

DECLARATION

11  
**INFORMATION TECHNOLOGY STRATEGY AND  
ORGANIZATION STRUCTURE RELATIONSHIP IN COMPANIES  
LISTED ON THE NAIROBI STOCK EXCHANGE** //

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By

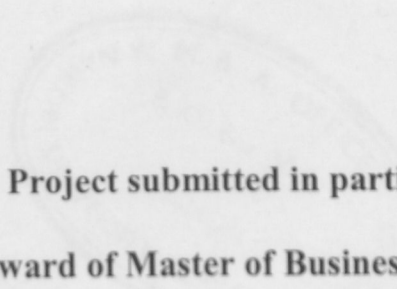
*08/02/2005*

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Date

This project has been submitted for examination with my approval as the university supervisor



**A Management Research Project submitted in partial fulfillment of the  
requirements for the award of Master of Business Administration  
(MBA) degree, Faculty of Commerce, University of Nairobi**

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**December 2004**

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# DECLARATION

This project is my original work and has not been submitted for a degree in any other university.

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Special recognition goes to my wife Sheila; you challenged me to take the course after a long period of procrastination. You were always there for me during times of late night study and your patience in my absence during the study period was overwhelming.

THANK YOU. To my dear wife Sheila and daughters; Karen and Stella

Your continued challenge, support, understanding and encouragement during the entire investment of your time period of the MBA study made it possible.

To my family, I had to forego the Sunday bonding and social sessions for the sole purpose of completing my study to my level best. Thank you for your support, encouragement and understanding.

To my parents

The solid foundation you built in me has brought me this far.

Mum; your words of encouragement still linger in my mind. Dad; you are the best. Thank you.

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BPR Business Process Reengineering .....	17
CEO Chief Executive Officer .....	21
CIO Chief Information Officer .....	22
EDP Electronic Data Processing .....	29
ERP Enterprise Resource Planning .....	30
IBM International Business Machines .....	31
ICT Information and Communication Technology	
IS Information Systems	
IT Information Technology	
KPI Key Performance Indicator	
LOB Line of Business	
NSE Nairobi Stock Exchange	
PC Personal Computer	
ROI Return on Investment	

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## ABSTRACT

Proceeding from the school of thought that strategy is implemented through organization structure, the study sought to establish the management's perception of the value of ICT to the business in companies listed on the Nairobi Stock Exchange (NSE) and thereby determine the relationship between the perceived strategic value of ICT and the placement of the ICT functions in their organization structures.

The research was carried out on 45 companies listed on the NSE with data being collected using structured questionnaires. Self-addressed mailing and drop (personally and through email) and pick methods of questionnaire administration were employed. A total of 35 responses were received representing 78% response rate. Of these, 80% were duly completed while 20% were returned uncompleted (as they had been sent) thereby offering an overall valid response rate of 62%.

Analysis of the data collected revealed the existence of a formal ICT function in 89.3% of the companies surveyed. In 72% of the companies, the head of the ICT function are positioned at a senior management level in the organization structure but their independent decision making is limited. In only in 16% of the companies does the head of ICT make independent decisions.

ICT function is perceived highly with 86% of the respondents rating it at a value between 2.5 and 5(highest). In 96% of the companies, IT's performance is critical (at a level of 4.75 out of 5) to the success of business strategy. In the majority (96%) of the companies, ICT strategy is highly influenced by the business strategy with the two strategies being aligned and mainly developed in-house (72%); 75% of the companies studied perceived IT

to be strategic. In 71% of the companies, the development and implementation of the ICT strategy is charged to the head of the ICT function with minimal involvement of the Executive Management (15%) and the Board of Directors (18%).

Even though in 96% of the companies, the need for ICT in the business is high and that there is a high level (an average score of 3.4 out of 5) of adoption of ICT in the business processes and products, determination of the strategic value of ICT to the business is hampered by the absence of ICT value measures; only 48% of the companies have these metrics in place. Determination of the strategic value based on the strategic and process value of ICT showed that the 76% of the companies had high strategic value (between 3.5 and 5) of ICT. On the basis of the perceived value parameters, the perceived strategic value of ICT was determined with a paltry 10% of the companies having high value of between 3.5 and 5. On inclusion of the perceived value of ICT in the determination of the strategic value, only 33% of the companies had a high strategic ICT value. The study therefore reveals a difference between the management's perception of ICT to the business and the determined perceived value of ICT to the business; 86% and 33% of the companies respectively.

The basis of the organization structure positioning in 85% of the companies is the strategic value of the function. 33% of the companies perceive and value ICT highly and 76% of them position ICT high in their organization structures. The study concludes that there is no relationship between the perceived strategic value of ICT function to the business and the positioning of the ICT function in the organization structure.

# CHAPTER 1: INTRODUCTION

## 1.1 Background

A business strategy articulates the overall direction of the business. Johnson and Scholes (2002) define strategy as the direction and scope of an organization over the long-term, which achieves advantage for the organization through its configuration of resources within the changing environment and to fulfill stakeholder expectations. Collis and Montgomery (1998) see strategy as a carefully constructed system of independent parts of the organization that actively directs executive's decisions about the resources the corporation will develop, the businesses the corporation will compete in, and the organization that will make it all come to life. For the strategy to be successful all these elements must be aligned to each other. An ICT strategy gives technological direction and purpose, organizes and deploys IT resources in the most effective manner, and coordinates the stream of decisions being made by different members of the organization and the IT function.

Strategy is about aligning every activity to create an offering that cannot easily be emulated by competitors. ICT is employed in the organization's relentless search for sustained uniqueness and out performance in terms of value creation for customers, shareholders and stakeholders. Porter's framework (Porter, 1980) and the Resource-Based View (RBV) of the firm (Wernerfelt, 1984) basically perceive the primary role of strategy as achieving a unique competitive advantage. Thus, the objective of ICT strategy becomes the effective and efficient use of technology to beat the competition either by excelling in the activities of the firm's value chain that allows the firm to establish a dominant position in the industry, or through the mobilization of unique resources and capabilities.

et al. 1993) Businesses are relying upon ICT to create competitive advantages thereby Strategy links the organization and its environment thereby matching the resources and activities of an organization to that environment (Johnson and Scholes 2002). An ICT strategy should therefore be consistent with the technological environment and seek to capitalize on opportunities the environment offers. According to Porter (1998), for an organization to achieve a competitive advantage over competition, it has to tap this advantage through cost-leadership, innovation, focus and speed. Organizations are creating, sustaining, and compounding these advantages through ICT. ICT improves the organization's strategic capability thereby enabling organizations to provide product/service features that are valued by customers and by enhancing competitive performance. Ford decreased its headcount in the procurement department by 75% by using IT in comparison with RFR.

Corporate strategy influences ICT through business strategies dictating the need for new information, systems, or other ICT capabilities. A business initiative can drive the need for new ICT projects that are required to realize the business objectives. However, as business becomes increasingly interconnected, ICT initiatives are becoming more synonymous to business initiatives. By offering new ways of doing business, new technology capabilities are influencing business strategies. While today m-commerce, e-commerce and extranets are a commonplace, a few years ago they were prime examples of technology-business initiatives, where technology was driving and changing the way in which business could be conducted. Daft (1993), contends that managers can also use IT for greater formalization, standardization and centralization. visible department of the practice of business, often designed to inform, limit and moderate managerial decision. McKinsey 7.5

The growth of IT systems and their pervasive use in business is a familiar development from the early 1980s. IT is fundamentally changing the nature of the workplace (Stebbins

et al, 1995). Businesses are relying upon ICT to create competitive advantage thereby taking a new urgency to the business. ICT is being employed in the value adding activities; creating a new source of and means to sustainable competitive advantage. It is increasingly through IT that consumer attraction and loyalty are accomplished while competitor initiatives are muted. It is therefore not surprising that business strategy is more and more influenced, enabled, and dependent on the ICT strategy.

(Thompson and Strickland, 1992). Strategy and structure relationship has attracted many researches with IT is central to the implementation of strategy and is closely and irrevocably linked with BPR. Weicher et al (1995) cite Walmart and Ford as examples of this linkage; using IT Walmart reengineered the processes used to procure and distribute mass-market retail goods; whilst Ford decreased its headcount in the procurement department by 75% by using IT in conjunction with BPR.

the basis of organization structure and organization structure defines the managerial decisions (Candlish, 1998). Business strategy should therefore lead ICT strategy with IT being a component of business just as much as other 'core functions' are. If IT is not in the service of the business strategy, then IT is just a technology in the business that falls short of translating business strategy into information technology. Conversely the ICT strategy should influence the business creating a symbiotic relationship.

organization structure expedites strategy action, or it may be a stumbling block thereto. Mwangi (2003) differentiates strategy and structure; that strategy is a concept, an abstraction, a theory of the business, often inferred by reviewing a pattern of managerial decisions; while structure is real, an artifact, a visible determinant of the practice of business, often designed to orient, limit and motivate managerial decision. McKinsey 7-S Framework (Pearce and Robinson, 2000) identifies six key factors (amongst them structure, strategy and systems) that determine superior performance. It is thus clear that

strategy is operationalised and realized through the structure with the ICT strategy operationalised through the ICT structure and its positioning in the organization structure.

The main forces driving organizations to change structure in pursuant to creating and sustaining competitive advantage is the need to exploit company capabilities (such as ICT) in line with the environmental changes and shareholder expectations (Thompson and Strickland, 1992). Strategy and structure relationship has attracted many researches with no real consensus. The relationships are that strategy drives structure: Chandler (1962), is a two-way influence: Mintzberg (1979), is reciprocal: Burgelman (1983), strategy follows structure: Ansoff (1965) and are independent: Aosa (1992). Irrespective of these views, structure (roles, responsibilities and lines of reporting) is an important element for success or failure of strategy. Strategy is the basis of organization structure and organization structure defines the managerial decisions (Camillus, 1998).

Translating strategy into action is thought in terms of structuring an organization to support successful performance, enabling success through the way in which separate resource areas of the organization support strategies, and how organizations manage change processes (Johnson and Scholes, 2002). Therefore, organization structure expedites strategic action, or it may be a stumbling block thereto.

Influences of ICT strategies have been observed in the form organization structure, process and strategy changes. IT improvements require changes in organizational structure and managerial processes with recent studies have associated IT innovations and applications with corporate downsizing, elimination of organizational levels, improved

cross-department coordination and better inter-organizational relationships (Stebbins et al, 1995). Organizations are now better able to structure for success through the use of ICT.

Different strategies imply different skills and requirements for success, which in turn translate into differences in organization structure. There is no doubt that the structure that an organization adopts is tightly linked to its strategy and the use of ICT (ICT Strategy) with the choice of structural orientation determining the organization's strategic posture. Some studies associate ICT advances with greater organizational flexibility, open flow of information, greater participation and voluntary input and decentralization (Huber, 1990). To be able to position the ICT function correctly in organizations, the management must be able to see the value of ICT to the business. Based on Mintzberg's classification (Mintzberg, 1979) and the IT and advantage framework (Boar, 1998), the IT function can be positioned in the organization to effectively maximize on the opportunities that the technology offers. Where IT is critical to the business (drives/complements the business strategy), the ICT function is strategic and can be observed through the positioning of the IT function at the strategic apex with IT being represented at the board level or/and a very senior management/directorship level. IT is seen at the operating core for organizations where it is key to the operations and production processes thereby helping achieve operational efficiency and productivity. At the lowest level, where the business is low in IT usage; the IT function is not visible and is not represented in the organization structure. In this case, IT activities may be assigned, as subsidiary tasks to another member of staff whose core duties is not IT.

## 1.2 Research Problem

Measuring the strategic value of ICT to the business is not easy; ICT encompasses both tangible and intangible components. Many organizations have invested heavily in ICT but are unable to assess its impact and value to the business in terms of value and return. As the business environment becomes more competitive and complex, the strategic value of ICT is being sought as a basis of structuring and positioning the ICT function in the organization structure in a way that the firm maximizes ICT's benefits.

The importance of organization structure is often overlooked and Miller (1989) identifies a gap in the literature whereby the content of business strategy (with ICT strategy a central part of it) has not been widely considered in relation to structure. Designing of organizational structures is one the most important roles of a manager yet this is often a neglected responsibility (Senge, 1994). The impact of the many restructures experienced since the 1990s support the views above and as such shows a lack of understanding of the principles of organizational structuring.

IT is viewed as a non-core activity with many companies opting to outsource their IT activities to organizations whose core activities are essentially in IT. Companies like Kenya Airways Limited and NIC Bank have outsourced some of their IT activities. Sparrow (2004), notes that big UK based companies will allocate 39% of their budgets to external services this year. Contrary to recent trends, functions such as marketing, finance, and production are seen as being key to the business with IT being seen as secondary. IT is enabling achievement of business goals, objectives, and strategies. Waruingi (2003) notes that many companies had recognized the need for and established fully-fledged ICT

departments as an indication that most of the companies appreciated the key role that ICT plays in the performance of their businesses.

The level of IT knowledge amongst the corporate executives in Kenyan enterprises is wanting, hindering the ability to correctly value the benefits of ICT to the business. Management's low perception of ICT has been occasioned by the lack of evaluation of ICT projects against other LOBs projects, scandals and reports of failed ICT projects. Weicher et al (1995) supports this perception by noting that the 'lackluster' performance of many information systems in the past decades have made senior management be skeptical about the effectiveness of IT as a whole.

Tenets of good corporate governance place focus on governance of IT. The large investments in ICT, and the strategic opportunities and risks those investments present, necessitates board-level risk management and governance activities for IT (Hamaker and Hutton, 2004). Unfortunately, IT remains a neglected function for most corporate boards receiving scant attention from most boards of directors. Waruingi (2003) deduces that only a handful of leading boards have committees that provide ongoing IT guidance.

The most visible shortcoming of many IT personnel is their lack of understanding of the company's specific areas of business, as well as business in general. IT Personnel without business savvy have thus been regarded lowly, as they are incapable of proving to the business that they can add value to the organization's progress and well being. They are seen to be technology 'junks' and are not in touch with the business.

The value of IT to business cannot be under-emphasized with the current day characterized by a highly complex and widespread deployment of IT systems in terms of organizational structures, technology use and resources. In the modern corporation, intangible assets such as ICT are the source of greatest value; they generate most of corporate growth and shareholder value (Lev, 2004). Ideally, organization structure and the placement of IT should be commensurate of its value to the business, but differing placements of IT in the organizations are observed; others have IT functions as divisions led by an IT Director or departments led by Senior Managers (reporting to the CEO), sections led by Line Managers reporting to a Senior Manager of a key function such as Finance. In other organizations, IT is just a support unit with no real leader and reporting to a line or operating Manager in the organization.

The proposed research will study the above factors and attempt to answer the following problems statements:

***Do Kenyan organizations perceive the ICT strategy as critical to the business?***

***Do Kenyan companies position IT in their organization structure in relation to the strategic value proposition of IT?***

### 1.3 Objectives of the Study

The objectives of the study are two fold:

1. To establish the management's perception of the value of ICT to the business in Kenyan companies listed on the NSE and,
2. To determine the relationship between the perceived strategic value of ICT and the placement of the ICT function in their organization structures.

### 1.4 Importance of the Study

Future scholars can use this research as a basis of further research in the area and the findings of the study may help resolve some of the questions about the relationships of IT to internal organization and provide insight into the optimal organization.

The study will also provide a better understanding of the basis of the placement of the IT function in organizations. The study also challenges corporate managers to view the ICT function as being a value-adding function and form this value as their basis for IT's placement in the organization to better able enjoy the value of ICT to the business.

On the basis of the study, corporate managers will appreciate ICT and its strategic value thereby use ICT to effectively and efficiently achieve their strategic objectives; enhancing their chances of a successful implementation of their chosen business and ICT strategies.

## CHAPTER 2: LITERATURE REVIEW

### 2.1 Introduction

The overall purpose and scope of the organization is to meet the expectations of all (or majority) of shareholders, add value to different parts of the enterprise, and achieve its objectives while at the same time achieving the expectations of its stakeholders. Success of the organizations in the present depends on how well it focused its past operations and future decisions then (effectiveness) and its ability to focus on its current operations efficiently. Its success in the future depends on how well it is able to focus on the future without losing focus on the present; this is any organization's greatest challenge.

Organizations (such as those listed on the NSE) have employed various strategies and technologies to help them achieve their objectives. A holistic position of the company must be viewed and not sectional; the company must view its future in terms of the future if its sections and how they synergistically integrate to form the future of the organization. ICT strategy is one of the functional strategies necessary for a company and the integration of the ICT strategy into the other business strategies should offer added value to the business.

### 2.2 Information and Communication Technology

Defining ICT is just as broad and varied as the terms forming the terminology itself; information (stimuli that have meaning in some context for its receiver), communication (transfer of information and understanding from one point or person to another) and technology (natural science and the scientific method applied to solving practical problems). With the convergence of telecommunications and computing technology, ICT

and IT are seen as one and as such these terms are used interchangeably. IT is highly dynamic and pervasive and such many scholars' and practitioners' definitions have not been exhaustive with the definitions changing as IT evolves.

IT encompasses all forms of technology used to create, store, exchange, and use information in its various forms (data, voice, images, multimedia, and other forms). IT includes matters concerned with furthering computer science and technology, design, development, installation, and implementation of information systems and applications. The San Diego State University defines ICT architecture as a framework for acquiring and evolving IT to achieve strategic goals and view IT as having both logical (mission, functional and information requirements, system configurations, and information flows) and technical (IT standards and rules that will be used to implement the logical architecture) components. The Treasury Board of Canada Secretariat (TBCS, 2004) further defines IT as referring to the scientific, technological and engineering disciplines as well as to the management technologies used in information handling, communication and processing, their applications and associated software and equipment and their interaction.

IT/ICT is therefore a broad terminology that is used to generally describe the systems, equipment/infrastructure, resources and processes that enable securing, easy and timely access/retrieval, storing, sharing and processing of information. From a business perspective, all this information is of utmost great value and enhances the quality and effectiveness of business decisions.

compatibility between the two technologies leading to their convergence (De Sutter, 2003; Somogyi and Galliers, 1987)

From the backroom of EDP to the desktop, factory floor, laptop and currently to the palmtop, IT has continually evolved in its use and is now at the heart of the entire business. IT is now involved in all processes of the business; Customer Relationship Management, Production, Financial, Inventory, Automation and Control systems are just but a few the business areas.

## **2.3 ICT and Strategy**

### **2.3.1 Strategy**

An organization relies on the external environment for its input resources (human, physical and financial), transforms them into outputs, which go back as outputs (goods and services) to the environment (the market). The external environment influences a firm's choice of direction and action and its changes interrupt the cycle. Understanding the trends characterizing the external environment helps in formulating a strategy. The external environment forces include; changing consumer needs, economic conditions, natural weather phenomena, trading blocks, competition, socio/cultural and political/legal, and technological (Pearce and Robinson, 2000). The success of an organization lies on how well they recognize and adequately respond to these factors and their changing impact. These organizations are able to re-organize easily, quickly and build timely and adequate strategies that ensures an upper edge to the competitor and that their products/services attract the market. With the environmental changes becoming more turbulent, strategy is increasingly becoming more useful.

Chandler (1962) defines strategy as “the determination of the long-run goals and objectives of an enterprise, and the adoption of courses of action and the allocation of resources necessary for carrying out these goals”. Johnson and Scholes (1999) define strategy as being about direction and scope of an organization over the long term. Therefore, strategy is a unifying theme that gives coherence and direction to the actions and decisions of an individual or organization.

### 1.3.2 ICT in Strategy

Business strategy focuses on building new advantages, which increase customer satisfaction and create distance from competitors, maintaining existing advantages and compressing or eliminating the advantages of competitors (Boar, 1998). Boar further classifies all advantages into five generic categories and is consistent with Porter's sources of competitive advantage (Porter, 1998); cost advantage; being able to provide products and services more cheaply, differentiation advantage; create a product or service offering highly desirable feature/functionality, focus advantage; meeting the specific needs of a particular customer, execution advantage; permitting an organization to service customer needs in a more superior manner than others and, maneuverability advantage; permitting an organization to adapt to changing requirements more quickly than others. Being maneuverable permits an organization to constantly refresh the other types of advantage. Competitive advantage can be attributed to the ownership of a valuable resource that enables a company to perform better than competitors (Collis and Montgomery, 1995).

Organizations need strategies to give direction and purpose, to organize and deploy resources in the most effective manner, and to coordinate the stream of decisions being made by different members of the organization. Success of the business strategy is attained if the company achieves its strategic objectives and targeted levels of financial performance.

### 2.3.2 ICT in Strategy

Corporate strategies strive to leverage resources into all markets in which those resources contribute to competitive advantage or to compete in new markets that improve the corporate resources (Collis and Montgomery, 1995). Technology is a driving force that shapes the strategic future of an enterprise (Ansoff and McDonnell, 1990). RBV sees companies as a very different collection of physical and intangible assets and capabilities that drive its performance in a dynamic competitive environment (Collis and Montgomery, 1995). ICT is one such valuable asset. ICT is a force for changes in organizations with the speed of these changes and their magnitude opening new levels of opportunities and challenges to organizations. As an internal capability, ICT can be a source of competitive strength or weakness. As a technological change in the external environment, ICT can be a threat or opportunity. ICT is at the heart of strategy in organizations and has the most potential to change the business through the ability to effectively leverage resources and drive revenues.

The ever increasing and complex business challenges (such as globalization, need for flexibility) call for the use of ICT requiring organizations to embrace IT for core functions. ICT is part of the core business in many organizations offering the organization key success factors required by the modern-day organization; speed, integration, flexibility and

enabling innovation (Ashkenas et al, 1995). Competition is now based on information, with companies that are better able to gather and utilize information having an advantage. Therefore, organizations need to formulate comprehensive IT strategies. Hogbin et al (1994) conclude that there is a greater need for IT to be more responsive to the long range needs of the business strategy, and for other business functions to make better use of IT to stay competitive.

ICT is applicable in all the value adding activities in an organization's value chain; from linking the value adding activities through processes to management and administration of the various activities. This is evidenced by Porter (1998) who shows IT as being pervasive in the value chain; observable and used in every generic category of value activity in the chain. IT links the various activities offering the organization a positive effect on differentiation and cost through its influence on the drivers for costs and uniqueness (of value activities). Mbote (2003), showed that IT has had some influence on marketing strategies of commercial banks in Kenya. The fusion of business and IT strategies is evidenced by every business decision triggering an IT event or process making IT a major component of the business strategy. Marketing, operating and production strategies heavily depend on the ICT strategy. Businesses are becoming more IT dependent, with business processes being more IT intensive (Figure I overleaf). New product developments are relying more on ICT than before. As such, the degree to which organizations use each of these facets of ICT gives different views of ICT in the firm.

A company will be positioned to succeed if it has the best and most appropriate stocks of resources for its business and strategy (Collis and Montgomery, 1995). Businesses that have high dependence on IT, their processes are IT intensive and their products are IT intensive have strategically positioned IT in the organization structure. ICT sustains and extends the organization's strategy and objectives.

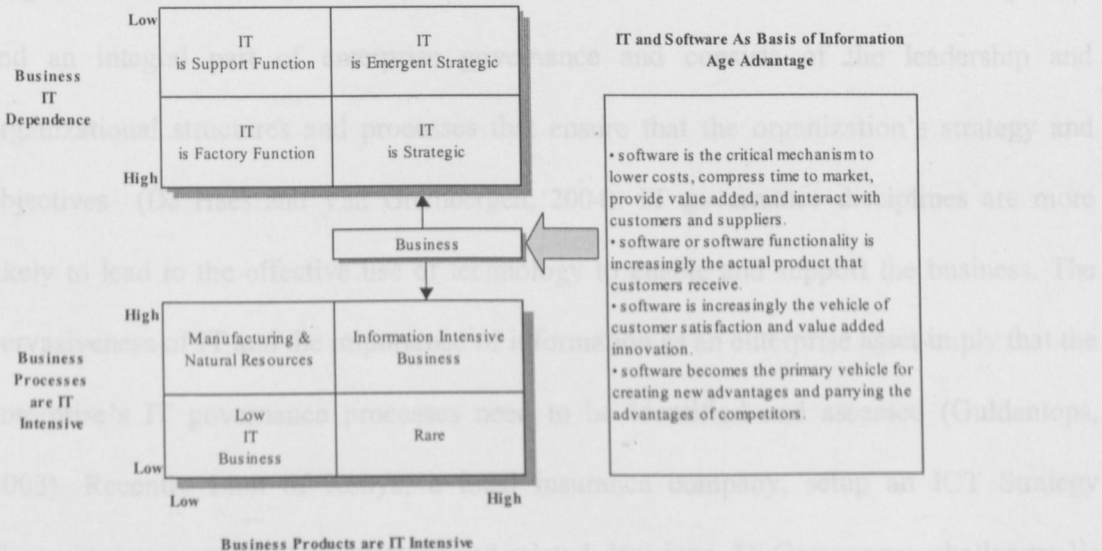


Figure I: IT and Advantage (Source: Information Technology Strategy As Commitment, Boar, 1998)

### 2.3.3 ICT Strategy

An ICT strategy focuses on the impact of technology change in the environment and the development of appropriate ICT capabilities thereby ensuring that the company is positioned to take better advantage of technological opportunities available thereby using critical resources optimally. It is through the ICT strategy that organizations become aware of and plans for changing technologies. The implementation of the ICT strategy is the responsibility of the executive management, assisted by ICT steering committees (De Haes and Van Grembergen, 2004).

the budgeting process. It further ensures that the adoption of ICT is systematic, planned, ICT strategy contains the technology scope (how IT creates business opportunities), vision, the competences (how IT creates business advantages), the governance structure (what external relationships IT depends on), security structures (how to mitigate risks inherent in the technology), infrastructure architecture, processes and skills.

IT governance is the responsibility of the Board of Directors and executive management and an integral part of enterprise governance and consists of the leadership and organizational structures and processes that ensure that the organization's strategy and objectives (De Haes and Van Grembergen, 2004). IT governance disciplines are more likely to lead to the effective use of technology to enable and support the business. The pervasiveness of IT and the importance of information as an enterprise asset imply that the enterprise's IT governance processes need to be identified and assessed (Guldentops, 2003). Recently Lion of Kenya; a local insurance company, setup an ICT Strategy Committee to oversee IT investment and related decisions. IT Governance challenges lie in controlling, managing IT risks while maximizing return to business. IT Governance also provides a fusion between IT and business and helps to obtain needed IT involvement of senior management.

Because all resources depreciate, an effective IT strategy requires continual investment in order to maintain and build valuable resources (Collis and Montgomery, 1995). The ICT development plan (a critical component of an ICT strategy) is a representation of the current and the planned ICT systems in the time raster, in the organizational and technical context and in their mutual linkage. Thus an ICT development plan is the reference for all ICT investments of an enterprise and forms as an input to strategy implementation through

the budgeting process. It further ensures that the adoption of ICT is systematic, planned, coordinated and controlled within the strategy.

ICT training and skill development program should be developed in conjunction with the HR function. This ensures that the employees have the necessary skills and competences to make use of resources within an IT policy and guidelines on the use of deployed systems (Braswell and Harmon, 2003).

#### 2.3.4 ICT and Business Strategy Alignment

An IT organizational structure delivers the information capital asset, supports and operationalises the business and ICT strategies (Gold, 2003). The positioning of the IT function in the organization and a supportive IT structure is critical to the successful implementation of the ICT strategy and thereby aligning the business and ICT strategies in pursuit to organizational goals and objectives. Dixon and John (1989) grouped IT functions as Management of Technology (computer operations, communications/Networking, Emerging Technologies, Planning-Technology) and Management of use of technology (systems development, end-user computing support and planning-applications).

An ICT strategy should incorporate the measurement of the benefits of ICT and the performance of IT personnel. Companies that have attempted to measure ICT's value have seen very encouraging results. Organizations have employed performance measures such as the Balanced Score Card (BSC) and IT portfolio management with the aim of measuring and communicating the level of performance of IT strategy and the organization as a whole (Gold, 2003; De Haes and Van Grembergen, 2004; Walter, 2004).

Identification of the return on a company's investment in ICT is important with benefits being attributed directly to ICT enabling returns to be evaluated against alternatives; calculating the ROI of ICT. In an ICT strategy, calculating the ROI of ICT may take the form of an evaluation/analysis of previously unexamined investments such as determining the additional costs and revenues generated by new business capabilities such as Internet-based online banking activity, or purchasing and ordering process (Unwala, 2004).

### 2.3.4 ICT and Business Strategy Alignment

The need for alignment between the IT and business strategies cannot be understated. The business needs to take full advantage of its ICT capability while at the same time the ICT capability should be able to support the business strategy. A lack of alignment between the IT and the business could lead to sub-optimal use of resources and cause the organization to lose out on the synergistic benefits thereof. According to Waruingi (2003) the alignment of IT and business strategies contributes to the development of long-term sustainable competitive advantage. This alignment is a necessary condition for organizational effectiveness (Luftman, 1996). Neumann (1994) points out that lack of alignment between the IT and business strategies affects a company's competitiveness whereby the companies will not be positioned to use critical resources optimally and therefore may be sidelined by companies that are taking better advantage of technological opportunities.

De Sutter (2003) refers to Henderson and Venkatraman's strategic alignment model for business and IT (Figure II) that clearly shows that IT strategy and plans should be deduced from and aligned with business strategy and plans, the main goal being to exploit IT for a competitive advantage for the organization as a whole.

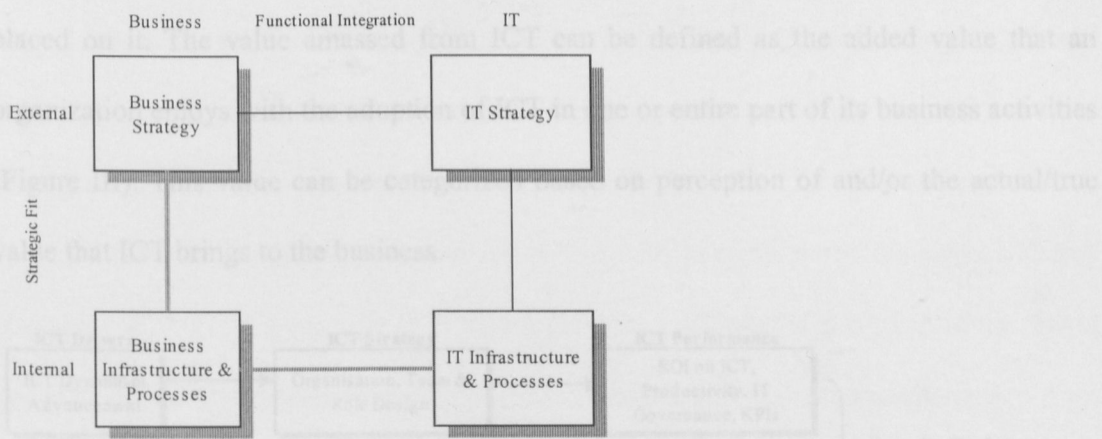


Figure II: Henderson and Venkatraman's Strategic Alignment Model [Adopted from De Sutter (2003), Pg. 345]

IT and Business strategies alignment is evidently important. Waruingi (2003) shows that there is a varied level of IT and Business Strategies alignment for companies listed at the NSE.

### 2.3.5 ICT's Value to Business

A successful implementation of a good ICT strategy delivers great value to the business (Unwala, 2004). Investments in ICT such as information, knowledge and skill, processes and software are intangible assets that create future benefits to an organization. They are employed in conjunction with the tangible assets. Realizing this characteristic offers an important view of ICT by business managers and investors and how they make decisions about it. ICT should add value to the business and be able to be clearly seen to do so by all stakeholders.

ICT's value to the business is a soft issue attracting different views and values being placed on it. The value amassed from ICT can be defined as the added value that an organization enjoys with the adoption of ICT in one or entire part of its business activities (Figure III). This value can be categorized based on perception of and/or the actual/true value that ICT brings to the business.

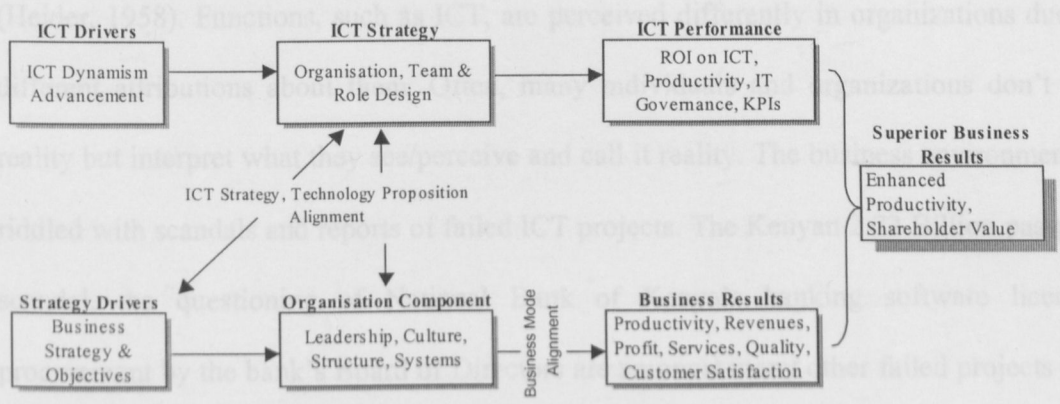


Figure III: ICT Strategic Value Framework

### 2.3.6 Perceived Value

Individuals perceive the world around them in different ways depending on the surrounding, exposure and their understanding of different environments thereof. Huczynski and Buchanan (2001) define perception as the dynamic psychological process responsible for attending to, organizing and interpreting sensory data. Thus, perception is a process by which individuals organize and interpret their sensory impressions in order to give meaning to their environment. The perceiver, the target and the situation influence perception. Ignorance of the perceiver and exposure to a situation hinders the ability of the perceiver to respond and act in an effective way to the situation. Consequently, the corporate management's perception of the value of ICT is hindered by their perception of IT.

People use information in making causal inferences and to answer causal questions; people act on the basis of their beliefs (Heider, 1958). The perceived value of ICT and thereof the placement of ICT in organizations, is partly based on the individual or management or collective beliefs. Disparities in the level of prior learning and experiences by individuals and organizations have led to different perceptions of the same situation (Heider, 1958). Functions, such as ICT, are perceived differently in organizations due to different attributions about them. Often, many individuals and organizations don't see reality but interpret what they see/perceive and call it reality. The business environment is riddled with scandals and reports of failed ICT projects. The Kenyan 2.72 Billion passport scandal, the questioning of National Bank of Kenya's banking software licenses procurement by the bank's Board of Directors are amongst many other failed projects that have befallen IT projects. [The Daily Nation Business Week Magazine; May 25, 2004 Pg 1]. These failed projects have greatly influenced the perception of ICT in many organizations. Weicher et al (1995) notes that the huge investment in IT has had little impact on productivity and shows that 85% of IT spending in the 1980's was in the service sector with productivity in this sector increased by only 1.9%, while productivity in the manufacturing sector rose 44%. Based on such record top management viewed IT as a disabler in business strategies.

ICT has been blamed; fairly or unfairly so, for many business failures. On the contrary, the offerings of ICT to the business have been underestimated. Selective perception where people selectively interpret what they see based on their interests, background, experience, and attitudes are amongst other errors identified (Heider, 1985). Huczynski and Buchanan (2001) observe that much of perception can be described as classification, or

categorization. Through perception, ICT can be categorized as strategic, important or non-core activity of the organization and thereby being positioned accordingly.

By being a soft issue; ICT's value is difficult to measure, with different weights being given by different people depending on their knowledge ability and/or perception of ICT. Like other intangible assets, valuation of the true worth/value of ICT has relied on perception. Since perception is hard to quantify/measure, and is subject to bias on the basis of ignorance, IT is seen as a centre of costs instead of the value centre that it actually is (Hamaker and Hutton, 2004). ICT decisions are made to improve business performance, and with a demonstrable ROI in mind. Organizations are now employing the use of metrics to monitor these investments helping to transform the perception of IT from a cost center to a value center.

### **2.3.7 Strategic Value**

The strategic value of ICT can be seen as the true measurable value/worth of ICT to the business and is realized through the successful implementation of the ICT strategy. Executive management teams should be focused on measuring and maximizing the value their organizations gain from ICT investments. The large amount of money spent on IT, and the strategic opportunities and risks those investments present, necessitates board-level risk management and governance activities for IT. According to Changepoint Corporation (a US based IT business management company), studies conducted show that enterprises that implement effective IT Governance and Board-level IT oversight frameworks such as the IT Board Committee realize significantly greater returns on IT investments and 20% higher profits than firms with poor IT Governance. According to Weill et al (2004), businesses with superior governance practices generate 20% greater

profits on average than other companies that share similar goals of making IT spending more effective and better aligning technology resources with business needs.

Through ICT, countless suppliers, vendors and partners are connected to organizations' systems. Some on the periphery, some so tightly integrated that they have direct access to/or are part of the organization's processes giving the organization the power to think faster, share more easily and react together as one. As an on demand business, it's the organization's point of strength. e-Business/Internet backed by back-to-back systems have enabled many organizations to enjoy the benefits of ICT. Using its world-class manufacturing infrastructure leveraged on IT, Dell has managed to operate on no more than two hours of inventory at a time. This program paid itself in the first twelve months of operation and has allowed Dell to adapt more quickly to rapidly changing technologies and maintain its position as a high-performance business (Harvard Business Review, Nov 2003 Pg 6).

To fully appreciate the value of ICT investments, organizations must fully and in totality analyze the reasons for spending in ICT before any investment is made. This analysis must be done in comparison to other business projects and appraised accordingly as business projects. According to Weill et al (2004) effective IT governance tend to have joint decision-making between business and IT managers on prioritizing technology projects. Evaluation of ICT investments/projects against other opportunities the company can pursue or the company's IRR ensures that only viable ICT investments are undertaken. With this understanding, the way ICT is treated in accounting thereof must be identified; whether it represents a long-term platform and so be amortized over the extent of its useful life or as an expense.

For an organization to enjoy the strategic value of ICT, a strategic alignment between the business and ICT strategies must be present. IT should be integrated into the business strategies and the business strategy forming the basis of the ICT strategy. Henderson and Venkatraman's strategic alignment model (Figure II) provides a way of aligning IT with business objectives to realize value from ICT investments. Through this alignment, IT is able to support and anchor the business's competitive strategies. (Bahrami 1992; Nadler et al. 1992; Tushman and O'Reilly 1996)

IT personnel must be fluent in both the business and technology, and make investments based on a solid understanding of the technologies involved and how they will support the business strategy. In his research paper, Waruingi (2003) quotes one of the respondents *"The IT Directors are expected to be part of the strategic think tank of the organization owing to the importance and amount of IT investment in our organization"*. IT should; thus, be viewed in the context of the competitive landscape, and how it can forge the company ahead.

## **2.4 ICT, Strategy and Organization Structures**

### **2.4.1 Organization Structure and Strategy**

Hill (2003) views the organization structure as the formal division of the organization into subunits, the location of decision-making responsibilities within the structure and as the establishment of integrating mechanisms. An organization structure is the architecture both visible and invisible that connects and weaves together all aspects of an organization to create buildings that provide structural integrity, functionality and aesthetic appeal (McMillan, 2002). As such organization structure is a pattern of relationships between roles in an organization and its components.

An organization's structure and its relationship with an organization's strategy, size, technology and culture are important (Mintzberg, 1979; Miller, 1989). Structure is the manner in which people are grouped together, their roles and reporting relationships, and their task assignments. Structures should therefore be designed to be flexible and learning-enabling, effective in promoting efficiency and cost-effectiveness (Bahrami 1992; Nadler et al, 1992; Tushman and O'Reilly 1996).

Hall (1999) identifies three organizational structure variables: formality, complexity and centralization. Formality can be measured by the written rules in an organization and involves "organizational control over the individual"; Complexity can be measured by the "division of labor, job titles, multiple divisions, and hierarchical levels"; and centralization "refers to the distribution of power within organizations".

Organizing for success in the implementation of the strategy is essential for a company to be able to develop and optimize the organization's resources and capabilities. The keys to successful implementation of the strategy are to unite the total organization behind the strategy and to see that every relevant activity and administrative task is done in a manner that tightly matches the requirements for first-rate strategy execution (Thompson and Strickland, 1992). Additionally, the internal organization structure must be matched to strategy.

Therefore, strategy is implemented through organizational structures, which provide the vehicle through which managers can coordinate the activities of the various functions or divisions to exploit fully their skills and capabilities. Additionally, Structures allocate

work, responsibilities, authority and power in order to direct activities and achieve organization's goals. As such, good and conducive internal organization structures are a must for a successful implementation of strategy.

Each strategy has its key success factors and critical tasks and as such the design of an organization should be based on these factors and tasks. For an organization to achieve maximum performance, its structure must fit with and/or match rate of change in its environment (Burns and Stalker, 1961). Some in organizations functions (LOBs) are more critical to the success of the business than the others, but the true success if the strategy lies in how all the organizations functions are pooled together effectively and efficiently. In almost a contradiction, all functions are equally important but there are certain activities that have to be performed exceptionally well for strategy to be successful.

The basis of grouping of activities together (organizational units) when creating an organization structure should be strategic relationships between them; how each activity links one piece of strategy to the other, with the key strategy-critical activities forming the main building blocks. The positioning of the organizational units in the hierarchy of authority is also essential in the successful implementation of strategy. By so doing, these key units' role and power are institutionalized.

Schwaninger (2000), cites that organization theory has focused on ideal-types of structures: (i) One-dimensional organizations: structured according to the criterion of functions (e.g. IT, marketing etc.) or objects (products, markets) - the hierarchical "line organization", (ii) two-dimensional organizations: structured according to two of these criteria at the same time (also called "matrix organizations"), and (iii) multi-dimensional

organizations: structured according to three criteria at the same time. McMillan (2002) identifies the traditional basic organization structure based on the works of Henri Fayol and Frederick Taylor as one that is centralized, functionally specialized, hierarchical and scientifically managed. McMillan (2002), identifies four different types of structure: (1) bureaucracy; based on hierarchy, authority, control and planning, (2) divisionalised structures and strategic business units; both based on decentralization, and 'de-structured' forms - described as high performance, (3) adhoc and (4) process-based organizations. Each of these structures offers their own strategic advantages and disadvantages and creates different strategic postures.

Mintzberg (1979), discusses five organizational structures that have varying degrees of formality, complexity and centralization: simple structure, machine bureaucracy, professional bureaucracy, divisionalized form and adhocracy. Accordingly, an organization's structure is largely determined by the variety in its environment with the environmental variety being determined by both environmental complexity and the pace of change. He identifies four types of organizational form (Figure IV) below, which are associated with four combinations of complexity and change.

		Environment Complexity	
		Simple	Complex
Pace of Change	Stable	<b>Machine Bureacracy</b>	<b>Professional Organisation</b>
	Dynamic	<b>Entreprneurial Startup</b>	<b>Adhocracy</b>

Figure IV: Environmental Determinants of Organizational Structure (Adopted from Mintzberg's Taxonomy of Organizational Forms, Beshears (2002))

Mintzberg (1979), further postulates that each organization can consist of a maximum of five basic subunits (Figure V): Strategic Apex (top management who does the planning and controlling), Middle Line (middle management who joins the operating core to the strategic apex), Operating Core (operations, operational processes who does the work), Technostructure (analysts that design systems, processes, etc who plans the work and organizes the assets of the organization), and Support Staff (who provides support outside the workflow of the organization).

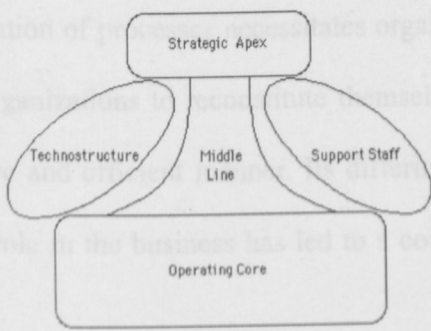


Figure V: Mintzberg's organizational configurations model; adopted from Mintzberg's Taxonomy of Organizational Forms, Beshears (2002)

Structural contingency theory holds that there is no single, effective structure for all organizations (Schwaninger, 2002; Morgan, 1986). Instead, organizations must adapt their structures to fit the contingency factors and the environment as they affect the organization. Contingency factors can include: strategy, size, task uncertainty, parent organization, public accountability, critical assets and technology (Donaldson 1996). Not all organizations will face these contingencies and some organizations will certainly face contingencies not mentioned here. As such, each organization is unique in terms of structure and chosen strategy.

## 2.4.2 ICT Strategy and Structure

The traditional approach to structuring the organization has been to construct the model around the components in such a way so as to maximize the effectiveness by which strategic goals and objectives are translated into business results. Consequently the structure of the organization will be different for those businesses operating in different markets, those utilizing different technologies and those facing different competitive and legislative pressures.

Reorganisation of processes necessitates organizational change (Karmarkar, 2004). IT has enabled organizations to reconstitute themselves by effectively structuring themselves in an effective and efficient manner. Its differing use in each organization coupled with its changing role in the business has led to a continual re-placement within the organization structure.

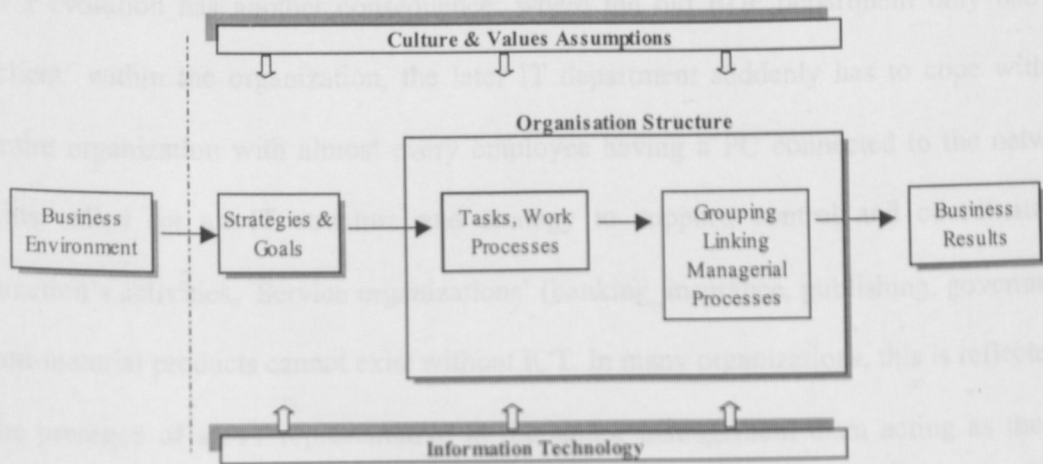


Figure VI: IT and Design (Adopted from IT and Organization Design, Stebbins et al (1995) Pg

A change in the environment requires a change in the strategy of the organization, which in turn requires a supporting organization structure for operationalization. IT and the cultural values assumptions drive and influence all the decisions made in the organization (Figure VI). As such ICT seen from the view of technology (an environmental factor) and/or as a strategy has a direct effect on how the organization is structured to be able to support the strategy.

ICT's influence on communication and collaboration has seen the traditional hierarchies within the organizations falling apart resulting in flatter organizations and horizontal departments becoming common. ICT has facilitated various structures for improved and optimal performance and efficiencies; these include matrix structures, decentralization, global/divisional/group structures and wider span.

IT's evolution has another consequence: where the old EDP department only had one 'client' within the organization, the later IT department suddenly has to cope with the entire organization with almost every employee having a PC connected to the network. This called for an IT structure and strategy to support, control and coordinate the function's activities. Service organizations' (banking, insurance, publishing, government) non-material products cannot exist without ICT. In many organizations, this is reflected by the presence of an IT representative in the senior management team acting as the link between the business and ICT. The placement of the representative and the IT function in the organizational structure has equally changed with the changing role of IT.

The placement of the IT function in organizations is varied with there being no consensus on where IT should be placed in the organization's structure. Some organizations have fully fledged IT departments reporting directly to the CEO, others are placed as a section in the 'key functions' such Finance, Administration and Operations while in others, IT is represented on the company's board e.g. Kenya Airways and the Nation Media group. Warungi (2003) cites that only 19% of the companies he studied had positions of IT Directors reporting directly to the MD/CEO while most of the IT Managers reported to the Finance Managers/Directors. This confirms that despite many Kenyan companies appreciating the need for ICT in the business operations; many of them do not place the IT function accordingly.

Feidler et al (1996) developed taxonomy with implications for matching information technology (IT) and organizational structures. Based on the degree of centralization of computer processing, capability to support communications, and the ability to share resources, they identified four IT structures: (1) centralized (centralized processing, low communication, low sharing), (2) decentralized (decentralized processing, low communication, low sharing), (3) centralized cooperative (centralized processing, high communication, high sharing), and (4) distributed cooperative computing (decentralized processing, high communication, high sharing).

Centralized computing is related to functional organizational forms with low integration and centralized decision making. Decentralized computing is related to product organizational forms with decentralized decision making. Centralized cooperative computing is related to functional organizational forms with high integration. Distributed

cooperative computing is related to both matrix and product organizational forms with high integration.

The ability to identify and understand the implications of IT structure is of critical importance to both academic and management practitioners (Fiedler et al, 1996). Hitt and Brynjolfsson (1997), examine the relationship between IT and the organizational architecture of firms. They conclude that firms that are extensive users of IT tend to adopt a complementary set of organizational practices that include: decentralization of decision authority, emphasis on subjective incentives, and a greater reliance on skills and human capital. Increased investment in IT is linked to a system of decentralized authority and related practices.

Based on Mintzberg's classification (Mintzberg, 1979) and the IT and advantage framework (Boar, 1998) – Figures I and V; the IT function can be placed in the different subunits depending on the level of criticality of ICT strategy to the business. Business dependence on IT, intensity of IT in business processes and products determine the level of criticality. Hypothetically, organizations regarding ICT as being critical to the business position the ICT function at the strategic apex offering an alignment between the ICT and business strategies and integrating technology into the business. Businesses that have a low use of ICT (business products are not IT intensive and low dependence on IT) position the ICT function at the support staff. If business processes are IT intensive, then the ICT function should be positioned at the technostructure where ICT's input in aligning processes is felt most. ICT function found in the operating core is observed in organizations that have business processes being IT intensive, a high business dependence of IT but the products are not IT intensive. The ICT function is found at the middle line in

organizations characterized by the level of criticality of ICT in the business being functionally varied with IT being seen as emergent strategic while at the same time the business being information intensive.

## 2.5 Research Hypothesis

$H_0$ : There is no relationship between the level of criticality of ICT Strategy to the organization and the placement of ICT function in the organization structure

$H_1$ : Some relationship exists between the level of criticality of ICT Strategy to the organization and the placement of ICT function in the organization structure

## 3.2 Population of Study

The population of study comprised all active companies listed on the Nairobi Stock Exchange. Companies listed on the NSE are publicly quoted and as such have an obligation to reveal information to the public. Wanjau (2013) further showed that there is a significant relationship between the ICT and business strategy of companies listed on the NSE.

## CHAPTER 3: RESEARCH METHODOLOGY

### 3.1 Research Design

The descriptive study design was applied in this study. A descriptive study is used to describe the characteristics of a population or a phenomenon by answers to the questions of *who*, *what*, *where*, and sometimes *how*. Such studies involve the collection of data and the creation of the number of times that a single characteristic is observed, or may involve relating the interaction of two or more variables (Cooper and Schindler, 2001).

Prior to the study, some information about the relationships between the ICT strategy and organization structure existed and as such a descriptive study generated information regarding the key aspects in order to develop profiles of ICT strategy, Strategic Value of ICT and organization structures. Additionally, the proposed study sought to determine *what* the relationships between ICT strategy and structure are and as such, the descriptive study was most suitable, *what* number of companies listed on the Nairobi Stock Exchange perceive IT as critical to the business.

### 3.2 Population of Study

The population of study comprised all active companies listed on the Nairobi Stock Exchange. Companies listed on the NSE are publicly quoted and as such have an obligation to avail information to the public. Waruingi (2003) further showed that there is alignment between the ICT and business strategies in companies listed on the NSE.

According to the list companies listed on the NSE as at 31<sup>st</sup> August 2004 (Appendix III), the number of companies stood at forty-eight (48) with one being suspended. Two companies traded/are listed as two different companies thereby implying the study population size (N) was 45. At 45, the population size was small and relatively varied thereby warranting a census survey.

Companies listed at the NSE were categorized into the four major sectors of the economy namely; Finance and Investment (12), Industrial and Allied (18), Commercial and Services (9) and Agricultural (6).

### 3.3 Data Collection

The study was based on primary data collected using a structured, undisguised and self-administered questionnaire. This instrument was divided into five parts/sections namely; Organizational Profile, Business Strategy, ICT Strategy, Organization Structure, and Value Diagnosis (Perception and Strategic).

The questionnaire was distributed through various methods of administration; email, drop and pick, postal mail with an enclosed self-addressed return envelope. This was with the aim of increasing the response rate. Follow-up was made through telephone, email and/or personal visit. A research assistant was hired with the sole responsibility of administering the questionnaires and a performance-based remuneration adopted; a fixed payment for every questionnaire completed and officially endorsed by the respondent.

Drop and pick method of questionnaire administration was most effective with the email and physical return posting exceptionally good questionnaire return rates, whilst the use of postal mail was least effective as shown in Table 1 overleaf. 17% of the questionnaires administered via email were completed and received via the same media.

Table 1: Questionnaire Delivery Methods

Method	No.	Received	No Response	Return Rate
Postal Mail	3	1	2	33%
Drop & Pick/Return	42	34	8	81%
<i>Email</i>	13	12	1	92%
<i>Physical</i>	29	22	7	76%

Email Return: 17%

The target respondents were the Chief Executive Officers as they are ultimately responsible for entire organization, its strategies and resources. They are seen to be impartial, above organizational politics of positioning and as such would give more objective responses. Additionally, they are executive board members whose responsibility spans to corporate governance issues and shareholder expectations and interests.

The data was collected within four weeks of dispatch thereby permitting analysis of data thereafter.

## CHAPTER 4: DATA ANALYSIS AND FINDINGS

### 4.1 Introduction

To obtain a meaning from the data collected, preliminary analytical steps of editing, coding and presentation were employed prior to the analysis of the data. Before processing the responses, the completed questionnaires were edited for completeness and consistency. The data was then coded to enable the responses to be grouped into a limited number of categories containing the critical information required for analysis.

Categorizing, ordering and summarizing of the data collected through the questionnaire were carried out. Descriptive statistics was used mainly to summarize and organize the data in an effective and meaningful manner. On the basis of a frequency distribution, pie charts, tables, graphs were used to present the data collected for ease of understanding and analysis. Responses that were not complete were disregarded in the analysis of data.

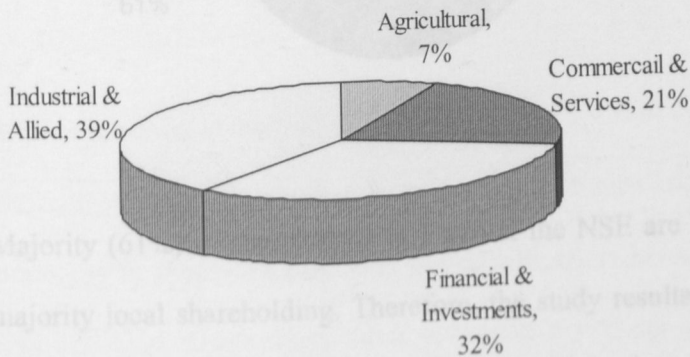
The overall questionnaire return rate (including those that were completed or incomplete) stood at 78%. In the analysis, those that were returned incomplete were disregarded thereby giving an effective valid total response/completion rate of 62%. Incompleteness was explained by either the questionnaire being returned unanswered at all, or substantially unanswered in more than one section, or companies not having an IT function. The number of valid responses was deemed adequate and representative for analysis and inference purposes.

Statistical analysis tools and software (SPSS version 10) and Microsoft Excel 2003 were employed in the analysis of the collected data. To determine the relationships between ICT strategy and organization structure and their respective aspects, bi-variate analysis techniques were used with the co-variation principle forming the basis of the association and relation. The correlations in the study are between level of criticality of ICT strategy and the placement of the ICT function in the organization structure. Pearson correlation was used to measure the extent, strength and direction of association between the identified variables. A perfect correlation would be "1," indicating that criticality of ICT strategy is rated higher by the same relative amount as the placement of ICT function in the organization structure. No correlation would be "0," and a perfect negative correlation would be "-1". Values of 0.4 or -0.4 are considered of moderate association. A nonparametric two-tailed test was used to test for significant differences between the observed distribution of data among categories and the expected distribution. *F* and *t* tests; and *F* and *t* distributions were used to test the research hypothesis at both 95% and 99% levels of confidence also showed the significance level of *r*.

## 4.2 Organisation Profile Overview

The distribution of the analysis data from the 62% of the returned questionnaires was distributed across the various sectors as shown in chart 1 below.

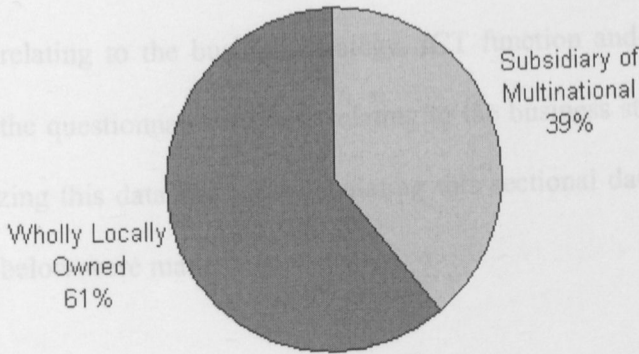
Chart 1: Sectorial Distribution of Population



61% of the companies studied had their operations spanning the East African region while 21% had international operations as well. Companies spanning operations in more than one sector have communication and distance challenges that could be addressed by adoption of ICT in its operations.

The responding organisations' age since incorporation ranged between 9 and 108 years while the age as a company listed at the NSE ranging between 3 and 50 years with the mode being 20 years. These showed that the companies were fairly mature in operations and as such would have looked into taking advantage of ICT as a source of competitive advantage.

Chart 2: Ownership Structure



Majority (61%) of the companies listed at the NSE are locally owned companies with a majority local shareholding. Therefore, the study results would be a fair indicator of the local manager's perception of ICT's value to the business.

### 4.3 State of Business Strategy, ICT Function and ICT Strategy

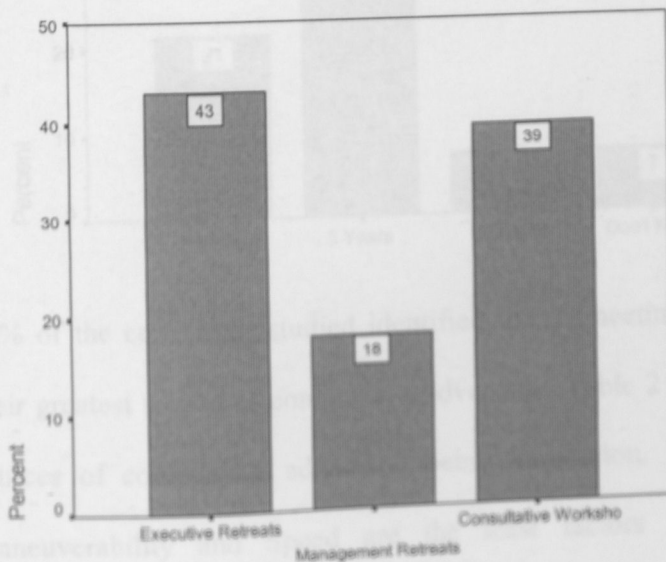
Business strategies define how the organizations meet their objectives and goals in the short and long term within their business scopes. The ICT function just like many other functions of the organization contributes to the achievement of these corporate objectives and the ICT strategy is instrumental to the success of the business strategy. With the business strategy offering a unifying theme, the ICT function, its personnel and the ICT strategy must work towards the achievement of the business goals and objectives just as much as other functions in the organization. The process of development, implementation and review of the business strategies is important to the acceptance, alignment and success of the strategies in the face of the ever changing and competitive business environment. To

be successful the organization must have a good complement of competitive advantages and in the current information age, ICT is seen as a source of competitive advantage.

Data relating to the business strategy, ICT function and the ICT strategy was captured from the questionnaire sections relating to the business strategy and the ICT strategy. By analyzing this data and cross-tabulating this sectional data, findings as shown in section 4.3.2 below were made.

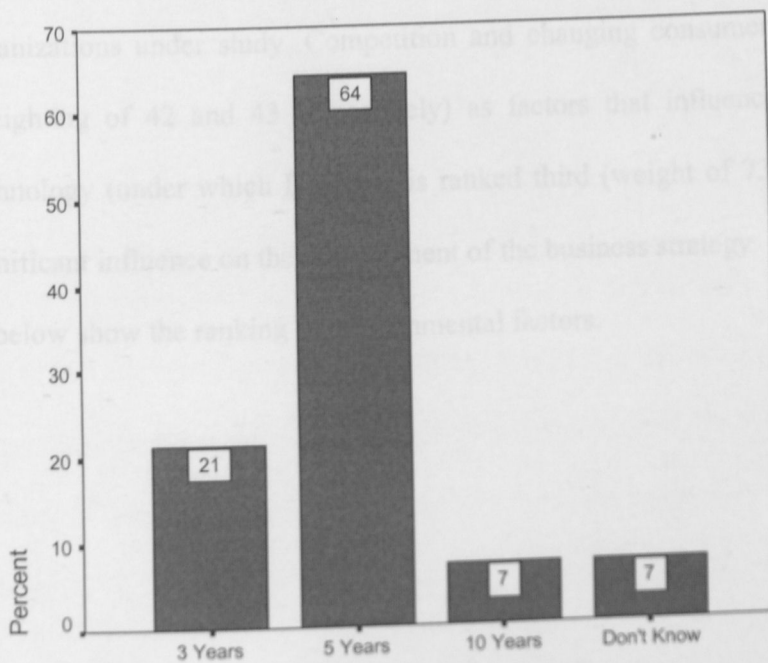
93% of the companies' indicated that they had a vision and/or mission statements forming the basis of the business strategy and other strategies adopted by the companies. Business strategies in these organizations are developed in-house with the involvement of other organizational stakeholders through executive retreats being a popular (43%) forum for developing business strategies as shown in Chart 3 below. This shows the extent of high level strategy development.

Chart 3: Mode of In-house Business Strategy Development



All companies surveyed had a business strategy developed by following a formal strategic planning process (93%) but with a varied planning horizon; the majority (64%) having a 5-year strategic plan whilst 21% have a 3 year plan as shown in chart 4 overleaf. 82% of the strategic plans are developed in-house through mainly executive retreats and consultative workshops; and are mainly (60%) reviewed once a year by mainly the Board of Directors and senior management of these organisations. Line managers (7%), IT Managers (11%) and Middle Management (27%) staff's involvement in the development of the business strategy is minimal.

Chart 4: Business Strategic Planning Horizon



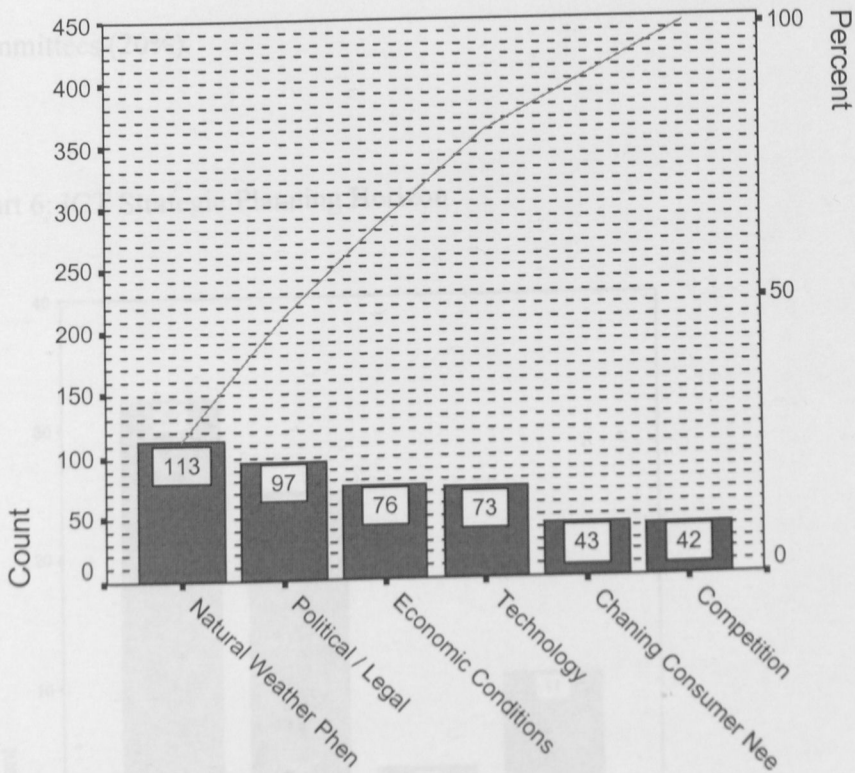
74% of the companies studied identified focus (meeting the unique customer needs) as their greatest source of competitive advantage. Table 2 below shows the other important sources of competitive advantage being Innovation, Execution and Cost Leadership. Maneuverability and Speed are the least factors in terms of being sources of competitiveness.

Table 2: Sources of Competitive Advantage

Factor	Rate	Count
Cost Leadership	50%	14
Focus	74%	20
Speed	36%	10
Innovation	64%	18
Execution	61%	17
Manuevability	46%	13

Each company ranked the environmental factors influencing its business strategy on a scale of 1 (highest) to 5 (lowest). The score for each factor was aggregated to give the weighting of the environmental factor in terms of influencing the business strategy of the organizations under study. Competition and changing consumer needs are ranked high (weighting of 42 and 43 respectively) as factors that influence the business strategy; technology (under which ICT lies) is ranked third (weight of 73) and as such has some significant influence on the development of the business strategy. The Pareto graph (Chart 5) below show the ranking of environmental factors.

Chart 5: Ranking of Environmental Factors Influencing Business Strategy

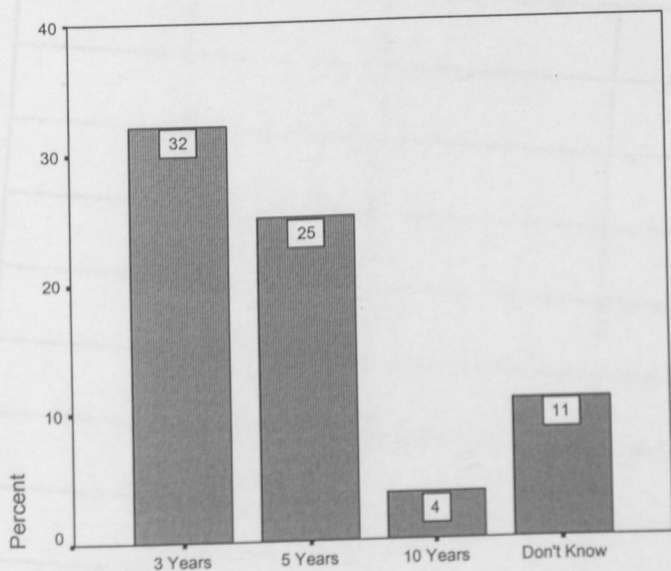


89% of the companies surveyed have a formal IT function (IT Department or Division) that is headed by IT/IS Manager (42%) or an IT/IS Director (29%). It is through this formal structure that the business strategy is implemented. To be able to contribute to the success of the business strategy, the ICT function operations are directed by an ICT strategy.

76% of the organisations have an ICT Strategy with a planning horizon of mainly 3 (45%) and 5 (35%) years as shown in chart 6 below. 71% of ICT strategies are reviewed annually and 10% bi-annually, and are developed in-house (86%) – fully or partly by mainly IT Management (71%), Senior Management (55%) and ICT Steering Committees, Consultants and Corporate Head Quarters (40%). CEO's involvement in the development

of the ICT strategy is least with only 10% of the firms surveyed involving them. There is limited involvement of non-IT personnel in the implementation of the ICT Strategy; IT Management (62%), Executive Management (38%) and CEO (25%) and IT Strategy Committees (20%).

Chart 6: ICT Strategic Planning Horizon



To ensure consistency in the implementation of the ICT strategy, and for the organizations to enjoy the benefits associated with standardization, the organizations under study have acknowledged the need for standardization of IT processes through IT standards. These standards are adopted in 80% of the organizations and are mainly defined and enforced at a functional level (44%), defined and enforced across functions (24%), emergent and coordinated across functions (12%).

ICT systems have been implemented in these organizations and across various processes and functions of the organizations. Financial systems are installed in 92% of the organizations while production planning systems are least installed (28%). Other system implementations

are shown in table 4 below. 69% of the systems implementations are linked together internally while only 48% of them are linked externally with supplies and customers.

Table 3: Systems Implementation in Organizations

Functional Area	ERP	Communication & Collaboration	Financial	Human Resources	Production Planning	Customer Management
Percent	35%	84%	92%	54%	28%	33%

71% of the companies purchase their IT investments with 18% using other means such as hire purchase or asset leasing.

A good business strategy gives direction to the organization implying that any other strategies can be developed and implemented within and in alignment to the business strategy. It is through the ICT function that the organizations can match the external technological environment and also implement the ICT strategy.

The companies show a high adoption of ICT with systems being implemented across the organizational functions and processes. Using their ICT and business strategies, these organizations can employ ICT to match the organizations to the environmental factors greatly influencing their business. Similarly ICT can be used in enhancing their sources of competitive advantage.

With the majority of the companies investing in IT assets, the ICT function faces competition with our business functions for funds. Thus the value of ICT to the business would need to be evident for the organization to fairly allocate the required resources.

#### 4.4 Business Strategy and ICT Strategy Relationships

The alignment of the business and ICT strategies is critical to the success of the business strategy and thereby the success of the organization. The two strategies must drive the business to the achievement of its objectives and goals with each strategy positively influencing the other. Alignment of the two strategies is seen in the involvement of various stakeholders in their development, similar planning horizons and the involvement of the top management in aspects of the strategies (from planning, implementation to review).

Cross tabulation and co-variation of the business and ICT strategy parameters showed the level of alignment and the relationships between the two strategies. 15% of the companies had a similar planning horizon for both business and ICT strategies with 40% of these having a 5 year strategic and a 3 year ICT planning horizon. On average, 60% of the companies have a ICT planning horizon similar or shorter than the business strategic planning horizon. Co-relating the two planning horizons show a pearson correlation coefficient of 0.2 and two-tailed significance test value of 0.399. Table 4 below shows the frequencies of the comparisons of the planning horizons.

Table 4: Relationship of Business and ICT Strategies Planning Horizons

Business Strategies Planning Horizon (SPH) & ICT Planning Horizon (ICTSP)  
Cross Tabulation

		ICTSP				Total
		3 Years	5 Years	10 Years	Don't Know	
SPH	3 Years	1	2	0	0	3
	5 Years	8	2	1	2	13
	10 Years	0	1	0	1	2
	Don't Know	0	2	0	0	2
Total		9	7	1	3	20

Table 6: Review of Business and ICT Strategies

Analysis of the presence of the ICT and Business strategies revealed that 76% of the companies that had a business strategy had an ICT strategy as well. The correlation between the presence of business strategy and that of the ICT strategy could not be determined because one of the variables (all the companies studied had a Business Strategy) was constant.

59% of the companies that develop their business strategies in-house also develop their ICT strategies in-house. Correlation of the two parameters gives a Pearson correlation value of 0.515 at a significance level of 1%.

Table 5: Development of ICT and Business Strategies

Business and ICT Strategy Development

		IT			Don't Know	Total
		Inhouse	External	Partly		
Business	Inhouse	13	1	3	1	18
	External	1	0	0	0	1
	Partly	0	0	2	1	3
	<b>Total</b>	<b>14</b>	<b>1</b>	<b>5</b>	<b>2</b>	<b>22</b>

Pearson Correlation r: 0.515  
 Sig. 1-tailed: 0.007  
 Significance Level: 0.01  
 N: 22

50% of the companies have a similar strategy review period for both business and ICT strategies. Correlation of the review periods shows a Pearson correlation value (1-tailed significance test) at a significance level of 0.05 of 0.393.

Table 6: Review of Business and ICT Strategies

Frequency of Business and ICT Strategy Review

		IT Strategy					Total
		Annually	Bi-Annually	Quarterly	Frequently	Never	
Business Strategy	Annually	10	2	1	1	0	14
	Bi-Annually	3	0	0	0	0	3
	Quarterly	2	0	0	0	1	3
	Frequently	0	0	0	1	0	1
	Never	0	0	0	0	0	0
	<b>Total</b>	<b>15</b>	<b>2</b>	<b>1</b>	<b>2</b>	<b>1</b>	<b>21</b>

Pearson Correlation r: 0.393  
 Sig. 1-tailed: 0.039  
 Significance Level: 0.05  
 N: 21

An ICT strategic planning horizon shorter or equal to that of the business strategy indicates and ensures some form of alignment of business and ICT strategies. A Pearson correlation coefficient of 0.2 and two-tailed significance test value of 0.399 show the insignificance of the relationship between the business strategy and ICT planning horizons.

The relationship between the presence of the business and ICT strategies was not deductive; it is not possible to determine whether the presence of a business strategy has an implication to the likelihood of company having an ICT strategy.

With a Pearson correlation of value 0.515 at a significance level of 1%, there exists a relationship between the in-house development of business strategy and the in-house development of the ICT strategy. We can therefore deduce with a 99% level of confidence that organizations that develop their business strategies in-house develop the ICT strategies internally as well.

At a 95% confidence level, there is a significant relationship between the frequency of reviews of the business and ICT strategies with companies that review business strategies annually reviewing their ICT strategies annually as well.

#### 4.5 Organisation Structure Status

Organisations implement their strategies through their organisations structures. For a successful implementation of a business strategy, a supporting organisation structure is critical. The organisation needs to organise itself in a an efficient and effective manner that all fucntions seamless integrate to ensure synergy is acheived in pursuant of its objectives.

Basis	Frequency	Percent
Centralized (Function)	12	44%
Decentralized (Function)	15	56%

Organisations are different, have different configurations of resources and operate in different environments. To be able to implement their strategies, they organise themselves according to their environment and complement of resources. As such different organisation structures exists. How these structures are developed and the basis of their development is equally different. With the environment being dynamic, organisations realign themselves to the environment in order to remain relevant. When the business strategy changes, organisation structure is reviewed in light of the changes in strategy to maintain the relevance of the structure. The positioning of the functions in the organisation structure is equally important as it sets more focus on key functions whose performance is critical to the success of the business strategy and institutionlises the decision making of the heads of these functions.

Data relating to the organisation structure was captured and analysed for how the companies structure and the basis of their structuring. The positioning of the IT function was determined through the hierarchy level of the head of the function.

Table 7 below describes the organizations structures for the companies under study. The majority (67%) of the organizations' structures are based on functions with 22% of the companies operating under a Matrix structure. The basis of these structures is the strategic value of the functions (85%), size of the function (22%) and industry standards (18.5%). In the past 5 years, 86% of the organizations have been restructured with 57% of the re-organisations affecting the IT function.

Table 7: Organization Structure Descriptions

Basis	Frequency	Percent
Centralized (Functional)	12	44%
Functions with Divisions (Geographic)	6	22%
De-centralised (Divisonal)	2	7%
Matrix	6	22%
Project Based (Product Team)	1	4%

72% of the Heads of IT are either Divisional Heads or Senior Managers in their organizations. 24% of them are in the middle management while 4% are in operations management. 60% of the heads of IT report to the CEO, 12% to Divisional Heads, 24% to Senior Management and 4% to Operations Management.

The IT in-charge does not make all IT related decisions by oneself; in 76% of the companies the CEOs, Board of Directors, Finance Directors and related committees are involved in the decision-making. 68% of the CEOs are involved in IT decision-making process. Table 8 overleaf shows the level of involvement of other stakeholders in making IT related decisions.

Table 8: Decision Making Span for the Head of IT

Position	Count	Involvement
CEO	15	68%
Finance Head	12	55%
BOD	7	32%
Head Quarter	1	5%
Investment Committee	5	23%
Head of IT	4	16%

Functional organizations are compartmentalized and hierarchical. Adoption of IT systems tries to de-compartmentalize organizations by aligning and integrating their processes and procedures. These organizations may miss out on the full strategic benefits gained from adoption of IT. Matrix and project based organizations are process oriented and are seamlessly integrated using IT thereby enjoying the strategic value of IT.

The high level of involvement of other stake holders in IT decision making may be beneficial to the organization especially if the stakeholders add value to the decision making. Moreover, their positive involvement may enhance the alignment of the ICT strategy to the business strategy. Otherwise, their involvement can be a hindrance to the implementation of the ICT strategy.

Table 9: Perception of IT Infrastructure

Majority of these organizations have realigned themselves to the changing business environment through their restructuring efforts and to make IT more relevant to their business strategy, the restructuring has affected the IT function as well.

Driven by business strategy	1	42%
Respond to change	4	15%
Enables fast response to changed market	6	23%

## 4.6 Management's Perception of ICT

IT is perceived differently depending on many factors, some of which are corporate, global and individual in nature. Different organisations have differing levels of adoption of ICT and equally differing is the exposure of management of these organisation within the organisation. As such on the basis of both individual and corporate perception of IT, the function is perceived very differently.

The perception of management in regard to IT is critical to the success of the ICT strategy and also to the positioning of ICT function in the organisation structure.

The personal perception of management was captured under the perception based value section of the questionnaire. This section sought the individuals opinion on IT, its role and performance in the business.

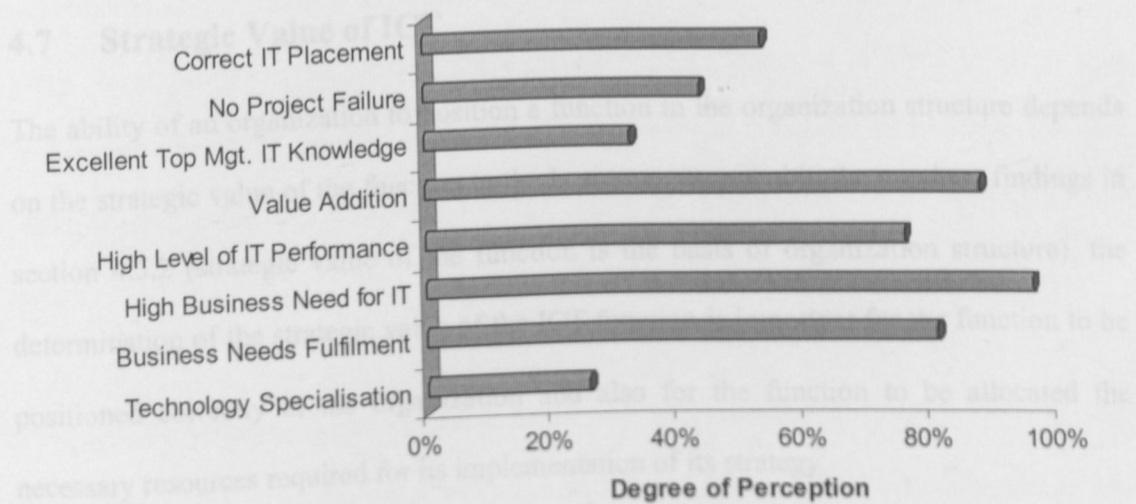
42% of the respondents view the IT infrastructure as one that is driven by the business strategy and one that enables fast response to the changing market (23%). Table 9 below indicates the various perceptions of ICT by the management.

Table 9: Perception of IT Infrastructure

Perception	Frequency	Percent
A utility run at a minimum cost	3	12%
Becoming driven by business Strategy	2	8%
Driven by business strategy	11	42%
Beginning to help business respond to change	4	15%
Enables fast response to changing market	6	23%

Only 33% of the respondents believe that the top management has an excellent knowledge of IT. 96% of them believe that the business need for IT is high while 88% acknowledge that IT has added significant value to the business. 64% of the respondents state that major IT projects have failed and that IT function does not specialize on technology at the expense of customer needs (74%). Chart 7 below shows the perceptions of the respondents in regard to the value of ICT to the business. Based on these perceptions 54% of the respondents believed that the IT function is correctly placed in their organization structures.

Chart 7: Perception of the Value of ICT to Business



The findings show a diversity of perception of ICT by the management. This may be explained by the various stages of maturity and sectors in which they operate, the differing levels of adoption of IT in their organizations and also the individual exposure to IT. The low values of this perception may indicate the low understanding of IT by the management. This is further reinforced by the finding that the management's knowledge

of IT is limited. The low level of IT knowledge may be a stumbling block to the adoption of IT in the business and also have a negative effect on the IT decision making process.

Despite of the low perception of the top management's IT knowledge , ICT is regarded at a considerable high level in organizations especially in connection with the businesses' need for IT, value addition ability of IT to the business, and its ability to fulfill business needs through its use. Also, even though there is relatively high perceptions that there have been occurrences of major IT project failures; the survey shows that the IT personnel performance is regarded highly and there is less of specialization on technology at the expense of customer needs.

#### **4.7 Strategic Value of ICT**

The ability of an organization to position a function in the organization structure depends on the strategic value of the function to the business. As noted in the previous findings in section 4.5.2 (strategic value of the function is the basis of organization structure), the determination of the strategic value of the ICT function is important for the function to be positioned correctly in the organization and also for the function to be allocated the necessary resources required for its implementation of its strategy.

The strategic value of the ICT function is dependent on factors such as the performance of the IT personnel, performance of the IT function itself and the impact it has had on the business amongst others. Measurement of the value is enhances the understanding of how IT is deployed to support the business strategy.

Data relating to the factors determining the strategic value of ICT to the business was collected under the value diagnostics section of the questionnaire and analysed. To be able to determine the measure for success of IT investments, a count of the number of responses indicating the use of a certain measure was made.

Measure	Percent	Frequency
Performance Based Management		
Cross Feedback Method	6%	1
Systems Downtime	13%	2

In 96% of the organizations, the performance of the IT function is critical (rated at 4.75 out of 5) to the success of their business strategy with 92% of the respondents acknowledging that the ICT strategy is highly influenced by the business strategy. In 78% of the organizations, adoption of ICT has helped reduce organizational costs. IT in these processes and functions, 59% of the companies conduct risk and impact 29% of the companies offered information about their ICT asset value while 32% offered information of their annual IT expenses. 48% of the companies have a measure of IT's value to the business with most of these measures being financial in form. Of those that have a measure of the value of ICT, 55% (6 out of 11) use measures that have a financial basis which include the balanced score card, return on investments and the internal rate of return.

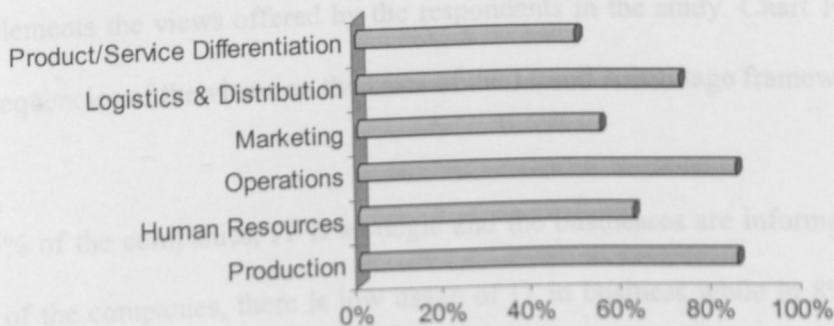
57% of the companies surveyed have a measure of IT personnel performance and thereby their value to the business is also reflected in these measures. 50% of the companies use performance based management systems and appraisals to measure the performance of their IT personnel. Table 10 overleaf shows the level of usage of other performance measures.

Table 10: IT Personnel Performance Measures

Measure	Percent	Frequency
Key Performance Targets	31%	5
Performance Based Management Systems & Appraisal	50%	8
Cross Feedback Method	6%	1
Systems Downtime	13%	2

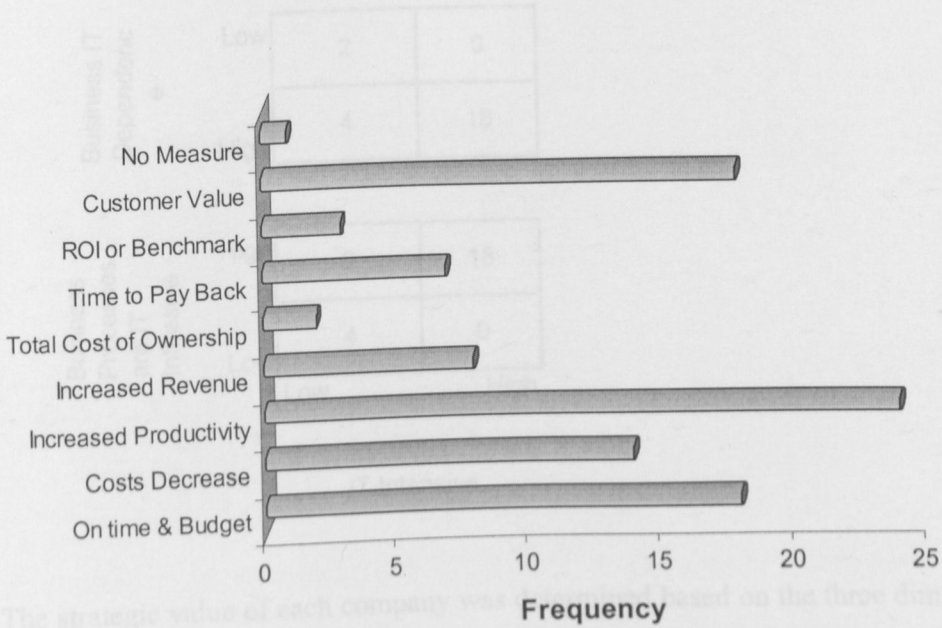
Organisations significantly use IT in their business processes especially in the areas of operations (85%), production (85%) and, logistics and distribution (73%). Chart 8 below shows the level of usage of IT in business processes and functions. In the deployment of IT in these processes and functions, 59% of the companies conduct risk and impact assessments of the IT projects prior to implementation.

Chart 8: Use of IT in Business Processes/Functions



Increase in productivity is seen as a common indicator for the success of IT investments in the organisation. Other measures in use are increase in customer value, IT project's delivery on time and within budget, and decrease in costs. Chart 9 below shows the frequency of the usage of the measures in these companies.

Chart 9: Measurement of Success of IT Investments



The strategic value of each company was measured based on the three dimensions as per the IT and Advantage model (Boar, 1998) and with the adoption of a rating of 1 (highest value) to 5 (lowest value) as shown in table 12 overleaf. The following formulae were used in the determination of the strategic value of each company. Based on the IT and Advantage Model (Boar, 1998), the following views of the use of ICT complements the views offered by the respondents in the study. Chart 10 overleaf shows the frequencies of the views on the basis of the IT and Advantage framework.

In 75% of the companies, IT is strategic and the businesses are information intensive. In 17% of the companies, there is low usage of IT in business while in 8%, IT is seen as a support function. Business products in 8% of the companies are not IT intensive but the business processes are IT intensive. In none of the companies is IT emergent strategic. 17% of the companies see IT as a factory function characterized by a high business dependence on IT but their products are not IT intensive.

Chart 10: Views of IT Based on IT and Advantage Framework

$$DSV = \sqrt{(SF \times PF)}$$

Where DSV: Determined Strategic Value is a product of the two values determined

Business IT Dependence	Low	2	0
	High	4	18

Table 13

Business Processes are IT Intensive	High	2	18
	Low	4	0
		Low	High

Business Products are IT Intensive

The strategic value of each company was determined based on the three dimensions as per the IT and Advantage model (Boar, 1998) and with the adoption of a rating of 1 (highest value) to 5 (lowest value) as shown in table 12 overleaf. The following formulae were used in the determination of the strategic value:

$$SV = \sqrt{(BDIT \times BP)}$$

Where SV: Strategic Value

BDIT: Business Dependence on IT

BP: IT Intensiveness in Business Products

$$PV = \sqrt{(BPIT \times BP)}$$

Where PV: Process Value

BPIT: Business Processes Dependence on IT

BP: IT Intensiveness in Business Products

$$DSV = \sqrt{(SV \times PV)}$$

Where DSV: Determined Strategic Value is a product of the two values determined above.

Table 11: Determined Strategic Value of ICT

Rating	DSV Range	Frequency
1	DSV>4.5	3
2	3.5<DSV<4.5	13
3	2.5<DSV<3.5	3
4	1.5<DSV<2.5	2
5	DSV<1.5	0
		<b>21</b>

Kurtosis (Ku) 2.58

The perceived strategic value of ICT (PCVD) was calculated on the basis of the perceived value diagnosis based on a scale of 1 to 5 (highest) as shown in table 13 below.

Table 12: Determined Perceived Strategic Value of ICT

Rating	PSV Range	Frequency
1	PSV>4.5	0
2	3.5<PSV<4.5	2
3	2.5<PSV<3.5	16
4	1.5<PSV<2.5	3
5	PSV<1.5	0
		<b>21</b>

Kurtosis (Ku) 1.14

Based on the determined strategic and perceived values of ICT, a combined value (CSV) of ICT was determined using the formula below and the results shown in table 14 overleaf.

$$CSV = \sqrt{(DSV \times PCVD)}$$

Where CSV: Determined Combined Strategic Value is a product of the perceived and strategic determined values.

Table 13: Combined Strategic Value of ICT

Rating	CSV Range	Frequency
1	CSV>4.5	0
2	3.5<CSV<4.5	7
3	2.5<CSV<3.5	13
4	1.5<CSV<2.5	1
5	CSV<1.5	0
		21

Kurtosis (Ku) 0.54

The distribution of combined strategic value of ICT shows a slight deviation from normal distribution while both the determined perceived and strategic values follow a leptokurtic distribution.

From the findings above, there is a lack of an understanding of the true value of ICT and its potential value to the business. The majority of the companies indicate that the performance of IT is highly critical to the success of the business strategy and that IT is strategic (based on IT and Advantage model) yet the determined combined strategic value of ICT shows the contrary. This means that the true value of ICT to the business is not evidenced in the business strategy implementation. The low presence of measures for the value of ICT to the business and the little information offered in regard to IT assets reaffirms this observation.

All the measures of the success of IT investments are linked to the cost/expense management and as such in general terms; IT is seen as being able to help the organization manage its expenses.

Whereas IT may greatly improve the ability for an organization to manage its expenses thus leading to cost leadership, there are other benefits of ICT to the business that these organizations may miss out making them less competitive.

#### 4.8 Positioning of ICT Function in Organization Structure

Correct positioning of a function in the organization structure ensures that the function is able to contribute effectively to the success of the business strategy. Additionally, it ensures that the function is maximizing its offerings to the business.

On the basis of the Mintzberg Classification (Mintzberg, 1979), the positioning of the ICT function was determined. The hierarchy level of the ICT function and the reporting structure of Head of ICT function were used to determine the position level on a scale of 1 to 5 as shown in table 15 below.

Table 14: ICT Positioning based on Mintzberg Taxonomy

Position	Mintzberg Classification	Frequency	Proportion
1	Strategic Apex	9	36%
2	Technostructure	8	32%
3	Middle Line	7	28%
4	Support Staff	0	0%
5	Operating Core	1	4%
		25	100%

36% of the companies position the ICT function in the Strategic Apex, 32% in the Technostructure and 28% in the Middle Line Management with a Kurtosis Value  $Ku$  of 0.66.

(Perceived (PCVD) and Combined (CSV)) sets of data against the Mintzberg classification levels (MZ) was undertaken.

With 75% of the companies showing that IT is strategic (section 4.7.2) and only 36% positioning the ICT function at the strategic apex, there is a clear mismatch. Organisations that view IT as being strategic and have not positioned the ICT function at the strategic apex may loose out on the many benefits that IT offers to the business. Additionally an under-allocation of resources to the ICT function is foreseeable under such circumstances. This may lead to a misalignment of between the ICT and business strategies thereby hampering the ICT function's contribution to the success of the business strategy.

Table 15: Statistical Analysis Results

	DSV	PCVD	CSV	MZ
T-Statistic	0.00	0.01	0.00	
Correl	0.02	0.18	0.14	
Chi Sq	0.33	0.99	0.67	
F-test F	0.00	0.00	0.00	

#### 4.9 ICT Strategic Value and the Organization Structure Relationships

The determinants for the true strategic value of ICT to the business as identified in the literature were strategic and the perceived values. A combination of the two values offers a good estimate for the true strategic value of ICT to the business. The perception of management through the perceived value of ICT to the business and the true worth of ICT to the business are used in the development of the organization structure. The strategic nature of the ICT function in the quest for the achievement of the business objectives is also a factor that influences the positioning of the function.

To be able to determine the relationship between the level of ICT positioning and the determined values of ICT, a statistical analysis of the three determined values (Strategic (DSV), Perceived (PCVD) and Combined (CSV)) sets of data against the Mintzberg classification levels (MZ) was undertaken.

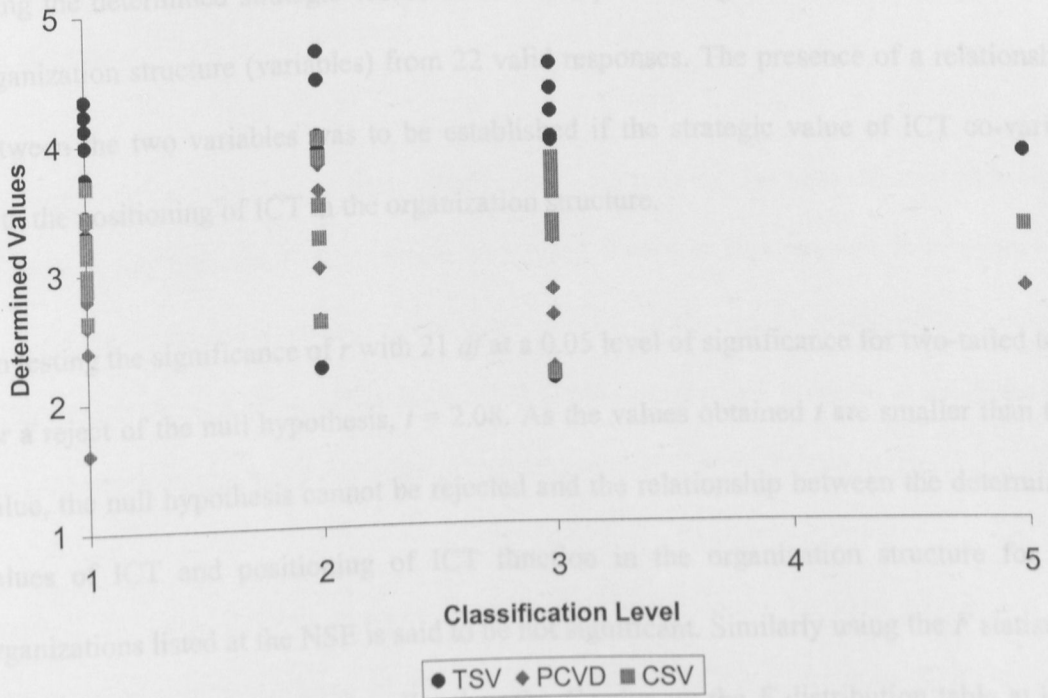
The perceived value of ICT accounts for 18% of the variance in the positioning of ICT in the organization structure as compared to strategic value and combined value that account for 2% and 14% respectively. Table 16 below shows the results of this analysis.

Table 15: Statistical Analysis Results

	DSV	PCVD	CSV	MZ
<i>t</i> - Statistic	0.00	0.01	0.00	
Correl	0.02	0.18	0.14	
Mode	3.45	2.60		1.00
Kurtosis	2.58	1.14	0.54	0.66
Chi Sq.	0.23	0.89	0.67	
Pearsson <i>r</i>	0.02	0.18	0.14	
Ftest <i>F</i>	0.03	0.00	0.00	

Scatter diagrams (chart 11 overleaf) for each these sets of data were drawn against the Mintzberg classification level.

Chart 11: Value of ICT



From the findings above, the perceived value of ICT influences the positioning of ICT in the organization structure more significantly than the strategic value of ICT. It is therefore important that the perception of management be reflective of the potential and/or actual value of ICT to the business. The need for the management's IT skill level needs to be at an adequate level.

#### 4.11 Summary

From the scatter diagram, a weak positive relationship between the perceived and combined values of ICT with the positioning of ICT in the organisation structure is observed but there is no evidence of a relationship in regard to the determined strategic value of ICT.

#### 4.10 Hypothesis Testing

To answer the research problem questions, a test of the research hypothesis was conducted using the determined strategic values of ICT and positioning of the ICT function in the organization structure (variables) from 22 valid responses. The presence of a relationship between the two variables was to be established if the strategic value of ICT co-varied with the positioning of ICT in the organization structure.

On testing the significance of  $r$  with 21  $df$  at a 0.05 level of significance for two-tailed test, for a reject of the null hypothesis,  $t = 2.08$ . As the values obtained  $t$  are smaller than this value, the null hypothesis cannot be rejected and the relationship between the determined values of ICT and positioning of ICT function in the organization structure for the organizations listed at the NSE is said to be not significant. Similarly using the  $F$  statistics, the calculated  $F$  statistics are smaller than the  $F$  value on the  $F$  distribution table at both levels of  $\alpha = 0.05$  or  $0.01$  (2.15 and 3.0 respectively). Thereby, we fail to reject the null hypothesis and conclude that the relationship between the values of ICT and the positioning of ICT in the organisation structure is not significant.

#### 4.11 Summary

The data collected and used for analysis represented all the economic sectors for companies listed on the NSE and therefore facilitated a representative analysis.

Companies listed at the NSE have a stated direction and long-term aspirations of the companies. The companies studied had a business strategy and as such had a direction. These companies have adopted ICT in the business strategy. The studies show that the

existence of alignment of both the business and ICT strategies evidenced by the commonality in their planning horizon and mode of development. The use of in-house personnel/stakeholders in the development and review of these strategies further reinstates the alignment.

The organization structures of these organizations support the business strategy with many of them being functional organization structures. The business strategy is implemented through the organization structure that is reviewed with the aim of matching the business to its environment. Attempts have been made to position the ICT function in a manner that the organizations can enjoy the value they perceive of ICT to the business.

There is a diverse but low perception of the ICT value to the business and also a low management skill knowledge of IT. On the contrary IT's performance is regarded as critical to the success of the business strategy. Despite this low perception, IT is seen as strategic but the true worth of the value of ICT to business is not well understood. There is a low presence of the measures for this value.

With the basis of positioning of the ICT function in the organization structure being its strategic value, the study reveals a clear mismatch in regard to the positioning. As such, the ICT function is incorrectly placed in these organizations. The hypothesis testing deduces that there is no relationship between the level of criticality of ICT strategy to the organization and the placement of ICT function in the organization structure.

## 5.4 Suggestions for Future Study

The study reveals a contradiction; that the positioning of the ICT function in the organization structure is not based on its perceived strategic value and that the respondent's majority view is that the structures are based on the value of the functions; a study should be done to identify the true basis of the positioning.

A similar but wider research (incorporating a larger population of study) may be conducted to confirm the findings. A replicating study may also be conducted on the same population (companies listed at the NSE) at some later time (say 2 years or more) to see whether there have been changes in perception and positioning of ICT function in light of the adoption of the recommendations put forth herein this research.

### APPENDICES

A narrowed research (sectorial) may be conducted to identify the unique sector perception of ICT function and relationship and its strategic value and relationship to the positioning of the function in the organization structure.

## APPENDICES

# APPENDIX I: QUESTIONNAIRE

## APPENDIX I: QUESTIONNAIRE

Ref No. \_\_\_\_\_

### Completing the questionnaire

Once you have completed the questionnaire, please mail it to the researcher in the enclosed self-addressed envelope. The researcher's contacts are also listed at the end of the questionnaire.

**Thank you** for taking time to participate in this important process.

Mark (X) or tick the response that most closely and appropriately represents your organization's position.

Please read each question carefully, then try to give the correct answer for your organization for each of the questions.

#### Disclaimer

Information you provide in this questionnaire will be privileged and shall not be used, or divulged to any other parties for the purpose other than to which it is intended for.

### Section 1: Organization Profile

1-1 How long has your organization been in operation in Kenya?

(i) From incorporation \_\_\_\_\_ years

(ii) As a listed company at the NSE \_\_\_\_\_ years

1-2 What is the ownership structure of the organisation?

Wholly locally owned with public shareholding

Subsidiary of multinational with public shareholding

1-3 How many employees does your organization employ?

(i) Management \_\_\_\_\_

(ii) Non-Management \_\_\_\_\_

1-4 What is the geographical coverage of your operations? (tick those that apply)

Local (within Kenya)

Regional (East African region)

International (Rest of the world)

1-5 What is your organization's IRR (Internal Rate of Return)? \_\_\_\_\_

## Section 2: Business Strategy

Questions in this section refer to your organisation's business strategy

2-1 Does your organization have Vision and Mission Statements?

- Yes       No       Don't know

2-2 Does your organization have a business strategy?

- Yes       No       Don't know

2-3 What is your organisation's business strategic planning horizon?

- 3 Years       5 Years       10 Years       Don't know

2-4 What kind of strategic planning process does your company follow?

- Highly formal  
 Formal (*Structured process*)  
 Semi-formal (*low degree of formality, high degree of informality*)  
 Informal (*No process*)  
 No planning takes place

2-5 Is your business strategy developed in-house?

- Yes       No       Partly       Don't know

(i) If **Yes**, how was it developed?

- Executive Retreats (*Senior Management*)  
 Management Retreats (*Senior and Middle Management*)  
 Consultative Workshops (*Senior, Middle and Line Management*)  
 Other (*Please Specify*)

(ii) If **No** or **Partly**, explain

---

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2-6 How often is your organisation's business strategy reviewed?

- Once a year  
 Twice a year  
 Quarterly  
 Frequently  
 Never

2-7 Who are involved in the review of the business strategy?

- Board of Directors
- Senior Management (*Departmental/Divisional Heads and CEO*)
- Middle Management
- Head of IT
- Line Management

2-9 What are the sources of your organisation's competitive advantage? (*tick all that apply*)

- Cost Leadership (*Price*)
- Focus (*Meeting Specific Customer Needs*)
- Speed
- Innovation (*Delivering Unique Products*)
- Execution (*Superior Customer Service*)
- Maneuverability (*Adaptability to Changing Requirements*)

2-10 What environmental factors have influenced your business strategy? (*Rank from 1-highest to 6-Lowest*)

- Competition
- Changing Consumer Needs
- Technology (*Information Technology Included*)
- Political/Legal
- Economic Conditions and Trading Blocks
- Natural Weather Phenomena

**Section 3: ICT Strategy**

3-1 Does your organization have an IT Department/Division?

Yes       No

3-2 What is the title of the Head of IT?

Group IT/IS Director

IT/IS Director

IT/IS Manager

Other (Please Specify) \_\_\_\_\_

3-3 How many employees report to the Head of IT?

Management \_\_\_\_\_

Non-Management \_\_\_\_\_

3-4 For how long has your organization had an IT department/Division?

Division	Department
<input type="checkbox"/>	<input type="checkbox"/> Over 10 years
<input type="checkbox"/>	<input type="checkbox"/> Between 5-10 years
<input type="checkbox"/>	<input type="checkbox"/> Between 1 - 5 years
<input type="checkbox"/>	<input type="checkbox"/> Under 1 year

3-5 Does your organization have an ICT strategy?

Yes       No       Don't know

3-6 What is your ICT strategy planning horizon?

3 Years       5 Years       10 Years       Don't know

3-7 How often is the ICT strategy reviewed?

Once a year

Twice a year

Quarterly

Frequently

Never

3-8 Is the ICT strategy developed in-house?

- Yes       No       Partly       Don't know

3-9 Who are involved in the development of the ICT Strategy? (Tick all that apply)

- IT Strategy Board Committee  
 CEO  
 Senior Management  
 IT Management  
 Others \_\_\_\_\_ (Please specify)

3-10 Who are responsible for the implementation of the ICT Strategy?

- IT Strategy Board Committee  
 CEO  
 Executive Management  
 IT Management  
 Others \_\_\_\_\_ (Please specify)

3-11 According to the last financial year,

(i) What was the total value of your ICT assets? \_\_\_\_\_

(ii) What was the total expenses related to ICT? \_\_\_\_\_

3-12 Does your organization have a measure of IT's value(returns) to the business?

- Yes       No       Don't know

If Yes,

(i) what is this measure?

- Balanced Score Card  
 ROI of IT  
 Internal Rate of Return (IRR)  
 Financial Ratio (Please specify) \_\_\_\_\_  
 Other (Please specify) \_\_\_\_\_

(ii) and what was the last financial year's ICT value to the business? \_\_\_\_\_

3-13 Does your organization have a measure of IT personnel performance?

- Yes       No       Don't know

If Yes,

(i) What is this measure? \_\_\_\_\_

3-14 Does your organization have IT standards?

- 4-1 What
- Defined, enforced at functional level
  - Emerging, coordination across functions
  - Defined, enforced across functions
  - Also coordinated with partners
  - None or not enforced

3-15 What IT systems does your organization have? (tick those that apply)

- 4-2 How
- Enterprise Resource Planning System
  - Communication and Collaboration Systems (e.g. eMail, Internet Site)
  - Financial System
  - Human Resources Management System
  - Production Planning System
  - Customer Relationship Management System

3-16 Are the IT systems in your organizations integrated or linked with each other?

- Yes
- No
- Don't know

3-17 Is any of your organization's IT systems integrated or linked with your customers or suppliers?

- Yes
- No
- Don't know

3-18 How does your organization fund its investments in ICT?

- Purchase
- Lease
- Mixed
- Don't know

3-19 Does your organization conduct an internal IT Customer survey?

- Yes
- No
- Don't know

4-5 Has the restructuring affected the IT budget?

- Yes
- No
- Don't know

If Yes, in the previous organization structure, in which unit the IT budget would be? (Please tick, question 4-5 for all agents)

4-6 What is the hierarchy level of the Head of IT?

- Director/Head
- Senior Management
- Middle Management
- Operational Management
- Line Management
- Support Staff (includes operating workbenches)

## Section 4: Organization Structure

4-1 What hierarchy levels does your organization have?

- Business Units
- Divisions
- Departments
- Sections
- Other (Please specify) \_\_\_\_\_

4-2 How would you describe the structure of your organisation?

- Centralized (Functional)
- Functional with Divisions (Geographic)
- De-centralised (Divisional)
- Matrix
- Project-based (Product Team)

4-3 How is the organisation structure developed? (Tick all those that apply)

- Based on the industry standard
- Based on the strategic value of the functions
- Adopted from corporate headquarters
- Size of the functions
- Other (Please specify) \_\_\_\_\_

4-4 Has your organization restructured over the last 5 years?

- Yes       No       Don't know

4-5 Has the restructuring affected the IT function?

- Yes       No       Don't know

If **Yes**, in the previous organization structure, to whom did the IT leader report to? (Refer to question 4-5 for categories)

---

4-6 What is the hierarchy level of the Head of IT?

- Divisional Head
- Senior Management
- Middle Management
- Operations Management
- Line Management
- Support Staff (Outside operating workflow)

4-7 To whom does the Head of IT report?

- CEO
- Divisional Head
- Senior Management
- Middle Management
- Operations Management
- Line Management

4-8 Does the IT incharge/leader make all IT decisions independently?

- Yes
- No
- Don't know

If **No**, who is involved in decision making? (Tick all those that apply)

- Board of Directors
- CEO
- Finance Director/Manager
- Corporate/Regional IT Headquarters
- Investment Committee
- Other (Please specify) \_\_\_\_\_

**Section 5 Value Diagnostics**

**Strategic Value**

Indicate (by ticking) the degree to which you agree with the importance of the following factors in relation to the strategic value of ICT to the success your organisation's business strategy

- 1. Strongly disagree
- 2. Disagree
- 3. Neither agree or disagree
- 4. Agree
- 5. Strongly agree

	1	2	3	4	5
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

5-1 Performance of the IT function is critical to the business strategy

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
--------------------------	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------

5-2 ICT strategy is highly influenced by the business strategy

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
--------------------------	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------

5-3 ICT function has helped reduce organisational costs

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
--------------------------	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------

5-4 ICT is used highly in the following business processes/functions

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
--------------------------	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------

Production

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
--------------------------	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------

Human Resources

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
--------------------------	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------

Operations

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
--------------------------	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------

Marketing

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
--------------------------	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------

Logistics and Distribution

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
--------------------------	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------

5-5 ICT has been used successfully to differentiate products/services

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
--------------------------	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------

5-6 Risk and impact assessments of IT projects is conducted

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
--------------------------	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------

5-7 How is the success of your company's IT investments measured? (Tick those that apply)

Project is on time and within budget

Decreased costs

Increased productivity

Increased revenues and profits

Total Cost of Ownership (TCO)

Length of time to payback

ROI formula or benchmark

Customer Satisfaction/Value

Other (Please Specify) \_\_\_\_\_

No measurement in place

### Perception Based Value

Indicate (by ticking) the degree to which you (*personal opinion*) agree with the following factors in relation to the strategic value of ICT to the success your organisation's business strategy.

		1	2	3	4	5
5-8	IT function specialize on technology at the expense of customer needs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5-9	The IT function has been able to fulfill business needs through technology	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5-10	The business need for IT is high	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5-11	The level of performance of the IT function is high	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5-12	IT has added significant value to the business	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5-13	Top Management's level of IT knowledge is excellent	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5-14	No major IT project has failed	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5-15	IT function is correctly placed in the organisation structure	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5-16	What is your perception of IT infrastructure?					
	<input type="checkbox"/> A utility, run at a minimum cost					
	<input type="checkbox"/> Becoming driven by Business strategy					
	<input type="checkbox"/> Driven by business strategy					
	<input type="checkbox"/> Beginning to help business respond to change					
	<input type="checkbox"/> Enables fast response to changing market					

**THANK YOU FOR TAKING TIME TO FILL IN THIS QUESTIONNAIRE**

Kindly return the questionannire to:

Felix Kariuki  
PO Box 5109  
Nyayo stadium  
Nairobi - 00506

Tel: +254 (020) 534300  
email: felix.kariuki@ieee.org

## APPENDIX II: COMPANIES LISTED ON THE NSE

### Argricultural

- 1 Brooke Bond Limited
- 2 Kakuzi
- 3 Rea Vipingo Plantations Limited
- 4 Sasini Tea & Coffee Limited

### Financial and Investment

- 5 Barclays Bank of Kenya
- 6 CFC Bank
- 7 Diamond Trust Bank
- 8 Housing Finance Company
- 9 ICDC Investments Compy
- 10 Jubilee Insurance Company
- 11 Kenya Commercial Bank
- 12 National Bank of Kenya
- 13 NIC Bank
- 14 Pan Africa Insurance Holdings
- 15 Standard Chartered Bank

### Commercial and Services

- 16 Car & General
- 17 CMC Holdings
- 18 Hutchings Beimer\*
- 19 Kenya Airways
- 20 Marshalls EA
- 21 Nation Media Group
- 22 Tourism Promotion Services
- 23 Uchumi Supermarkets

\* *Currently Suspended*

### Industrial & Allied

- 24 Athi River Mining
- 25 Bamburi Cement
- 26 BOC Kenya
- 27 British American Tobacco
- 28 Carbacid Investments
- 29 Crown Berger
- 30 Dunlop Kenya
- 31 EA Cables
- 32 EA Portland Cement
- 33 EABL
- 34 Firestone EA
- 35 Kenya Oil Company
- 36 Kenya Power & Lighting Company
- 37 Mumias Sugar Company
- 38 Total Kenya
- 39 Unga Group

### Alternative Investment Market Segment

- 40 A Baumann Company
- 41 City Trust
- 42 Eaagads
- 43 Express Kenya
- 44 Kapchorua Tea Company
- 45 Kenya Orchards
- 46 Limuru Tea Company
- 47 Standard Newspapers Group
- 48 Williamson Tea

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