

**EFFECT OF MARKETING INFORMATION SYSTEMS ON COMPETITIVE
ADVANTAGE OF ICT APPLICATION SERVICE PROVIDERS IN NAIROBI
COUNTY**

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DECLARATION

This Research Project is my original work and has not been presented for any award in any other University.



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

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DEDICATION

To God who has been with me throughout the Master's program and my family, especially my Mother for the endless moral support and my late Dad who challenged me to undertake this Master's Program.

ABSTRACT

Today, significance of information is posed as an important tactical and strategic source in making short-term and tactical decisions as well as in enjoying strategic advantages in long-term programs of the organization. Marketing information systems serves as a key resource, since the quality of the marketing information affects the effectiveness of decision making that support activities undertaken by the firm. The research objective was to determine the influence of Marketing Information Systems on competitive advantage of Application Service Providers in Nairobi County. This research was anchored on the theory of competitive advantage and the Marketing Information Systems. The study adopted a descriptive cross sectional survey design. Primary data was collected using online survey questionnaires. The respondents were firms licenced under the Application Service Providers category. Data was analysed using descriptive statistics and inferential statistics. The findings showed that all MkIS components including internal reports, marketing research, Marketing Intelligence and MDSS had a relationship that is significant with the competitive advantage of Application Service Providers. Internal reports and MDSS had the highest coefficient values of 0.116 and 0.111 respectively, followed by marketing research with a coefficient value of 0.070 and marketing intelligence had the lowest coefficient value of 0.040. The study concluded that Internal Reports, Marketing Research, Marketing Intelligence and MDSS had a positive influence on the competitive advantage of Application Service Providers in Nairobi County. The researcher further made recommended that firms should improve the quality of information that is fed into the MkIS to enhance reliability as well as expand the sources where information is gathered to ensure all stakeholders are captured. The researcher recommended increased and sustainable budget allocation to marketing research to ensure quality systems, and also sensitization of all users to inform on the benefits on MkIS. The researcher also gives suggestions for further research based on the finding which includes researching on the role MkIS plays on firms' decision making process as well as how MkIS can be used to determine the marketing mix in organizations

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ABBREVIATIONS AND ACRONYMS

MkIS	Marketing Information System
MI	Marketing Intelligence
MDSS	Marketing Decision Support System
IT	Information Systems

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CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Marketing information system is efficient tool providing past, present and projected information relating to internal operations and external information (Armstrong and Kotler, 2007). Today, significance of information is posed as an important tactical and strategic source in making short-term and tactical decisions as well as in enjoying strategic advantages in long-term programs of the organization. Ade et al. (2017) highlights that in the current upsurge of the changes in the business environment companies are confronted with unpredictable environmental changes, which are so fast that constant readiness is of high importance. At this background, marketing information systems serves as a key resource, considering that quality of the marketing information has an affect on the effectiveness of decision making that support activities undertaken by the firm such as development management activities, service enhancement, appropriate distribution, pricing, sales promotion, effectiveness and anticipation of sales (Manojlovic, 2014).

Having a functional marketing information system is very important to an organization's ability to compete in the current market place. This research considered a marketing information system model by Cox & Good (1967) that outlines the different constituents which interrelate to form a system whose data output can be used to make informed decisions with regards to markets, competitors, products and customers. The research will also be guided by theory of competitive advantage by Michael Porter (1985). Porter argues that competitive advantage exists when the strategy pursued by a firm accords it superior advantage over competitors in the eyes of customers and also in shielding the firm against the present competitive forces so

as to ensure superior profits are maintained. Competitive advantage is enhanced profoundly by company's ability to create value for their client and it has to surpasses the cost incurred in its creation (Porter, 1998). The basic types of strategies that aide the creation of competitive advantage by firms include cost advantage, product or Service differentiation and niche (Porter, 1985). Application Service Providers are classified under ICT industry and are among the SMEs that provide the cornerstones on which the country's economic growth and stability rests (GoK, 2017). As the market advances towards heightened integration resulting from the evolution of information communications technology, as well as reduced trade barriers, some of the major opportunities to do business have arose from their capabilities enabling them to take part in markets both regionally and internationally (Mutula & Brakel, 2006). This can only be realized when the information available is used to create competitive advantage for these firms (Porter, 2003). ICT firms work towards being equipped with ideal systems that will enable them to tackle globalization hurdles, whose hallmark is Information Communication Technology (ICT) and innovation, a chief factor of competitiveness.

1.1.1 Marketing Information Systems

Marketing Information Systems has received considerable attention from various scholars. The earlier works can be traced to Cox and Good (1967) who perceived Marketing Information Systems to be a set of procedures and methods that guided a systematic analysis of data and its presentation that was key in decision making with regards to marketing. They propose a structural model that is based on four components including Internal Reports, Marketing Research, Marketing Intelligence, and Marketing Decision Support Systems. The first three components are devoted to

data collection, while the fourth component is focused on data evaluation and transformation into information.

According to Talvinen (1995), the MkIS system is based on the three main features. Firstly, a Marketing Information system is conceived as primary as well as flexible, considering that a firm's marketing operations are interconnected and need to accommodate the environment's changing scenarios. Secondly, a Marketing Information system is formal and evolutionary which implies that it must be specially designed to blend with the firm's goals in order to ensure satisfaction of management needs in the marketing department sustainably. Finally, the system should be able to supply an organized flow of relevant information that will enable easing of decision-making processes.

Pride and Ferrell (1987), outline the function of MkIS to be that of enabling managers to make decisions that are informed through provision of a stream of data on various factors including pricing, advertising expenses markets, competitors as well as distribution among others. This information is sourced from both internal as well as external sources of the organisation, which depending on how the organization uses it, generates opportunities for the firm to become competitive in the market. These opportunities include new markets, reduction of perceived risks, creation of entry barriers, upselling and cross selling opportunities, enhanced client relationships among others (Clow et al, 1999). Organizations need a clear MkIS to enable managers to predict the future market changes and consumer behaviour.

1.1.2 Competitive Advantage

Competitive advantage as a concept has been a central point of discussions both in academia as well as practice in the discussion on organization strategy. Competitive

advantage as defined by Porter (1990) exists when a company possesses the ability of delivering similar or superior values as similar players in the market yet offering at a much lower cost (cost advantage) or provide value which surpasses that offered by similar product (differentiation advantage). By pursuing either of these strategies organizations are able to provide their clients more utility while lowering at the same time lowering their cost structure.

Besanko, et al, (2009) contends that competitive strategy communicates approaches which organizations intend to utilize so as to achieve success in their strategic business areas. Firms assent that in order to achieve growth, remain competitive as well as survive, continuous change of the marketing strategies should be embraced in order to address the evolving industry demands which explains the heightened interest in information management over the last decade. Clow et al (1999) mentions information to be one of the potential sources of competitive advantage for organizations with the aspect of applicability being highlighted, whereby it is noted that it is not just enough to have access to the information, but rather how marketing managers are able to apply it when making strategic decisions will also determine how valuable it will be in enabling the firm be competitive in the market place.

Thus a competitive advantage enables organizations to create a higher value for their clients and higher performance for themselves. According to Porter (2008), a firm's competitive advantage emanates from the value that businesses create for clients by deploying the resources and capabilities within their disposal, which enable the firm to have a long- term, inimitable and beneficial competitive position as compared to similar players in the market. Hill et al (1999), discusses building blocks that firms

can adopt to propel them into attaining a competitive edge which include efficiency in its operations, superior quality, innovative as well as customer responsive.

1.1.3 Application Service Providers in Nairobi County

Firms classified under the Application Service Provider category are among firms providing ICT services under the umbrella of the ICT sector in Kenya. The main composition of the sector is firms which are engaged in fields such as software customization, web design, ICT value-added services and IT consultancy. Typically, products and services provided vary in terms of specialization. According to CA (2018), firms in the ICT industry are classified into thirteen different categories depending on the products and services they offer. According to the register of unified licensing framework licensees held by Communication Authority (CA) as at 2018 the categories range from Applications Service Provider (ASP), Telecommunications Equipment Vendors (TEV), Business Process Outsourcing Service Providers (BPO) and Public Communication centres among others.

Among the components outlined as key drivers of economic developments in Kenya Vision 2030, ICT features prominently more so as a strategic pillar in development of counties. The Application Service providers who fall under the ICT sector are important players in the social economic growth of the country and are together with other ICT firms perceived as an engine for growth (GOK, 2017). Their importance to any economy centres on the role they play in stimulating ingenious entrepreneurship, providing gainful job opportunities to many people, mobilizing and utilizing savings and the available inputs, to supply transitional inputs or semi processed inputs to large scale firms and to decrease migration from rural to urban settings.

1.2 Research Problem

Good marketing information system provides information that is highly reliable and addresses the controllable as well as non-controllable business factors and customers, and thus improves the value of decisions made by marketing managers (Ganeshasundaram & Henley, 2007). Majority of firms however, continue to struggle to survive and remain afloat in the present environment that is constantly changing are yet to realize the value of MkIS which provides an all-round view of the firm's strategies (Kotler, 2012). Accurately predicting consumer's response to marketing initiatives becomes difficult in the absence of relevant marketing information system (Muala et al, 2018). According to Port & Miller (1985), many firms lack the awareness of the link between a reliable and comprehensive MkIS and their survival in the competitive market. The trend has shown that the success of majority of firms in developing countries is often short lived with many firms finding it difficult to sustain their good performance in the long term due to lack of continuous sourcing of information that informs about market dynamics (Kimani, 2006).

Driving and maintaining growth continues to be at the centre of decision making by firm managers. The ICT industry in particular together with the chain of companies that support the industry continue to face profound business challenges resulting from among other factors an explosive growth rate of the industry characterized by a growing number of firms, technological innovation that is driving this growth, and the high speed of innovation bringing fourth innovative products and services and also creating new markets. Considering such circumstances, ICT firms struggle to source and take advantage of information which can inform their decisions and capture business value thus enabling the firms remain competitive in the market (Nasir, 2005).

Numerous researches have been conducted locally, regionally and internationally that focus on MkIS. Globally, Sultan (2012) focused on examining the part that MkIS played in marketing decision-making in Jordanian shareholding medicines production firms. The study adopted both primary and secondary data. Results indicated that a significant relationship existed between MkIS components and decision-making. Gounaris et al, (2007), also did a research to determine how effective marketing information systems are in five star hotels in Greece. The aim was to design and empirically validate an instrument used to measure how effective a marketing information system is. The study adopted a survey research design whereby primary data was used, and collected using questionnaires and analysed quantitatively. The findings showed that both internal and external components as well as organizational adaptability of the MkIS were key in ensuring responsiveness by customers.

Regional studies include Kayode (2010) who looked at the nature, part and effect of marketing research as a tool for enhanced profitability in Nigerian enterprises. Primary data was gathered by administering questionnaires and analysed using regression analysis. The results showed that marketing research is a proper tool for enhancing firm profitability, customer's satisfaction and loyalty. Similarly, Nasri, (2011), did a research which looked into competitive information in Tunisian companies where the purpose was to determine to what extent of knowledge of competitive information in Tunisian firms. Primary data was used and was collected using questionnaires and analysed. Findings showed that internal sources of information were more valuable to managers as compared to external sources.

Locally, Thuita (2019) conducted a study that focused on marketing information systems and its effects on competitive advantage whereby the context was Consolidated Bank of Kenya Limited. Interview guide was used to gather primary data and analysed using content analysis. Results showed that there were notable changes experienced after adopting the marketing information systems leaning towards competitiveness. Kimani (2006) also conducted a research that focused on the application of MkIS by Savings and Credit Limited in their effort to create a sustainable competitive advantage. The questionnaire was used to gather primary data. The findings showed that the firm had put in place a marketing and information systems within their marketing department and its implementation had given them an edge as compared to their competitors.

That organizations reap from having functional MkIS that leads to business success is a widely agreed fact. Nevertheless, empirical studies that focus on marketing information systems and competitive advantage of ICT companies and more specifically Application Service Providers in Nairobi County are limited. Thus, the research question to be answered was, what is the effect of marketing information systems on competitive advantage of Application Service Providers firms in Nairobi County?

1.3 Research objective

The research objective was to determine the influence of Marketing Information Systems on competitive advantage of Application Service Providers in Nairobi County

1.4 Value of the study

The findings of this research will be invaluable to the various stakeholders in the ICT sector and beyond. For theory, the study will add empirical insights into the

relationship between variables of marketing information systems as well as their consequences on competitive advantage of firms. Thus, the findings will provide a further understanding of the connection between marketing information systems and competitive advantage, and individuals who will interact with the study will be able to build on the suggested contextual, conceptual and methodological gaps and conduct further studies.

With regards to practice, this study will be valuable to managers in ICT Industry as they work towards being competitive in the market. In particular, this study will be instrumental in aiding an understanding on the link between the use of marketing information systems and competitive advantage thus pay attention to developing new or reviewing and making improvements on their Marketing information system and its use in enhancing their competitive advantage.

To policy makers such as ICT regulatory agencies and marketing association, the findings of this study will provide practical insights with regards to the use of marketing information systems by Application Service Providers firms and its effect on the firm's competitive advantage. This will enhance their insight when passing recommendations on the measures to be adopted in improving competitiveness of companies in the ICT industry in Kenya. It will also be a reference point for Marketing Associations when establishing how to achieve competitiveness via promoting use of Marketing Information Systems in ICT sector and other industries. These discoveries are likely to enrich policy framework in the industry and hence better performance

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter will look at the theoretical underpinnings, the premise upon which this research is anchored upon, as well as the past literature that is relevant to answer the research question for this research. The literature will shade more light on the relationship between the variables under study as well as how they relate under various contexts.

2.2 Theoretical Framework

This research was informed by the theory of competitive advantage by Michael Porter (1985) and the Marketing Information System Model by Cox & Good (1967) and the Innovation Theory of Profits by Joseph Schumpeter (1935).

2.2.1 Porter's Theory of Competitive Advantage

The theory of competitive advantage as presented by Porter (1985) argues that the extent to which firm has the ability to create for itself a long-term competitive advantage in the market will determine its survival. The objective of competitive strategy formulation as assumed by this theory, is to link the firm to its operating environment, whose main aspect is the industry in which it operates in. This approach is used to enable firms to position themselves strategically and enhance their defence against competitive forces and influence them to their favour.

Porter contends that competitive advantage for firms emanate from what value they create for clients and that by doing that they are able to have long-term, distinctive and beneficial competitive position as compared to similar players in the market. According to Scaolovs & Gaile- Sarkane (2010), upholding superior profits for extended period of time ensures a firm gains competitive advantage, and to do this,

organizations must provide what buyers perceive to be of greater value and that is a superior product at a minimum cost or that is worth charging higher prices. Porter proposes three generic strategies including the Cost Leadership strategy, Differentiation strategy and Niche strategy. By pursuing either of these strategies organizations are able to offer more utility to their clients as well as minimize the cost structure.

Porter (1985) identifies forces that influence a firm's competitive advantage in the market place, and points out that a manager's greatest interest lies in the development of a strategy that will propel the firm to establish a strategic position against the five forces. These forces include the threat posed by substitute products or services, competitors' rivalry, entry barriers, bargaining and purchasing power of both suppliers and buyers Porter (2001). To a large extent, these five market forces collectively determine the ability of a firm to compete in the market.

The theory of competitive advantage has been addressed by various scholars who have advanced the argument further and expanded its scope. Among them include Mintzberg (1987) who categorizes the strategies depending on the nature and progress of the firm. These categories include penetration strategies, market development strategies, product development strategies and diversification strategies. Some of the factors addressed include price, image, auxiliaries and quality. Kevin and Subramaniam (1996) contends that Porter's theory of competitive advantage only addresses the external environment and assumes a classic perfect market, yet markets which are not perfect in every economic sense. They contend that the view only considers the external factors of a firm yet sources of competitive advantage also emanate internally. McGrath (2013) introduces the concept of transient advantage

whereby she contends that the traditional view of competitive advantage is no longer viable and that for firms achieve competitiveness they need to focus on innovation strategies that continuously build new advantages.

Soundararajan (2015) argues that to achieve competitive advantage, the strategies adopted by firms should promote efficiency, innovation, quality and customer responsiveness, and that Information Systems play a big role in enhancing these components. Howard et al (1999), contends that competitive advantage can be gained by firms if they address information system design and strategy development simultaneously. Porter's model continues to be referred to, in demonstrating how information technology can enhance competitiveness in organizations (Turban et al, 2006).

2.2.2 Marketing Information Systems Model

The MkIS model by Cox & Good (1967), outlines procedures and methods followed to collect, analyse, and present information key in the marketing-related decision making processes. The features that make up the system include integration and flexibility, specificity and relevance. Kotler and Armstrong (1991), argue that a Marketing Information system is achieved by means of a constant systematized process of withdrawal of information with high strategic value, involving social networks of clients, professionals, and other agents. Cox and Good (1967) propose a structural model that is based on four components including internal reports, Marketing Intelligence, marketing research and marketing decision support. The first three components are devoted to data collection, while the fourth component is focused on data evaluation and transformation into information.

The purpose of MkIS according to Van Bruggen et al., (2001) entails integrating inputs coming in from a variety of functions within and outside of the firm into a map

that is holistic and meaningful covering the firm's operation, illustrating the various customer interactions, markets as well as, suppliers among others. Decision making by management is thus improved through reliance on facts rather than their personal gut-feeling and instinct (Talvinen and Saarinen, 1995). Information is also processed within a short time which allows managers to compare and contrast critical information from various sources linked the firm. Such meaningful collection and integration of information would normally prove to be difficult in the case such infrastructure is lacking in an organization. In order for firms to develop marketing plans that are realistic and have a higher success chance, MkIS is considered is a major prerequisite (McDonald and Payne, 2005), because is greatly affects the planning process as well as its outcome (Amaravadi et al., 1995).

Talvinen (1995) contends that marketing information system can avail opportunities for the firm to gain competitive advantage or in itself be a competitive necessity. Some of these benefits include improvements in the reporting system as presented by Gounaris, et al, (2007) and also the ability to effective monitor a firm's marketing environment, more precisely with regard to clients and competitors, and thus enabling managers and salespeople to achieve their set marketing objectives. This framework is relevant for this study since it provides a basis of comprehending the components and functionality of a marketing information systems and how it contributes to competitiveness of a firm.

2.3 Components of Marketing Information Systems

Marketing Information Systems is an operating structure that interconnects people, tools as well as procedures. According to Kotler (1997), the purpose of the system is to collect, classify, analyse, evaluate and distribute actual, appropriate and true information in order to improve planning and control of marketing activities. MkIS is

made up of four main components including Internal Records, Marketing Intelligence, Marketing Research and Marketing Decision Support Systems. The Encyclopaedia of Information Systems suggests that whilst the MkIS vary in the degree of sophistication whereby some are highly computerized than others, a fully-fledged MkIS should have these components which can aide collection, storing, retrieving and processing of data

Internal records in MkIS the component that is used to manage internal information that a firm generates from its daily activities. It is used to gather information generated from the interaction between the firm and its micro-environment such as data gotten from sales records, customer interaction, sellers' reports, statements of accounts. An extensive database is built by firms from the electronic records of client and market information obtained from that has been collected from the various data sources within the organization's network. The information in the database can be readily accessed by marketing managers and utilized in identifying market opportunities as well as anticipate challenges, lay out their programs, and also in evaluating output (Kotler & Armstrong, 2008). Accessing the internal data base for the firm is quicker and less costly as compared to other sources of information (Pride & Ferrell, 2006).

A marketing intelligence system refers to a set of guidelines and data sources that sorts and scrutinizes data from multiple sources and is used by managers in making decisions (Fao.Org., 2010). The Marketing intelligence component is used to manage data that is gathered from the continuous interaction between the firm and its operating environment which entails information on economic, social, political, legal, environmental, physical, or technological aspects. According to Kotler (1997),

marketing intelligence system is ordered collection of information resources and procedures of getting it used by managers for recreation of the updated picture of changes taking place within the operating environment.

Marketing intelligence (MI) subsystem supplies information that drives a firm's strategic and tactical decisions. Majority of organizations spend on gathering information from varied systems and applications so as to build an all-round firm view that reflects market conditions, and also support more informed and effective decisions (Jazdtech, 2010, pride and Ferrell, 2006). With the advent of the internet and growth of social media platforms, too much information is generated which according to Malhotra, (2003), has led to development of mass media monitoring tools to gather relevant data from such platforms to be used in marketing activities.

Marketing research refers to proactively searching for information that can be used in solving a supposed marketing issue. Here, the information is systematically and objectively identified, collected, analysed, disseminated, and utilized in solving problems and identifying opportunities in marketing (Malhotra, 2007). Marketing research is viewed by The American Marketing Association as a function that connects consumers to the marketer through information. The acquired information then informs the identification and definition of opportunities and challenges in marketing; generation, refining, and evaluation of marketing activities; monitoring marketing performance; and enhance the comprehension of marketing as a process.

A Marketing Decision Support System (MDSS) is defined by Cassie (1997) to be a coordinated collection of data, models, analytic tools and computing power which enables firms to turn information into a basis of marketing decisions. MDSS assists decision makers to use data and models to solve unstructured problems based on

information technology. With the system, the value and suitability of marketing decisions is enhanced when the decision making efficacy is improved (Buttery & Tamaschke, 1995). Li & Davies, (2001) contend that MDSS focuses on giving support rather than replacing managerial judgement which generally creates a sync between strategic analysis and the managerial intuition which is instrumental in achieving managerial intuition that helps in achieving a synergy in the decision making process (Cassie (1997), MDSS supports a broad range of decision making concerns on different organizational levels including corporate, tactical and functional.

At the corporate level, the decision-making contexts include designing and planning for products, research and development, analysing customer profile as well as large scope forecasting among others. At the tactical and functional level, the contexts include pricing, management of asset revenue, doing budgeting for different departments, forecasting as well as inventory controls (LI & Davies, 2001). According to Rael (2000), the advanced technologies and modelling capabilities that characterize MDSS enable marketing managers to experiment with various marketing mix strategies as well as analyse effectiveness of different scenarios. This ensures that the consequences of various marketing strategies are explored before management can commit valuable resources and time.

The Marketing Information System should support the manager by providing access to databases that hold relevant data as well as interactive testing of solutions, but not act as a replacement to the manager's judgment. This therefore means that the MkIS should not be left to deliver solutions and neither should it enforce a predefined analysis sequence. The key benefit of MkIS is to provide supporting information for

problems that are semi structured in nature that allows computer to systematize some analysis components, but also the insights and judgment of the decision makers are maintained to ensure that the process is controlled. A problem solving process that is effective is collaborative and enriched by the interaction between the system and users.

2.4 Empirical Review and Knowledge Gaps

Competitive advantage is a reflection of an organization's core strategy or unique resources sourced and utilized by an organization to achieve superior results relative to that of similar players. Chern, Anthony and Chih-Ping (2014) in Igbaekemen (2014), contend that organizations competing in a particular market, in any given time, possess varying resources and pursue different objectives. As contended by Howard et al, (1999), if marketing information systems is tapped into when developing marketing strategies, organizations can be able to gain competitive advantage. The model by Porter presents forces which influences competitiveness of firms in the marketplace. Majority, if not all management officials have heightened interests in coming up with strategies that focus on establishing a position that is more profitable as well as sustainable (Turban et al, 2006). Tin order to achieve this, a firm should build a reliable and superior Marketing information system that will help in gathering, analysing and interpreting critical information.

Several empirical studies have been done to look into the concept of Marketing Information Systems and Competitive Advantage in firms. Globally, Sultan (2012) focused on examining what role MkIS played in marketing decision-making in Jordanian medicines production firms. The study adopted both primary and secondary data. The results indicated that a relationship existed between MkIS components and decision-making. The study conducted by Alhadid, Al-Zu'biand Samer (2015) to find

out whether there is a relationship between MkIS and competitive advantage whereby the context was the Jordanian banking sector. Primary data was collected from the respondents using a questionnaire. Findings indicated the presence of a significant relationship between the major components of MkIS like and the banks' competitive advantage in Jordan.

In Africa, Kayode (2010) looked at the nature, role and impact of marketing research as a tool for increased profitability in Nigerian business enterprises. The study used primary data which was gathered by administering questionnaires and the data analysed using regression analysis. The results showed that marketing research is a veritable tool for enhancing profitability, customer's satisfaction and loyalty. Similarly, Nasri, (2011), did a research which looked into competitive information in Tunisian companies where the purpose was to investigate the extent of knowledge of competitive information in Tunisian firms. Primary data was used and was collected using questionnaires. The results indicated that internal sources of information were more valuable to managers as compared to external sources.

In Kenya, some research has been done in this area. Kimani (2006) focused on ascertaining what effect MKIS had in creating sustainable competitive advantage of savings and credit firm (Kenya) Limited. Questionnaires were used in collecting primary data that was analysed through content analysis. The results showed that savings and loan (Kenya) limited had implemented a MKIS in the marketing department which had all components of marketing information system. The findings show as well that information gathered using the MKIS was used to new product development as well as in introducing improvements on the already existing product to serve the changing customer needs. Thuita (2019) also conducted a research that

focused on marketing information systems and its effects on competitive advantage whereby the context was Consolidated Bank of Kenya Limited. An interview guide was used to collect primary data and then analysed using content analysis. The results indicated a presence of notable changes experienced after adopting the marketing information systems leaning towards competitiveness.

The literature that has been reviewed in this study indicates that competitive advantage is an important aspect that ensures survival and superior performance of firms. This concept has become more critical especially considering how dynamic the current operating environment has become due to the rapid developments in the area of information technology. Taking advantage of available information in decision making especially those that address marketing activities has also been seen to be very important in ensuring firms attain a competitive advantage. Although the empirical literature reviewed has addressed major concepts in marketing information systems and competitive advantage of organizations, there still exists conceptual, contextual and methodological gaps whereby such as focusing of case studies or exploring one or a combination of marketing information components without covering all the components. This study intended to fill these gaps by finding out how marketing information systems affect competitive advantage of ICT companies in Nairobi County

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This section presented the research design that was used in this research. It also discussed the targeted population, sampling techniques, tools used in data collection and also the methods and techniques employed in analysing data.

3.2 Research Design

A research design is a framework or plan specifically designed to guide the researcher source for answers for the research questions (Dulock, 1993) and is the heart of any study. This research adopted the descriptive cross sectional survey design was. Jorde, (2008) states that the aim of cross sectional survey design is to determine the frequency of a particular attribute, within a population that is defined within specific timelines. Descriptive studies focus on determining both qualitative and quantitative information. The selected design enabled the researcher to identify the relationship that exists between MkIS and Competitive Advantage. The selection of this design method was on the basis of its ability to gather different types of data and is quick and the cost is on the lower side.

3.3 Population of the Study

The researcher focused on the ICT firms that have been registered by CA under the category of application service providers that operate in Nairobi County. According to the register held by CA as at February 2018, there are approximately 210 firms registered providing ICT Application Services in Nairobi County. These were therefore be essential in seeking to understand how the effects Marketing Information Systems have on the competitive advantage of a firm.

3.4 Sample Design

Sampling design entails selecting a representative subsection of the population which will be studied for findings to be generalized to the entire population (Cooper & Schindler, 2014). The sample size was determined using the Yamane (1967) formula to calculate the sample size.

$$n = \frac{N}{1 + N(e)^2}$$

Where n= size of the sample, N= size of the population and e= alpha level (0.05).

N= 210

n= 138

Out of the total number of firms selected, the researcher used random sampling to select 138 firms that took part in this research.

3.5 Data Collection

The type of data that was useful in this research was primary data which was collected by administering questionnaires to the respondents by the researcher and research assistants. The questionnaire was ideal in collecting structured data from the selected respondents within limited timelines. The semi structured questionnaire was administered to the senior management persons in the ICT Application Service Providers firms. The managers were considered to have the relevant information that was necessary for this research since they were in charge of making decisions and implementing strategies as well as monitoring the performance of the organizations.

The questionnaire had three sections whereby section A covered general data for the ICT Company; section B will reviewed information about to the respondent's

knowledge of the marketing information systems in the ICT industry while section C will look into the relationship between MKIs practices and competitive advantage. Likert scales were used to capture qualitative data in the questionnaire.

3.6 Data Analysis

Upon completion of data collection, it was cleaned to improve the quality through the correction of errors and omissions. Regression analysis and descriptive statistics was used to analyze the gathered data whereby the tool that was used was “Statistical Package for the Social Sciences (SPSS)”. Regression analysis was preferred because it helped in showing how the variables correlate with each other. A key aim of statistical examination is to determine relationships, and this makes it possible to forecast the variables in respect of the other variables (Freund, 2001). The relationship between the independent variable (Marketing Information System) to the dependent variable (Competitive advantage) was determined using the regression analysis.

The regression equation that was adopted included;

$$Y = \beta_c + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \epsilon$$

Where; Y represents Competitive advantage

X_1 represents Internal Records

X_2 represents Research

X_3 represents Intelligence

X_4 represents Marketing Decision Support Systems

β_1 to β_4 represent the regression coefficients of the independent variable

c is the Constant

ϵ is the error term

A T-test at 95% confidence level was done by the researcher to bring out the level of significance with regards to the independent variable explaining variations in the dependent variable.

CHAPTER FOUR

DATA ANALYSIS, FINDINGS AND DISCUSSION

4.1 Introduction

The chapter is a discussion of analysis of the gathered data, the findings which are then discussed. The researcher looked at marketing information systems and its impact of competitive advantage of ICT Application Service Provider firms in Nairobi County. The objectives of the study included finding out how the various components of marketing information system namely internal reports, marketing research, marketing intelligence and marketing decision support system, impacted the competitive advantage of the identified firms.

4.2 Rate of Response

As discussed in the previous chapter, the data was gathered using questionnaires that were sent to 138 respondents out of which 104 responses were received to be analyzed. This accounts for a response rate of 75.36% which according to Jorde (2008) is considered adequate to do analysis and derive inferences.

4.3 General Information

This subsection presents the research findings of the respondents' general information. This was necessary since it gave the researcher the necessary information regarding the various characteristic of the respondent factors thus indicating the respondents' ability to respond to the information about the variables being researched on.

4.3.1 Position

The question to respondents required them to specify what positions they held within their respective organizations. Table 4.1 is an illustration of the results.

Table 4. 1: Position Held in the Organization

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Manager	74	71.2	71.2	71.2
Supervisor	30	28.8	28.8	100.0
Total	104	100.0	100.0	

Source: Survey Data, 2020

Table 4.1 shows that a large proportion of the respondents held managerial positions as represented by value of 71% while 29% were supervisors. This results infer that the respondents interacted with important organizational information which the researcher needed for this study, thus suitable to answer the research questions.

4.3.2 Working Period

The question required responses on the respondents' work period. The results are illustrated in Table 4.2

Table 4. 2: Period of Working

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Below 1 year	2	1.9	1.9	1.9
1-5 years	63	60.6	60.6	62.5
6- 10 years	22	21.2	21.2	83.7
Above 10 years	17	16.3	16.3	100.0
Total	104	100.0	100.0	

Source: Survey Data, 2020

The results in Table 4.2 illustrate that a large number of the respondents having worked in their organizations for 1- 5 years accounting for 61% followed by those who had worked for 6 to 10 years with a value of 21%. Those who had worked for over 10 years accounted for 16% while those who had worked for less than 1 year accounted for 2%. The results show that a big number of respondents had adequate work experience thus able to provide the required information objectively.

4.3.3 Firm's Operational Period

The question required the respondents to indicate the period that their respective firms have been operational. The output is as illustrated in Table 4.3.

Table 4. 3: Period of Operation

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid less than 5 years	17	16.3	16.3	16.3
5-10 years	27	26.0	26.0	42.3
11-15 years	10	9.6	9.6	51.9
16-20 years	16	15.4	15.4	67.3
Above 20 years	34	32.7	32.7	100.0
Total	104	100.0	100.0	

Source: Survey Data, 2020

Table 4.3 illustrates that a large number of the companies had been operational for a period of more than 20 years as shown by the value been of 33% followed by those that have been in operation for 5 to 10 years at 26%. Those that had operated for less than 5 years accounted for 16% while those that had been operational for 16 to 20 years and 11 to 15 years accounted for 15% and 10 % respectively. These findings suggest that a large number of firms had been operational for a substantial period thus had developed systems such as the MkIS, and therefore able to provide the information necessary to answer the research question.

4.3.4 Scope of Company Operations

The researcher asked the respondents to indicate the scope covered by their firms with regards to coverage. The findings are as shown in Table 4.4.

Table 4. 4: Scope of Company Operations

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Local	64	61.6	61.6	61.6
Regional	28	26.9	26.9	88.5
International	12	11.5	11.5	100.0
Total	104	100.0	100.0	

Source: Survey Data, 2020

The results in Table 4.4 illustrate that a large number of the firms were running operations locally as indicated by the value of 61.6%, followed by regional coverage at 26.9% and lastly international coverage accounting for 11.5%. This output implies that a large number of firms had the information that came with exposure and experience which was necessary to provide reliable information for this study.

4.3.5 Use of Marketing Information Systems

The respondents were required to indicate on whether their organizations had a functional marketing information system. The results are as indicated in Table 4.5.

Table 4. 5: The Firm has a MkIS

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Yes	98	94.2	94.2	94.2
No	6	5.8	5.8	100.0
Total	104	100.0	100.0	

Source: Survey Data, 2020

The Table 4.5 shows that a large number of firms have a marketing information system as represented by a value of 94%, and only 6 % of the firms did not have a marketing information system. These findings imply that majority of firms under the license of Application Service Providers have adopted a marketing information system.

4.4 Descriptives

4.4.1 Internal Records

The respondents were asked to indicate the extent to which they agreed with the statements regarding the use of internal reports component of the Marketing Information Systems on a scale of 1 to 5 where by 1 – Strongly Disagree, 2- Disagree, 3- I don’t know, 4- Agree and 5- Strongly Agree. The findings are as showed in Table 4.6.

Table 4. 6: Internal Reports

Statements	Mean	Std. Deviation
Company has a multiple and all-inclusive internal marketing database	3.98	.80
Every department within the firm stores their data in the database.”	3.79	1.02
Firm’s internal records supply critical information on customer performance	4.05	.77
Firm’s internal records supply critical data on the firm’s sales and purchases.	3.79	1.08
Data contained in the firm’s internal records can be considered to be accurate.	4.76	.56
Marketing data contained in the firm’s internal records is fit for purpose	2.15	.93
All the information received from marketing research and intelligence is maintained in the company’s internal records.	4.26	1.10
There is continuous update of information contained in the firm’s internal records.	4.25	1.04
The firm relies on internal records to detect hitches.”	4.15	.93
When compared to other information sources, the Internal marketing database is considered less costly	4.43	.92
The firm’s computerized internal records and reports have an effect on the decision-making process.	3.84	1.01

Source: Survey Data, 2020

Table 4.6 illustrates the responses with regards to internal reports component of the marketing information system. With regards to the firm having several and all-inclusive internal marketing database and every department within the firm keeping their data in the internal database, means of 3.98 and 3.79 and standard deviations of 0.80 and 1.01 respectively were recorded. On the firm’s internal records providing critical information on customer performance and sales and purchases, results posted means of 4.05 and 3.79 with SD of 0.77 and 1.08 respectively. On accuracy of marketing information in the company's internal records as well as it being fit for the purpose the findings posted means of 4.76 and 2.15 with SD of 0.56 and 0.93 respectively.

With regards to the company maintaining all received information from the marketing research and Intelligence in the internal records as well as constantly updating internal records the findings showed mean of 4.26 and 4.25 with SD of 1.10 and 1.04 in that order. With regards to the firm depending on internal records in identifying problems as well as it being less expensive as compared to other sources of information, the findings showed a mean of 4.15 and 4.43 with SD of 0.93 and 0.92 in that order. On the effect of computerized records and internal reports on the decision-making process the findings recorded a mean of 3.84 with SD of 1.01.

4.4.2 Marketing Research

The respondents were asked to indicate the extent to which they agreed with the statements regarding the use of marketing research component of the Marketing Information Systems on a scale of 1 to 5 where by 1 – Strongly Disagree, 2- Disagree, 3- I don't know, 4- Agree and 5- Strongly Agree. The findings are as showed in Table 4.7.

Table 4. 7: Marketing Research

	Mean	Std. Deviation
The allocated budget for the firm's marketing research department is sufficient enable efficient perform performance	4.63	.71
The firm often carries out activities related to marketing research.	3.87	1.13
Firm's management ensures that the research plan is continuously enhanced.	2.74	1.13
Primary data including interviews, research and monitoring is the main base of marketing information ”	2.25	1.01
Secondary data including internal records, research institutions and government research presents the main base of marketing information gathered	3.57	.99
Conducting marketing research is important when dealing with the firm's marketing situations	4.47	.74
Firm's marketing research enables detection, collection as well as tracking of issues as well as in providing suitable answers	4.63	.62
Marketing research help the firm to accurately assess current operating environment	4.51	.85

Understanding consumer behavior is aided by conducting marketing research	3.29	.868
The performance of staff in the firm reflects the positive impact of marketing research	3.75	.92
The risk that is brought by uncertainty is reduced by conducting marketing research	2.29	1.26
New opportunities for firms are identified by conducting marketing research	3.62	1.05
Conducting marketing research avails necessary information needed to aide timely decision making	3.84	1.03
The findings, recommendations and the proposal emanating from marketing research positively contributes to the process if decision-making	3.59	1.16

Source: Survey Data, 2020

Table 4.7 illustrates the results of the responses with regards to the marketing research component of the marketing information system. With regards to budget allocated to marketing research department being sufficient, the results posted a mean of 4.63 with a standard deviation of 0.71. Majority of the respondents also agreed that their firms occasionally worked on marketing research posting a mean of 3.87 with a standard deviation of 1.13. With regards to company's management performing continuous improvement on the research plan, the respondents were neutral indicating a mean of 2.74 and a SD of 1.13. With regards to types of data used when gathering information, findings showed that their firms preferred secondary data as compared to primary data with a mean on 2.25 and standard deviation of 1.01 for primary data usage while secondary data usage had a mean of 3.57 with standard deviation of 0.99.

With regards to relevance of marketing research to marketing situations facing the company and its role in the detection, collection and tracking problems as well as provision of adequate solutions, the respondents were in agreement with a mean of 4.47 and 4.63 with standard deviations of 0.74 and 0.62 respectively. The respondents also agreed that the firms marketing research helped when carrying out assessments of

the current market as well as in understanding consumer behaviour as indicated by means of 4.51 and 3.29 with a standard deviation of 0.85 and 0.86 respectively. With regards to effectiveness of marketing research being reflected positively on the firm’s marketing performance reducing the risk of uncertainty, the findings showed a mean of 3.75 and 2.29 with standard deviation 0.92 and 1.26 respectively. The respondents also agreed that marketing research in the company contributed on new opportunities as well as in providing information that is necessary for making decisions in a timely manner as indicated by means of 3.62 and 3.84 and standard deviations of 1.05 and 1.03 respectively. With regards to the marketing research findings, recommendations, and proposals contributing to the process of decision-making, the findings indicated a mean of 3.59 and a standard deviation of 1.16.

4.4.3 Marketing Intelligence

The respondents were asked to indicate the extent to which they agreed with the statements regarding the use of marketing intelligence component of the Marketing Information Systems on a scale of 1 to 5 where by 1 – Strongly Disagree, 2- Disagree, 3- I don’t know, 4- Agree and 5- Strongly Agree. The findings are as showed in Table 4.8.

Table 4. 8: Marketing Intelligence

	Mean	Std. Deviation
Marketing intelligence benefits firms by providing knowledge as well as enabling them be aware of current business environment.	3.54	1.18
Company makes use of marketing intelligence regularly to learn about their competitors.	4.35	.70
The firm depends on media for information	3.94	.92
Customers provide important information regarding markets and the competitors.”	3.22	.86
Internal information sources such as management, consultants, sales staff among others are the main information sources for upcoming market developments	3.96	.82

The firm considers marketing intelligence a critical resource that enables understanding of market requirements.	3.61	1.04
Sufficient and relevant information about company clients is supplied by marketing intelligence	3.80	.84
Marketing intelligence enables the firm to obtain information on market services.	4.01	.95
The firm is enabled by marketing intelligence to constantly track and evaluate competitor performance	3.84	1.01
The firm is alerted on possible threats and opportunities early enough through marketing intelligence	3.75	.99
The performance of staff in the organization reflects positive effects of marketing intelligence	3.62	1.13
Marketing intelligence contributes to the firm's decision-making process.	3.04	1.07

Source: Survey Data, 2020

Table 4.8 illustrates findings covering the marketing intelligence component of the marketing information system. The findings showed that the respondents agreed that the company benefited from the marketing intelligence techniques as well as in keeping abreast with on-going and emerging marketing circumstances as reflected by a mean of 3.54 and standard deviation of 1.18. With regards to company using marketing intelligence regularly to gather information about competitors, the findings indicated that the respondents strongly agreed with a mean of 4.35 with standard deviation of 0.70.

With regards to the firms relying on the media for information and also customers offering valuable information on markets and competition, the results posted a mean of 3.94 and 3.22 with SD of 0.92 and 0.86 respectively. Similarly, the findings showed that majority of the respondents agreed that firms relied on internal information sources such as management, consultants, sales personnel and delegates of purchase among others, to spot and report new developments in the market having a mean of 3.96 and a standard deviation of 0.82.

With regards to marketing intelligence being considered a vital resource in understanding the nature of the market necessities as well as providing sufficient and useful information about the customers, the findings indicated majority of respondents in agreement posting a mean of 3.61 and 3.80 with a standard deviation of 1.04 and 0.84 respectively. On marketing intelligence being instrumental in obtaining the necessary market information services and assisting to track and evaluate competitor performance, the findings indicated majority in agreement with a mean of 4.01 and 3.84 with standard deviations of 0.95 and 1.01 respectively.

With regards to marketing intelligence in the company helping in raising alarms of possible threats as well as opportunities the findings indicated majority agreement with a mean of 3.75 and a standard deviation of 0.99. A mean of 3.62 and standard deviation of 1.13 indicated that a large number of the respondents agreed on the relevance and effectiveness of marketing intelligence being confidently reflected by staff in their performance in marketing activities while a mean of 3.04 with a SD of 1.07 indicated that majority agreement that the information provided by marketing intelligence at the company aided the process of decision-making.

4.4.4 Marketing Decision Support System

The respondents were asked to indicate the extent to which they agreed with the statements regarding the use of marketing decision support system component of the Marketing Information Systems on a scale of 1 to 5 where by 1 – Strongly Disagree, 2- Disagree, 3- I don't know, 4- Agree and 5- Strongly Agree. The findings are as showed in Table 4.9.

Table 4. 9: Marketing Decision Support System

	Mean	Std. Deviation

Computer program deliver information that is considered important in plans to achieve marketing goals	3.44	1.03
Computer program have the ability of predicting changes likely to occur to the firm's marketing strategy variables	4.05	1.07
Computer program have the ability to define the costs resulting from changes in marketing variables.	3.90	.94
Computer program has the ability of analyzing and identifying marketing hitches.”	3.89	.77
Computer programs are able to minimize the related effort, time, and costs.	4.33	.67
Computer programs are able to gauge how effective the firm's marketing operations are.	4.04	.87
Computer programs have the ability of determining customer size which can positive influence firm sales.	3.57	1.10
Computer programs point out software constraints and tailbacks that negatively affects daily operations.”	3.14	1.23
Computer programs assist the firm to access opportunities as well as mitigate the threats	3.00	.99
Computer programs can help in identifying the firm's marketing strong point and also weaknesses.	4.04	.79
Employee training on application of computer programs ensures improved efficiency in marketing output	3.75	1.13
The firm considers computerized decision- support programs when making decisions	4.75	.58

Source: Survey Data, 2020

Table 4.9 illustrates the findings from the analysis of the responses with regards to MDSS component of the marketing information systems. The majority of the respondents agreed that computer programs provided information that was used in the efficient achievement of marketing objectives posting a mean of 3.44 with a standard deviation of 1.03. With regards to the ability of computer programs predicting changes which may happen to the marketing strategy for the company as well as describing the consequences of a change in the variables, the findings showed that majority of respondents agreed as reflected in the mean of 4.05 and 3.90 and standard deviations of 1.07 and 0.94 respectively. Findings as well showed that majority of the respondents agreed that computer programs are able to analyse and identify the

marketing problems as well as reduce the effort, time, and cost posting a mean of 3.89 and 0.33 and a SD of 0.77 and 0.67 respectively.

Majority of the respondents also agreed that computer programs measured how effective marketing activities were as well as determine the size of the customers that are able to influence organizational sales posting a mean of 4.04 and 3.57 with SD of 0.87 and 1.10 respectively. With regards to computer programs pointing out software constraints and bottlenecks that affect daily work and also helping the institution to seize opportunities and avoid threats, the findings indicated a mean of 3.14 and 3.00 with standard deviations of 1.23 and 0.99 respectively.

With regards to computer programs being able to identify the firm's marketing strengths and weaknesses, majority of the respondents were in agreement posting a mean of 4.04 and a standard deviation of 0.79. A mean of 3.75 and a standard deviation of 1.13 were recorded in reference to efficiency of training programs on usage of computer programs improving marketing performance whereas the statement on bank relying analysed information provided by computerized decision- support programs in their decision-making process recording a mean of 4.75 and a SD of 0.58 which implied that the majority of respondents strongly agreed with the statements.

4.5 Regression Analysis

The aim of this research was to determine the effect of MkIS on the competitive advantage of application service providers. The indicators that defined the independent variable included the components of the MkIS which are internal reports, marketing research, marketing intelligence and marketing decision support system.

The regression equation adopted was;

$$Y = \beta_c + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \epsilon$$

Where; Y represented (Competitive advantage)

X_1 represented Internal Records

X_2 is represented Research

X_3 is represented Intelligence

X_4 represented Marketing Decision Support Systems

β_1 to β_4 represented the regression coefficients of the independent variable

c was the Constant

ϵ the error term

Table 4. 10: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.347 ^a	.120	.085	.27361

a. Predictors: (Constant), Marketing Decision Support System, Internal Reports, Marketing Intelligence, Marketing Research

Source: Survey Data, 2020

Table 4.10 illustrates that the coefficient of determination R^2 is 0.120 and R is 0.347. These findings imply that competitive advantage of Application Service Providers can be predicted up to 34.7% by marketing information systems with a standard error of 0.273. The results further show that 12% of the change in competitive advantage of firms can be explained by the changes in components of MkIS adopted by an organization. This therefore implies that the remaining 88% of competitive advantage of the firms is determined by factors that have not been considered in this particular study.

Table 4. 11: ANOVA^a

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	1.015	4	.254	3.389	.012 ^b
	Residual	7.411	99	.075		
	Total	8.426	103			

a. Dependent Variable: Competitive Advantage

b. Predictors: (Constant), Marketing Decision Support System, Internal Reports, Marketing Intelligence, Marketing Research

Source: Survey Data, 2020

Table 4.11 indicates the ANOVA output. When determining the significance of the coefficient of determination, this table shows that at $\alpha= 5\%$, the f statistic is 3.389. There is a p value of $0.012 < 0.05$ which is significant. This implies that marketing information systems components are significant in predicting competitive advantage of the firms classified as application service providers.

Table 4. 12: Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	3.194	.339		9.407	.000
	Internal Reports	.116	.072	.177	1.605	.012
	Marketing Research	.070	.093	.090	.759	.045
	Marketing Intelligence	.040	.077	.055	.515	.030
	Marketing Decision Support System	.111	.056	.218	1.997	.049

a. Dependent Variable: Competitive Advantage

Source: Survey Data, 2020

Table 4.12 illustrates the regression coefficients which indicate that a relationship exists between the components of Marketing information systems and competitive advantage of application service providers. Internal reports recorded $p=0.012 < 0.05$, marketing research recorded $p=0.045 < 0.05$, marketing intelligence recorded $p= 0.030 < 0.05$ and MDSS recording $p=0.049 < 0.05$. The testing for Significance was done at $\alpha=0.05$ whereby the significance occurs when p registers a value that is less than

0.05. These findings imply that the components of marketing information system including internal reports, marketing research, marketing intelligence and MDSS have a relationship that is significant with the competitive advantage of application service providers.

The linear model will therefore be represented as follows;

$$Y = 3.194 + 0.116X_1 + 0.070X_2 + 0.040X_3 + 0.111X_4 + \epsilon$$

These results imply that when all other independent factors are maintained at a constant, increasing the internal reports component by a single unit will result to a 0.116 change in competitive advantage of the firm, increasing marketing research component by a single unit will result to a 0.070 change in competitive advantage of the firm, increasing marketing intelligence component by a single unit will result to a 0.040 change in competitive advantage of the firm and finally increasing MDSS component by a single unit will result to a 0.111 change in competitive advantage of the firm.

4.6 Discussion of the Findings

The results showed that a large number of the firms had implemented a functioning marketing information system. With regards to internal records being a source of information that is easy and cheap source of information, being accurate and fit for purpose as well as containing information that is up to date thus making decision making more effective, the findings showed that majority of respondents were positive. These findings are supported by the findings of Alhadid, Al-Zu'bi and Samer (2015), which reached to a conclusion that internal records had a significant role in a firm's decision making. Further, the findings are supported by Li & Davies, (2001) who found that marketing information systems for SMEs was based on the internal

records. The study by Nasri (2011) also supports the findings of this study as he concluded that internal marketing was considered by managers as a reliable information source and that it had an impact on decision making. Similarly, the findings of the study by Kayode (2010) that showed marketing research was a veritable tool for enhancing profitability, customer's satisfaction and loyalty supports the results in this research study.

The results on marketing research showed that the component affected the competitiveness of the firms significantly. This can be attributed to the improvements and advantages that marketing research adds to the marketing information systems for firms through providing the necessary information for decision making as and when it is needed. These findings are supported by studies by Ganeshasundaram and Henley (2007) who found that firms carried out research in order to be competitive, and Li (1995) who also reached to a conclusion that marketing research provided a rich and reliable source of information especially in supporting decisions that dealt with pricing.

The findings also showed that with regards to marketing intelligence systems, the respondents agreed that it provided useful information and that it assisted in providing early alarm with regards to threats as well as opportunities that the firm face. Further, the findings show that marketing intelligence was instrumental in decision making and that it affected the competitive advantage of firms. These findings are supported by various studies including Nasri (2011) who found that managers in Tunisia were aware of the effects of marketing intelligence on organizational performance as well as Li (1995) who found that marketing intelligence provided reliable information with regards to competitors.

The findings on MDSS indicated that majority of the firms had adopted and that it had a significant influence on competitive advantage of firms. The findings are also supported by Kimani (2006) who concluded that MDSS analysed information and produced reliable output which was used in decision making.

The findings from the regression analysis also indicated the existence of a relationship between MkIS and competitive advantage, whereby competitive advantage of ICT Application Service Providers can be predicted up to 34.7% by MkIS, and further, a 12% change of competitive advantage was attributed to MkIS factor as illustrated in the model summary. These findings are supported by various studies including Alhadid, Al-Zu'bi and Samer (2015) who found that a significant relationship existed between the major components of Marketing Information System and the competitive advantage of banks in Jordan. Similarly, the research by Kimani (2006) supports the findings of this study whereby the findings showed the information gathered by MkIS was mainly used in informing product developments and enhancements with the goal of being competitive in the market. Further, Thuita (2019) whose study found that notable changes had been achieved by Consolidated Bank of Kenya after adoption of MkIS which were positively contributing to the institution's competitive advantage also supports the findings of this study.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter presents a discussion of the summary, the conclusions and the researcher's recommendations as informed by results. The study's limitations are as well discussed and areas that may need to be researched on further. This research concentrated on establishing the effect of marketing information systems on the competitive advantage of ICT Application Service Providers.

5.2 Summary

The primary data used was mainly provided by respondents in managerial positions representing a figure of 71%. Majority of the respondents showed their work experience to span for 1 to 5 years accounting for 61%. Majority of the firms represented by a figure of 33% had been in operation for over 20 years which is considered substantial period to be in operations. Similarly, majority of the firms had local presence as illustrated by the figure of 61.6%. With regards to the use of MkIS, the findings indicated that majority of the firms totalling to 94% had adopted a marketing information system

With regards to internal reports the results indicated that a large number of the respondents had multiple and comprehensive internal marketing database and that it supplied key information on various factors such as customers. The findings also showed that the internal records were considered accurate and was constantly updated and that it affected the decision making process. The results also showed that the respondents agreed that internal records were less expensive as compared to other

sources of information however that the records were fit for purpose the findings indicated a lower mean.

With regards to marketing research, the findings indicated that majority of respondents agreed that there was a budget allocated for marketing research and that the firms periodically invested in marketing research. The findings however recorded a lower mean on the firms continuously improving the research plan. The findings also indicated that the respondents agreed that firms preferred using secondary data as compared to primary data as their basis of gathering information. The findings also showed a strong agreement from the respondents that marketing research helped in the detection, collection and tracking of problems as well as provision of adequate solutions. The findings also indicate that marketing research contributes to the decision making process of the organization as well as reduction of uncertainty.

On marketing intelligence, findings presented indicate that majority of the respondents strongly agreed on their firms using marketing intelligence regularly and that marketing intelligence benefits their firms with regards to keeping abreast with the ongoing and emerging circumstances. The findings also indicated that the respondents agreed that their respective organizations relied on various sources for intelligence including media, customers and their internal sources such as managers, consultants etc. The findings also showed that the respondents strongly agreed that marketing intelligence contributed to the decision making process.

Findings with regards to MDSS indicate that majority of the respondents strongly agreed that the program provided useful information for achievement of objectives and was also able to predict the change that may occur to the marketing strategies. The findings also showed that a most respondents agreed on the program is able to

analyze and identify marketing issues facing the organization and that they reduce the effort, time and costs that firms spend in strategy planning and implementation. The results indicated that a large number of respondents agreed that the program was able to measure how effective marketing activities in an organization are, as well as efficient in determining the extent that customers were influencing sales in addition to assisting firms identify and seize opportunities and also avoiding threats. The findings also indicated that majority of respondents agreed that their firms heavily relied on the support program in decision making process.

The findings from the regression analysis showed that competitive advantage of ICT Application Service Providers could be predicted up to 34.7% by marketing information systems. The results further showed that 12% of the change in competitive advantage of firms was explained by the changes in components of MkIS adopted by an organization. Further, the results also showed that all MkIS components including Internal Reports, Marketing Research, Marketing Intelligence and MDSS have a relationship that is significant with the competitive advantage of ICT Application Service Providers.

5.3 Conclusion

This study looked at the influence Marketing Information Systems had on the competitive advantage of ICT Application Service Providers in Nairobi County. This study therefore makes the following conclusions. Majority of ICT Application Service Providers have adopted a MkIS in their firms. Further, these firms depend on the system for their information needs and analysis advantages which they rely on when making important marketing decisions.

The adoption of MkIS components which are Internal Reports, Marketing Research, Marketing Intelligence and MDSS, by majority of the respondents and the implied effect they have been seen to have on the firms' operations as well as the significant relationship between the components and competitive advantage as witnessed in the findings, the study concludes that Internal Reports, Marketing Research, Marketing Intelligence and MDSS has a positive impact on the competitive advantage of ICT Application Service Providers in Nairobi County.

5.4 Recommendations of the Study

Based on the findings of this study, the researcher makes several recommendations including the firms improving the quality of information that is fed into the MkIS which will enable reliability of output from the system. Further, the firms can expand the sources where they gather their information and not only rely on internal sources, and secondary data so as to ensure that they capture the whole picture of the customers, environment and market, as well as internal environment.

To ensure quality systems, the researcher recommends increased budget allocated to marketing research and ensure that it is sustainable. Lastly, the researcher recommends that sensitization of all users should be conducted to inform on the benefits on MkIS and organize trainings on usability to ensure that the information resource is optimally used to benefit the organization

5.5 Limitations of the Study

A number of challenges were faced in the course of this research. Key among the limitations include the constraint of moving around due to the containment measures imposed in an effort to manage the Covid-19 pandemic, which made data collection challenging. This was however addressed by sourcing for the respondents' contacts including email addresses and phone contacts and contacting them virtually to fill the

questionnaires online which were prepared with the Google forms application, or email.

Another limitation was the fear of respondents to take part by providing the information requested. This hurdle was addressed by contacting the respondents and assuring them that the necessary steps had been taken to ensure confidentiality of the respondent was observed as well as the fact that the data provided was going to be applied only for academic reasons.

5.6 Suggestions for Further Research

The researcher recognizes the importance of MkIS and recommends further research to be conducted on gaps identified in the course of this study. These include researching on role of MkIS on the decision making process in organizations in the ICT sector, as well as how MkIS can be used to determine the marketing mix in organizations.

Further, since this study focused on a single licence category among many in ICT context, the researcher also suggests that a similar study as this be conducted on the other licence categories within the same context, and even further studies to focus different contexts which will enable comparison of findings from these varying contexts and enhance understanding.

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APPENDICES

Appendix I: Questionnaire

Section A: General Information

1. Position held in the organization?

Manager

Supervisory

2. Your Department in the ICT firm

3. Your work experience?

Below 1 year

1 to 4 years

4 to 6 years

6 to 10 years

Above 10 years

4. State the length of time the Company's has been in Operation

Less than 5 years 5- 10 years 11 -15 years 16- 20
years

Above 20 years

5. State the Scope of the company's operations

Local Regional International

Section B: MARKETING INFORMATION SYSTEMS

1(a). Does ICT Firm have a Marketing Information System?

Yes No

(b). If yes, kindly tick appropriately to indicate the components that make up the system

Internal Reports

Marketing Research

Marketing Intelligence

Marketing Decision Support System

In this section please tick the extent to which you agree with the statements regarding the use of Marketing Information Systems on a scale of 1 to 5 where by 1 – Strongly Disagree, 2- Disagree, 3- I don't know, 4- Agree, 5- Strongly Agree

	Statements	1	2	3	4	5
MARKETING INFORMATION SYSTEMS						
1	Your ICT firm utilizes the following marketing information systems.					
	a) Internal Records					
	b) Marketing Research					
	c) Marketing Intelligence					
	d) Marketing Decision Support System					
INTERNAL RECORDS						
1	The firm has a multiple and all-inclusive internal marketing database					
2	Every department within the firm stores their data in the database.”					
3	Firm’s internal records supply critical information on customer performance					
4	Firm’s internal records supply critical information on sales and purchases.					
5	The information contained in the firm’s internal records can be considered to be accurate.					
6	Marketing information contained in the firm’s internal records is fit for purpose					
7	All the information received from marketing research and intelligence is maintained in the company’s internal records.					
8	There is continuous update of information contained in the firm’s internal records.					
9	The firm relies on internal records to detect hitches.”					
10	When compared to other information sources, the Internal marketing database is considered less costly					
11	The firm’s computerized internal records and reports have an effect on the decision-making process.					
MARKETING RESEARCH						
12	The allocated budget for the firm’s marketing research department is sufficient enable efficient perform performance					

13	The firm often carries out activities related to marketing research.					
14	Firm's management ensures that the research plan is continuously enhanced.					
15	Primary data including interviews, research and monitoring is the main base of marketing information "					
16	Secondary data including internal records, research institutions and government research presents the main base of marketing information gathered					
17	Conducting marketing research is important when dealing with the firm's marketing situations					
18	Firm's marketing research enables detection, collection as well as tracking of issues as well as in providing suitable answers					
19	Marketing research help the firm to accurately assess current operating environment					
20	Understanding consumer behavior is aided by conducting marketing research					
21	The performance of staff in the firm reflects the positive impact of marketing research					
22	The risk that is brought by uncertainty is reduced by conducting marketing research					
23	New opportunities for firms are identified by conducting marketing research					
24	Conducting marketing research avails necessary information needed to aide timely decision making					
25	The findings, recommendations and the proposal emanating from marketing research positively contributes to the process if decision-making					
MARKETING INTELLIGENCE						
26	Marketing intelligence benefits firms by providing knowledge as well as enabling them be aware of current business environment.					
27	Company makes use of marketing intelligence regularly to learn about their competitors.					
28	The firm depends on media for information					
29	Customers provide important information regarding markets and the competitors."					
30	Internal information sources such as management, consultants, sales staff among others are the main information sources for upcoming market developments					
31	The firm considers marketing intelligence a critical resource that enables understanding of					

	market requirements.					
32	Sufficient and relevant information about company clients is supplied by marketing intelligence					
33	Marketing intelligence enables the firm to obtain information on market services.					
34	The firm is enabled by marketing intelligence to constantly track and evaluate competitor performance					
35	The firm is alerted on possible threats and opportunities early enough through marketing intelligence					
36	The performance of staff in the organization reflects positive effects of marketing intelligence					
37	Marketing intelligence contributes to the firm's decision-making process.					
		MARKETING DECISION SUPPORT SYSTEM (MDSS)				
38	Computer program deliver information that is considered important in plans to achieve marketing goals					
39	Computer program have the ability of predicting changes likely to occur to the firm's marketing strategy variables					
40	Computer program have the ability to define the costs resulting from changes in marketing variables.					
41	Computer program has the ability of analyzing and identifying marketing hitches.”					
42	Computer programs are able to minimize the related effort, time, and costs.					
43	Computer programs are able to gauge how effective the firm's marketing operations are.					
44	Computer programs have the ability of determining customer size which can positive influence firm sales.					
45	Computer programs point out software constraints and tailbacks that negatively affects daily operations.”					
46	Computer programs assist the firm to access opportunities as well as mitigate the threats					
47	Computer programs can help in identifying the firm's marketing strong point and also weaknesses.					
48	Employee training on application of computer programs ensures improved efficiency in marketing output					
49	The firm considers computerized decision-support programs when making decisions					

Section C: COMPETITIVE ADVANTAGE

In this section please tick the extent to which you agree with the statements with regarding your firms Competitive Advantage achieved by using data from Marketing Information Systems on a scale of 1 to 5 where by where by 1 – Strongly Disagree, 2- Disagree, 3- I don't know, 4- Agree, 5- Strongly Agree

	Questions	1	2	3	4	5
1	Efficiency due to minimized costs associated with product and service delivery					
2	Products and services that are well differentiated					
3	Enhanced product/service innovation					
4	Paying attention to a defined market segment					
5	Growth in Customers					
6	Improved brand image and reputation					
7	Increased switching costs for customers					
8	Maximize the entry costs					
9	Company growth and expansion					
10	Others, specify and rate accordingly					

Appendix II: List of Application Service Providers

1. Able Wireless Company Limited
2. Abshir Investments Company Limited
3. Adtel Limited
4. Africa Fleet Management Solutions Limited
5. Afriq Network Solutions Limited
6. Ahadi Wireless Limited
7. Airtel Networks Kenya Limited
8. Airtouch Connections Limited
9. Alan Dick & Company (East Africa) Limited
10. Alphabest Computers & Ict
11. Amity Software Inc Limited
12. Atrams Limited
13. Attain Enterprise Solutions
14. Autoscope International Limited
15. Azanuru Technologies
16. Azusa Limited
17. Back Track Technologies
18. Bandwidth And Cloud Services Group Limited
19. Bandwidth Providers East Africa Limited
20. Bell Western Limited
21. Bernsoft Interactive Limited
22. Bics Kenya Limited
23. Binbit Kenya Limited
24. Birdseye Auto Track Limited
25. Bituls Company Limited
26. Borderless Tracking Limited
27. Brand Technologies
28. Brck Limited
29. Bt Communications Kenya Limited
30. Cable One Limited
31. Carrix Media Group Limited
32. Cellulant Kenya Limited
33. Chear (K) Limited
34. China Telecom (Kenya) Limited
35. Cloud One Limited
36. Commcarrier Satellite Services Limited
37. Compfix Data Limited
38. Controltech Limited
39. Converged Information Services Limited
40. Coolight Technologies Africa Limited
41. Corprisk Africa Limited
42. Craft Silicon Limited
43. Creative Energy Limited
44. Crest Trackers Limited
45. Ctrack Kenya Limited
46. Cyber Trace Limited
47. Dalcom Kenya Limited
48. Databit Limited
49. Datalink Systems International Limited
50. Decoded Solutions Limited
51. Diamond Online Satellite Systems
52. Digital Distribution Centre
53. Digital Savanna Limited
54. Digital Telematics Limited
55. Dr. Wireless Limited
56. Dragon Solutions Limited
57. Dvoice Technologies Limited
58. Edgelink Communication Limited
59. Eldama Technologies Limited
60. Electronic And Transmission Media Limited
61. Elige Communications Limited
62. Ells Limited
63. Embarq Limited
64. Emerging Markets Communications (K) Limited
65. Endeavour Africa Limited
66. Equator Datanet Kenya Limited
67. Eskay Communications Limited 7
68. Fastlet Communication Company Limited
69. Fiberlink Limited
70. Finatrack Global Limited
71. Finnet Communications Limited
72. Finserve Africa Limited
73. Flex Communications Limited
74. Fourth Generation Networks Limited
75. Frontier Optical Networks Limited
76. Frontiers Trading Limited
77. Frotcom E.A Limited
78. Gap Tech Solutions Limited
79. Gateway Insurance Company Limited
80. Geda Limited
81. Gemm Tracking
82. Geo-Net Communications Limited
83. Geo-Sat Solutions Limited
84. Geotrace Technologies
85. Globaltech Communications Limited
86. Harun International Limited
87. Hirani Telecommunication Limited
88. Homeland Media Group Limited
89. Igo Broadband Limited
90. Indigo Telecom Limited
91. Industrial Technology Trading Company Limited
92. Infinity Kartal International Limited
93. Infomage Solutions Limited
94. Information Convergence Technologies Limited
95. Intellect Group Limited
96. Internet Solutions Kenya Limited
97. Iphone Global Limited
98. Isat Africa Kenya Limited
99. Itek Solutions Limited
100. Iway Africa Kenya Limited
101. Jamii Telecommunications Limited
102. Jmw Limited

103. Karibu Telecom Limited
104. Kasnet Internet Services Limited
105. Kennet Tracking Limited
106. Kenya Education Network
107. Kenya Network Information Centre
108. Kinde Engineering Works Limited
109. Kingsway Autowatch Limited
110. Lantech (Africa) Limited
111. Leavitt Holdings Limited
112. Leighton Tracking Limited
113. Level Three Telecommunications Kenya Limited
114. Linkers International Limited
115. Liquid Telecommunications Kenya Limited
116. Lycamobile Kenya Limited
117. Lyle Kenya Limited
118. Marts Logistics Limited
119. Masaba Services Limited
120. Matrix Vision Systems Limited
121. Mawingu Networks Limited
122. Micro Mobile Limited
123. Mobile One To One Limited
124. Mobile Pay Limited
125. Mobile Telephone Networks Business (K) Limited
126. Mobile Vas Dealers Limited
127. Mount Kenya Online Limited
128. Mutter Holdings Limited
129. My Isp Limited
130. NairobiNet (K) Limited
131. Naj Autoworld Limited
132. Next Generation Networks
133. Next Thing Networks Limited
134. Nia Moja Business Solutions (K) Limited
135. Ninewinds Communications Limited
136. Nirali Entreprises Limited
137. Northend Communications Limited
138. Ocean Five Telecom Limited
139. Onenet Africa Limited
140. Onmobile Kenya Telecom Limited
141. Orca Bay Data Solutions
142. Oyster Enterprises Limited
143. Pinnacle Systems Limited
144. Pis International Limited
145. Poa Internet Kenya Limited
146. Pollys Tracking Technologies Limited
147. Porting Access Kenya Limited
148. Power Governors (K) Limited
149. Powerhive East Africa Limited
150. Rainbow Network Solutions Limited
151. Rasmilink
152. Reflex Technologies Limited
153. Regent Tracking Services
154. Retriever Limited
155. Rivercross Tracking Limited
156. Royal Machinery And Gadget Suppliers Limited
157. Safaricom Plc
158. Saferider Management Systems Limited
159. Sahannet Limited
160. Saraman Link Limited
161. Sasa Networks Limited
162. Scania East Africa Limited
163. Sea Submarine Communications Limited
164. Secutec Limited
165. Sema Mobile Services Limited
166. Sense Telecommunications Limited
167. Simbanet Com. Kenya Limited
168. Sisi Communications Limited
169. Sky Broadband Kenya Limited
170. Sky Patrol Limited
171. Skyline Holdings Limited
172. Smart Fast Trackers Limited
173. Societe Internationale Telecommunications Aeronautiques (Sita)
174. Soltic Africa Limited
175. Spectrum Wireless Communications Limited
176. Speeddial Connections Limited
177. Stoic Company Limited
178. Strack Kenya Limited
179. Supreme Truckway Solutions Limited
180. Suuban Entrepise
181. Tapifare Kenya Limited
182. Techno Track Limited
183. Technology Analysts Limited
184. Teleken Limited
185. Telematic Solutions Limited
186. Telematics Africa Limited
187. Telkom Kenya Limited
188. The Kenya Power And Lighting Company Limited
189. Tiben Technologies Company Limited
190. Total Security Surveillance Limited
191. Toucan Networks Limited
192. Toyotsu Auto Mart Kenya Limited
193. Tracer Limited
194. Track And Trace Limited
195. Tracking Plus Limited
196. Trailmycar Solutions Limited
197. Transport And Lifting Services Limited
198. Unique Tracking Company Limited
199. Universal Access Solutions Limited
200. Universal Connect Limited
201. Upande Limited
202. Uvacorp Technologies Limited
203. Valleypoint Telecoms Limited
204. Virtual Nova Limited
205. Vodacom Business (Kenya) Limited
206. Voip Pro (K) Limited
207. Wananchi Group Kenya Limited
208. Wananchi Telecom Limited
209. Wetraklive Limited
210. Wiafrica Kenya Limited