THE ROLE OF INFORMATION TECHNOLOGY IN STRATEGY FORMULATION IN COMPANIES LISTED AT THE NAIROBI STOCK EXCHANGE

BY

BENGI, E.K

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DECLARATION

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

Sign_____   Date_____

BENGI EDWARD KIMATHI
D61/P/ 8380/03

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

Sign_____   Date_____

JEREMIAH KAGWE

LECTURER,

DEPARTMENT OF BUSINESS ADMINISTRATION.

UNIVERSITY OF NAIROBI

DEDICATION

I would like to dedicate this study to my Parents, Mr. and Mrs. Bengi for their relentless efforts to educate me. There is no doubt in my mind that this study could not have been without their many years of dedicated support, counsel and above all love.

To my family - Bernadette, Andre, Mitchell, and Roy for their continued encouragement and support.

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ABSTRACT

Research on IT - strategy integration has been concentrated in developed economies such as US and UK. In the past, a lot of this research has been geared towards the role of IT on improving operational efficiency and financial performance. As the field of strategic management has expanded, strategy researchers and practitioners have shown increasing interest in the role of information technology (IT) in strategic management. This study focuses on the role played by IT in strategy formulation in companies listed at the Nairobi Stock Exchange.

Strategy formulation is considered part of the larger strategic management process comprising of diagnosis, setting objectives, formulation, implementation and finally evaluation and control. Information Technology has been discussed in the light of an organizational context. The definition presented for IT is therefore a discussion on its application in business rather than the scientific definition.

The study uses an exploratory survey design where the population composed of all companies quoted at the NSE directory as at 1st August, 2010. Data was collected by means of a questionnaire, which consisted of both open-ended and closed-ended questions where the target respondents were the senior managers in strategic planning, business and the IT function designated as being responsible for planning and managing IT and business resources in the organizations. Data collected was both quantitative and qualitative and analysis was conducted using descriptive statistics, which includes measures of central tendency, measures of variability and measures of frequency among others.

The study assesses strategic management practices in firms and how this is carried out in identifying Information Technology opportunities during environmental analysis. The opportunities are operationalized under 36 factor scale with each of the factors falling in one of three categories of Competitive, Portfolio and Internal objectives of the firm. The most important opportunities were identified. An overwhelming majority of the firms concede to using formal strategic management practices and to evaluating IT opportunities during environmental analysis. Most of the firms however do not use a structured approach in assessing IT opportunities leading to the possibility of overlooking some.

The study identified the most important opportunities from each of the three business dimensions. IT supports the competitive dimension of strategy by proving opportunities for better products or services to customers, by enabling firms to respond more quickly to environmental change and by improving customer relations. IT supports the internal dimension of strategy by providing opportunities for increased volume, accuracy and reliability of data (information) for planning and operations control, operational cost reduction, and enhancing regulatory compliance. Finally IT supports the portfolio dimension of strategy by affording opportunities for portfolio redesign and by raising entry barriers in current industries of operation.

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CHAPTER ONE: INTRODUCTION

1.1 Background of the study

An ever changing business environment characterised by stiff competition, changing customer and investor demands, changing regulation, and new compliance demands has become the norm for most organizations today. In order to compete in this kind of environment firms must continually review their current objectives and strategies in ways that make the organization more successful.

Strategic management is a widely accepted concept in management today. Organizational leaders are expected to set clear vision and mission statements for their firms and then marshal the entire organization towards achievement of set goals. In most organizations today, clear strategic management structures have been established to ensure effective formulation and execution of strategy. Strategy formulation in particular is concerned with *how* a firm's set objectives will be achieved (Thompson, Stickland and Gamble, 2007).

The last two decades have seen a revolution in the application of IT in business organizations. This growth has been fuelled by the enormous opportunities presented by IT in the areas of efficiency improvements, operational support, product development, various Management Information Systems (Rockart, 1988). Therefore, many firms have continued to apply IT in their various functions and operations and IT can no longer be ignored in strategic management. While traditionally, IT has been perceived as being a means to provide more efficient processes that would lead to lower cost of products and services, it is widely acknowledged today that IT is central in formulating and executing strategy in many organizations (Porter and Miller, 1985).

There is compelling evidence that firms listed at the Nairobi Stock Exchange are likely to be engaged in good strategic management practices and that the firms also use IT extensively in their business operations. The opportunities created by IT are enormous, creating opportunities for new products and services and transforming operations in entire organizations, sectors and economies in ways that were not perceivable a few years ago (Rockart, 1988). The firms listed at the NSE are engaged in business with their sole purpose being good shareholder return. Due to the opportunities presented by IT, it is likely that these firms *have used* or *are using* IT in

strategy formulation either as one of the competitive weapons, or by applying IT to actualize various strategic and operational objectives.

1.1.1 The Concept of Strategy and Strategy Formulation

Johnson and Scholes (2002) define strategy as being the direction and scope of an organisation over the long-term, as being the search for competitive advantage, as being the configuration of resources and competencies in a changing environment and as being the set decisions that a firm's management takes as it seeks to fulfil stakeholder expectations. A Key task of top management is formulating corporate strategy. Where is the corporation going? What does the corporation do well? What weaknesses do we need to address? Can the firm continue its current activities at a high level of performance? What opportunities for new directions are available? What are competitors doing? What competencies do we need to build? Can the firm continue its present course, maintaining momentum where it is doing well? Alternatively, the corporation can dramatically change its strategy by deciding among competing alternatives for new ventures.

Strategy formulation is part of the wider strategic management process consisting of diagnosis, setting objectives, formulation, implementation, evaluation and control (Thompson et al., 2007). Diagnosis involves performing a situation analysis of the internal and external environment of the firm. Internal analysis aims at identifying the strengths and weaknesses. It focuses on the internal factors that give an organization certain advantages and disadvantages in meeting the needs of its target market. External analysis involves analyzing the organization's external environment to identify major opportunities and threats. Objective setting is concerned with target setting- defining clear targets in such aspects as profitability and customer service. Objective setting is based on the output from the diagnosis stage, taking advantages of new opportunities in the market, building upon strengths to do better, countering threats while working to reduce weaknesses. Planners seek at this stage to set new objectives and to modify current objectives in order to make the organization more competitive. Strategy formulation is the process of defining how the objectives will be met. Strategy formulation involves clearly stating what the company has to do in the short term and in the long term in order to achieve the set objectives (Gupta, 1987).

1.1.2 Information Technology

IT can be defined as any form of computer-based information system, including mainframe as well as microcomputer and telecommunication applications (Orlikowski and Gash (1992). In an organizational context IT refers to the management and use of information using computer-based tools (Mirani & Lederer, 1998). It includes acquiring, processing, storing, and distributing information. Most commonly it is a term used to refer to business applications of computer technology, rather than scientific applications (Mirani & Lederer, 1998). The term is used broadly in business to refer to anything that ties into the use of computers.

In business applications, the range and strategic impacts of such systems are vast and in some industries heavy reliance on IT as a competitive weapon has been witnessed; for example;

- In banking, the Co-operative Bank of Kenya leveraged on its unique relationship with the Co-operative movement in Kenya to develop an ATM system that would allow Co-operative society members to draw money from the bank's ATM network while directly debiting customer accounts at the individual societies. This simultaneously grew revenues for the bank and the societies while increasing switching costs for the societies (http://www.co-opbank.co.ke/Main-Site/Home/Co-operatives/Sacco-Link).
- Federal Express drivers use hand-held computers and sophisticated data management systems that improve service and reduce costs, making overnight delivery services profitable and affordable to customers (Powell and Dent-Micallef, 1997)
- Equity bank, riding on the popular MPesa service from Safaricom developed a mobile phone based banking system effectively doubling their account base while simplifying the loan application and banking processes for its customers (www.businessdailyafrica.com).
- Xerox provides master production schedules online to suppliers to facilitate just in time deliveries, reducing inventory costs while improving supplier relations (Powell and Dent-Micallef, 1997).
- Large retailers like Toys R Us and Wal Mart use sophisticated inventory management technologies, including electronic data interchange with suppliers, to increase operational efficiencies and improve services (Powell and Dent-Micallef, 1997).

The Mpesa product from Safaricom, a telecommunications firm listed at the NSE is one such product that is IT driven. Mpesa has totally transformed and dominated money transfer business in Kenya and beyond while enabling Safaricom to expand its portfolio into money transfer business. This portfolio was a "banks only" domain only two to three years ago. It is no wonder that some CEOs are looking at IT as the driver that will take their organizations to the next level. The usage of IT in strategy cannot be better summarized than in the words of Richard Etemesi, the CEO of Standard Chartered Bank in a recent press release while announcing the bank's 2009 performance where the Bank reported a 43% jump in profits to reach KES 6.3 Billion. "In 2009, the Bank invested heavily in technology anticipating that it would be the main driver in business growth in the banking sector for the future. The Bank made substantial investment in systems infrastructure and introduced several technology – based products and services. It also standardised the technology platforms to become more nimble and able to respond to the changing business environment. Our new investment in technology has enabled us to serve new customer segments and widen our customer reach." (www.standardchartered.com/ke/investor-relations/.../Press%20Release.pdf)

Large to medium enterprises quoted at the stock exchange can play a critical role as a gauge for assessing organizational usage of Information Technology in strategy formulation. It is however important to indicate at this stage that small enterprises also play a critical role in long term national development of developing countries. The next section focuses the discussion on these firms that are quoted at the Nairobi Stock Exchange (NSE).

1.1.3 The Context of study: Companies Listed at the Nairobi Stock Exchange
This section provides a historical perspective of the NSE and its role in the Kenyan economy and also provides a theoretical snap shot of how to view the organizational context of information technology and strategy formulation within the organizations quoted in the NSE.

In 1954, the Nairobi Stock Exchange (NSE) obtained its formal constitution. However, organized dealings in shares (stock) had been ongoing since 1920; without a formal market, rules or regulations to govern stock broking activities. Trading was based on a gentleman's agreement and it was a sideline business conducted by auctioneers, estate agents and lawyers who met in a bar to transact business. Francis Drummond, an estate agent established the first professional

stock broking firm in 1951. By 1952, there were 43 public companies whose normal value of issued capital was about Kenya pound 11.8 million. In July 1954, the NSE was opened voluntarily. An association of stock brokers registered under the Societies Act with 85 securities listed. At this time, the NSE was not a legal entity, a partnership nor a corporation. It had no trading floor and members met through a call over in a bar. Pricing of securities was established through negotiation and the association remained exclusively European until 1963. In 1971, a capital issue committee was formed under the Ministry of Finance to regulate and control issuance of new equity and debt securities. In 1975, the government imposed a capital gain tax of 35% (www.nse.co.ke/newsite/inner.asp?cat=ahistory). In 1989, the Capital Markets Authority (CMA) Act came into force which led to the creation of the CMA in January 1990 with the objective of developing the capital market and protecting investors. In the same year, the call over trading system was phased out in favour of an open outlay system, which resulted in the establishment of a trading floor. Eight new brokers were licensed in 1994.

In 1995, foreign ownership restrictions in locally controlled companies were doubled from 20% to 40%. Privatization of Kenya Airways was done at the stock exchange in 1996 and this was followed by the introduction of incentives to foreign investors in 1998. These included setting up tax-free venture capital funds and removal of capital gains on insurance companies and investment allowance of beneficial ownership by foreigners. The year 2001 saw the cross-border listing of East African Breweries in Kenya, Uganda and the listing of additional companies such as Mumias Sugar and ICDC.

Thus the study is focusing on companies quoted in the NSE, given that the trading at the NSE continues to play a vital role in national development. As at 17th February, 2009, market capitalization has peaked at Ksh: 710 billion, comprising 52 equities, 5 corporate bonds and 72 Government of Kenya treasury bonds. Thus focusing on organizations in the NSE would provide a good indicator of the usage of IT in strategy formulation, not only because the companies have been operational for a long time (and therefore are likely to have used IT in strategy formulation), but also because the companies are drawn from different sectors of the economy (Appendix 3). The companies from the different sectors in the NSE (Agricultural Sector;

Commercial and Services Sector; Finance and Investment Sector; Industrial and Allied Sector) will thus provide a peek into how strategic value flows are dependent on the organizational type.

1.2 Statement of the Research Problem

Research on IT - strategy integration has been concentrated in developed economies such as US and UK. In the past, a lot of this research has been geared towards the role of IT on improving operational efficiency and financial performance. As the field of strategic management has expanded, strategy researchers and practitioners have shown increasing interest in the role of information technology (IT) in strategic management (Sabherwal and King, 1991; Henderson and Venkatraman, 1993; Porter and Millar, 1985; Rockart and Short (1989) Keen, 1993). However, the literature in the area is quiet fragmented and weighs heavily to studies conducted in developed countries. Such a study is not known to have been carried out in Kenya.

Porter and Millar (1985), for example, related IT to the value chain, concluding that the main strategic purpose of IT is to coordinate activities in the chain; Keen (1993) concluded that IT should support competitive thrusts such as cost leadership, differentiation, innovation, growth, and external alliances; and Rockart and Short (1989) argued that ITs serve primarily to manage organizational inter-dependence, i.e., to solve coordination problems among departments and strategic business units.

A number of researchers have examined the conditions under which IT creates sustainable advantages. Porter (1985), for example, focused on first mover advantages, arguing that technological advantage arises when first mover advantages (such as pre-empting customers through switching costs) outweigh first mover disadvantages (such as development costs and learning curves). Clemons (1986) distinguished between externally focused applications i.e. those that connect the firm with customers or suppliers (such as ATMs, and internally focused applications, i.e., those that improve internal efficiencies (such as factory automation systems). Citing case examples, the author suggests that external applications tend to produce advantages based on switching costs, whereas internal applications tend to produce advantages based on scale economies, managerial expertise and efficiencies.

Available literature on local experiences is mainly limited to media reports of the practices in IT and its contribution to the survival of organizations. The government has taken note of the likely positive role that IT can play in the economic advancement of the country by articulating various policy positions (Muganda, 2008). Other local studies such as Muganda (2001) and Muganda and Van Belle (2007) undertook studies on of e-commerce strategies in selected organizations in Kenya. While the study is critical in advancing the knowledge on strategic planning using IT, their study is specific to e-commerce application.

The purpose of this research is to develop an understanding of the usage of IT capabilities to formulate strategy within an organizational context. The study builds on the study by Bakos and Treacy (1986) by adopting the conceptual framework (discussed in the literature review) and extends its applicability to the assessment of how IT is used in strategy formulation. The authors classify three types or dimensions of operational and strategic objectives that rely on IT for their actualization: internal objectives, competitive objectives and business portfolio objectives. The research will adopt this model and focus on these three dimensions as the areas where firms can apply IT to meet various business objectives.

The research question that shall guide this study is the following:

- **What is the role of IT in Strategy Formulation?**

A number of hypotheses are identified from the conceptual framework based on a preliminary review of literature and interviews:

H1: IT capabilities can be exploited in formulating internal strategies of an organization.

H2: IT capabilities can be exploited in formulating competitive strategies of an organization

H3: IT capabilities can be exploited in formulating business portfolio strategies of an organization.

1.3 The objectives of the study

A broad objective of the study is to establish how IT is applied in formulating strategy at firms listed at the Nairobi Stock Exchange.

1.4 Importance of the Research

The research will be important to the following:

Policy Makers: Decision makers will gain value added information about the role of IT in strategic planning. Further, they will be more informed on how they can use IT to achieve competitive advantage, improve operational efficiency and develop portfolio.

Academics: Academics and business researchers will be able to borrow from the findings of this research to support literary citations as well as develop themes for further research. The study will also inform then on the state of IT with regard to strategy formulation in Kenya.

Business People and Investors: Business persons, for instance suppliers of IT technology can use the findings to establish the IT technologies that are of strategic importance to organizations and concentrate on developing them. Additionally, investors like stock market buyers will be able evaluate those companies that are focused on the future through implementation of strategic ITs that will add value to their investments.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

This chapter begins with discussions on the concept of strategy before discussing strategy formulation. Later in the chapter, IT and its role in strategy formulation in an organizational context has been discussed. The chapter concludes by developing a conceptual model for assessing the application of IT in strategy formulation.

2.2 Strategy

Several authors have offered definitions for the concept of strategy (Ansoff, 1965; Thompson et, al, 2007; Johnson and Scholes, 2005; Mintzberg and Waters 1995; Quinn, 1980). Hax and Majluf (1988) contend that the different authors who have defined strategy have done so by giving selective attention to the various relevant issues. Johnson et, al (2005) for example give prominence to scope and direction of a company in the long term while Thompson et, al (2007) observe a company strategy as "consisting of the competitive moves and approaches that managers employ to grow their business, attract and please customers, compete successfully, conduct operations and achieve the targeted levels of organizational performance". From a review of various literature, several dimensions of strategy can be identified.

First, strategy establishes purpose for the organization in terms of defining the long term objectives of the firm (Chandler, 1962). Resources are therefore allocated accordingly in order to meet the long term objectives of the firm. In the second dimension, strategy is seen in light of the competitive domain of the firm. Strategy defines the business the firm is in or the business it intends to be in (Gupta, 1987). Thirdly, strategy is seen as the organizational blueprint for the entire organization. The blueprint is designed to ensure that the key objectives of the firm are achieved. Strategy has also been defined with respect to how the organization responds to the internal and external environment. Strategy is the various moves that the firm takes to actively and continuously adapt the organization to meet demands of a changing environment (Weiner and Mahoney, 1981). In yet another aspect, Porter (1980) defines strategy as the search for a favourable competitive position in an industry. He introduces the concept of competitive advantage and defines strategy as the various moves that a firm takes in the quest of attaining and maintaining competitive advantage in the selected industry (Porter 1985).

Mintzberg and Waters (1995) argue that no one definition is better than the other but rather all can be treated as complementary definitions. Ansoff (1987) seems to concur when he suggests that strategy is somewhat an elusive concept. This is probably why, like in many other fields of management there is no consensus on one definition. Many authors would however agree with the fact that strategy is the unifying theme that gives coherence and direction to the decisions of an organization. Johnson and Scholes (2002) observe strategy as consisting six major elements: It concerns the full scope of an organizations activities, it is the matching of the organizations activities to its environment, it concerns the process of matching the firms activities to resource capability, it has major resource implications, it affects operational decisions and is greatly influenced by the values and beliefs of those in power. Likewise, Hax and Majluf (1988) argue that strategy is a multidimensional concept that embraces all the critical activities of the firm providing it with a sense of unity, purpose and direction. They view strategy as encompassing several dimensions; as the coherent unifying and integrative pattern of decisions, as the organizational purpose in terms of long term objectives, as the selection of the business of the organization, as what the company intends to be, as the responses to internal and external environment in order to achieve sustainable long term competitive advantage, as engaging all the hierarchies of the organization- corporate, business and functional, and finally as the nature of contribution the firm wants to contribute to its stakeholders.

Mintzberg (1987) suggests that the explicit recognition of multiple definitions of strategy can help practitioners to navigate through the field and goes on to describe strategy in five perspectives; as a plan, ploy, pattern, position and perspective. Strategy is a plan or some conscious course of action that an organization takes. This implies that strategies are made in advance of the actions they precede and that they are also developed consciously and purposefully. Strategy is also a ploy or the specific manoeuvres or actions whose sole intention is to outwit a competitor. Strategy is also a pattern or the consistency in behaviour or the stream of actions that emerge over time in an organization. The stream of actions could be intended or unintended only developing over time. Fourthly, strategy is a position or the location of an organization within an environment. In this view, strategy involves creating a match between the organization and its internal and external environments. Finally strategy is a perspective or the way the organization sees or perceives itself with respect to the others and the environment. As

an example, some organizations would want to perceive themselves as pacesetters in their industries, or as dynamic, aggressive etc.

Thompson et al., (2007) identify two important characteristics of strategy. In the first observation, they state that strategies evolve over time and that every company must be willing to modify its strategy in response to changing market conditions, changing technology, competitor moves, changing consumer needs, new opportunities, new ideas for improving strategy and when there is compelling evidence that the current strategy is not working well. Thus, changing circumstances and management efforts to improve strategy cause a company strategy to evolve over time. The authors also suggest that strategy is partially proactive and partially reactive. Proactive strategy emerges from the proactive actions and decisions taken by management to improve performance and secure competitive edge. On the other hand, reactive strategy is the strategy that comes as a result of reactions to unanticipated developments in the environment and fresh market conditions. Thus a company's strategy is shaped by both management choice and partly by the necessity to adapt and conform to environmental conditions. Mintzberg and Waters (1995) also introduce the aspect deliberate and emergent strategies. Deliberate strategies are intended and followed by deliberate actions while emergent strategies emerge over time when patterns develop in the absence of intentions.

From the preceding discussions, it emerges that it is important for organizational leaders to proactively manage and shape how an organization's business will be conducted. Strategy creates the roadmap that defines the direction and decisions that a company will make in order to outmanoeuvre rivals and create sustainable competitive advantages. The next section examines the strategy formulation process.

2.3 Strategy Formulation
It is useful to consider strategy formulation as part of the larger strategic management process that comprises of five phases: developing a strategic vision and mission, setting objectives, crafting strategy or formulation, implementation strategy and finally evaluating performance and initiating corrective adjustments (Thompson et al., (2007). The discussion in this section has adopted this framework.

2.3.1 Vision and Mission

At the very onset of the firm or the strategic management process, company leaders have to wrestle with the idea of selecting the path that the company will take. Selecting a strategic vision involves identifying a market segment, products, and customer segments that will enable the firm to achieve its goals. A strategic vision can be defined as a futuristic view of where the company is going, or where it would want to go (Gupta and Govindarajan, 1984). A vision seeks to unite the organization towards a particular direction, charts a strategic path and moulds organizational identity (Miller and Toulouse, 1986).

In defining a strategic vision, a company has to assess both its internal and external environments and select a path from one or more competing alternatives (Porter, 1980). In evaluating the external environment the company has to contend with issues such as if it's current strategic cause in terms of its product, market, customers and technology present attractive growth opportunities. A company must also evaluate its competitive environment to determine opportunities and potential threats that can weaken its prospects. A company also requires to evaluate emerging market opportunities that it can pursue and any new customer groups or geographic markets that it can get in. Finally a company also needs to evaluate declining markets to determine if there are markets market segments or customer groups that it needs to divest from. Internal considerations include assessing organizational strengths and weaknesses and how the strengths can be leveraged in the long term while working to reduce weaknesses. Other internal considerations include targeted growth goals, profitability and shareholder expectations.

Unlike a company vision that portrays a company's future business scope and direction, a company mission seeks to describe a company's current business scope and purpose (Thompson and Scholes (2002). A mission statement answers critical questions such as who a company is, what a company does, customer and market focus and why the company exists. In defining a mission statement, the company seeks to set itself apart from other businesses of its type and identify its scope of operations (Shank and Govindarajan,1988). In conclusion, a mission statement communicates three things; what has to be done to achieve the vision, what a company is known for or would like to be known for, and finally, it seeks to uniquely identity the organization among its peers in the market .

2.3.2 Analysis of the Internal and External Environments

Johnson and Scholes (2002) highlight that strategic management goes beyond the routine, short-term, operation-specific concerns of an organization. It deals with complexity arising out of ambiguous and non-routine situations with organization wide implications. It involves understanding the strategic position of the company, its strategic choices and how they turn strategy into action.

Bennet (1996), points out that strategic management will involve in part, analyzing the environment, resources and expectations for future implications. Johnson and Scholes (2002) refer to this as the company's strategic position i.e. knowing both its internal and external environment, being aware of effects on organization and its activities, knowing its resources, capabilities and core competencies to exploit any opportunities and knowing the expectations and purposes of groups within the organization and what they aspire for future development of the organization.

Analysis of the External Environment

Firms face External environments that are highly turbulent and complex and global conditions make analysis of these environments increasingly difficult (Hitt, Hoskinsson and Ireland, 2007). Panagiotou (2003) indentifies he process of external analysis as comprising of scanning (identifying early signals of environmental trends and changes), monitoring (detecting meaning through ongoing observations of changes and trends) ,forecasting (developing projections and anticipated outcomes) and assessing (determining the timing and importance of environmental changes and trends for firms strategies).

The aim of external analysis is to identify opportunities and threats. Hitt et, al (2007) define an opportunity as a condition in the external environment that if exploited helps a company achieve strategic competitiveness. He defines a threat as a condition in the external environment that may hinder a firm's efforts to achieve strategic competitiveness and goes further to breakdown the external environment into General, Industry and Competitor environments.

The General environment comprises of factors in the broader society that influence entire economies and the firm operating under. These factors have been classified under the PESTEL framework as political, Economic, Social, Technological Environmental and legal factors (Tan,

2005). Other authors such as Hough and White (2004) classify them as Demographic, Economic, Political/Legal Social-cultural Technological and Global factors. *Political factors* refer to government policy such as the degree of intervention in the economy. These could include government subsidies, government policies and support, available infrastructure and such other government dependent factors. *Economic factors* include factors such as interest rates, taxation changes, economic growth, inflation and exchange rates and trade deficits/surplus. *Social factors* refer to social trends in the larger population. These could be workforce diversity, women at the workplace, religious factors and shifts in product preferences. *Technological factors include factors such as* new technologies, application of Information technology, product innovations, applications of knowledge and support in research and development. *Environmental factors:* environmental factors include the weather and climate change, pollution, waste disposal, changes in weather patterns etc. *Legal factors* related to the legal environment in which firms operate. These could include taxation laws, regulation, labour laws etc

An industry can be described as a group of firms producing goods that are close substitutes (Hitt et al., 2007). Porter (1985) highlights that the attractiveness of an industry is a function five forces of competition: threat of new entrants, rivalry among competing firms, threat of new substitutes, bargaining power of buyers, and bargaining power of suppliers. Industry analysis is an important aspect of environmental analysis because it helps firms identify industry characteristics that will enable them achieve strategic competitiveness (Tan, 2005) (Hitt et al., 2007) suggest that a thorough analysis of industry environment has become very important in recent days as industry boundaries get more blurred. In particular he sites examples of airlines selling mutual funds and automakers selling insurance and motor vehicle financing. This integration has also been witnessed locally with the earlier example of telecommunications companies entering the money transfer market.

Finally, competitor analysis involves gathering and interpreting information about competitors (Lynch, 2007). The aim of competitor analysis is to understand competitors' current position in terms of capabilities, current position and future objectives (Hitt et al., 2007). Effective competitor analysis helps a firm understand, interpret, and predict competitor actions which in turn contribute to the firm's ability to compete successfully.

Analysis of the Internal Environment

The Internal Analysis of strengths and weaknesses focuses on internal factors that give an organization certain advantages and disadvantages in achieving competitive advantage (Johnson and Scholes, 2002). The focus should be on resources, capabilities and core competences. If weaknesses are identified in areas required to achieve competitive advantage, then firms must acquire those resources, and build capabilities and competencies as needed (Bennet, 1996). An alternative is to outsource weak areas in order to improve customer value (Miller and Toulouse, 1996). Therefore firms need to have the appropriate resources and capabilities to develop the desired strategy and create value for customers and other stakeholders (Hitt et al., 2007).

On the other hand, firms also need to be aware of their strengths. Strengths refer to resources, capabilities and core competencies that give the firm an advantage in meeting the needs of its target markets and achieving competitive advantage (Bennet, 1996). Any analysis of company strengths should be market oriented or customer focused because strengths are only meaningful when they assist the firm achieving competitive advantage (Johnson and Scholes, 2002).

2.3.3 Setting Objectives

The purpose of setting objectives is to convert the strategic vision into specific performance targets (Thompson et al., (2007). The targets then become the yardsticks that will measure how well the organization is doing. Objectives are also a top down communication process from top level managers to lower level management on what has to be done (Yavitz, Boris and Newman, 1982). Objectives therefore support company wide interests and are cascaded downwards in the organization hierarchy. They are developed based on factors identified in environmental analysis; taking advantage of favourable factors while dealing with unfavourable factors identified in internal and external analysis (Pascale, 1984). Objectives are generally measurable, time bound, flexible, motivating, consistent with other company objectives, in harmony with the vision and mission of the company, action focused and acceptable to those responsible of implementing them (Brunson, 1982). Objectives set targets on key aspects of the organization such as profitability, productivity, competitive position, technology growth, employee development, customer service etc.

Objectives are broadly classified into strategic and operational objectives (Thompson et al., 2007). Strategic objectives are medium to long term covering periods of three to five years. On the other hand, operational objectives are short term, setting targets for durations of one year or less. Brunson (1982) makes two key observations regarding the nature of objectives: Strategic objectives are organization wide- seeking to set the direction of the business as a whole. They are derived from environmental analysis and are more concerned on building the company's future potential and effectiveness. In contrast operational objectives seek to provide guidance to the various operational units or functions, clearly communicating what has to be done in the short term. Operational objectives are derived from strategic objectives and their main focus is usually on creating efficiencies.

2.3.4 Crafting a strategy – the actual formulation of strategy

While Objectives set performance targets and seek to answer the question of *where* the company would want to go and *by when*, the actual process of crafting strategy seeks to answer the question of *how* those targets will be achieved (Miller and Toulouse, 1986). Crafting of strategy is a means of choosing among the various alternatives and proactively searching for opportunities to do new things or for opportunities to do existing things in a better way (Mintzberg, 1998). Crafting strategy is also about doing things differently where it matters, outmanoeuvring competition, being more efficient, more imaginative and adapting faster to environmental changes (Porter, 1985). Unlike objective setting that is mainly driven from the top and cascaded downwards, crafting strategy tends to be more of an organization wide activity involving managers at all levels of an organization (Mintzberg, 1998).

Thompson et al., (2007) identifiey four levels at which strategy formulation occurs in an organization. Consequently four different levels and types of strategy exist in an organization, each of which involves different facets of the company's overall strategy. This is especially so in the case of a diversified, multi-business companies where strategies of several different businesses have to be managed. The discussion below explains how strategies are formulated and managed at the different levels of an organization.

Corporate strategy: This comprises the overall strategy elements for the corporation as a whole, or the grand strategy. The main aspects pursued at this level include considerations and initiatives in growth and portfolio. Corporate level strategy involves four main kinds of

initiatives: Making the necessary moves to establish positions in different businesses and achieve an appropriate amount and kind of diversification (Pascale, 1984), initiating actions to boost the combined performance of the businesses the company has diversified into, pursuing ways to capture valuable cross-business strategic fits and turn them into competitive advantages (Porter, 1985) and establishing investment priorities and allocating corporate resources into the most attractive lines of business. (Miller and Toulouse, 1986).

Competitive level or business level strategy: Competitive strategy is about being different. It means deliberately choosing to perform activities differently or to perform different activities from rivals to deliver a unique mix of value (Porter, 1980). In this second aspect of a company's strategy, the focus is on how to compete successfully in each of the lines of business the company has chosen to engage in. The central thrust is how to build and improve the company's competitive position for each of its lines of business.

Porter (1980) developed four generic strategies as the fundamental choices that a company can make. Various mixes from the fundamental choices can be used to create various competitive tactics. He argues that a business needs to make two fundamental decisions in establishing its competitive advantage: whether to compete primarily on price or to compete through providing some distinctive points of differentiation that justify higher prices, and how broad a market target or competitive scope it will aim at. These two choices define the four generic competitive strategies of overall price (cost) leadership, differentiation, price (cost) focus and differentiation focus.

*Functional level strategies***:** Are relatively short-term activities that each functional area within a company will carry out to implement the broader, longer-term corporate level and business level strategies. Each functional area has a number of strategy choices that interact with and must be consistent with the overall company strategies. Three basic characteristics distinguish functional strategies from corporate level and business level strategies: shorter time horizon, greater specificity, and primary involvement of operating managers. Functional strategy focuses on major functional areas such as marketing, finance, production/operations, research and development, and human resources management.

2.4 Information Technology

From a business and organizational context IT has been defined as the management and use of information using computer-based tools Mirani & Lederer, (1998). It includes acquiring, processing, storing, and distributing information. The term is widely used to refer to business applications of computer technology and how computer technology is used to support business applications.

Porter (1985) acknowledges IT's role as one of the principal drivers of competition claiming that it plays a major role in both the structural changes in existing industries as well as in the creation of new industries. Technological change is such an important influence on competitive advantage both because it creates new opportunities for competition and because it plays a central part in the existing competitive strategy through its ubiquitous presence in the value chain. He states that *Information Technology* and *Information Systems* are particularly important as every activity creates and uses information. He points out that modern information system technology plays a particularly crucial role in scheduling, controlling, optimizing, measuring and otherwise coordinating all manner of activities. Similarly, he notes that office or administrative information technologies, although often neglected or subsumed beneath the umbrella term of information systems, also have an important role changing the way office functions are performed. Other authors such as Keen (1981) MacFarln and MCKennedy (1981) contend that Information Technology will become the backbone of organizations and that organizations will develop around their IT.

2.5 Role of Information Technology in Strategy Formulation

This research focuses on the potential of Information Technology to improve strategic performance of the firm. It seeks to explore the tools and methodologies to help the firm find valuable opportunities for strategy formulation arising from IT. Bakos and Treacy (1986) suggest that opportunities arising from Information Technology can be viewed from three perspectives: That of an organizational designer trying to improve efficiency and effectiveness of the current firm, that of an industry insider trying to out-maneuver other participants in the competitive game, and that of an outsider investigating whether to enter an industry. The three strategic views arising from these perspectives create opportunities for firms in formulating their Internal strategy, Competitive strategy and Business portfolio strategies. Internal strategy focuses on

moves that develop efficient and effective organizational structures and processes for achieving strategic and operational objectives. Competitive strategy is concerned with the competitive moves within the industry and how IT supports competitive objectives. Business portfolio strategy refers to the choice of which industries to compete in and how to position the firm in those industries. These components of strategy are closely related and Information Technology can affect all of them simultaneously or separately at different stages (Bakos and Treacy 1986).

2.5.1 IT and Internal Strategic and Operational objectives

Kettinger et al., (1994) suggest that IT affects the firm by increasing the potential of internal and external coordinating efficiencies, and firms that do not adopt IT will have higher cost structures and therefore competitive disadvantages. This means that at the most basic level, some form of Information Technology is absolutely necessary to guarantee continued existence of the firm today.

Mirani and Lederer, (1998) observe IT affects on the firm from three dimensions: competitive, informational and transactional or automation dimensions. These dimensions are discussed further in the following sections. IT can therefore be used to formulate strategies around competitive, informational and automation objectives of the firm. Bytheway (2004) also captures the linkages between IT, business processes and business benefit in the Information Management Body of Knowledge (IMBOK) framework showing the areas of shared concern (Figure 2.1)

The Information Management Body of Knowledge

Technology

Information technology

Information system

Business process

Business benefit

Business strategy

The area of shared interest

Society
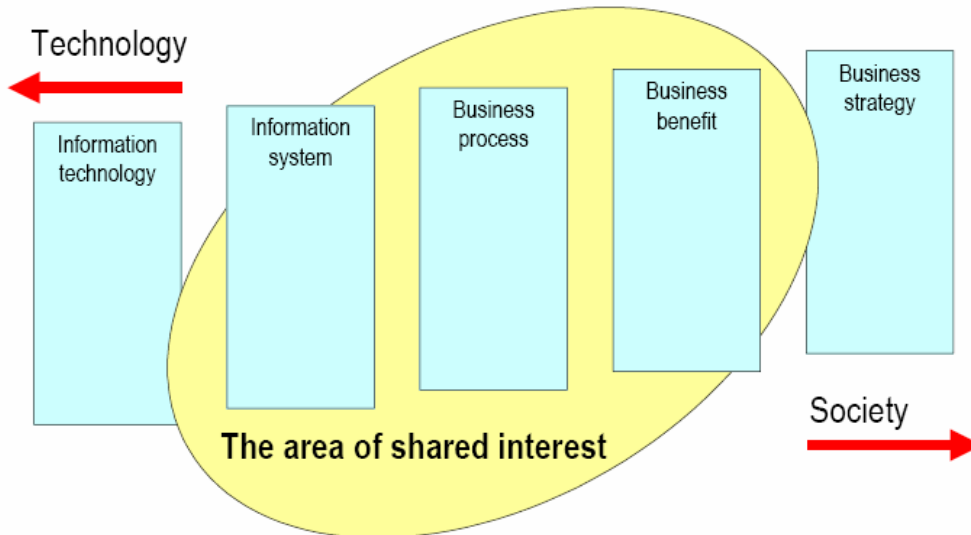
Figure 2.1: IMBOK Framework (Source: Bytheway, 2004).

The model shows five interdependent areas, with IT on one end and business strategy at the other end. Business processes benefit from the introduction of various information systems which in turn benefit from IT. This leads to business process transformation through efficiencies created which in turn leads to organizational transformation. Realization of business benefits as a result of transformation of processes and the business in general results in attainment of organizational strategy (Bytheway, 2004). The next sections explore the specific opportunities that IT presents to support business objectives of automating and informating.

IT and automation or transactional objectives: IT is employed in organizations to improve operational efficiency by automating information-based processes to enable firms do things faster, cheaper, accurately and consistently (Ward & Griffiths, 1996). The emphasis is on the automation of labour-intensive organizational processes with the aim of cost reduction largely from internal organizational sources. Mirani & Lederer (1998) identifies three main types of automation or transactional objectives that a firm can could have: communication efficiency, cost reduction and business efficiency. Communications efficiency improves collaboration within and without the firm and makes information sharing easier. It also reduces the costs of

organizational communication (for instance travel costs). Cost reduction arises as a result of automation of manual processes resulting to execution of activities faster and more cheaply. Lastly, business efficiency benefits improve the overall efficiency of employees, business processes, and financial resources.

IT and Informational objectives: The overall aim of these objectives is to attain management effectiveness by enhancing decision making through the development of Management Information Systems (MIS) and Executive Information Systems to enhance the internal and external information processing. With improved decision-making, organizations are able to proactively respond to environmental changes as well as improve their operations. Yanis and Bacos (1986) propose the construct of bounded rationality as a major link between IT and informational objectives. Bounded rationality at the individual level refers to the neurophysiological limitations to the information processing capacities (memory, computation and communication) of an individual. It is demonstrated in limits on the complexity and size of problems that can be solved by humans. IT can directly affect the computational and communication abilities of a decision-maker, thus shifting the limits of rationality. The end result is quality decision making. Informational benefits are broken down into information access (or availability), information quality, and information flexibility (Mirani & Lederer, 1998).

2.5.2 Information Technology and Competitive Objectives
Competitive objectives are focused on using IT to provide business advantage through change (Applegate, McFarlan & McKenney, 1999). This is achieved by building upon the automation and informating capabilities of IT to transform a firm and create business advantages. This focus enables organizations to achieve both internal (through process redesign) and external business integration (changing the roles of firms in an industry). IT has been a source of competitive advantage especially so when IT capabilities are complemented by existing business and human resources (Yanis and Bacos, 1986). Business resources could be existing customers, suppliers or partners while human resources refer to the overall organizational culture and leadership that is supportive of IT innovation.

Thus, IT is a transformation enabler, perhaps the chief enabler, of business advantages through creation of new products, processes, product delivery methods, market opportunities, and even

new organizational forms. Mirani & Lederer (1998) break down competitive objectives into competitive advantage, alignment and customer relations. By introducing changes to its business processes through IT, a firm can create competitive advantage for itself or reduce the existing advantage of its competitors. IT can also support organizational goals by building capabilities that enable the firm to respond faster to environmental changes and by creating linkages with other organizations (such as competitors, suppliers and customers) in ways that either to lock them in or raise switching costs (Yanis and Bacos, 1986). Customer relations benefits directly enhance customer experience and perception of the organizational image usually through improved products and better service delivery (Mirani & Lederer (1998).

2.5.3 Information Technology and Business Portfolio Objectives
The previous sections focused on the impact of information technology within industry boundaries. It is likely however, that information technology will have more macroscopic effects as well, affecting the structure of different marketplaces (Yanis and Bacos, 1986). Information systems, for example, can help markets be more efficient by increasing the amount of available information, and can lower certain barriers to entry while raising others. As an example, it can be argued that the entry into the money transfer business of mobile telephony providers which has traditionally been a bank's domain is a case of IT lowering entry barriers. Thus, IT can cause a shift in the structure of entire industries affording opportunities for portfolio redesign.

Porter's framework of competitive forces (Porter, 1980) derived from industrial economics, suggests a point of view based on the dynamics of an economic game where participants include industry competitors, customers, suppliers, and potential entrants. In that framework, the structural implications of IT for a particular industry will be determined by its effect on rivalry within the industry, its impacts on the industry's relations with its customers and suppliers, and its implications for prospective entrants and the threat of substitute products. Tightly linking strategy with the development of IT is of growing importance in many industries. One major aspect of this link is the need for a firm's strategy to provide direction for its technological base-building. An alternative course is to translate the technological superiority of the firm into opportunities for successful ventures in new industries (Mirani & Lederer, 1998). According to Yanis and Bacos (1986), industry-level impacts of IT have important strategic implications for the portfolio of industries in which a firm is competing. Specifically, a firm may be able to

improve its portfolio by taking advantage of structural changes catalyzed by new technology. Alternatively, a firm can actively seek opportunities to exploit its IT-related skills and resources in new industries.

2.6 Theoretical Framework for assessing use of IT in formulating strategy

From the discussions in the above sections, the actual formulation of strategy begins when the various strategic and operational objectives have been defined. This research considers that the dependent variable that can aid in assessing the usage of IT in strategy formulation is the exploitation of IT capabilities to realize various operational and strategic objectives of the firm. The three aspects of these objectives are internal, competitive, and business portfolio objectives. Further, internal objectives are broken into informational and transactional dimensions. These constructs, are by no means exhaustive but are considered as representative in this study. The relationship between the objectives, resultant IT driven strategies and the likely success of these strategies is moderated by a number of complementary business and human resources and how the strategies are implemented. These are considered pertinent matters in strategy implementation which is beyond the scope of this study.

Various strategic and operational objectives have been identified as possible areas where IT can play a role in formulating strategies. The objectives will be analysed by observing the exploitation of IT capabilities in formulating Internal, Competitive and Portifolio strategies. These observations will be operationalized under a 36 – item scale whose individual variables have been used and validated by a number of researchers as depicted in table 2.2 below:

Objectives	Supporting Literature
Competitive Objectives	
Change the way the organization conducts business	Parker & Benson, 1987; Sullivan-Trainor, 1990-9 1
Enhance competitiveness or create strategic advantage	Janulaitis,1984; Lay, 1985; McGugan, 1987
Enable the organization to catch up with competitors	Parker & Benson, 1987
Align well with stated organizational goals	Parker & Benson, 1987
Help establish useful linkages with other organizations	Parker & Benson, 1987
Enhance the credibility and prestige of the organization	Orli & Tom, 1987
Improve customer relations	Orli & Tom, 1987; Rivard & Kaiser,1989
Provide new products or services to customers	Sullivan-Trainor, 1989
Provide better products or services to customers	Parker & Benson, 1987; Sullivan-Trainor, 1989
Enable the organization to respond more quickly to change	Mirani & Lederer, 1998
Internal Objectives (Informational)	
Improve management information for strategic planning	Orli & Tom, 1987
Enable faster retrieval or delivery of information or reports	Rivard & Kaiser, 1989; Sullivan-Trainor, 1989
Present information in a more concise manner or better format	Rivard & Kaiser, 1989
Increase the flexibility of information requests	King & Schrems, 1978; Orli &

	Tom,1987
Enable easier access to information	Rivard & Kaiser,1989
Improve the accuracy or reliability of information	King & Schrems, 1978; Vaid-Raizada, 1983; Orli & Tom, 1987
Increase the volume of information output	Rivard & Kaiser, 1989; Sullivan-Trainor, 1989
Improve the information for management control	King & Schrems, 1978; Orli & Tom,1987;Parker& Benson, 1987
Improve information for operational control	Parker & Benson, 1987
Internal Objectives (Automation)	
Save money by reducing the work force	Orli & Tom, 1987; Parker & Benson,1987
Save money by avoiding the need to increase the work force	Smith, 1983
Save money by reducing travel costs	Smith, 1983
Save money by reducing communication costs	Smith, 1983
Save money by reducing system modification or enhancement costs	Smith, 1983; Vaid-Raizada, 1983
Save money by reducing hardware use	Orli & Tom, 1987
Facilitate organizational adhereance to governmental regulations	Mirani & Lederer, 1998
Allow other applications to be developed faster	Smith, 1983
Allow previously infeasible applications to be implemented	Orli & Tom, 1987; Sullivan-Trainor,1990-9 1

Provide the ability to perform maintenance faster	Mirani & Lederer, 1998
Speed up transactions or shorten product cycles	Orli & Tom,1987; Parker & Benson, 1987
Increase the return on financial assets	Mirani & Lederer, 1998
Enhance employee productivity or business efficiency	King & Schrems, 1978; McGugan,1987;1989; mith,1983;
Provide greater data or software security	Vaid-Raizada, 1983
Business Portfolio Objectives	
Move into new business	Orli & Tom, 1987
Lower entry barriers in other industries	Orli & Tom, 1987
Raise entry barrier in current industry	Orli & Tom, 1987

Fig. 2.2 Objectives and supporting literature Source: (Muganda, 2009)

Therefore under the competitive objectives, various literature sources support the use of IT realize them. These are covered by variables 1-10. The Informational objectives arise from indicators 11-19 from the table, while Transactional objectives are supported by variables 20 – 33 from the literature. Portfolio objectives are supported by variables 34 – 36. However, given that these variables have mostly been validated from a developed-countries perspective, the study shall adopt a flexible approach that enables the capturing of unique opportunities from the context of organizations in a developing country. This is addressed in the design of the data collection instrument discussed in the next chapter.

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Research Design

The study used an exploratory survey design. Kotler and Armstrong (2001) observe that this method is the best suited for gathering descriptive information; where the researcher wants to know about people's feelings, attitudes or preferences concerning one or more variables through direct query. The exploratory survey design is preferred given that there is no comprehensive research that has been undertaken to explore the usage of IT capabilities to formulate strategy at firms listed at the NSE. This research may therefore be classified as the 'descriptive – information' type of research that attempts to 'unearth' how IT capabilities have been utilized to formulate strategy.

3.2 Population of Study

The population of study composed of all companies quoted at the NSE directory as at 1st August, 2010. This is a total of 55 companies. A census of all these organizations was conducted. A sampling frame of the 55 firms is provided in Appendix A.

3.3 Data Collection Method

Data was collected by means of a questionnaire, which consisted of both open-ended and closed-ended questions (see Appendix B). This was administered to the respondents using hard copies sent by hand (or where possible, digital copies sent via e-mail). For those sent by hand, the drop and pick later method was used. Part A of the questionnaire captured demographic information of the respondents and a specification of business processes and tasks in strategy formulation. Part B of the questionnaire, collected data relevant for the objective of identifying where and how IT capabilities have been used in strategic formulation.

The target respondents were the senior managers in strategic planning, business and the IT function designated as being responsible for planning and managing IT and business resources in the organizations. These could be identified as Chief Information Officers (CIOs), IT/IS Directors, Business managers/ directors, and strategic planners. Measurement of the key variables relevant for the primary objective of study will use Likert-type Scale. Secondary data will be gathered from records that were availed to the researcher or from published and unpublished statements that was relevant for addressing the objectives of this research.

3.4 Data Analysis Technique

Data collected was both quantitative and qualitative. Data analysis was conducted using descriptive statistics, which includes measures of central tendency, measures of variability and measures of frequency among others. According to Mugenda and Mugenda (1999) descriptive statistics enable meaningful description of a distribution of scores or measurements using a few indices or statistics. Measures of central tendency give us the expected score or measure from a group of scores in a study. Measures of variability, such as standard deviation, inform the analyst about the distribution of scores around the mean of the distribution. Frequency distribution shows a record of the number of times a score or record appears. The Statistical Package for Social Scientists (SPSS) program will be used to analyze the data.

Qualitative data was analyzed using content-analysis. Content analysis is a measure through proportion and is used to measure the pervasiveness of the item being analyzed (Kothari, 2004). This helped in comparing data which are not in a quantitative form. This analysis ensured that all objectives in the study are well catered for. Analyzed data was presented in form tables, charts and graphs. Part A and part B was analyzed using descriptive statistics in which various measures such as averages, standard deviation and variances shall be calculated to aid in describing the data. In addition, part B shall employ the use of both descriptive statistics as well as inferential statistics. Inferential statistics shall specifically employ the use of factor analysis to help achieve data reduction of the many variables of strategic objectives requiring IT. For instance, Part B of the questionnaire had 36 items which are hypothesized to be measures of strategic objectives requiring IT capabilities for their realization. Factor analysis was first, aid in identifying which of the 36 are the critical factors based on some cut-off point; while in the second instance, the analysis shall help in clustering the 36 items around the three constructs of: competitive objectives, Internal objectives and portfolio objectives.

CHAPTER FOUR: ANALYSIS, FINDINGS AND DISCUSSION

4.1 Introduction

This chapter discusses the data analysis, findings and discussion. The objective of the study was to investigate the role of Information Technology in strategy formulation in companies listed at the Nairobi stock exchange. Data was analyzed using SPSS analytical tool AND presented by tables, pie charts and bar graphs. It was interpreted using frequencies and percentages. Other findings were further processed to yield meaning interpretation using mean and the standard deviation. The researcher targeted senior managers in Strategic planning, Business and the IT function designated as being responsible for planning and managing IT and business resources in the organizations. The researcher realized a response rate of 90.9%.

The chapter is organized in three sections, with the first section being a presentation of the analysis and findings on interviewee demographics, while the second being a presentation of the analysis and findings on the main objectives. The last section is a discussion on the findings and how this study adds to existing literature.

4.2 Demographic outlook

The demographic outlook of the target respondents was based on Position held by respondents, Sectors or industries where respondents belong, Education, Respondents gender, Number of years respondents have worked with Organization, and Roles played by respondent.

Table 4.1: Position held in the Organization

Position held in the Organization		
Position	**Frequency**	**Percentage**
ICT Director	10	20.0
Divisional Director (Business)	7	14.0
Strategy Manager	8	16.0
Project/ Business Process Change Manager	10	20.0
Operations Director	13	26.0
CEO	2	4.0
Totals	**50**	**100.0**

Table 4.1 illustrates positions held in the organizations of the respondents. From the findings, 26 percent were Operations directors, 20 percent of the respondents were ICT Directors, 20 percent were Project and Business Process change managers, 16 percent were Strategy Managers, 14 percent were Divisional Directors in business while 4 percent were CEOs. This indicates that that most respondents were highly involved in strategy formulation and the overall decision making in their organizations as most were senior managers. It also signifies that most were holding tactical and operational level positions which are crucial in strategy formulation.

Table 4.2: Sectors or industries where respondents belong

Sectors or industries where respondents belong		
Sector	**Frequency**	**Percentage**
Agricultural sector	3	6.0
Commercial and services sector	11	22.0
Finance and investment sector	15	30.0
Industrial and allied sector	17	34.0
Alternative Investment sector	4	8.0
Totals	**50**	**100.0**

Regarding respondents sector or industry where respondents belong, 34 percent of the respondents were from the Industrial and allied sector, 30 percent were drawn from Finance and investment sector, 22 percent were from Commercial and services, 8 percent were from the Alternative Investment sector while 6 percent were from the agricultural sector. This indicates that most of the respondents were from the Industrial and Financial services sectors. The study therefore has representation from all the sectors but with obvious combined dominance of the Industrial and Financial services sectors (64 percent). The two are also the dominant sectors at the NSE and the findings will therefore be heavily biased towards the two.

Table 4.3: Education and Training

Education and Training		
	Frequency	**Percentage**
Diploma	5	9.8
Under graduate	27	52.9
Post graduate	19	37.3
Totals	**51**	**100.0**

The researcher was interested to know respondents education and training. Majority 52.9 percent of the respondents had undergraduate level training, 37.3 percent were of postgraduate level training while 9.80 percent were of diploma level education. This indicates that most of the respondents had postgraduate and undergraduate level training as illustrated by table 4.3. This implies that most organization prefer hiring well trained staff as their roles were highly professional.

Figure 4.1: Respondents Gender

Respondents Gender

Female 46%

Male 54%
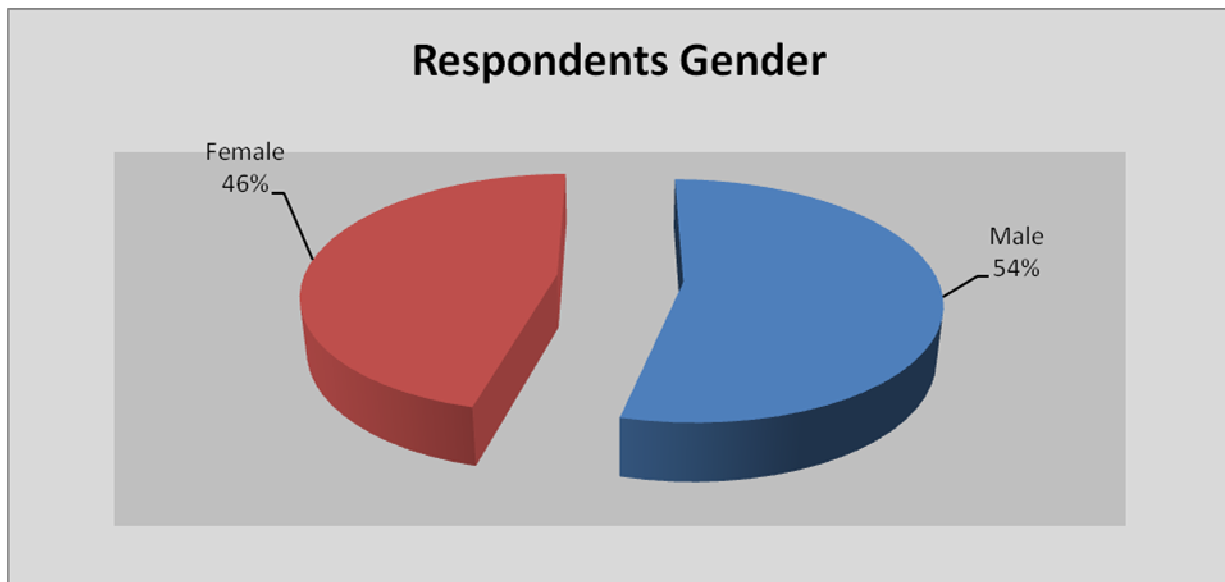
Regarding the gender of the respondents, majority of the respondents (54 percent) were male while 46 percent were female respondents. This indicates that most of those who responded were men. It also implies that most of the positions are held by men.

Table 4.4: Number of year's respondents has worked with Organization

Number of years respondents worked with the organization/Division/Department		
	Frequency	**Percentage**
1-5 years	9	18.0
6-10 years	13	26.0
11-15 years	15	30.0
16-20 years	10	20.0
over 20 years	3	6.0
Totals	**50**	**100.0**

Table 4.4: Illustrates the number of years respondents had worked with their respective organizations. From the findings, 30 percent had been in the organization between 11 -15 years, 26 percent had been in the organization for 6– 10 years, 20 percent had been in the organization between 16-20 years while 18 percent had been in the organization between 1to 5 years. The remaining 6 percent had been in the organization for over 20 years. This indicates that most respondents had been in the organization for more than 10 years.

Table 4.5: Roles played by respondent

Roles played by respondent		
	Frequency	**Percentage**
Business	17	34.0
IT	10	20.0
Operations	23	46.0
Totals	**50**	**100.0**

Regarding the roles played by respondent's. Majority 46 percent played Operations roles, 34 percent played Business roles while 20 percent played IT roles. All the respondents also played roles in Strategy formulation. This indicates that majority played Operations and Business roles as illustrated in table 4.5. This indicates that the findings of this research are heavily dependent on perception and feelings of business and operations teams as opposed to IT teams.

4.3 Findings on the main objectives

This section is a presentation of the analysis and findings on the main objectives of the study.

Table 4.6: Formal strategic management process

Formal strategic management process		
	Frequency	**Percentage**
Affirmative	50	100.0
Negative	0	0.0
Totals	**50**	**100.0**

Regarding the strategic management approach, all the respondents used formalized strategic management practices where clearly defined operational and strategic goals were identified. This implies that all the companies interviewed are engaged in formal strategic planning.

Table 4.7: Assessment of IT opportunities during environmental analysis

Assessment of IT opportunities during environmental analysis		
	Frequency	**Percentage**
Affirmative	38	76.0
Negative	12	24.0
Totals	**50**	**100.0**

On the question of assessing IT opportunities during environmental analysis, majority of the firms (76 percent) were of the affirmative. This implies that firms take seriously and are aware of the opportunities presented by IT and are engaged in scanning the environment for new opportunities.

Table 4.8: Structured approach for assessing IT opportunities

Structured approach for assessing IT opportunities		
	Frequency	**Percentage**
Affirmative	6	12.0
Negative	47	88.0

On the use of a structured approach for assessing IT opportunities, only 12 percent were of the affirmative. An overwhelming 88 percent did not use a structured approach to assess IT

opportunities during environmental analysis. This implies that most of the companies are likely to be assessing IT opportunities in a haphazard manner.

Table 4.9: Competitive Opportunities

Competitive Dimension							
	Never applied	Rarely applied	Indifferent	Applied	Extensively applied	Mean	Std. Dev.
Change the way the organization conducts business	-	-	18	20	62	4.44	0.79
Enhance competitiveness or create strategic advantage	-	2	10	20	68	4.54	0.75
Enable the organization to catch up with competitors	-	2	0	28	70	4.66	0.59
Align well with stated organizational goals	-	-	6	34	60	4.54	0.61
Help establish useful linkages with other organizations	4	6	4	40	44	4.08	1.18
Enhance the credibility and prestige of the organization	35	34	10	10	11	2.28	1.31
Improve customer relations	-	6	10	44	40	4.18	0.84
Provide new products or services to customers	-	4	24	46	26	3.94	0.81
Provide better products or services to customers	-	-	10	44	46	4.36	0.66
Enable the organization to respond more quickly to changes in the environment	-	10	12	30	48	4.16	0.99

Table 4.8 illustrates the IT competitive opportunities identified by respondents during their strategic planning process. The higher the mean, the most prevalent the factor was and vice versa. From the findings, enabling the organization to catch up with competitors, align well with stated organizational goals as well as enhance competitiveness or create strategic advantage were the major competitive opportunities indentified with mean 4.66, 4.54 and 4.54 respectively. In addition, companies also cited better products or services to customers, improved customer

relations and quick response to environmental changes as the other most important opportunities in gaining competitive edge with mean of 4.36, 4.18 and 4.16 respectively.

Table 4.10: Informational Opportunities

Informational Dimension							
	Never applied	**Rarely applied**	**Indifferent**	**Applied**	**Extensively applied**	**Mean**	**Std Dev**
Improve management information for strategic planning	-	12	14	30	44	4.06	1.03
Enable faster retrieval or delivery of information or reports	-	4	24	30	42	4.10	0.90
Present information in a more concise manner or better format	-	-	26	40	34	4.08	0.77
Increase the flexibility of information requests	-	12	16	28	44	4.04	1.04
Enable easier access to information	-	12	16	26	46	4.06	1.047
Improve the accuracy or reliability of information	-	8	10	26	56	4.30	0.94
Increase the volume of information output	-	4	10	32	54	4.36	0.81
Improve the information for management control	-	10	20	26	44	4.04	1.019
Improve information for operational control	-	-	14	44	42	4.28	0.69

On the informational dimension, the most prevalent informational opportunities include increased volume of information output, improved accuracy or reliability of information as well as improved information for operational control with mean of 4.36, 4.30 and 4.28 respectively. In addition, other opportunities were faster retrieval or delivery of information or reports, improved management information for strategic planning and improved information flexibility or format with mean of 4.10, 4.08 and 4.06 respectively.

Table 4.11: Automation or Transactional Opportunities

Automation orTransactional Dimension							
	Never applied	**Rarely applied**	**Indiff erent**	**App lied**	**Extensivel y applied**	**Mea n**	**Std Dev**
Save money by reducing the work force	-	-	20	32	48	4.28	0.78
Save money by avoiding the need to increase the work force		10	10	30	60	4.70	
Save money by reducing travel costs	-	-	26	30	44	4.18	0.82
Save money by reducing communication costs	-	-	20	26	54	4.34	0.79
Facilitate organizational compliance to governmental and industry regulations	-	-	4	44	52	4.48	0.57
Allow previously infeasible applications to be implemented	-	5	15	34	46	4.21	0.86
Facilitate other applications to be developed faster	-	4	10	52	34	4.16	0.76
Facilitate development of previously infeasible applications	-	4	10	44	42	4.24	0.78
Facilitate faster maintenance of plant and equipment	42	30	20	5	3	1.97	1.04

Regarding the transactional dimensions, opportunities were to save money by avoiding the need to increase the work force (Mean of 4.70), facilitate organizational compliance to governmental and industry regulations (mean of 4.48) and save money by reducing communication costs (mean of and 4.34). Other major opportunities included the fact that IT allowed previously infeasible applications to be implemented. IT also facilitated other applications to be developed faster.

Table 4.12: Business portfolio Opportunities

Business Portfolio Objectives Dimension							
	Never applied	Rarely applied	Indifferent	Applied	Extensively applied	Mean	Std Dev
Move into new business	-	6	10	42	44	4.30	0.61
Lower entry barriers in other industries	56	24	10	8	2	1.76	1.05
Raise entry barriers in current industry	-	8	10	30	52	4.26	0.93

Table 4.9 illustrates the business portfolio opportunities for the respondents. From the findings, the main opportunities mentioned were moving into new businesses (mean of 4.30) and raising entry barriers in their current industry (mean of 4.26). Lowering entry barriers in other industries was not identified as a major opportunity (mean 1.76).

4.4 Discussions

There is little disagreement about the strategic importance of Information Technology. Indeed, the use of Information Technology as a competitive weapon has been researched and agreed upon by many authors (Porter and Miller (1985), Rockart and Short (1989), Keen (1993)). The strategic impacts of IT are also very evident in business today. Strategic management is also a widely accepted concept in management with an overwhelming 100 percent of the firms interviewed in this study being engaged in formal strategic management practices.

A key part of the strategy formulation process is the analysis of internal and external environments. Lynch (1997), identifies that an organization's strategic position can be analyzed through drawing evaluations on its Strengths and Weaknesses depicting the strategic capability (Internal - resources and competencies) and its Opportunities and Threats which come from the external environment. Johnson (2002) points out that the external environment can also be assessed through use of various models including Porters 5 Forces model and PEST. This progresses to the SWOT analysis which is a combination of an analysis of both internal and external environments. From the SWOT matrix, the most important elements are identified.

These elements work together in matching internal strengths to external opportunities to create core competencies that meet customer needs. In addition, they also assist in converting internal weaknesses into strengths and external threats into opportunities, leading to strategic recommendations.

This study has found out that majority of the firms (76 percent) interviewed use IT in strategy formulation by taking advantage of IT opportunities available to them during environmental analysis. The study adopted the model proposed Bakos and Treacy (1986) which categorises IT opportunities into three distinct dimensions; opportunities for competitive strategy, opportunities for internal strategies and opportunities for business portfolio strategies. Under each of the dimensions, the available opportunities are identified in literature and have been tested in order to pick out the most important opportunities among firms listed at the NSE. Most of the firms however conceded that they do not use a structured approach to asses IT opportunities as proposed in literature. Most of past research has also tended to focus their studies to several fragmented opportunities that IT presents. Porter and Millar (1985), for example, relate IT to the value chain, concluding that the main strategic purpose of IT is to coordinate activities in the chain; Keen (1993) concluded that IT should support competitive thrusts such as cost leadership, differentiation, innovation, growth, and external alliances; and Rockart and Short (1989) argued that IT serves primarily to manage organizational inter-dependence, i.e., to solve coordination problems among departments and strategic business units. This study contributes to existing knowledge by testing the structured model as proposed by Bakos and Treacy (1986) and confirming its applicability.

CHAPTER FIVE: SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Summary and Findings

This study sought to identify the role played by Information Technology in strategy formulation in companies listed at the Nairobi stock exchange. It has come up with the following findings: (1) Firms listed at the NSE use IT in strategy formulation during environmental analysis, (2) Most of the firms (78 percent) listed at the NSE do not use a structured approach of assessing IT opportunities during environmental analysis. (3) Under the competitive dimension, enabling the organization to catch up with competitors, aligning the organization well with stated organizational goals and creating strategic advantage were the most important opportunities presented by IT. (4) Under the Business portfolio dimension, the most important opportunities presented by IT were raising entry barriers in current industries and moving into new business lines. (5) Under the internal strategies dimension, the most important opportunities presented by IT were increasing the volume and quality of Information for planning and operational control, cutting communication costs, and cutting labour costs by avoiding the need to increase workforce.

5.2 Conclusions

This study has found out that firms take their strategic planning very seriously with an overwhelming 100 percent interviewed involved in formal strategic management practices. As pointed out earlier there is also consensus in literature that IT presents many opportunities for organizations to formulate their strategies. Past literature however dwells a lot on one or just a few of the opportunities presented by IT. Conclusions from these studies are definitely very credible, but there is also merit in looking at IT from a more holistic view and paying special attention to IT opportunities from various dimensions of an organization; competitive , internal and portfolio dimensions. The three dimensions identify different issues of importance and are amenable to different methodologies for opportunity identification. These perspectives are also likely to differ in their appropriate environmental analysis methods as they are based on separate theoretical disciplines.

5.3 Recommendations

ICT presents many opportunities for firms listed at the NSE and the country at large. However, ICT is still developing and the level of awareness of IT strategy-Integration has undermined the development of this area. A structured approach for assessing opportunities presented by IT has been proposed in this study and companies will benefit a lot by taking advantage of these opportunities to formulate their Internal, Competitive and Business portfolio strategies.

5.4 Recommendations for further research

Further research can be undertaken by varying the contest of study to specific industries such as manufacturing, banking or by carrying out case studies in specific firms. It is possible that industry or firm specific dynamics can alter the results of the study to a great extent.

Further research can also be undertaken on firms not listed at the NSE to find out if the results hold.

Finally, further research can be carried out to investigate the role of Information Technology in Strategy implementation.

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APPENDICES

APPENDIX A: List of Companies at the NSE as at 31ST August 2010

AGRICULTURAL SECTOR

Kakuzi Ltd.

Rea Vipingo Ltd.

Sasini Tea and Coffee Ltd.

COMMERCIAL AND SERVICES SECTOR

Access Kenya Group Ltd.

Car and General Ltd.

CMC Holdings Ltd.

Kenya Airways Ltd.

Marshalls (E.A.) Ltd.

Nation Media Group Ltd.

Safaricom Ltd.

Scangroup Ltd.

Standard Group Ltd.

TPS (Serena) Ltd.

FINANCE AND INVESTMENT SECTOR

Barclays Bank of Kenya Ltd.

C.F.C Stanbic Bank Ltd.

Diamond Trust Bank of Kenya Ltd.

Equity Bank Ltd.

Housing Finance Ltd.

Kenya Commercial Bank Ltd.

Olympia Capital Holdings Ltd.

Centium Investments Company Ltd.

Jubilee Insurance Co. Ltd.

Kenya Re-Insurance Ltd.

National Bank of Kenya Ltd.

NIC Bank Ltd.

Pan Africa Insurance Holdings Co. Ltd.

Standard Chartered Bank Ltd.

Co-operative Bank of Kenya Ltd.

INDUSTRIAL AND ALLIED

Athi River Mining Ltd.

Bamburi Cement Ltd.

BOC Kenya Ltd.

British American Tobacco Kenya Ltd.

Crown Berger (K) Ltd.

Carbacid Investments Ltd.

E.A. Cables Ltd.

E.A. Portland Cement Ltd.

E.A Breweries Ltd.

Eveready East Africa Ltd.

Kenya Oil Ltd.

Kenya Power and Lighting Co. Ltd.

Kengen Ltd.

Mumias Sugar Company Ltd.

Sameer Africa Ltd.

Total Kenya Ltd.

Unga Group Ltd.

ALTERNATIVE INVESTMENTS MARKET

A Baumann and Company Ltd.

Eaagads Ltd.

Williamson Tea Kenya Ltd.

Kenya Orchards Ltd.

City Trust Ltd.

Express Ltd.

Kapchorua Tea Company Ltd.

Limuru Tea Company Ltd.

(www.nse.co.ke/newsite/inner.asp?cat=companies)

APPENDIX B: Questionnaire

SURVEY ON THE APPLICATION OF INFORMATION TECHNOLOGY IN STRATEGY

FORMULATION IN COMPANIES LISTED AT THE NSE

SECTION A: Interviewee Demographics

1.   Please provide the following information:

   Position_____

   Sector_____

   Reporting to_____

2.   Education and Training _____

3.   Gender _____

4.   Career:

i)   Number of years with the organization/Division/Department: _____

ii)   Role profile: Business/IT/Operations_____

_____

SECTION B: Main Objectives

6. Does your organization carry out formal strategic planning where clearly defined strategic and operational objectives are identified?

_____

7. In your internal and external environmental anaysis, does your organization scan and assess various opportunities presented by IT?

_____

8. In your internal and external environmental analysis, do you use a structured approach to assess the opportunities that IT presents for your Internal, Competitive, and Business portfolio objectives?

_____

9. Please indicate the extent to which you have applied IT in strategy formulation in order to meet the following objectives

Strategic and Operational objectives for your organization	Never applied	Rarely applied	Indifferent	Applied	Extensively applied
Competitive Objectives					
Change the way the organization conducts business					
Enhance competitiveness or create strategic advantage					
Enable the organization to catch up with competitors					
Align well with stated organizational goals					
Help establish useful linkages with other organizations					
Enhance the credibility and prestige of the organization					

Strategic and Operational objectives for your organization	Never applied	Rarely applied	Indifferent	Applied	Extensively applied
Improve customer relations					
Provide new products or services to customers					
Provide better products or services to customers					
Enable the organization to respond more quickly to changes in the environment					
Internal strategic and operational objectives for your organization					
Informational Dimension					
Improve management information for strategic planning					
Enable faster retrieval or delivery of information or reports					
Present information in a more concise manner or better format					
Increase the flexibility of information requests					
Enable easier access to information					
Improve the accuracy or reliability of information					
Increase the volume of information output					
Improve the information for management control					
Improve information for operational control					

Strategic and Operational objectives for your organization	Never applied	Rarely applied	Indifferent	Applied	Extensively applied
Transactional Dimension					
Save money by reducing the work force					
Save money by avoiding the need to increase the work force					
Save money by reducing travel costs					
Save money by reducing communication costs					
Facilitate organizational compliance to governmental and industry regulations					
Allow previously infeasible applications to be implemented					
Facilitate other applications to be developed faster					
Facilitate development of previously infeasible applications					
Facilitate faster maintenance of plant and equipment					
Speed up transactions or shorten product cycles					
Increase the return on financial assets					
Enhance employee productivity or business efficiency					
Provide greater data security					
Business Portfolio Objectives for your organization					
Move into new business					

Strategic and Operational objectives for your organization	Never applied	Rarely applied	Indifferent	Applied	Extensively applied
Lower entry barriers in other industries					
Raise entry barriers in current industry					