DISRUPTIVE INNOVATION AND COMPETITIVE ADVANTAGE OF LARGE TELECOMMUNICATION FIRMS IN NAIROBI COUNTY, KENYA

BY

DAVID LEMISO MORIRO

A RESEARCH PROJECT SUBMITTED IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE AWARD OF THE DEGREE OF MASTER OF BUSINESS ADMINISTRATION, SCHOOL OF BUSINESS, UNIVERSITY OF NAIROBI

DECEMBER 2018

DECLARATION

I, the undersigned, declare that this research project is my original work and has not been submitted for a degree in this or any other university.

Signature…………………………..…………………………Date……………........……

David Lemiso Moriro

D61/86708/2016

SUPERVISOR

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

Signature…………………………..…………………..………Date………………………….

Prof. Zachary Awino

Department of Business Administration

School of Business

University of Nairobi

ACKNOWLEDGEMENT

I acknowledge the Almighty God for the far I have come. Glory be to Him.

I wish to express my gratitude to my supervisor Prof. Zachary Awino for his professional guidance and motivation throughout this process. Many thanks also to my fellow students Emmanuel Kitunka, Joshua Tapatayia, Henderson Lemurt, William Kaigil among many others for encouragement throughout this study.

DEDICATION

I dedicate this project to the almighty God, and prior researchers in the field of Strategic Management.

To my Parents Moses and Flora, Wife Miriam, Children Sasha, Liam, Lemiso Jn., siblings Lekakeny, Nainyeyie, Nasieku, Tapapul and Eng. Chereret. To my friends Jim, Jeanne, Bradley and Tyler for prayers and all support accorded me.

TABLE OF CONTENTS

LIST OF TABLES

ABBREVIATIONS AND ACRONYMS

CA   Communication Authority

ICT   Information Communication and Technology

ICTA   Information Communication and Technology Authority

SDGs   Sustainable Development Goals

TMT   Top Management Team

SPSS   Statistical Package for Social Sciences

UON   University of Nairobi

ABSTRACT

Technological dynamism of the telecommunication firms in Nairobi County has been characterized by innovation disruptions from various players time and again. Whenever such disruptions occur from small players in the industry, it normally attracts retaliation from big players leading to multiplier effect in the industry. Under such conditions, some organizations automatically emerge the winners while other suffer the adverse effects. It the past, however, it has never been clear as to the influence of disruptive innovation on competitive advantage of firms. The objective of the study was to address the foregoing gap. Descriptive research design was adopted in this study; the target population constituted all the 27 large telecommunication firms in Nairobi County as at December 2017. Primary data was collected using a semi structured questionnaire, after which cleaning, organization, and coding (of open ended responses) was done. Descriptive analysis entailed computation of the mean and standard deviation for the scores on various indicators. Regression analysis was done and significance of the beta factors interpreted at 5% level of significance. The operations were done using Statistical Package for Social Sciences, version twenty. Seventy three point six percent changes in competitive advantage could be attributed to changes in disruptive innovation. The study established that if there were no changes in disruptive innovation, competitive advantage would be at 1.508. However, a unit change in disruptive innovation would lead to increase in competitive advantage by a factor of 0.481. At 5% level of significance in conversation was found to significantly influence competitive advantage. The significance level was 0.1%, which was less than 5% threshold. The study suggests the findings for the development of policies that would be geared towards increasing the sustainability of the telecommunication sector in Kenya. The Information and Technology should apply the study results in decision making since it would assist in developing well-informed policies geared towards the achievement of the Vision 2030, the Big Four agenda, and the sustainable development goals in Kenya. The study also recommends that the academics in the field of strategic management, should consider using the empirical evidence adduced to further their research interests. Theorists should also consider the findings of this study to find further empirical foundation in light of the linkages between disruptive innovation and competitive advantage. By so doing, further studies in other contexts, including public, private, manufacturing, and service would develop. Finally, the study recommends that the top management team of the various telecommunication firms should use the findings for guidance in making necessary adjustments in their various functional units to enable them enhance innovation and become competitive. Specifically, because the study findings have drawn important lessons for success and best practices for the telecommunication sector against the backdrop of increasing industry competition.

CHAPTER ONE

INTRODUCTION

1.1 Introduction

Innovation has been touted as one of the key areas of priority for transformation of societies all over the world. It is for this reason that corporations seem to embrace the concept with a view to undertaking transformation for their sustainability. Disruptive innovation is deemed to have occurred whenever new technologies emanate from traditionally small organizations, leading to significant disorientation of the big players in the industry. By its nature, disruptive innovation is capable of facilitating competitive advantage for an organization.

The concept of competitive advantage has been defined by Gupta (2013) as the situation where an organization possesses unique resources, systems, and processes that make it stay ahead of the competitors. According to Divandri (2011), competitive advantage is only sustainable if it is difficult to imitate by the competitors in the long run. This study sought to determine the relationship between disruptive innovation and competitive advantage.

In this respect, it was guided by the postulations of disruption theory which considers technological innovation as a potential source of strategic disruption among firms necessitating strategic change, and dynamic capability theory which postulates that for a competitive advantage to be sustainable it ought to be regularly reviewed and configured to make it unique and ha to copy (Divandri et al., 2011). The study drew motivation from the technological dynamism of the telecommunication firms in Nairobi County, characterized by innovation disruptions from various players time and again.

Whenever such disruptions occur from small players in the industry, it normally attracts retaliation from big players leading to multiplier effect in the industry. Under such conditions, some organizations automatically emerge the winners while other suffer the adverse effects (Christensen et al., 2002). It is therefore not yet clear as to the influence of disruptive innovation on competitive advantage position of both the innovation 'disruptor' and the 'disrupted' among the large telecommunication firms in Nairobi County.

According to Organization for Economic Co-operation and Development (2018) an organization is considered large if it has more than 250 full-time employees. By this definition, there are 27 large telecommunication firms in Nairobi County. The firms in Nairobi County offer diverse products and services ranging from telecommunication infrastructure, short message services, data, radio frequencies among others.

During the year 2017, the market grew by 2.8 percent largely because of expansion of the markets by the service providers and availability of affordable phones are some of the factors that continue to spur mobile telephony growth in the country (ICTA, 2018). Due to the dynamic nature of the industry, every telecommunication is striving to achieve competitive advantage. Against this backdrop, innovation has gained prominence as a strategy used by these firms, with innovation disruptions and consequent retaliation typical among them.

1.1.1 Disruptive Innovation

Disruptive innovation was defined by Christensen et al. (2015) a process whereby a smaller less resourced company is capable of successfully challenging well established

players in the industry by offering better products or services at lower prices targeting segments overlooked by incumbents focusing on the improvement of products.

This definition is so far the most dominant among scholars in this thematic area. According to this definition, entrants into an industry gradually make their products better and move upmarket, by providing products and services that meet the interest of their original customers as well as those of the clients hitherto loyal to the bigger players. Others such as Constandache et al. (2015) argue that under such dynamics, when mainstream clients significantly embrace the new innovation from the smaller industry player, disruption is deemed to have occured.

There are two key dimensions of disruptive innovation, that which focuses on new products to new markets, and that which focuses on improving an existing product or service to perform better for existing customers (Singer, 2010; Christensen, 1997). They agree that the business enviroment has increasingly become disruptive worldover hence businesses must be well equipped to diagonize disruption and position themselves in a manner that would seize the opprturtunies presented by such disruption or in a way to avoid being relegated by disruption, many a business have been rendered extinct by disruption and as such businesses must be ready to disrupt or be disrupted from a startegic point of view.

According to Christensen (1997) Both disruptive innovation constructs are technologies providing diverse values from traditional technologies, and are originally less advanced compared to the established technologies with respect to customer taste and preferences. According to Adner (2002) such disruptions normally bring in the critical performance improvement well at their introdcution stages, with early adopters embracing them at the

very introduction. As the late adopters of the innovation embrace it, the product/service would have made sugnificant penetration into the traditional market.

1.1.2 Competitive Advantage

According to Divandri et al. (2011) and Gupta (2013) the concept of competitive advantage can be explained from the core competence perspective. They argue that it is a competency or ability that an organization outcompetes at while pursuing its overall strategic direction. Therefore, any core capability that varies from those traceable to competitor would qualify as a competitive advantage. Despite wide theoretical and empirical exploration on this concept, there is still a debate as to the ideal competitive advantage indicators of competitive advantage (Bunduchi, 2010).

The most common indicators of competitive advantage in literature include cost process flexibility, production efficiency, effectiveness, customer service, product quality, and delivery reliability (K'Obonyo et al., 2011; Berdine, 2008). In light of this, K'Obonyo et al. (2011) and Berdine (2008) appear to agree on the minimization of unit cost of production, customer satisfaction rating, production waste minimization, user satisfaction rating, contingent deviation from standards, and low frequencies of delivery failures as suitable indicators for each of the above competitive advantage dimensions respectively.

Despite the dominant use of the above indicators for competitive advantage, Behnam (2018) argue that to be sustainable, each of the competencies ought to be distinctive, hard to copy, versatile, sustainable, and standing out from the competition. A similar proposition has been advanced by Gupta (2013) who argues that only then would such competency be a source of sustainable competitive advantage. This argument has also been supported by Divandri et al. (2011) and Bunduchi, (2010).

1.1.3 Telecommunication Firms in Kenya

The telecommunication firms in Kenya are under the regulation of Communication Authority of Kenya, which was established in February 1999 by Kenya Communication Act, 1998, to license and regulate telecommunication, radio communication, and postal services in Kenya. This responsibility translates to the following functions: licensing operators, regulating tariffs for monopoly area, establishing interconnection principles, type-approving communication equipment, managing the radio frequency spectrum, formulating telecommunication numbering schemes and assigning them to network operators; and implementing universal service obligation for both postal and telecommunication services (Communication Authority of Kenya 2015).

The most dominant players in this industry are the mobile network service providers, even though others are in the software development and internet service provision. New government economic policies in the mid-1990s were developed and adopted, supported by the International Monetary Fund and World Bank. Recommendations of that process included separation of the postal and telecommunication operations.

Telecom Kenya was to provide telecommunication services, postal corporation of Kenya to offer postal services, and Communication Authority of Kenya a separate national regulatory authority. Telephone services quality in Kenya remained problematic at times (Communication Authority of Kenya, 2015). Official waiting lists of customers seeking telephone services increased. These waiting lists only applied to areas where telephone services are available. Emerging private mobile telephone companies provide services capacity but remain too expensive for many citizens.

Mobile phones have gained increased importance in the sector of information and communication technology for development in the 2000s and have effectively started to reach the bottom of the economic pyramid. The government has liberalized the mobile cellular market and the first one to be granted was Safaricom limited, a subsidiary of Telkom Kenya, followed by Ken cell communication limited now Zain communication limited (Communication Authority of Kenya, 2015). Competition has been intense in this industry, with innovation disruptions being a common competitive affront among the firms.

1.1.4 Large Telecommunication Firms in Nairobi County

Organization for Economic Co-operation and Development (2018) defines a large firm as that which has more than 250 full-time employees. There are 27 telecommunication firms meeting this criterion in Nairobi County, and they offer diverse products and services ranging from telecommunication infrastructure, short message services, data, radio frequencies among others (Information, Communication and Technology Authority, 2018). During the year 2017, the market grew by 2.8 percent largely because of expansion of the markets by the service providers and availability of affordable phones are some of the factors that continue to spur mobile telephony growth in the country (ICTA, 2018).

Money transfer service is the leading in terms of transaction volume and value controlling more than eighty percent while Mobile pay has the least transactional volume and value with about 0.3 percent market share (ICTA, 2018). In the internet and data market segment, Safaricom is the leading with about seventy-six percent followed by

Airtel Networks Limited at 15.7% while Mobile pay has the least market share at 0.3 percent (ICTA, 2018).

These firms provide a variety of telecommunication services including network service provision, among others. Due to the agile dynamic nature of the telecommunication industry in Kenya, innovation is indeed a critical success factor in industry. In this regard, products and services tend to have short life cycles as a result regular innovation disruptions in the industry. Therefore, those players that seek competitive advantage are ever on the look-out for innovation disruptions, and are normally prepared to respond.

1.2 Research Problem

Many businesses continue to grapple with disruptive innovation in a bid to either unlock immense opportunities hidden in disruptive innovation or navigate through the challenges presented by disruptive innovation worldwide (Wessel & Christensen, 2012; Adner, 2002) There is an agreement among scholars such as Singer (2010) and Markides (2005) that only organizations that embrace disruptive innovation and develop winning strategies have success stories characterized by minimization of unit cost of production, customer satisfaction rating, production waste minimization, user satisfaction rating, contingent deviation from standards, and low frequencies of delivery failures.

The telecommunication firms in Kenya are characterized by short product or service life cycle (Ndemo, 2016). This situation has been attribute to agile nature of the industry in terms of technology and hence innovation. Due to the fierce competition typical of this industry, innovation disruptions are not uncommon, with market leaders such as Safaricom using their capital might to deal with the disruptions from relatively smaller counterparts. Disruptive technologies from such smaller players often creep into the

mainstream market normally dominated by the traditionally big players (Christensen et al., 2002).

Due to their relatively better resource situation, such large players normally retaliate by introducing technologies as well, further complicating the intensity of competition within the industry. Various empirical studies have been conducted on innovation, competitive advantage, and the telecommunication industry worldwide. A study by Chang-Chieh, Chen and Subramian (2010) focused on the association between disruptive innovation, strategic choice, and performance of Asian multinational corporations. This was a case study and its findings were that when Galanz Limited in China decided to enter the microwave market in 1992, it did not follow in the footsteps of other disruptively innovative Chinese companies, which served as manufacturing contractors for foreign companies selling in other markets.

The concept of competitive advantage was however not part of the study, hence it is not yet known what the influence of disruptive innovation would be. A study by Singer (2010) focused on how an incumbent defends its competitive advantage and organizational performance. The dimensions of disruptive innovation were radicalism, impact size, and process stage. The study determined that there were various strategic choices in attempt to deal with disruptive innovation including "confuse strategy", "collude strategy", "capture strategy", and "corrupt strategy" with each strategy influencing performance.

However, the study did exclusively conceptual, hence there was not particular contextual focus. A study by Markides (2006) focused on disruptive innovation and organizational performance. The study established that disruptive innovation provided a vehicle to a

firm's new customers, who would have previously viewed their offerings as substandard. This study was however done in a developed economy context, that is, the United Kingdom. Its findings are not therefore not generalizable to the Kenyan context.

A study by Adner and Zemsky (2005) focused on disruptive technology, strategic choice, competition, and performance. Being a conceptual review, the study had no specific contextual focus. It was determined that performance oversupply facilitates disruption, but it is not necessary for the dynamics that Christensen describes in his original conceptualization of disruptive innovation. In particular, the study highlights the role of relative segment sizes, the extent of rivalry among each group of firms, the utility trajectory, and the relative rate at which each segment's utility for the new technology is increasing. However, because the study did not focus on any specific context, it becomes difficult to apply its findings on a particular context without the risk of contextual challenges.

Ngugi (2017) focused on the M-Pesa mobile money transfer as an example of disruptive innovation. This was a case study involving a detailed account on the development of the M-Pesa technology and the disruptions it has caused in the Kenyan corporate world. There is however need for a survey to establish the extent of disruption in the entire telecommunication industry in Kenya. The current study is one such attempt to conduct survey on the concept of disruptive innovation and its influences on competitive advantage among the telecommunication firms in Nairobi County, Kenya.

A study by Declerck (2010) focused on disruptive innovation in the microfinance institutions in Kenya. The specific focus of the study was to reveal if the "mission drift" concept was prevalent among the microfinance institutions in Kenya. Being a descriptive

survey, the study revealed mixed answers to the question of whether mission drift was indeed present in these organizations. This study, however, utilized exploratory design hence was not capable of drawing relationships between variables.

The current study sought to determine the relationship between disruptive innovation and competitive advantage of telecommunication firms in Nairobi County. A study Kapto and Njeru (2014) focused on the strategies developed by mobile phone companies in Kenya to gain competitive advantage. The study adopted sample survey design, and it established that there was a strong association between strategies adopted by the mobile phone firms to gain competitive advantage. The mobile phone firms are only a sub-industry in the telecommunication industry, other categories such as software development firms were not investigated.

The current study sought to establish the influence of disruptive innovation on competitive advantage of the large telecommunication firms in Nairobi County. There are inconsistencies among some studies, others have been focused on developed economies, while a few have been purely conceptual in methodology. There is therefore no clarity as to the relationship between disruptive innovation and competitive advantage. The current study therefore sought to answer the question: What is the effect of disruptive innovation on competitive advantage of large telecommunication firms in Nairobi County?

1.3 Research Objective

The objective of the study was to determine the effect of disruptive innovation on competitive advantage of large telecommunication firms in Nairobi County.

1.4 Value of the Study

The study would provide empirical evidence on the effect of disruptive innovation. Due to the epistemological orientation of this study, the various theories underpinning it would find empirical backing. This would consequently help refining the theories and would chart direction for further research on this phenomenon. Accordingly, the findings of the study would provide a pointer as to the future research priority.

The government of Kenya through the relevant agencies such as the ICTA and other Information Communication and Technology (ICT) related agencies at both the national and devolved governments would find the study an invaluable source of information for charting policy direction in order to develop the sector. A more effective ICT system would enhance achievement of the Vision 2030 and Big Four Agenda of Kenya, the Vision 2063 of the African Union, and the Sustainable Development Goals of the United Nations.

The findings of the study would also provide insight on the plausibility of various strategic choices with regard to competitive advantage of the various telecommunication firms in Nairobi County. In light of this, the Boards and top management team (TMT) of the various organizations would find the study an important source of information not only for strategic choices but also on strategic action in light of achieving competitive advantage in the increasingly competitive industry.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter presents the work of other scholars in regard to the study variables. It specifically presents theories on which the study is anchored, empirical literature and hence the conceptual framework. The section then summarizes the critically reviewed literature. This helps in developing the literature stream, and the application of abstract theories which may lack contextual evidence.

Various studies have been conducted in the recent times to assess the association between disruptive innovation, competitive advantage, and related concepts. Most of the studies have, nevertheless, been conducted in more developed economies, and whose business environment is different from that of Kenya. Despite these contextual variations, the studies offer relevant information that could offer tentative direction with respect to the relationship between the key study variables.

In Kenya, even where attempts have been made to study the association between disruptive innovation and competitive advantage, none has ever focused on the large telecommunication firms in Nairobi County. The results of these studies have, however, been included in this study because they offer information in other industries thereby widening the range of knowledge for future researchers. In this regard, they are appropriate basis for hypothesis formulation, and provided guidance to the current study.

2.2 Theoretical Foundation

Theories are different schools of thought which provide a reasoned thinking on how things unfold in nature. They give meaning and explanations as to how and why things happen the way they do. They are used here to explain the interdependence among concepts. The prediction of each theory with respect to the behavior of the study variables, as well as its major weakness have been articulated in this part. The theories underpinning this study are the disruption theory which considers innovation as a potential source of strategic disruption among firms necessitating strategic change, and dynamic capability theory which postulates that for a competitive advantage to be sustainable it ought to be regularly reviewed and configured to make it unique and ha to copy (Divandri et al., 2011).

Disruption theory emphasizes innovation as a potential strategic disruption antecedent among firms, thereby calling for the ability of those firms to cope. The prediction of the theory is that under conditions of disruptive innovation, organizations that make the right strategic choices would tend to have competitive edge over their rivals. The second theory is the dynamic capability theory by Teece et al. (1997) which provides a relatively concise prediction on the concept of competitive advantage.

The theory holds that for an organization to attain and sustain competitive advantage, then such a firm ought to develop a mix of unique, inimitable assets, systems, and processes, and that those capabilities should be constantly configured by examining the dynamics in the environment Gupta (2013). The limitation of the dynamic capabilities theory lies in its over-emphasis on the concept of "dynamism" without providing a clear

prescription of an optimal level of such capabilities under various environmental conditions.

2.2.1 Disruption Theory

The disruption theory evolved from disruptive technology concept develped by Christensen (1997) and it is a phenomenon where a novel technology that has lower cost and relative performance as indicated by the ordinary measures but whose ancilliary impact is immense. It explains how a product/service originally emanates from the lower segment of the market characterised by lower costs and accessibility, and eventually seeps the upper segments (Downes et al., 2013).

For disruptive innovation to be successful the following ingredients must be well aligned starting with enabling technology that avails a more affordable and accessible product to a board market. Secondly, delivers a product targetting the least profitable market segment. Christensen (1997) argues that it only qualifies as disruptive innovation if it is able to balance the various interests of the stakeholder such as consumers, suppliers, and other partners upon its proliferation.

The theory predicts that under disruptive innovation, firms that make the right strategic choices would tend to gain competitve advantage. However, the theory overly assumes that the management has perfect access to information about disruptive trends in the environment. The theory also ignores the influence of firm heterogeneity in its postulation on the influences of disruption to the state of firm competitiveness (Helfat et al., 2007).

2.2.2 Dynamic Capability Theory

The theory postulates that if abilities of a firm are diverse and implicit, imitation by other firms would be made difficult, forming the basis for sustainable competitive advantage (Teece et al., 1997). According to this theory, a firm should advance its competences in a dynamic setting by utilizing peripheral company-specific proficiencies (Bogers, 2012). Based on the foregoing theoretical postulation, authors such as Berdine et al. (2008) have come to a conclusion that it is evident that the company-specific resource positions and evolutionary pathways outline the company's administrative and firm developments which subsequently explain competitive advantage of such a firm. The weakness of dynamic capabilities theory is that it overly assumes that there exists an equilibrium point of dynamic capabilities and that such a point ought to be the focus of a rational strategist.

This assumption is ideal since competitive advantage is relative and contingent upon the capabilities of key competitors, and which cannot be assumed to be constant. This observation has previously been made by West et al. (2012), and Divandri et al. (2011). The prediction of this theory is that firms tend to develop dynamic capabilities and continuously develop them according to the changing competitive environment. It also predicts that new business strategies, such as the development of potentially disruptive innovation, tend to be adopted by organizations in attempt to gain sustainable competitive advantage.

2.3 Empirical Literature Review

Empirical investigations on disruptive innovation, competitive advantage, and related concepts are gaining prominence. A study by Chang-Chieh, Chen and Subramian (2010) focused on the association between disruptive innovation, strategic choice, and

performance of Asian multinational corporations. This was a case study and its findings were that when Galanz Limited in China decided to enter the microwave market in 1992, it did not follow in the footsteps of other disruptively innovative Chinese companies, which served as manufacturing contractors for foreign companies selling in other markets.

The concept of competitive advantage was however not part of the study, hence it is not yet known what the influence of disruptive innovation would be. A study by Singer (2010) focused on how an incumbent defends its competitive advantage and organizational performance. The dimensions of disruptive innovation were radicalism, impact size, and process stage. The study determined that there were various strategic choices in attempt to deal with disruptive innovation including "confuse strategy", "collude strategy", "capture strategy", and "corrupt strategy" with each strategy having a unique potential to impact organizational performance. However, the study did exclusively conceptual, hence there was not particular contextual focus.

A study by Markides (2006) focused on disruptive innovation and organizational performance. The study established that disruptive innovation provided a vehicle to a firm's new customers, who would have previously viewed their offerings as substandard. This study was however done in a developed economy context, that is, the United Kingdom. Its findings are not therefore not generalizable to the Kenyan context.

A study by Adner and Zemsky (2005) focused on disruptive technology, strategic choice, competition, and performance. Being a conceptual review, the study had no specific contextual focus. It was determined that performance oversupply facilitates disruption, but it is not necessary for the dynamics that Christensen describes in his original

conceptualization of disruptive innovation. However, because the study did not focus on any specific context, it becomes difficult to apply its findings on a particular context without the risk of contextual challenges.

In Kenya, a study by Ngugi (2017) focused on the M-Pesa mobile money transfer as an example of disruptive innovation. This was a case study involving a detailed account on the development of the M-Pesa technology and the disruptions it has caused in the Kenyan corporate world. The study determined that the technology developed a new market, causing disruption to the pre-existing ones thereby becoming a major competitor to the established market leaders and alliances in the financial services sector in Kenya.

There is however need for a survey to establish the extent of disruption in the entire telecommunication industry in Kenya. The current study is one such attempt to conduct survey on the concept of disruptive innovation and its influences on competitive advantage among the large telecommunication firms in Nairobi County, Kenya. A study by Declerck (2010) focused on disruptive innovation in the microfinance institutions in Kenya. The specific focus of the study was to reveal if the "mission drift" concept was prevalent among the microfinance institutions in Kenya.

Being a descriptive survey, the study revealed mixed answers to the question of whether mission drift was indeed present in these organizations. This study, however, utilized exploratory design hence was not capable of drawing relationships between variables. The current study sough to determine the relationship between disruptive innovation and competitive advantage of large telecommunication firms in Nairobi County. Ndemo (2016) did a study on the disruptive innovation technology in Kenya, being secondary research. The study concluded that new disruptive innovations were destroying the

traditional ways of undertaking business. This was a conceptual review, and no empirical determination was made in this regard.

The current study, considering the significance of the propositions by Ndemo (2016), sought to adduce empirical evidence on relationship between disruptive innovation and competitive advantage of large telecommunication firms in Nairobi County. A study Kapto and Njeru (2014) focused on the strategies developed by mobile phone companies in Kenya to gain competitive advantage. The study adopted sample survey design, and it established that there was a strong association between strategies adopted by the mobile phone firms to gain competitive advantage. The study further determined that cost leadership, differentiation and focus also positively influenced competitive advantage. The mobile phone firms are only a sub-industry in the telecommunication industry, other categories such as software development firms were not investigated. The current study sought to establish the influence of disruptive innovation on competitive advantage of the large telecommunication firms in Nairobi County.

2.4 Summary of Knowledge Gaps

From the foregoing empirical literature review, various gaps in knowledge have been identified. The gaps can be classified as conceptual, contextual, and methodological. For example some of the studies have had a narrow focus of the dimensions of the variables of interest, others have focused on different nation contexts with unique characteristics. Some of the studies have also used methodologies that are limited in terms of ability to bring out association among the variables. Table 2.1 is a summary of the knowledge gaps as identified from the review of empirical literature.

Table 2.1 Summary of Knowledge Gaps

Researcher (s)	Focus of study	Method ology	Findings	Knowledge gaps	Focus of the current study
Christensen, Raynor and McDonald (2015)	The relationship between disruptive innovation and organizational performance	Cross-sectional Survey	Disruptive innovation key to sustaining growth and other indicators of organizational performance	The study context and methodology not highlighted	A focus on the large telecommunication firms in Nairobi County, using descriptive survey design
Wheelen and Hunger (2012)	The relationship between strategic choice and organizational performance	Cross-sectional Survey	Strategic actions are within the realm of strategy implementation.	The study context and methodology not highlighted	A focus on the large telecommunication firms using descriptive survey design

Table 2.1 Continued

Chang-Chieh, Chen and Subramian (2010)	Disruptive innovation, strategic choice, and organizational performance among Asian multinational corporations.	Cross-sectional Survey	Galanz Limited in China it did not follow in the footsteps of other disruptively innovative Chinese companies.	This was a case study hence the analytical model could not bring out association. The performance could be due to spurious correlation.	Use of survey design
Singer (2010)	How an incumbent defends its competitive advantage and superior performance	Conceptual Review	There were various strategic choices in attempt to deal with disruptive innovation.	The study did exclusively conceptual, hence there was not particular contextual focus.	A focus on the large telecommunication firms in Nairobi County, using descriptive survey design

Markides (2006)	Disruptive innovation and organizational performance	Conceptual review	Disruptive innovation provides a vehicle to new customers, who previously viewed their offerings as substandard.	The study did exclusively conceptual, hence there was not particular contextual focus.	A focus on the large telecommunication firms in Nairobi County, using descriptive survey design
Adner and Zemsky (2005)	Disruptive innovation, strategic choice, and organizational performance	Conceptual Review	Performance oversupply facilitates disruption, but it is not necessary for the dynamics that	Because the study did not focus on any specific context, it becomes difficult to apply its findings on a particular context.	A focus on the large telecommunication firms in Nairobi County, using descriptive survey design

Table 2.1 Continued

Charitou and Markides (2002)	Disruptive innovation and organizational performance	Cross-sectional Survey	Disruptive strategic innovations not necessarily superior to the traditional ways of competing	The study did exclusively conceptual, hence there was not particular contextual focus.	A focus on the large telecommunication firms in Nairobi County, using descriptive survey design

Table 2.1 Continued

Based on the above knowledge gaps, the current study sought to establish the influence of disruptive innovation on competitive advantage of the telecommunication firms in Nairobi County. This is because as evident in Table 2.1 above, there are inconsistencies among some studies, others have been focused on developed economies, while a few have been exclusively conceptual reviews.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter presents the research methodology adopted for the study. It focuses on the research design, population of the study, sampling design and procedure, data collection instrument, data collection procedure, and analysis. The study would use descriptive survey design, and it would focus on the 27 large telecommunication firms listed by the Information Communication and Technology Authority of Kenya.

Due to the relatively small population, this was a census survey. Data collection was done through a structured questionnaire, while data analysis was done using simple regression model. Some of the key references in this section include Mugenda and Mugenda (2003) as well as Saunders, Lewis and Thornhill (2009). The study assumes that the likert scale to be used in data collection is interval in nature since only then would linear regression analysis be possible.

The questionnaire was administered to the heads of innovation and technology and business growth and development in each firm. Depending on the management structure of the firm, the head of an equivalent department may be subjected to the questionnaire instead. Diligence has been undertaken in the development of the data collection instrument to enhance validity and reliability of the data collected. Below is a detailed presentation on the methodology of the study.

3.2 Research Design

There are various research designs including exploratory, descriptive and explanatory (Saunders et al., 2007). An exploratory study is one that aims at finding out what is happening in a given environmental setting with regard to the phenomenon under study through asking questions; a descriptive study refers to portraying an accurate profile of a phenomenon, persons, situations so as to bring out more information; whereas an explanatory study is one that aims at establishing association between study variables (Yin, 2013).

This study adopted descriptive survey design because the focus was the telecommunication firms in Nairobi County, with the conceptual focus being to establish the association between disruptive innovation and competitive advantage. A cross-sectional study sought to measure the association of variables at an instant so as to describe the incidence of a phenomenon and how the variables are related (Saunders, et al., 2009).

Descriptive statistics was used to prepare the data for further statistical analysis to enhance the chances of generalization from the study sample to the study population. Statistical analysis provided the basis for establishing the probabilistic association between the variables, and drawing of conclusions (Yin, 2013). The analysis and interpretation was in accordance with the objective of the study.

3.3 Population of the Study

Population is a collection of elements, objects or individuals forming the central focus of a study (Castillo, 2009). The individuals or objects must be having similar observable

characteristics (Cooper et al., 2011). In this regard, the target population of this study was the 27 large telecommunication firms in Nairobi County.

Large telecommunication firms in Kenya have been chosen as the population of the study due to the nature of the research problem and objectives of the study. A list of the firms has been obtained from the Information Communication and Technology (ICT) Authority (2018) showing that the firms are 27 in Nairobi County.

The firms were therefore be included in the study without regard to the size, industry of operation, among other characteristics. This is because those differences in characteristics are not part of the scope of the proposed study. Their physical addresses have also been identified readiness for the actual survey, with logistical preparations considered.

3.4 Sample Frame

An authoritative list from which the accessible population is determined is called sample frame (Kothari, 2004). A sample frame depends on the context of the study, and particularly the study population. According to Cooper et al. (2011) a sample frame is not synonymous with the target population since the former is normally data-based and the elements in it can be accessed for data collection.

This study focuses on the large telecommunication firms in Nairobi County. The firms are considered large since they have more than 250 full-time employees, a criterion suggested by the Organization for Economic Co-operation and Development (2018), and operate in various sub-industries such as mobile network service provision, internet service provision, and software development.

The telecommunication firms are under the ministry of Information, Communication, and Technology and a data base of the telecommunication firms is maintained and regularly updated by the Information, Communication, and Technology Authority (ICTA). The study, therefore, investigated all the large telecommunication firms from the data base of ICTA. According to the Authority, there are a total of 27 large telecommunication firms in Nairobi County as shown in Appendix II.

3.5 Data Collection

This study made use of primary data collected using a questionnaire. Questions have been designed to cover various dimensions of each variable in the study. The tool contains both open as well as close-ended items. The latter was used with the aim of providing more structured responses that facilitated quantitative analytical methods, and conclusion development.

The questionnaire was administered to the heads of innovation and technology and business growth and development in each firm. Depending on the management structure of the firm, the head of an equivalent department may be subjected to the questionnaire instead. This is because they are deemed capable of providing valid responses in relation to the study objectives.

The questionnaire comprised of three sections. Section A sought to gather general information about the respondents. Section B concentrated on questions covering disruptive innovation, while section C focused on competitive advantage. The questions have been derived from Adner and Zemsky (2005), and Behnam (2018).

3.6 Data Analysis

Data analyses comprised numeric measures and was done using descriptive statistics. It also helped to depict the data distribution, including mean, median, and mode representing measures of central tendency, and range, variance, and standard deviation representing measures of dispersion. Simple regression model was used to measures association between the variables as stated in the objective of the study. This was done using Statistical Package for Social Sciences (SPSS) version 20. The study was guided by the regression model shown below:

$Y = \alpha + \beta X + \mu i$

Where:

Y= Score of competitive advantage; X= Score of disruptive innovation; β = Beta coefficient of disruptive innovation; α = Regression constant; μi – Expected error that is assumed to be associated with the variables.

The coefficient of determination (R-Square) obtained gave the explanatory power of the model while the correlation coefficient (Beta factor) for each of the four independent measures gave the nature and extent of relationship with the dependent variable. Test for statistical significance was done using p-values, and was interpreted at 0.05 level of significance. Therefore, p-values greater than 0.05 was interpreted for statistical significance, while p-values less than 0.05 was interpreted for statistical insignificance. The robustness of the linear regression model was done using F-test.

CHAPTER FOUR

DATA ANALYSIS, RESULTS AND DISCUSSION

4.1 Introduction

This chapter entails interpretation and presentation of the research findings. It presents the respondents' demographic information, and descriptive and inferential analyses on each of the study variables, namely: total quality management, and productivity, including their dimensions modelled in the study in accordance with the objectives.

The data collection instrument was distributed to the individuals in the population, of whom 80% were successfully completed and returned, and the balance unreturned. The respondents were in strategic levels of the organizations, hence were capable of providing valid responses on the state of disruptive innovation and competitive edge in their firms.

Adjusted R-squared was used to determine the extent to which disruptive innovation explained competitive advantage, the beta factor was used to determine the degree and nature of correlation between disruptive innovation, and competitive advantage. The significance of the beta factors was checked at 5% level of significance, with p-values less than or equal to 0.05 interpreted for statistical significance, otherwise it would be statistically insignificant.

4.2 Response Rate

The accessible population of the study was 27 large telecommunication firms in Nairobi County, and a census of the same was done. The data collection instrument was distributed to the individuals in the population, of whom 80% were successfully completed and returned, and the balance unreturned. Figure 4.1 below represents a summary of the response rate.

Table 4.1 Response Rate

Questionnaire	Frequency	Percentage
Filled and Returned	22	80
Unreturned	5	20
Total	**27**	**100.0**

Source: Primary Data (2018)

The response rate was enhanced through adoption of the appropriate data collection strategies. This was done by invoking a conversation with the respondents first to make them at ease. This strategy was used also to reduce the risk of the respondents giving socially-correct responses.

The researcher also ensured questionnaire submission was done early enough to allow significant time for completion. Early preparation of questionnaires and pre-testing of the same also helped the researcher time for analysis and presentation.

4.3 Demographic Information

The respondents were asked to indicate the following demographic data: position in the organization; cumulative experience in the current position; and highest level of education. The results were as shown the Tables below.

Table 4.2 Position in the Organization

Position	Frequency	Percentage
Manager, Business Development	2	9%
Manager, Innovation	10	46%
Manager, Marketing and Research	8	36%
General Manager	2	9%
Aggregate	**22**	**100%**

Source: Primary Data (2018)

From Table 4.2 above, majority of the respondents were managers in the innovation portfolio, representing 46%; followed by managers in charge of marketing and research, representing 36%; managers in charge of business development, and the general managers, each representing 9% of the respondents.

This means that the respondents were in strategic levels of the organizations, hence were capable of providing valid responses on the state of disruptive innovation and competitive advantage in their respective organizations. In this respect, the reliability of responses was also enhanced since validity is a key condition for data reliability.

Table 4.3 Experience in Current Position in the Organization

Age Bracket	Frequency	Percentage
Below 3 years	2	9%
4-6 years	5	23%
7-10 years	12	55%
More than 10 years	3	13%
Aggregate	**22**	**100%**

Source: Primary Data (2018)

From Table 4.3 above majority of the respondents had been in their current positions for a periods between 7 and 10 years, representing 55% of the respondents. This was followed by those who had been in their current positions for periods between 4 and 6 years, representing 23% of the respondents. The least number of respondents had been in their current positions for periods below 3 years. This means that majority of the respondents had been in their current positions for sufficient period, hence could provide valid opinion on disruptive innovation, and competitive advantage.

Table 4.4 Level of Education

Level of Education	Frequency	Percentage
Bachelor	8	36%
Master	14	64%
PhD	0	0%
Aggregate	**22**	**100%**

Source: Primary Data (2018)

From Table 4.4 above, majority of the respondents had master degree, representing 64% of the respondents. The rest of the respondents had bachelor degree, representing 36% of the respondents. None of the respondents had a PhD degree, nor other qualification. This implies that all the respondents were sufficiently literate to respond to the research questionnaire without direct assistance from the researcher.

4.4 Descriptive Analysis

The study sought to determine the influence of disruptive innovation on competitive advantage of large telecommunication firms in Nairobi County. Data was collected using a semi-structured questionnaire, after which coding was done for the open ended questions, and organization of the data done in readiness for the actual analysis. The results were as shown in the Tables below.

Table 4.6 Respondents' Perceptions on Disruptive Innovation

Score	1	2	3	4	5	Mean	Standard Deviation
My firm invests in potentially disruptive innovation	0	1	3	17	1	**3.933**	**0.145**
My firm is always looking out for potentially disruptive innovation form the competitors	2	2	15	2	1	**3.132**	**0.382**
Due to the innovation disruptions in the industry, my firm has learnt to be more dynamic	0	1	17	2	2	**3.146**	**0.233**
Disruptive innovation has enhanced new product/service development in my firm	1	3	16	1	1	**3.032**	**0.282**
					Aggregate Score	**3.311**	**0.261**

Source: Primary Data (2018)

Descriptive statistics were used to bring out the distribution of data, including the use of mean and standard deviation. From Figure 4.6 above, the respondents were mostly neutral on the level of innovation disruption in their respective organizations.

This was demonstrated by the aggregate mean of 3.311, and standard deviation of 0.261. The most favorable response was on the investment of the firms in potentially disruptive innovation, as shown by the mean of 3.933, and standard deviation of 0.145.

Table 4.7 Respondents' Perceptions on Customer Service

Scale	1	2	3	4	5	Mean	Standard Deviation
Our average customer satisfaction rate is very high	2	2	15	2	1	**4.077**	**0.145**
Our daily average customer complaints are very low	0	1	17	2	2	**4.132**	**0.382**
We detect changes in customer preferences very fast	1	3	16	1	1	**3.906**	**0.233**
We communicate with customers very regularly	1	1	17	2	1	**3.876**	**0.264**
Our daily average customer compliments are very high	0	1	17	1	3	**4.055**	**0.321**
Aggregate Score						**4.009**	**0.269**

Source: Primary Data (2018)

From Table 4.7 above, the respondents tended to agree to all the statements on the state of customer service in their organizations. This was shown by the mean of 4.009, and standard deviation of 0.269. The most favorable score on this competitive advantage dimension was that their daily customer complaints were low compared to their closest rivals. This was shown by the mean of 4.132, and standard deviation of 0.382. The most consistent responses were on the rate of customer service compared to closest rivals, which had standard deviation of 0.145, being the lowest standard deviation.

Table 4.8 Respondents' Perceptions on Cost Effectiveness

Scale	1	2	3	4	5	Mean	Standard Deviation
Our costs of new product development are very low	2	2	4	13	1	3.954	0.316
We have very low cost of in-bound inventory	1	1	2	16	2	3.802	0.222
Our transportation costs are very low	1	3	2	15	1	4.100	0.186
We have very low inventory holding costs	1	2	3	15	1	4.112	0.286
Aggregate Score						3.992	0.253

Source: Primary Data (2018)

From Table 4.8 above, the respondents agreed to most of the statements about the cost effectiveness of their organizations. This was shown by the aggregate mean of 3.992, and standard deviation of 0.253. The most favorable score on this competitive advantage dimension was the level of inventory holding costs, which had a mean score of 4.112, and standard deviation of 0.286.

Table 4.9 Respondents' Perceptions on Flexibility

Scale	1	2	3	4	5	Mean	Standard Deviation
Our ability to handle unexpected challenges is very high	0	2	4	15	1	4.133	0.122
Our employees are very flexible in decision making	1	1	2	11	5	4.002	0.271
Aggregate Score						**4.068**	**0.393**

Source: Primary Data (2018)

The most consistent response was on the low levels of transportation costs among the respondents' firms. This is because it had the lowest standard deviation of 0.186. From Table 4.9 above, the respondents generally agreed to the statements on the level of flexibility in their organizations. This was shown by the aggregate mean score of 4.068, and standard deviation of 0.393.The firms' ability to handle unexpected challenges was found to be high, with the mean score of 4.133, and standard deviation of 0.122. This opinion was more consistent, since it had lower standard deviation of 0.122.

4.5 Regression Analysis

The study sought to determine the influence of disruptive innovation on competitive advantage of large telecommunication firms in Nairobi County. Data was collected using a semi-structured questionnaire, after which coding was done for the open ended questions, and organization of the data done in readiness for the actual analysis. Regression analysis was done using Statistical Package for Social Sciences, version 20.

Adjusted R-squared was used to determine the extent to which disruptive innovation explained competitive advantage, the beta factor was used to determine the degree and nature of correlation between disruptive innovation, and competitive advantage. The significance of the beta factors was checked at 5% level of significance, with p-values less than or equal to 0.05 interpreted for statistical significance, otherwise it would be statistically insignificant. The results were as shown in the Tables below.

Table 4.10 Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.889	.790	.736	.22462

Source: Primary Data (2018)

Adjusted R squared is coefficient of determination which tells us the variation in the dependent variable due to changes in the independent variable(s). From the findings in the above table, the value of adjusted R squared was 0.736 an indication that there was variation of 73.6% in competitive advantage due to changes in disruptive innovation at 95% confidence interval.

37

This shows that 73.6% changes in competitive advantage could be attributed to changes in disruptive innovation. From the findings shown above there was a strong positive correlation between the study variables as shown by 0.889.

Table 4.11 Analysis of Variance

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	1.293	1	.431	3.814	.001[b]
	Residual	37.968	29	.113		
	Total	39.261	30			

Source: Primary Data (2018)

From the ANOVA statistics in Table 4.11, the regression model had a fit with the data (F=3.814, P < 0.05). This is an indication that disruptive innovation had a significant influence on competitive advantage, at 5% level of significance, since the p-value was 0.1%, which was less than 5%.

Table 4.12 Model Coefficient

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.508	1.131		1.333	.001
	Disruptive Innovation	.481	.228	0.203	2.110	.002

Source: Primary Data (2018)

As shown in table 4.12 beta coefficient was significant ($\beta = 0.481$, t = 2.110, P < 0.05). This implies that for every unit change in identity there was 48.1% increase in performance.

From the data in the above table, the established regression equation was:

Y = 1.508 + 0.481X

From the above regression equation, it was revealed that if there were no changes in disruptive innovation, competitive advantage would be at 1.508. However, a unit change in disruptive innovation would lead to increase in competitive advantage by a factor of 0.481. At 5% level of significance in conversation was found to significantly influence competitive advantage. The significance level was 0.1%, which was less than 5% threshold.

4.6 Discussion of Findings

The study has a relationship with both theoretical and prior empirical studies. The postulations of disruption, and dynamic capability theories both have predictions on the relationship between disruptive innovation and competitive advantage. Previous empirical studies have also been examined, based on their objectives, and major findings. The study adduced evidence in support of and against the selected theoretical and empirical literature.

The prediction of the disruption theory is that under conditions of disruptive innovation, organizations that make the right strategic choices would tend to have competitive edge. The study established that disruptive innovation was significantly associated with competitive advantage of the large telecommunication firms in Nairobi County.

Dynamic capability theory holds that for an organization to attain and sustain competitive advantage, then such a firm ought to develop a mix of unique, inimitable assets, systems, and processes (Gupta, 2013). The current study determined that the firms which scored high on each of the competitive advantage indicators, tended to have greater levels of competitive advantage, as determined by the aggregate mean scores.

4.6.1 Relationship with Theory

The theories underpinning this study were the disruption theory which considers innovation as a potential source of strategic disruption among firms necessitating strategic change, and dynamic capability theory which postulates that for a competitive advantage to be sustainable it ought to be regularly reviewed and configured to make it unique and ha to copy (Divandri et al., 2011). Disruption theory emphasizes innovation

as a potential strategic disruption antecedent among firms, thereby calling for the ability of those firms to cope.

The prediction of the theory is that under conditions of disruptive innovation, organizations that make the right strategic choices would tend to have competitive edge over their rivals. The current study established that disruptive innovation was significantly associated with competitive advantage of the large telecommunication firms in Nairobi County. The findings of the current study are, therefore, consistent with the postulations of disruption theory.

The second theory was the dynamic capability theory by Teece et al. (1997) which provides a relatively concise prediction on the concept of competitive advantage. The theory holds that for an organization to attain and sustain competitive advantage, then such a firm ought to develop a mix of unique, inimitable assets, systems, and processes, and that those capabilities should be constantly configured by examining the dynamics in the environment Gupta (2013). The current study determined that the firms which scored high on each of the competitive advantage indicators, tended to have greater levels of competitive advantage, as determined by the aggregate mean scores. The findings of the current study were, therefore, consistent with the postulations of the dynamic capability theory.

4.6.2 Relationship with Previous Empirical Studies

A study by Markides (2006) focused on disruptive innovation and organizational performance. The study established that disruptive innovation provided a vehicle to a firm's new customers, who would have previously viewed their offerings as substandard.

The current study determined that customer service dimension of disruptive innovation was a statistically significant determinant of competitive advantage, hence quite consistent with the findings of Markides (2006).

A study by Ngugi (2017) focused on the M-Pesa mobile money transfer as an example of disruptive innovation. The study determined that the technology developed a new market, causing disruption to the pre-existing ones thereby becoming a major competitor to the established market leaders and alliances in the financial services sector in Kenya. The current study determined that disruptive innovation was a significant determinant of competitive advantage of the large telecommunication firms in Nairobi County, hence in concurrence with Ngugi (2017).

A study Kapto and Njeru (2014) focused on the strategies developed by mobile phone companies in Kenya to gain competitive advantage. The study adopted sample survey design, and it established that there was a strong association between strategies adopted by the mobile phone firms to gain competitive advantage. The study further determined that cost leadership, differentiation and focus also positively influenced competitive advantage. The current study had determined that the cost dimension of competitive advantage scored highly among the respondents, and that those firms that had better cost leadership scores also had more competitive advantages. These findings are, therefore, consistent with those of Kapto and Njeru (2014).

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter comprises a presentation on summary of the study findings, conclusion and recommendations based on the findings. The summary, conclusion and recommendations have been made in accordance with the objectives, methodological approach, findings, and limitations of the current study. The findings of the study were established to be comparable with the postulations of both the disruption and dynamic capability theories.

The findings were also found to be consistent with those of prior studies, including Markides (2006) who focused on disruptive innovation and organizational performance, Ngugi (2017) who focused on the M-Pesa mobile money transfer as an example of disruptive innovation, and Kapto and Njeru (2014) who focused on the strategies developed by mobile phone companies in Kenya to gain competitive advantage.

A few limitations were also encountered in the course of this study. Some respondents were uncooperative in filling the questionnaires; this limitation was mitigated by invoking a conversation with the respondent's first to make them at ease. This strategy was used also to reduce the risk of the respondents giving socially-correct responses.

5.2 Summary of Findings

The study used descriptive design to determine the influence of disruptive innovation on competitive advantage in the large telecommunication firms in Nairobi County. The value of adjusted R squared was 0.736 an indication that there was variation of 73.6% in competitive advantage due to changes in disruptive innovation at 95% confidence interval.

This shows that 73.6% changes in competitive advantage could be attributed to changes in disruptive innovation. R is the correlation coefficient which shows the relationship between the study variables, from the findings shown above there was a strong positive correlation between the study variables as shown by 0.889. However, a unit change in disruptive innovation would lead to increase in competitive advantage by a factor of 0.481. At 5% level of significance in conversation was found to significantly influence competitive advantage.

The significance level was 0.1%, which was less than 5% threshold. The findings of the study were also comparable with the postulations of both the disruption and dynamic capability theories. The findings were also found to be consistent with those of prior studies, including Markides (2006) who focused on disruptive innovation and organizational performance, Ngugi (2017) who focused on the M-Pesa mobile money transfer as an example of disruptive innovation, and Kapto and Njeru (2014) who focused on the strategies developed by mobile phone companies in Kenya to gain competitive advantage.

5.3 Conclusion

Technological dynamism of the telecommunication firms in Nairobi County has been characterized by innovation disruptions from various players time and again. Whenever such disruptions occur from small players in the industry, it normally attracts retaliation from big players leading to multiplier effect in the industry. Under such conditions, some organizations automatically emerge the winners while other suffer the adverse effects

(Christensen et al., 2002). It the past, however, it has never been clear as to the influence of disruptive innovation on competitive advantage of firms.

The objective of the study was to address the foregoing gap. In this regard, the study determined that most large firms in the telecommunication sector in Nairobi County were experiencing innovation disruptions often. The firms, according to the study, had developed mechanisms for converting the disruptions into competitive advantage by focusing on customers, managing costs, and embracing flexibility. This was demonstrated by the high mean scores for the various dimensions of competitive advantage, and disruptive innovation.

5.4 Recommendations

The study has unearthed valuable information about the influence of disruptive innovation on competitive advantage. It has particularly determined that customer service, cost leadership, and flexibility were more realizable under innovation disruptions. This means that attempts to enhance competitive advantage should pay attention to innovation disruptions.

Therefore, there is need for the top management team of the various firms surveyed to revisit the support for innovation management in their various departments. The study also recommends more collaboration among the academics, industry players, and policy makers in the economy to enhance the capacity of the telecommunication firms in Kenya.

This would, therefore, enhance firm competitiveness against the backdrop of increased competition in the sector. The study also recommends that other dimensions of disruptive

innovation that were not examined in this study, should be investigated to develop knowledge on this strategy.

5.5 Limitations

A few limitations were encountered in the course of this study. Some respondents were uncooperative in filling the questionnaires; this limitation was mitigated by invoking a conversation with the respondent's first to make them at ease. This strategy was used also to reduce the risk of the respondents giving socially-correct responses.

Some respondents also took longer than expected time to fully complete the questionnaire; the researcher however ensured questionnaire submission was done early enough to allow significant time for completion. Early preparation of questionnaires and pre-testing of the same also helped the researcher time for analysis and presentation.

The questionnaire was initially subjected to reliability test using Cronbalch's alpha coefficient and was found to be 0.5, hence was below the 0.7 threshold recommended by Nunnaly (1978). In this regard, the questions in the tool had to be altered iteratively until the final coefficient reached 0.75.

5.6 Implications of the Study on Policy, Theory and Practice

The study suggests the findings for the development of policies that would be geared towards increasing the sustainability of the telecommunication sector in Kenya. The Information and Technology should apply the study results in decision making since it would assist in developing well-informed policies geared towards the achievement of the Vision 2030, the Big Four agenda, and the sustainable development goals in Kenya.

The study also recommends that the academics in the field of strategic management, should consider using the empirical evidence adduced to further their research interests. Theorists should also consider the findings of this study to find further empirical foundation in light of the linkages between disruptive innovation and competitive advantage.

By so doing, further studies in other contexts, including public, private, manufacturing, and service would develop. Finally, the study recommends that the top management team of the various telecommunication firms should use the findings for guidance in making necessary adjustments in their various functional units to enable them enhance innovation and become competitive. Specifically, because the study findings have drawn important lessons for success and best practices for the telecommunication sector against the backdrop of increasing industry competition.

5.7 Recommendations for Further Research

The study sought to establish the influence of disruptive innovation on competitive advantage in the large telecommunication firms in Nairobi County, Kenya. The study recommends that an in-depth study should be done on challenges facing the adoption of various innovation approaches in other economic sectors in Kenya, including the manufacturing and other service sectors.

The study also recommends that the influence of moderating and intervening variables such as firm characteristics, government policy, strategic leadership, and corporate governance, should be examined since they were not within the scope of the current study. These are emerging as key drivers of corporate performance in this age.

The study also recommends that more research needs to be done using longitudinal approach in order to test the behaviour of the time series data with respect to the current research problem, this is because according to Kothari (2004), longitudinal design has stronger reliability on relationship determination compared to cross sectional surveys. The current study did not utilize longitudinal approach due to logistical limitations.

REFERENCES

Adner, R. (2002). When are technologies disruptive? A demand-based view of the emergence of competition. *Strategic Management Journal,* 23(8), 667-688.

Adner, R., & Zemsky, P. (2005). Disruptive Technologies and the Emergence of Competition. *The RAND Journal of Economics.* 36(2), 229-256.

Behnam, S., Raffaella C., & Mercedes G. (2018). How should firms reconcile their open innovation capabilities for incorporating external actors in innovations aimed at sustainable development? *Journal of Cleaner Production*, 170, 1(950).

Benham, G.R. (2018). Innovative service opportunities for the taxi industry. Automated Vehicle Symposium, San Fransisco.

Berdine, M., Parrish, E., Cassill, N.L. & Oxenham, W. (2008). *Measuring the Competitive Advantage of the US Textile and Apparel Industry.* Alfred P. Sloan Foundation. A conference paper. Boston.

Bunduchi, R. (2013).Trust, partner selection and innovation outcome in collaborative new product development. *Production Planning Control and Management Operations Journal,* 24(2–3), 145–157.

Castillo, J. (2002). A note on the concept of tacit knowledge. *Journal of Management Inquiry*, 11(1), 46-57.

Chang-Chieh, H., Chen, J., & Subramian, A.M. (2010). Developing disruptive products for emerging economies: lessons from Asian cases. Research Technology Management. 53(4), 21-26.

Christensen CM. 1997. The Innovator's Dilemma. *Harvard Business School Press*: Boston, MA.

Christensen, C.M. Verlinden, M., & Westerman, G. (2002). Disruption, disintegration and the dissipation of differentiability. *Industrial and Corporate Change*. 11(5), 955-993.

Christensen, C.M., & Raynor, M.E., (2003) The Innovator's Solution: Creating and Sustaining Successful Growth: *Harvard Business School Press*. Boston, MA.

Christensen, C.M., Raynor, M.E. & McDonald R (2015). What is Disruptive Innovation? *Harvard Business School Press*. Boston, MA.

Constandache, N., & Chiru, G., (2015). Balanced Scorecard: organizational performance management instrument. EuroEconomica. 2(34), 456-486.

Cooper, D. R., & Schindler, P. (2006). Business Research Methods. 9th ed. Boston: McGraw-Hill.

Declerck, M. (2016). *Disruptive innovation in microfinance - the case of Kenya.* Louvain School of Management, Université catholique de Louvain: Janssen, Frank.

Divandri, A. & Yousefi, H. (2011). Balanced Scorecard: A Tool for Measuring Competitive Advantage of Ports with Focus on Container Terminals. *International Journal of Trade, Economics and Finance,* 2(6), 3-15.

Downes, L., & Nune, P.F., (2013). The Big-Bang Disruption. *Harvard Business Review.* 32(2), 2-10.

Gupta, V., Venn, R., & Berg, N. (2013). Building competitive advantage through social intrapreneurship. *South Asian Journal of Global Business Research*, 2(1), 104.

Helfat, C. E., Finkelstein, S., Mitchell, W., Peteraf, M. A., Singh, H., and Teece, D. J. (2007). *Dynamic Capabilities: Understanding Strategic Change in Organizations*. Malden, MA: Blackwell Publishing.

K'Obonyo P., & Mugambi G.K. (2011). Market strategy and corporate performance: The contextual application of PIMS principles in Kenya. *Africa Management Review*, 1(1), 1-12.

Kapto, J. S & Njeru, A. (2014). Strategies Adopted by Mobile Phone Companies in Kenya to Gain Competitive Advantage**.** *European Journal of Business Management, 2* (1), 352-367.

Kothari, C. R. (2004). *Research methodology: Methods and techniques*. New Age International.

Markides, C. (2006). Disruptive Innovation. In need of better theory. *Journal of product innovation management,* 23(1), 19-25.

Mugenda, O.M., & Mugenda, A.G. (2003). Research Methods: Quantitative and qualitative approaches. *African Centre for Technology Studies*, Nairobi, Kenya.

Ndemo, B. (2016). *Digital Kenya: An entrepreneurial revolution in the making*. McMillan Publishers, Nairobi.

Ngugi, I.K. (2017). M-PESA: A Renowned Disruptive Innovation from Kenya. *Instructor's Manual for Strategic Marketing Cases in Emerging Markets,* 1(1), 75-77.

Raynor, M. (2011). The innovator's manifesto: deliberate disruption for transformational growth. Crown Publishing.

Saunders, M., Lewis, P., & Thornhill, A. (2007). *Research methods for business students*. 5th ed. Essex: Pearson Education Limited.

Singer, J. (2010). *The organizational network fieldbook: Best practices, techniques and exercises to drive organizational innovation and performance.* 4th ed. Boston: McGraw-Hill.

Teece, D. J. (2016). Firm organization, organizational structure, and technological innovation. *Journal of economic behavior & organization*, *31*(2), 193-224.

Teece, D.J., Pisano, G. & Shuen, A. (1997) Dynamic Capabilities and Strategic Management. Strategic Management Journal, Vol. 18, No. 7. (Aug., 1997), pp. 509-533.

West, J., Chesbrough, H., Vanhaverbeke, W., and (2015). *Open innovation: Researching a new paradigm*. Oxford, UK: Oxford University Press.

Wheelen, T. L., & Hunger, J. D. (2012). Strategic Management and Business Policy: Toward Global Sustainability (13th ed.). Boston, USA: Pearson/Prentice Hall.

Yin, R. K. (2013). *Case study research: Design and methods*. Sage publications.

APPENDICES

Appendix I: Research Questionnaire

SECTION A: GENERAL INFORMATION

1. Your position in the Organization _____

2. For how many years have you worked in the current position?

    Below 3 years [ ]

    4-6 years   [ ]

    7-10 years   [ ]

    More than 10 years   [ ]

3. What is your highest level of education?

    First Degree   [ ]

    Masters   [ ]

    PhD   [ ]

    Other Please specify   _____

SECTION B: DISRUPTIVE INNOVATION

4. Below are different statements about *disruptive innovation* in your organization. Please express your opinion on each of the statements. Use a scale of 1-5 where: *1-Strongly Disagree; 2-Disagree; 3-Neutral; 4- Agree; 5-Strongly Agree*

Scale	1	2	3	4	5
My firm invests in potentially disruptive innovation					
My firm is always looking out for potentially disruptive innovation form the competitors					
Due to the innovation disruptions in the industry, my firm has learnt to be more dynamic					
Disruptive innovation has enhanced new product/service development in my firm					

SECTION C: COMPETITIVE ADVANTAGE

5. Below are different statements about *competitive advantage* in your organization. Please express your opinion on each of the statements. Use a scale of 1-5 where: *1-Strongly Disagree; 2-Disagree; 3-Neutral; 4- Agree; 5-Strongly Agree*

Customer service	1	2	3	4	5
Our average customer satisfaction rate is very high					
Our daily average customer complaints are very low					
We detect changes in customer preferences very fast					
We communicate with customers very regularly					
Our daily average customer compliments are very high					
Our response to customer requests is normally very fast					
Cost Effectiveness	1	2	3	4	5
Our costs of new product development are very low					
We have very low cost of in-bound inventory					
Our transportation costs are very low					
We have very low inventory holding costs					
Flexibility	1	2	3	4	5
Our ability to handle unexpected challenges is very high					
Our employees are very flexible in decision making					

THANK YOU

Appendix II: List of Large Telecommunication Firms in Nairobi County

1. Wananchi Group Limited

2. Safaricom Limited

3. Jamii Telecommunications Limited

4. Mobile Telephone Networks Business Kenya Limited (MTN)

5. Mawingu Networks Limited

6. Access Kenya Group

7. Telkom Kenya Limited

8. Iway Africa Kenya Limited

9. Mobile Telephone Networks Business Kenya Limited

10. Huawei

11. Internet Solutions Limited

12. Airtel Networks Limited

13. Mobile Pay Limited

14. Finserve Africa Limited

15. Seven Seas Technologies

16. SEACOM

17. Symphony Technologies Limited

18. Cloud Productivity Solutions Ltd

19. Computer Revolution Africa Ltd

20. ComputerPride

21. Essar Telecom Kenya Limited

22. Symphony

Appendix II Continued

23. Oracle Systems Limited

24. Sage Software

25. Faiba Internet

26. Kenya Web Limited

27. Fintech Kenya Limited

Source: ICT Authority of Kenya (2018)

Appendix III: Introduction Letter

UNIVERSITY OF NAIROBI
SCHOOL OF BUSINESS

	P.O. Box 30197
Telephone: 020-2059162	Nairobi, Kenya
Telegrams: "Varsity", Nairobi	
Telex: 22095 Varsity	

DATE 16/11/2018

TO WHOM IT MAY CONCERN

The bearer of this letter ....MR. DAVID LEMISO................
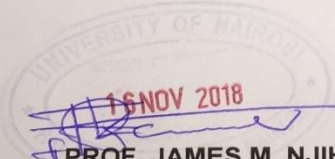
Registration No.......D61/86708/2016.....................

is a bona fide continuing student in the Master of Business Administration (MBA) degree program in this University.

He/she is required to submit as part of his/her coursework assessment a research project report on a management problem. We would like the students to do their projects on real problems affecting firms in Kenya. We would, therefore, appreciate your assistance to enable him/her collect data in your organization.

The results of the report will be used solely for academic purposes and a copy of the same will be availed to the interviewed organizations on request.

Thank you.

16 NOV 2018

PROF. JAMES M. NJIHIA
DEAN, SCHOOL OF BUSINESS

Source: UON 2018

58

Appendix IV: Proposal Correction Certificate

UNIVERSITY OF NAIROBI

SCHOOL OF BUSINESS

PROPOSAL CORRECTION FORM

Student Name.....DAVID LEMISO.....

Registration Number.....D61|86|708|2016.....

Department.....DBA.....

Specialization.....Strategic Management.....

Title of Project Proposal.....Disruptive Innovation and.....
Competitive advantage of large Telecommunication
firms in Nairobi County, Kenya.....

The student has done all the corrections as suggested during the Proposal Presentation and can now proceed to collect data.

Name of Supervisor..PROF. Z.B ACWES.....Signature.....Date..16/11/2018

Source: UON 2018

59