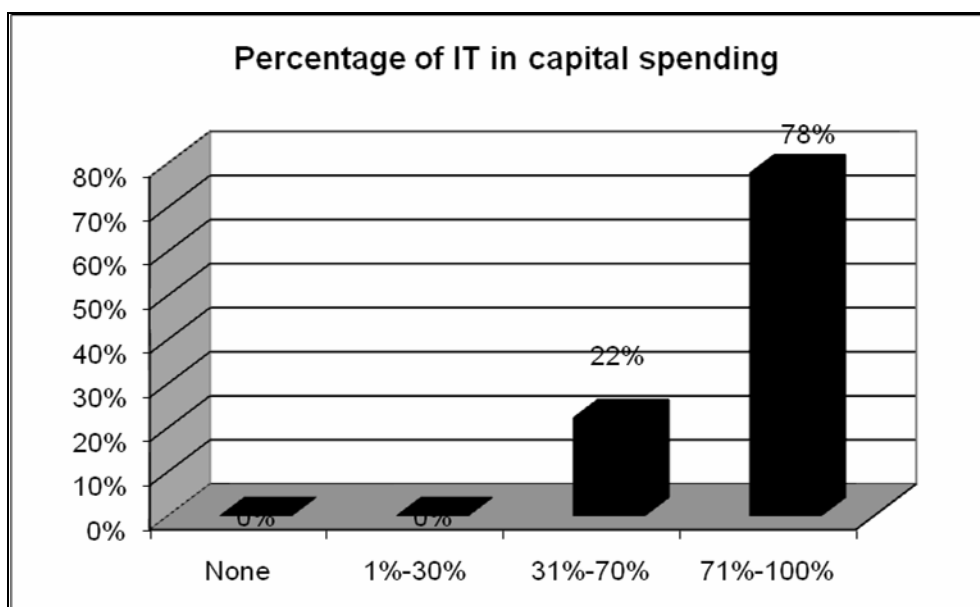
When asked whether the deployment of the new systems will have a major cost reduction, 89% of the respondents agreed while 11% disagreed.

Table 4.7 Significant gaps with competitors



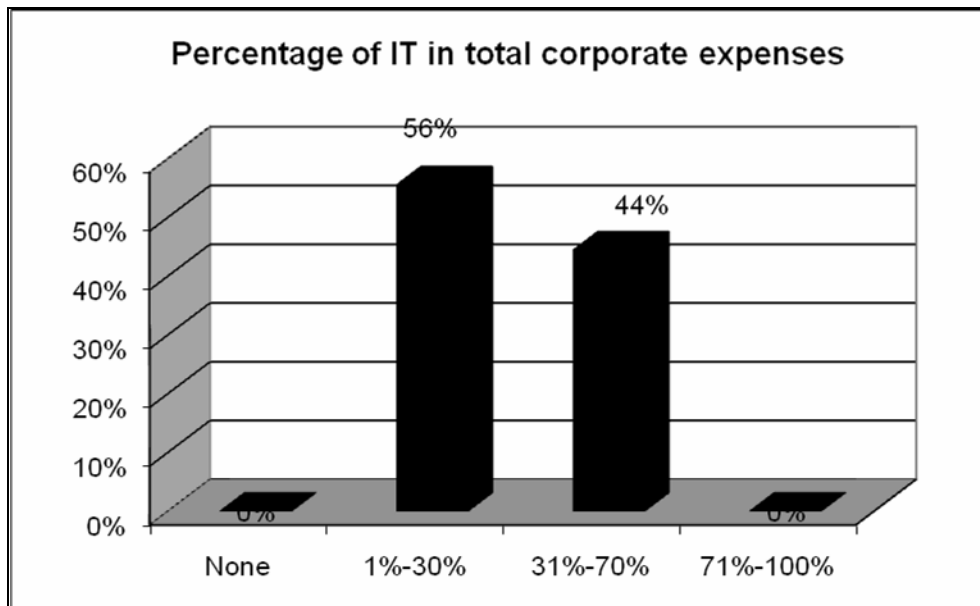
88% of the respondents indicated that the new systems will close significant gaps with competitors in terms of cost and service respectively while 78% said it will close in terms of process performance.

Table 4.8 Percentage of IT in capital expenditure



Information technology was found to form a bigger share of the capital expenditure of between 71-100%.

Table 4.9 Percentage of IT in total corporate expenses



IT was found to form between 1-30% of total corporate expenses by 56% while 44% of IT form 31-70% of total corporate expenses.

4.3 Qualitative Analysis

4.3.1 Problems considered critical to ICT adoption and use in Kenya

When the researcher sought to find out problems considered by respondents as critical to ICT adoption and use in Kenya, they listed the following: Maintenance of the system, Lack of technological expertise, Training of personnel, Use of pirated software's, Resistance to change, Declaring employees redundant, High initial, cost of setting up the system, Systems corruption due to viruses, Frequent changes in, technology is very expensive, Frequent failure of systems.

CHAPTER FIVE

CONCLUSION AND RECOMMENDATIONS

5.0 Introduction

This chapter discusses the findings gathered from the analysis of the data, as well as the conclusions reached. The chapter incorporates the various suggestions and comments given by the respondents in the questionnaires. Findings have been summarized alongside the objectives of study, conclusions have been drawn from the study and the recommendations for actions are given.

5.1 Summary of finding

Majority of the respondents had less than 5 branches in Kenya, with core businesses being online. Incase of system failure the response time is faster even though there will be no major business loss. 67% of the respondents said there will be no serious consequences to internal users if the response time is delayed beyond one second while 33% of the respondents said it will have serious consequences to internal users.

The respondents indicated serious consequences to external users by 56% if the response time is delayed beyond one second while 44% indicated lack of serious consequences. The researcher sought to find out the duration it will take before serious consequences are felt incase of repeated service interruptions, 44% indicated 0-8 hours, 33% said between 9 to 16 hours while 22% said between 17-24 hours. All the respondents indicated that maintenance/upgrades are being carried out in their companies currently. 67% of the respondents indicated that the current system works provide cost reduction while 33% said it provides strategic differentiation.

Majority of the respondents, 89%, indicated that internal systems are invisible to suppliers and customers while 11% said they are visible to suppliers and customers. The researcher sought to find out how fast the respondents will revert to manual procedures incase of systems crash. 67% indicated immediately, 22% said 0-1 hour while 11% said between 12-24 hours. 78% of the

respondents said 1-30% of the value transactions can revert to manual system, 22% said between 31-70% can revert. 78% of the respondents indicated to be in the process of deploying a new system while 22% said they are not planning to deploy a new system. 67% of the respondents indicated that there will be major process and service transactions when the new systems are deployed while 33% of the respondents said there will be no major process and service transactions.

When asked whether the deployment of the new systems will have a major cost reduction, 89% of the respondents agreed while 11% disagreed. 88% of the respondents indicated that the new systems will close significant gaps with competitors in terms of cost and service respectively while 78% said it will close in terms of process performance. Information technology was found to form a bigger share of the capital expenditure of between 71-100%. IT was found to form between 1-30% of total corporate expenses by 56% while 44% of IT form 31-70% of total corporate expenses. The following problems were considered critical to ICT adoption in Kenya; Maintenance of the system, Lack of technological expertise, Training of personnel, Use of pirated software's, Resistance to change, Declaring employees redundant, High initial cost of setting up the system, Systems corruption due to viruses, Frequent changes in technology is very expensive and Frequent failure of systems.

5.2 Conclusion

Majority of the respondents had less than 5 branches in Kenya, with core businesses being online. Incase of system failure the response time is faster even though there will be no major business loss. For many companies there will be no serious consequences to internal users if the response time is delayed beyond one second but there will be there for external users. Incase of repeated service interruption it will take a shorter duration for serious consequences to be felt. It was found that the current system works provide a cost reduction and the internal systems are invisible to suppliers and customers

Incase of system failure most of the companies will immediately revert to manual systems, this show that most companies have not adequately adopted ICT, even though they indicated a small fraction only can be reverted to manual system. Thus most of the companies indicated to being in

the process of adopting a new system, which will have a major process and service transactions and major cost reduction. The new system will also close significant gaps with competitors in terms of cost, service and process performance. Information technology forms a bigger share of capital expenditure for most companies but is cheaper in maintaining.

The following problems were considered critical to ICT adoption in Kenya; Maintenance of the system, Lack of technological expertise, Training of personnel, Use of pirated software's, Resistance to change, Declaring employees redundant, High initial cost of setting up the system, Systems corruption due to viruses, Frequent changes in technology is very expensive and Frequent failure of systems.

5.3 Recommendations

The companies in Kenya are undergoing tremendous changes. They are just coming out of the economic crisis and are struggling to achieve profitability. ICT adoption should be given a major concern if these companies have to cut cost and possibly in future escape the consequences of economic crush

There need to develop standard criteria on the process and type of ICT to be adopted. There should be a government intervention in the ICT adoption to reduce the high costs incurred in their implementation.

It is suggested that further research should be carried out focusing on value of ICT among other companies that are not listed on the stock exchange.

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APPENDIX: QUESTIONNAIRE

LETTER OF INTRODUCTION

Dear respondent,

I am a student undertaking an MBA at the school of business, university of Nairobi .The research topic is; Strategic Application Of Information Technology In Companies Listed On The Nairobi Stock Exchange.

I request you to fill the attached questionnaire and the information you will provide will be used strictly for academic purposes and will be treated as confidential.

Thank you.

Yours faithfully,

Kennedy Nduati

QUESTIONNAIRE

1. Name of your firm _____
2. How many branches does your firm have in Kenya?
 - Less than 5 ☐
 - Between 6 and 10 ☐
 - Between 11 and 15 ☐
 - More than 15 ☐
3. Are the core business activities online?
 - Yes ☐
 - No ☐
4. How long does user response time online take
 - 0 - 1 minute ☐
 - 1 hour ☐
 - 12 hours ☐
 - 24 hours ☐
 - If more please specify _____
5. If the systems fail for a minute or more, is there an immediate loss of business?
 - Yes ☐
 - No ☐
6. Does a decrease in response time beyond one second have serious consequences for **internal** users?
 - Yes ☐
 - No ☐
7. Does a decrease in response time beyond one second have serious consequences for **external** users?
 - Yes ☐
 - No ☐

8. If there are repeated service interruptions, how long will it take before serious consequences occur
- | | |
|---------------|--------------------------|
| 0 – 8 hours | <input type="checkbox"/> |
| 9 – 16 hours | <input type="checkbox"/> |
| 17 – 24 hours | <input type="checkbox"/> |
| Other _____ | |
9. What systems works are carried out?
- | | |
|-------------------------|--------------------------|
| Maintenance/ Upgrades | <input type="checkbox"/> |
| New Software Deployment | <input type="checkbox"/> |
10. Does the systems work provide:
- | | |
|---------------------------|--------------------------|
| Strategic differentiation | <input type="checkbox"/> |
| Cost Reduction | <input type="checkbox"/> |
11. Are the Internal systems invisible to suppliers and customers?
- | | |
|-----|--------------------------|
| Yes | <input type="checkbox"/> |
| No | <input type="checkbox"/> |
12. If the systems crash (go down) how fast can the company revert to manual procedures?
- | | |
|---------------|--------------------------|
| Immediately | <input type="checkbox"/> |
| 0 – 1 hour | <input type="checkbox"/> |
| 2 – 12 hours | <input type="checkbox"/> |
| 12 – 24 hours | <input type="checkbox"/> |
| Impossible | <input type="checkbox"/> |
13. What percentage of your firm's **value transactions** can revert to manual procedures?
- | | |
|-----------|--------------------------|
| None | <input type="checkbox"/> |
| 1 – 30 % | <input type="checkbox"/> |
| 31 – 70 % | <input type="checkbox"/> |
| 71 – 100% | <input type="checkbox"/> |

14. Is your firm in the process of deploying new systems?

- Yes ☐
- No ☐

15. When the new systems are deployed will there be **major process and service transformations?**

- Yes ☐
- No ☐

16. When the new systems are deployed will there be **major cost reductions?**

- Yes ☐
- No ☐

17. Will the new systems **close** significant gaps with **competitors** on the following?

- | | Yes | No |
|---------------------|--------------------------|--------------------------|
| Cost | <input type="checkbox"/> | <input type="checkbox"/> |
| Service | <input type="checkbox"/> | <input type="checkbox"/> |
| Process Performance | <input type="checkbox"/> | <input type="checkbox"/> |

18. Information Technology constitutes what percentage of your firm's **capital spending?**

- None ☐
- 1 – 30 % ☐
- 31 – 70 % ☐
- 71 – 100% ☐

19. Information Technology constitutes what percentage of your firm's **total corporate expenses?**

- None ☐
- 1 – 30 % ☐

31 – 70 %

☐

71 – 100%

☐

20. Please indicate at least **two** problems you consider critical to ICT adoption and use in Kenya.

a) _____

b) _____

THANK YOU VERY MUCH FOR YOUR TIME AND COOPERATION