FIRST MOVER STRATEGY AND PERFORMANCE OF SELECTED TELECOMMUNICATION APPLICATION SERVICE FIRMS IN KENYA

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DECLARATION

This thesis is my original work and has not been presented for a degree or any other award in any other University. No part of this thesis should be produced without authority of the author or/and Kenyatta University.

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DEDICATION

This thesis is dedicated to my family, Ezekiel, my husband, and our children, Marvin, Michelle and Mercy who constantly prayed for me, showered me with their love and support, actions and words that encouraged me as I wrote this thesis.

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LIST OF ABBREVIATIONS AND ACRYONMS

ANOVA: Analysis of Variance

APS: Application Service Firms

CA: Communication Authority

CEO: Chief Executive Officer

DC: Dynamic Capabilities

EO: Entrepreneurial Orientation

FMA: First Mover Advantage

IBM: International Business Machines Corporation

ICT: Information and Communication Technology

IPA: Importance Performance Analysis

IT: Information Technology

KIPPRA: Kenya Institute for Public Policy Research and Analysis

NACOSTI: National Commission for Science, Technology and Innovation

NFP: Network Facilities Providers

PSTN: Public Switched Telephone Services

RBV: Resource Based View

R&D: Research and Development

SD: Standard Deviation

SME: Small Medium Enterprises

SPSS: Statistical Package for Social Science

ULF: Unified Licensing Framework

VIF: Variation Inflation Factor

VRIN: Valuable, Rare, Inimitable and Non-substitutable

VPN: Virtual Private Network

WLS: Weighted Least Square

OPERATIONAL DEFINITION OF TERMS

Application Service Firms: Firm's licensed to provide communication services which include data, internet and mobile services to end users using infrastructure leased from Network Facilities Providers.

Barrier to Entry Strategy: A firm's approach to achieve superior performance by developing activities that discourage competitors from entering the same market.

Customer Churn: This is when a telecommunication application service firm loses it customer to competition.

Entrepreneurial Orientation: A strategic posture where the firm's willingness to find new opportunities focuses on its abilities to be innovative, take risk, pro-active, compete aggressively and management acts autonomously.

Firm Performance: The degree a telecommunication application service firm manages to meet the set goals and objectives and is measured as market share, customer retention, reputation and profitability.

First Mover Advantage: Advantages enjoyed by a firm for being first in the market, industry or introducing a product or service first, arising from buyer switching costs, technological knowledge and pre-emption of assets.

First Mover Strategy: Approach adopted by firms to achieve superior performance through focusing on activities that ensure the sustainability of their first mover advantages.

Innovation:	The capacity of a telecommunication application firm to find, develop new products or processes in order to improve the value of its products or services.
IT Capability:	The telecommunication application firm's ability to build up IT infrastructure that is flexible and thus enhancing the firm's efficiency and effectiveness in management of knowledge for better performance.
IT Compatibility:	The ability of the firm to share any form of information between different information technology equipment that are within or without the telecommunication application firm.
IT Connectivity:	The ability of equipment within the telecommunication application firm to communicate with other devices that are either located within or outside the firm in order to facilitate the share-ability of IT resources.
IT Infrastructure:	A foundation for present and future IT components, where there is flow of knowledge and information across the firms, customers and partners.
IT Modularity:	The ability to easily add, modify or remove technology components to allow standardization of business processes for share-ability and reusability.

Maintenance Service:	Activities such as serviceability and repair services offered by a firm to improve on quality.
Mass Market Dominance Strategy:	Firm's plan to serve a large potential market with homogeneous customers.
Network Facilities Providers:	Firms licensed to deploy communication infrastructure using any form of technology that includes fiber, copper, satellite or microwave systems for the purpose of leasing for use by Application Service Firms.
Network Factors:	These are partnerships with providers of complementary products/services in order to implement mass market dominance strategy.
Niche Market Penetration Strategy:	Firm's plan to serve a market segment by addressing the homogeneity of customers.
Operation Supremacy:	Firm's activities that ensure the firm achieves leadership position in the production, distribution and marketing of products or services.
Portability:	Switching from one service provider to another while keeping the same mobile number.
Proprietary Technology:	Processes or system owned by a firm which has uniqueness and non-imitable features that build capacity giving the firm a competitive advantage.

Quality Improvement Strategy:	Firm's plan to continuously serve the market by pre-empting and adopting to changing customer requirements.
Relationship Management:	Building long-term relationships with customers in niche market.
Telecommunication:	A suite of technologies, equipment facilities, devices, networks and applications that support communication.
Telecommunication Application Services:	Services provided by Telecommunication Application Service firms to end users using fixed, mobile and wireless technologies, this services are data, internet and mobile services.

ABSTRACT

Dynamics in the telecommunication sector are constantly changing hence telecommunication application service firms are experiencing declining performance. Rapid growth pace, threats from new entrants, adoption of new products by customers has increased competition leading to loss of customers, firm reputation and declining profitability. Telecommunication application service need to adopt strategies that can respond to the changing environment. This study sought to investigate the effect of first mover strategy on performance of selected telecommunication application service firms in Kenya. More specifically, the study assessed the effect of barrier to entry strategy, quality improvement strategy, mass market dominance strategy and niche market penetration strategy on performance of selected telecommunication application service firms in Kenya. In addition, the study investigated the effect of the mediator variable, entrepreneurial orientation and the moderator variable, information technology capability on first mover strategy and the performance of telecommunication application service firms. The underpinning theories were goal setting theory, game theory, dynamic capability theory and entrepreneurial orientation theory. The epistemological position was positivism and the research design adopted was descriptive and explanatory. The population targeted was 21 selected telecommunication application service firms. The unit of analysis was the selected telecommunication firms while the unit of observation was the heads of functional areas of marketing, finance, operations and strategy and the managing director in each of the telecommunication application service firms. Both primary and secondary data was collected. Open and closed-ended questionnaire was used to collect primary data while secondary data was collected from Communications Authority. A pilot study was conducted to determine the reliability of the research instrument. The study attained the required coefficient and gave an overall coefficient of 0.9. To ensure content and face validity, the instrument was subjected to an expert opinion. Descriptive and inferential statistics were used to analyze quantitative data. Descriptive analysis was done using mean scores, frequencies, standard deviations and percentages. While inferential statistics was carried out using correlation and multiple regression. The relationship between the independent, moderating, mediating and dependent variables were assessed using multiple linear regression. Hypotheses testing was conducted at 5% level of significance using P-values to assess significance. Content analysis was used to analyze qualitative data in order to establish meaning, interpret and draw conclusions. According to the study's findings, barrier to entry strategy, quality improvement strategy and niche market penetration strategy all have a positive and significant effect on the performance of selected telecommunication application service firms in Kenya, while mass market dominance strategy has an insignificant effect on the performance of selected telecommunication application service firms. Further, the study found that first mover strategy and performance of telecommunication application service firms in Kenya is not moderated by information technology capability. However, entrepreneurial orientation mediates the relationship. This study concludes that niche market penetration strategy has the highest significant effect on performance of selected telecommunication application service firms. Hence the study recommends telecommunication application service firms should adopt activities related to relationship management in order to serve the needs of consumers and thus improve performance.

CHAPTER ONE

INTRODUCTION

1.1 Background of Study

Telecommunication plays a key part in any given country's economic development hence growth in telecommunications sector cause positive effect in other sectors of the economy. Telecommunication industry has been largely state-owned, however reforming the sector has been critical for governments to improve efficiency and performance (Ariff,Cabanda & Sathye, 2009). The deregulation of the telecommunication sector has led to an urgency to deliver high quality products and services that leads to superior performance. There is need for firms to put more effort in order to be at similar level with the changing environment, achieve a competitive advantage as well as improve performance relative to competition (Monday, Akinola,Ologbenla & Aladeraji, 2015). The key determinants of economic growth in the telecommunication sector of developing countries include deregulation, privatization and competition (Narayana, 2011).

Globally, as the telecommunication industry continues to evolve, firms are experiencing different performance challenges due to competition and changing customer demands (Singhal, Forst, McClure, Sachedva, Droogenbroek, Baschnonga & Mahajan, 2015). There is a gap between growth in customer-base, data traffic and the growth in revenue for telecommunication firms for instance in Europe, reports indicated that data traffic and mobile subscribers had increased while revenue had declined,(Oertzen & Asensio, 2017). Market share had reduced due to undercutting on prices, blocking of mergers and takeovers by regulators and thus declining performance in terms of profitability. Rapid growth in terms of subscribers in Indonesia is not in line with revenue generated. Low pricing strategy adopted by firms due to competition on undifferentiated services and emerging technology has resulted in low profitability (Wulansari, Rismayani & Pramudiana, 2015).

In Africa, firms in telecommunication sector are facing intense competition due to entry of additional players both foreign and domestic, thus affecting the profitability of firms in the sector (Djiofack-zebaze & Keck, 2009). According to Yeboah-asiamah, Narteh and Mahmoud, (2018) rapid growth pace coupled with increased

competition and saturation of markets has resulted to telecommunication firms facing declining profitability, poor customer retention due to high customer churn and costs incurred from loss of revenue .

According to Letangule and Letting, (2012), telecommunication firms in Kenya operate in an increasingly competitive market thus they must develop strategies that can be adopted to anticipate, create and respond effectively to change arising in the internal and external environments. Kipkirong and Rabach, (2013) affirms this argument by acknowledging that firms require to be proactive and as well as formulate strategies that will successfuly respond to actual changes as well as expected changes within the environment. Jerbashian and Kochanova, (2017), proposed cost reduction strategy for potential entry and performance of telecommunications companies, this include providing information that assists in getting the best deals in telecommunication infrastructure. The ripple effect involves reducing firms' operating costs, consumer search costs, new entries and downstream firms, gain of market power by firms and hence a boost in the overall performance of telecommunications firms.

Performance in firms is based on the premise that for a firm to achieve collective purpose, then there must be voluntary association of productive assets that include human, capital and capital resources (Monday *et al*., 2015). The essence of performance in telecommunications is value creation, which is also the essential overall performance criteria for any firm. Prior research on firm performance proposes that performance measures should link and integrate between operational and strategic measures. Firm performance is thus a subset of organisational effectiveness that covers both operational and financial outcomes objectives, (Selvam, Gayathri, Vasanth, Lingaraja, & Marxiaoli, 2016). In a highly competitive telecommunications sector, the best shot at top performance for any firm is becoming a change initiator.

Creating strategy for the future in order to cope with a chaotic environments where markets and industries continously emerge, collide,split, evolve and decline is amongst the most critical challenge in business . The firm's ability to handle uncertainty by intensifying resilience and adaptation to the changing environment is

one of the prime antecedent of success (Vecchiato, 2015). Firms can integrate a first mover strategy in order to be successful (Malik, 2012;Mueller, Titus, Covin, & Slevin, 2012;García-Villaverde, Parra-Requena, & Ruiz-Ortega, 2017; Hsiao, Chen, Guo, & Hu, 2017). Rapid changes and innovations in technology have made the first mover strategy a must-have for firms aspiring to perform at their best. First mover advantages are achieved through a collaboration of firm resources and capabilities. Yet, superior performance is not guaranteed even when a firm owns resources and capabilities. Iaquinto, (2011), in support of this argument, proposed that when a firm's intended strategy is to be a first mover, then their intentions should determine the behaviour and decisions undertaken to improve performance. Performance outcomes derived from the strategy occur when asymmetry is developed between a firm and its competitors from the firm's possession of unique resources (Koch, 2014). Prior studied on performance and industry structure characteristics opine that, in a concentrated or competitive industry such as telecommunication, firms that adopt a first mover strategy are likely to result in a higher market share than first mover that compete in less concentrated industry (Karabag & Berggren, 2011). Accordingly in Kenya, huge investments in telecommunication technologies has resulted to a highly competitive telecommunication sector,(Kipkirong & Rabach, 2013). The size of the market share counts much when a firm can effectively use its competitive advantage to rise above the inconsistencies of both internal and external environments.

Entrepreneurial orientation (EO) enhances the firm's ability to discover and exploit resources, breaking rules that exist as well as initiation of new institutional paradigms within the market, thus improving on firm performance (Khanna & Palepu, 2010) . EO is inferred as strategy making processes, structures and behaviours of firms characterised by competitive aggressiveness, innovativeness, proactiveness risk-taking and autonomy, (Lechner, & Gudmundsson, 2014). Bendickson, (2016) argues that EO was emphatically and actively linked to financial performance which can be measured in terms of archival and perceived financial performance, and non-financial performance such as satisfaction. However, Alegre and Chiva, (2013) contradicted this by arguing that some studies show a non-significant relationship. Whereas resources could be transferred or traded, capabilities are inimitable and unique, therefore perceived as the glue that enhances deployment towards a task or activity

that is advantageous, (Parida & Daniel, 2015). Chae, Koh and Prybutok, (2014), argues that Information Technology (IT) capability can increase firm performance through increased product differentiation resulting to higher revenues and profits. While Anand,Wamba and Sharma, (2013) contends that IT capabilities can enable firms to improve financial, achieve better control of their resources and coordination across a firm and allow better planning for the future.

1.1.1 Firm Performance

Firm performance a construct that is multifaceted has diverse approaches to measures and is broadly categorized as financial approach and non-financial approach. The financial approach monitors firm performance based on evaluating the firm's ability to achieve desired financial indicators such as market share, turnover and profit and, by further providing retrospective perspectives of the competitive position which existed at a point in the past, (Rosová & Balog, 2012). However the non-financial measures are not limited to annual financial reporting cycle and they have fewer constraints from accounting standards and regulations therefore use non-monetary expressions, (Lau, 2015).

Understanding performance is vital for effective management of any firm, this is because process improvement is not practical without measurement of outcomes (Al-Matari,Al-Swidi & Fadzil,2014). Understanding the performance of the firm is a relevant construct in strategic management, nevertheless despite its relevance, issues such as lack of unanimity and agreement on indicators exist in studies on performance of firms (Selvam, Gayathri, Vasantha, Lingaraja & Marxiaoli, 2016).

Firm performance has variant definitions, for instance according to Santos and Brito, (2012), firm performance is a subset of organisational effectiveness covering outcomes which are both operational and financial. While Atalay,Anafarta and Sarvan, (2013), viewed firm performance as a multidimensional concept whose indicators were viewed from a departmental perspective such as finance,production or marketing or from a consequential perspective such as growth and profit. Performance is a critical indicator which measures how well a firm achieves its objectives and can measured by the firm' efficiency and effectiveness in goal achievement (Kyengo,Ombui & Iravo, 2016). Al-Matari, *et al.,* (2014) indicated firm performance

is equally critical for effective management of firms and therefore process improvement cannot be achieved when there is no presence of outcome measurement.

The literature on performance management suggests that when monitoring firm's performance, there is minimal emphasis on financial measures of performance by managers. This may be because financial measures do not satisfactorily reflect firm's performance in the current changing business environments (Hoque, 2005). The current application of the non-financial measures were as a result of shortcomings in the financial approach. Non-financial approach provided additional information that indirectly reflects strengths and weaknesses of operations in the firm thereby building the firm's competitiveness (Ahmad & Zabri, 2016). Financial measures are direct reflections of current profitability and operating efficiencies, which are indicators of future earnings potential while non-financial measures of performance are actionable and future-oriented, vital for improving firm capabilities for future planning and strategy implementation (Teeratansirikool, Siengthai, Badir & Charoenngam, 2012).

Research by various scholars have attempted to comprehend the association of first mover strategy and performance of firms by providing empirical evidence that first mover strategy significantly affect firm performance (Iaquinto,2011;Hsiao, Chen, Guo & Hu, 2017; García-Villaverde, Parra-Requena & Ruiz-Ortega, 2017). Hsiao *et al*., (2017) observed that for firms to achieve better performance, the first mover strategy in useful when coping with varying conditions encountered both internally and externally. While García-Villaverde *et al.*, (2017) finds that agile firms that choose the first mover strategy develop appropriate competitive tactics that can gain greater performance. Niñerola, Sanchez-Rebull and Hernandez-Lara, (2017) research on foreign investment observed that to achieve superior performance first mover strategy such as barrier to entry strategy can be implemented by seeking local partners.

However, according to Jiang, Li, Liu and Tao, (2017),first mover strategy may have a siginificant effect on the performance of first movers nevertheless performance of latemovers can also be influenced by the same strategy. The study demonstrated first mover strategy can attract imitation by latemovers which influence deviation from industry norms and hence performance of latermovers in terms of profitability. While

Lee and Kim, (2018) argues that new entrant can differentiate themselves and affect performance of first movers if a location strategy is adopted, however the location strategy must suplement a brand concept. Inline with the above studies, further research in required to interrogate the effect of the mediator and moderator variable on first mover strategy and firm performance association.

Chaston and Sadler-smith, (2012) argued that firms highly inclined towards entrepreneurial orientation are associated with strong levels of growth in addition to representing a source of competitive advantage and thus superior peformance. Further, firms operating in intense market environments specifically those with high entrepreneurial orientation show higher levels of growth, strive to achieve customer satisfaction and thus enhanced reputation. Additionally, first mover strategy cannot be implemented effectively without the support of IT capability (Aeron & Jain, 2015; Shan & Jolly, 2013; José & Ortega, 2010; Praest, 1998). In view with this contention, this study regards entrepreneurial orientation as a mediator variable and information technology as the mederator variable.

Studies conducted in the telecommunication have proposed different measures of performance. For instance Okwemba, (2018) argued that performance in mobile telecommunication firms in Kenya is achieved when there an increase on market share, productivity, profitability and efficency. While Kyengo *et al.*, (2016) study on the influence of competitive strategies measured performance as sales, profitability, return on investment, new and improved product introduction, market share, product quality, annual earnings and employee skills improvement.

Arasa and Gathinji, (2014) performance indicators were sales, market growth, customer retention, profitability and product innovation. Letangule and Letting, (2012) study on innovation strategies in telecommunication sector in Kenya measured performance in terms profitability, growth and competitiveness. Wulansari,Risymayani and Praudiana ,(2015) research on performance of telecommunication industry in Indonesia adopted financial measures as profitability, leverage and efficiency ratios.

According to Bahri-Ammari and Bilgihan, (2019) in a rapidly changing environment, telecommunication firms strive to retain existing customers. Thus retention is defined

as the way in which a firm can keep its customers and maintain its customer portfolio. While Adeosun and Ganiyu, (2013) study argued that reputation matters and the basis a customer may chose products or services from a particular firm in preference to competitors and is therefore a major element included in performance. Wulansari,Rismayani and Pradudiana, (2015) study on performance in telecommunication industry calculated market share in terms of total sales of the firm compared to the total sales of the industry. Sharma, (2017) study on financial performance considered current ratio, asset turnover ratio and net profit as performance indicators. Accordingly, net profit is the excess of revenue over expenses during a particular period. Based on these arguments, this study measured performance as customer retention, reputation, market share growth and profitability growth.

1.1.2 First Mover Strategy

According to Jiang, Li,Liu and Tao, (2017), a first mover is a firm that is the first to implement a specific strategy within a given opportunity. Hence a first mover strategy is associated to service, process or product strategy. Jakopin and Klein, (2012), conceptualized the first mover strategy as a strategy undertaken by a firm by intentionally being first to introduce a product or service in the market and thus achieve a competitive advantage thereby establish strong resource position barriers for follower firms. Markides and Sosa, (2013) proposed the first mover strategy as a strategy adopted by a pioneer firm to exploit first mover advantages, by creating sustainability. Sustainability depended on initial and subsequent resources as well as capabilities relative to the quality of capabilities and resources owned by late entrants.

Besharat, Langan, and Nguyen, (2016) viewed first mover strategy as a phenomenon where firms derive competitive advantage from being first in the market. While according to Hsiao *et al.,(*2017), first mover strategy allows a firm to overtake its competitors with more potent resources and capabilities that are more dynamic. Firms that adopt a first mover strategy could create customer switching costs, pre-occupy scarce resources and attain leadership positions (Lee, John & Fong, 2018). However, in order to benefit from the first mover advantages, a firm needs to own resources and capabilities that can exploit the opportunities presented successfully.

The first mover strategy debate arises from discussions by prior scholars in strategy on first mover advantages sustainability, as well as the question of whether being a pioneer in a market is sufficient to generate the desired advantages. Thus, Vecchiato, (2014) opined that first mover advantage are major benefits gained by a firm as a result of pioneering, through market change anticipation as well as disadvantages encountered by a late mover that fails to foresee such changes. Walter, Edelma and Hatten, (2016) perceived the first mover advantages as the gains in performance that was attained by a firm for being first to introduce a new product category in the market when there was control on firm resources and lead time. Environmental changes provide the opportunity to first movers; however, the firm must first own the resources and organisational skills that can be strategized to capitalize on such opportunities. That meant that competitive advantage must be maintained continuously (Kaličanin, 2008).

Wunker, (2012) contended that first movers can only win under four conditions, that is, maintain an early market lead achieved by ensuring late entrants will encounter barriers. Secondly, enhanced resources and competencies that cannot be easily imitated by larger firms thus leading to the firms acquiring competitive advantage. Thirdly, refrain from inappropriate technologies or business models before understanding the market and lastly refrain from earning huge initial costs. Similarly, in telecommunication sector, first movers attained decisive first mover advantages where high switching costs, network externalities and economies of scale created strong barriers for new entrants, (Karabag & Berggren, 2011).

The lack of a strategy by a first mover provides a platform where late entrants enjoy the benefits of free ride (Koch, 2014). Cleff and Rennings, (2012), argued that in a highly competitive environment, first mover advantages are likely not to last, however a successful first mover strategy can be achieved through technological leadership, strong R&D, large scale marketing, production, and distribution capabilities. Building from prior research Lieberman and Montgomery, (2013) argued that to overcome a situation where first mover advantages may be significantly undermined, the first mover must have a strategy to cope with conditions encountered for superior performance.

Extensive research by Yannopoulos, (2013) looked at successful strategies employed by first mover. The strategies proposed in the study include building complementary assets, barrier to entry, exploitation of distribution advantage, quality improvement, continuous innovation, and reaction to new entry, time-in market advantages, mass market dominance and niche market penetration strategy. Whilst, Iaquinto, (2011) proposed new product development strategy for firms whose intended strategy is to be first entrants in a market or industry. However the strategy could only suitable when technological development is rapid, economic growth and the acceptance of consumers to new products is equally quick. Malik, (2012) study proposed incremental learning and local market focus as first mover strategies for business alliances. Wunker, (2012) examined niche penetration strategy for superior product reputation, value chain strategy for a solid ecosystem where a firm sought to be the industry standard and facilitated-network strategy to penetrate a nascent industry.

Markides and Sosa, (2013) cited the significance of the first mover strategy for firm success, examined the mass dominance strategy for first mover firms. Walter, Edelman, and Hatten, (2016) examined innovation and quality improvement strategy to adapt new firm capabilities. This study adopted the first mover strategy as proposed by Jakopin and Klein, (2012) and Yannopoulos, (2013), which included barrier to entry strategy, quality improvement strategy, mass market dominance strategy and niche market penetration strategy.

Barrier to entry strategy is a strategy where the first mover protects from imitation through high barriers to entry. The barrier to entry mechanisms is a result of interaction between uniqueness, casual ambiguity and receptiveness which increases barriers to imitation (Kim, 2013). Although some entry barriers emanate from specific industry characteristics, market incumbents develop barriers to entry purposefully to hinder new entrants, as a result potential competition is reduced, further new entrants incur additional expenses inclusive the normal costs earned to compete in the new market. The inherent advantages enjoyed by first movers enables the incumbents to achieve above average profitability (Niu, Dong & Chen, 2012). Barriers to entry such as proprietary technology, switching costs, economies of scale and patents give the firm inherent advantages which enable them to achieve superior performance. Advantages can be gained from products that are technically sophisticated where

learning is kept proprietary while later entrants have difficulty in benefiting with more advanced technology, (Molina-Castillo, Rodriguez-Escudero & Munuera-Aleman, 2012). Barrier to entry creates firm asymmetries which strengthen first mover standing in the market thereby affording them abnormally high economic rents and foster long-term survival (Walter *et al.,* 2016). However, studies reviewed indicate that barriers to entry vary according to market structure and industry therefore there is a need to identify what barriers exist in telecommunication sector. Barrier to entry strategy was operationalized as the firm's approach to achieve performance adapting switching costs, economies of scale, patents and proprietary technology.

Quality improvement strategy is achieved through improved product quality, creation of additional market segments, vertical integration and costs reduction. Yannopoulus, (2013) proposes that through continuous improvement on product quality and entry into additional segments pioneers can pre-empt future competition. Additionally, roduct improvement through the development of new product development and product differentiation can create additional market segments. Vertical integration through value-chains puts a premium on efficiency, market power, consistency and access to sales channels (Wunker, 2012). Efficiency on delivery of products improves on customer satisfaction and increases market share (Thomas, 2013). Maintenance service such as serviceability and repair services are significant for enhancing customer satisfaction and retention (Ho, Chang & Yen, 2016). Malik, (2012) argues that pioneer can sustain the first mover advantages through cost efficiencies by the accumulation of learning over time. However, early entrants can slowly lose sales and profitability as competitors innovate past them (Rodriguez-Pinto, Carbonell & I.Rodriguez-Escudero, 2011), therefore pioneers need continuous improvement on product or service quality to have sustainability in firm performance.

There is a gap on whether firms can explore and exploit quality improvement together to achieve superior performance (Herzallah, Gutherrez, & Rosas, 2017). Therefore further research to add to the understanding of the relationship between quality improvement strategy and firm performance is required. New product development, efficiency in delivery, product differentiation and maintenance service were adapted as indicators of quality improvement strategy.

Mass market dominance strategy is a strategy based on a design that is the dominant design during the initial establishment or when the dominant design emerged (Markides & Sosa, 2013). Low product price, product range, targeting the average consumer rather than early adopters by emphasizing low prices that help grow the market. The success of first mover firms can be enhanced by offering a broad product line through line extensions and product modifications (Yannopoulos, 2013). Network factors through the partnership with providers of complementary products is crucial for the success of firms adopting mass market dominance (Hartigh, Ortt, Kaa & Stolwijk, 2015). Operation supremacy are the resources and capabilities that enable activities that lead to leadership in production and distribution (Casey & Töyli, 2012). This strategy adds more knowledge on the strategy first movers can adopt to dominate the market and achieve superior performance. Therefore mass market dominance strategy was operationalized in this study as the firm's plan to serve a large potential market with homogeneous customers where product range, network factors and operation supremacy were the indicators.

The niche market penetration strategy is a strategy where firm's intention is to avoid direct competition with market leaders to gain market share in specific market or products where the leaders are weak or not present (Yannopoulos, 2013). Wunker, (2012) cites that pioneers can become solution shops because their value lies in the customization or heterogeneity of customers. The strategy is implemented by targeting those segments that have not been served by major competitors. Ottosson and Kindström, (2015) argue that this strategy can be adopted as an aggressive or proactive choice that allows a firm to outperform competitors both in growth as well as profitability while at the same time create a reputation that followers will have a hard time matching.

Niche market penetration strategy is suitable for firms with small market segments own complementary assets where pioneers are unable to build capacity ahead of demand (Yannopoulus, 2013). Success in niche market strategy involves specialization and long-term relationships through relationship management for the sustainability of competitive advantage (Cuthbert, 2011). In this study, the niche market penetration strategy was viewed as a proactive strategy that firms can adopt to achieve superior performance and was defined as the plans of a firm to serve a certain

market segment by addressing homogeneity of customers. Market segmentation, specialization and relationship management as the indicators.

1.1.3 Entrepreneurial Orientation

The concept of Entrepreneurial orientation(EO) is considered to be associated with strategic management as well as strategic decision making process that is at the firm level. It is the organisation enthusiam to explore and to undertake new opportunities as well as the responsibility to affect change (Zehir, Can, & Karaboga, 2015). The EO concept which emerged in the 1970's was initially viewed as the ability of a firm to have product-market innovation engagements and therefore ventures undertaken were relatively risky but were the first to create proactive innovations hence allowing the firm to outperform competition (Rezaei & Ortt, 2018).

Arshad, Rasli, Arshad and Zain, (2014), conceptualised entrepreneurial orientation as the involvement of the firm into a market that is new. Shirokova, Bogatyreva, Beliaeva and Puffer, (2015) conceptualization EO as a firm's ability to take an active strategic posture focusing on the abilities of the firm to constantly create innovations , proactiveness in firm actions and undertake ventures that are risky inspite of high probability of losses. The EO concept originates from the resource based perspective and the dynamic capability, thus it is viewed as a vital resource of the firm or capability facilitating attainment of superior performance. Kantur,(2016), views EO as practices, procedures and decision making activities that lead to market entry, in addition to proactiveness,innovativenes and risk-taking, which include the tendencies to act autonomously and to be aggressive toward competition. Its is perceived as an overall strategic philosophy which guides the behavioral dimensions in a firm and is also a higher-order construct.

When a firm adopts EO the chances of increased competitive advantage are higher, however engaging in EO activities require the support of upstream capabilities in order to benefit (Smith *et al*., 2013). Firms engaging in pioneering are entrepreneurial by the virtue that they exploit opportunities in a preemptive way (Covin, Slevin & Heeley, 2000). In exploiting and exploring of products and process that are new in the market, EO give emphasises to innovation and proactivity, thus a legitimate

response to a the changing environment, further it escalates chances of attainment of competitive advantage and superior performance. Exploitation of opportunities entails risk, which is one of the dimensions of EO and can also have a positive mediating effect (Rosenbusch *et al.,* 2013). Existing research reveal EO is associated to performance of firms . Fairoz, Hirobumi and Tanaka, (2010) report that market share, growth in sales and profit increased in firms that adopted EO. Arham, (2012) further argues that firms prepared to undertake risk, their approach is innovative as well as proactive then growth is accelerated. This study adopted Lumpkin and Dess, (2015) dimensions of EO that is proactiveness, risk-taking, innovativeness, competitive agressiveness and autonomy as dimensions of EO. Proactiveness is refered to as opportunity-seeking perspective whereby a firm while anticipating future demand emphasis to introduce services or products ahead of competition (Kalali, & Heydari, 2016). Risk-taking entails going into unknown and investing considerable reources in activities that are uncertain. Innovativeness refers to a firm potential to develop new products or services by being creative in addition to being leaders in technology through R &D. Competitive aggressiveness refers to the magnitude with which a firm's strives to perform better that its competitors, as evidenced through aggressive responses to competition (Charupongsopon & Puriwat,2017). Autonomy is when individuals or groups take independent action with the purpose of starting a new project and seeing it through to completion (Wójcik-Karpacz,2016).

1.1.4 Information Technology Capability

Building from resource base view on competitiveness, IT capability can be rare, specific, and difficult to imitate or substitute and could also be an important source for competitive advantage as well as differentiation. According to Lu and Rumamurthy (2011), the ability of a firm to acquire, deploy, combine and reconfigure resources such as IT that can support and enhance strategies in business and processes is referred to as IT capability. Additionally, Yao and Zhu, (2012) posited IT capability as an essential catalyst that assisted in development of business values by embedding IT-enabled resources to aid in the strategy and process in a firm.

In addition, Liu, Ke, Wei and Hua, (2013) viewed IT capability as inherent capability that shapes higher-order capabilities that eventually affect firm performance. While according to Parida and Daniel, (2015), the firms capacity to utilise its vast range of

technologies deliberately for purposes of business from the most basic technology to most complex was defined as information technology capability.

Liu *et al.,* (2013) opine IT capability to be the development of IT infrastructure that is flexible and vital for effective and efficient knowledge management that can enhance performance. Flexible IT infrastructure advances a basis on which current and future IT applications can be build to enable the movement of information and knowledge in the firm and to its customers that consequently assists in maintaining a competitive advantage. Therefore IT capability can be built from flexible IT infrastructure that provide connectivity, compatibility and modularity. Compatibility is the capability to share information of any type across any kind of technological component within all areas in the firm thus spanning organisational boundaries, empowering of employees while readily availing data, information and knowledge. Connectivity is the capability of component that is technological in nature to communicate with other component within and without the environment of the firm thereby facilitating sharability of IT resources. While IT modularity is the capability to reconfigure comfortable (modify,add or remove) technological components thus allowing standardizing of business processes for reusability and sharability.

The moderating role of IT capability has been extensively examined in prior studies. Hefu, Qian and Liang, 2016) contended that embedding of IT capability in firms processes enables the firms to intepret and use date and knowledge to improve performance. While, Chi, Ravichandran and Andrevski (2010) argued that with the use of information technology its was possible to derive some benefits from the implementation of IT network structures. Additionally, Chakravarty,Grewal and Sambamurthy, (2013) opined that organisational agility, a critical business value can be enhanced by the use of IT capability. Extant studies suggested that IT capability enhance firm performance, therefore building from this background, this study considered IT capability to moderate first mover strategy and firm performance. Further, this study adopted Liu *et al.,* (2013) conceptualization of IT capability that is connectivity, compatibility and modularity,considering them as fundamental capabilities .

1.1.5 Telecommunication Application Service Firms in Kenya

In today's world, economic development is promoted through modern telecommunication facilities that facilitate rapid transmission of information. Thus a telecommunication infrastructure that is well developed can improve efficiency in an economy through reduction in the cost of information to consumers as well as producers. In many countries, the telecommunication sector in the last two decades has been developed at a rapid rate. This fast-paced growth could be explained by factors such as market liberalization,advancements in telecommunication technology and privatisation (Lam & Shiu, 2010).

The range of telecommunication applications and services is now wide and includes services such as broadcast and interactive television, conferencing,telephony and video, facsimile, instant messaging, emailing, data transmission, host of web distributed collaboration and internet based communication. Telecommunication is now viewed as a suite of technologies, equipment,devices, networks,facilities and applications supporting communication at a distance (Rajasekar & Raee, 2013). As an outcome technologies have been integrated to provide a vast range of services which include messaging, telephone services,internet, movie,music and radio and can now delivered through a single device (Barman, Dutta & Nath, 2018)

Rapid advancement on expansion of network infrastructure and internet technologies has led to the growth of telecommunication application service firms. The firms deliver and manage computer-based services and applications from remote centers to multiple customers via the internet or a VPN (Jeong & Stylianou, 2010). From a managerial perspective, focusing on firm core competences, access to a diverse set of application, scalability while maintaining flexibility and reducing concentration where there is no in-house expertise are some of the benefits of procuring external services from application service firms. However, there exists a discrepancy between the expected and realized benefits of the service provide firms.

The Communication Authority of Kenya (CA) is responsible of formulating and implementing telecommunications strategy and policy. CA adopted a Unified Licensing Framework (ULF) to formulate a market structure that groups telecommunication firms into seven categories. These are International gateway

operators, Submarine cable landing rights operators, Network facilities providers, Application service providers, Content service providers, Dot Ke sub-domain name registrar service providers and Business process out-sourcing service providers. The network facilities providers establish and operate communication infrastructure using fiber,copper,satellite or microwave systems for the purpose of leasing to the application service providers, (CA,2017).

The telecommunication application service firms provide services to the end users which include mobile and fixed telephony services, data and internet services using the network services of a network facilities provider.This includes providing broadband connectivity to end users or customers, internet connectivity, private networks that can carry voice data and video services. In the recent times, firms in this category have been experiencing declining performance due to increased competition occasioned by entry of new players. According to CA Register of licensees, there was total of 234 Application Service Providers in 2018. The sector has recorded constant growth since 2007 where there were only 17 licensed providers. The numbers have maintained an upward trend to 105,143 in 2011 and 2016 respectively.There is limited research on telecommunication application service firms, and specifically in Kenya. Extant empirical studies have focused on mobile telecommunication firms in Kenya. For instance Okibo and Ogwe, (2013) examined the quality of customer care services, case study of Telkom Kenya. While Ooko, Nzomoi, and Mumo, (2014) investigated the factors that influence consumer switching behaviour of mobile subcribers.

1.2 Statement Problem

Information and Communication Technology (ICT) is one of the key enablers of economic growth. Kenya's Vision 2030 seeks to transform the country into a knowledge based and information economy. This could be achieved by shifting the current industrial development path towards innovation where adoption, adaptation and use of knowledge are the key sources of economic growth. According to CA reports,(2020), with delivery of services both in public and private sector is moving to online, there is a demand for telecommunication services which has led to increased competition.

According to CA reports, (2021) the overall market share in the telecommunication sector for the third quarter of financial year 2020/21 declined by 1.5%. In addition the sector had recorded a decline in growth from 11.3% in 2018 to 8.8% in 2019, (CA, 2019). Further, CA ICT survey (2016), shows that the number of firms offering application services have increased, however, the cut throat competition had resulted to a downward trend in performance. For instance, CA reports (2017) on mobile services indicated that Safaricom Limited market share reduced from 71.2% in 2016 to 69.1% in 2017 and 63.3% in 2018. Airtel market share reduced from 17.6% in 2016 to 17.2% in 2017. While Finserve market share reduced from 4.7% in 2017 to 4.2% in 2018 and 3.6% in 2019. Telkom market share declined to 8.1% in 2019 from 8.8% in 2018.

Further firms offering data and internet services such as Jamii Telecommunication Limited market share reduced by 1.3% from 2017 to 2018, while Liquid Telecommunication market share also reduced from 3.0% in 2017 to 2.2% in 2018. This decline could be attributed to changing customer demands and advancement in technology, but further enquiry is paramount. Application service firms are facing slowing profitability due to poor customer retention. According to CA reports, (2017) portability increased from 11.3% in 2016 to 16.9% in 2017 thereby leading to increased customer churn and thus poor customer retention. Customer churn led to loss of revenue from current customers as well as the additional cost incurred from acquiring new ones.

Consequently firms are experiencing loss of revenue, declining profitability and reputation due to reducing marketing budget. Securing of cyber space, abuse of intellectual property and sharing of key infrastructure has resulted to poor customer retention and reduced profitability of telecommunication firms (KIPPRA 2016; 2017). This increasing costs and unfair pricing are some of the factors that have attributed to slowing performance, however further interrogation is necessary.

A review of empirical attempts on first mover strategy revealed gaps in conceptualization of the research constructs. For instance a study by Jiang, Li, Liu and Tao, (2017) conceptualised first mover strategy as product market diversification and geographic market diversification. While Hsiao, Chen, Guo and Hu,(2015) study

conceptualised first mover strategy as technical and managerial capacity. Consequently, more studies are needed to get consensus on conceptualization of first mover strategy as well as indicators for use in measurement.

Additionally there were contextual gaps identified, for instance first mover strategy and firm performance were conducted in developed countries with economic setting that were varying. For example Lado-sestayo, Vivel-búa and Otero-gonzález, (2017) focused on the drivers and barriers to entry in the Spanish hotel sector. While Herzallah, Gutherrez, and Rosas, (2016) investigated quality improvement strategy association to performance in the Palestinian industry. There was need to extend the study of first mover strategy in a Kenyan setting. Further empirical review revealed methodology gaps on varying research design (Hartigh, Ortt, Kaa & Stolwijk, 2015; Parida & Daniel, 2015; Velu, 2015).

While the majority of the literature reviewed in this study focused on the direct relationship between first mover strategy and firm performance, there was a gap in the literature on the mediating effects of entrepreneurial orientation on the relationship between strategy and firm performance, as well as whether IT capability played a moderating role in this relationship. Accordingly, IT capability had an important role in a firms operations and corporate strategies and is thus an important strategic asset (Liu *et al.*, 2013).

Thus, strategic decisions and the allocation of resources may be influenced by EO, therefore firms applying appropriate strategic orientation could identify the opportunities that the environment provided and thus achieve superior performance (Rosenbusch *et al.,* 2013). Therefore, based on this background the study sought to give empirical evidence on the effect of first mover strategy on the performance of telecommunication application service firm in Kenya, mediated by entrepreneurial orientation and moderated by information technology capabilities.

1.3 Objectives of the Study

1.3.1 General Objective

The general objective of this study was to investigate the effect of first mover strategy on performance of selected telecommunication application service firms in Kenya.

1.3.2 Specific Objectives

This study sought to achieve the following specific objectives:

i. To determine the effect of barrier to entry strategy on performance of selected telecommunication application service firms in Kenya.
ii. To determine the effect of quality improvement strategy on performance of selected telecommunication application service firms in Kenya
iii. To establish the effect of mass market dominance strategy on performance of selected telecommunication application service firms in Kenya
iv. To determine the effect of niche market penetration strategy on performance of selected telecommunication application service firms in Kenya
v. To determine the moderating effect of information technology capability on first mover strategy and performance of selected telecommunication application service firms in Kenya
vi. To determine the mediating effect of entrepreneurial orientation on first mover strategy and performance of selected telecommunication application service firms in Kenya

1.4 Research Hypotheses

The study tested the following hypotheses.

H_{01} Barrier to entry strategy has no significant effect on performance of selected telecommunication application service firms in Kenya.

H_{02} Quality improvement strategy has no significant effect on performance of selected telecommunication application service firms in Kenya

H_{03} Mass market dominance strategy has no significant effect on performance of selected telecommunication application service firms in Kenya.

H_{04} Niche market penetration strategy has no significant effect on performance of selected telecommunication application service firms in Kenya.

H_{05} Information technology capability has no significant moderating effect on first mover strategy and performance of selected telecommunication application service firms in Kenya.

H_{06} Entrepreneurial orientation has no significant mediating effect on first mover strategy and performance of selected telecommunication application service firms in Kenya.

1.5 Significance of the Study

Kenya is currently in a state of transformation as it works towards the attainment of the development goals as stated in Vision 2030. The telecommunication sector has particularly been identified as a critical component in the delivery of Vision 2030 objectives through wealth creation and employment. The telecommunication sector has experienced considerable infrastructural transformation as a result of the installation of fiber optic cable connecting Kenya. Similarly, the sector has experienced tremendous growth in terms of the market structure, technology adoption, particularly the application services offered.

The findings of this study have a significant policy implication to telecommunication application service firms and CA. The knowledge derived can be utilised by Communication Authority to facilitate formulation and evaluation of policy that will guide and protect telecommunication applications service firms and telecommunication infrastructure. The findings provides information to the management of telecommunication applications service firms by providing knowledge on first mover strategies that can be implemented to improve on performance. In addition, the results provides information on the relevance of the mediating variable, entrepreneurial orientation on the relationship between first mover strategy and firm performance.

The study contributes to the body of knowledge by providing empirical evidence on first mover strategy and performance of selected telecommunication application service firms in Kenya. Introduces a conceptual framework outlining first mover strategy and performance and moderation of information technology capability and mediation of entrepreneurial orientation. In addition, the study contributes to the advancement of the theory by validating the theories used to study the variables.

1.6 Scope of the study

The study sought to establish the effect of first mover strategy on performance of selected telecommunication application service firms in Kenya. Specifically, the study

sought to determine the effect of barrier to entry strategy, quality improvement strategy,mass market dominance strategy and niche market penetration strategy on performance of selected telecommunication application service firms in Kenya. The study further determined the moderating effect of information technology capability and the mediating effect of entrepreneurial orientation on first mover strategy and performance of selected telecommunication application service firms. The theories underpinning this study are The Goal Setting Theory, The Game Theory, Dynamic Capability Theory and Entrepreneurial Orientation.

The application service firms is defined under the unified licensing framework by CA as an organisation providing all forms of services using network services. The firms provide broadband connectivity, internet connectivity and private networks that carry voice,data and video and other services to customers. The application service firms do not build infrastructure but provide provide services using fixed, mobile and wireless technologies. The application service firms were considered for this study because they are critical in enabling economic growth in Kenya by transforming the country into a knowledge based and information economy. This is inline with Kenya's Vision 2030 that seeks to use knowledge as a source of economic growth.

The study was conducted in the telecommunication sector among selected application service firms in Kenya. The selected application service firm were chosen given that fact that although they were first movers in the sector, further research is required to inform the firm how to increase performance. A target population of twenty one telecommunication application service firms was selected for this study. The twenty one selected firms were selected based on mechanisms that lead to first mover advantages. The mechanism for the selection were switching costs, technological leadership and pre-emption of scarce resources. The study collected primary data from respondents of all the twenty one selected telecommunication application service firms. Primary data was collected using semi-structured questionnaire. Data was collected related to the period 2015 – 2019. This period was chosen because it was in 2015 when Kenya Information Communication Act was amended to align it with the Competition Act, thereby CA was given power to promote competition and make regulations.

1.7 Limitation of the Study

There were varying limitation anticipated to be encountered that could cause a hinderance on the study's success. Acquiring of the sought information was the major limitation of the study. Information touching on the performance of telecommunication application service firms is sensitive. Therefore as a result, the respondents were unwilling to answer or provide correct information due to the sensitivity of the topic. However the researcher assured the respondents by providing research authorization documents, and highlighted benefits the study would bring to their organisations. In addition, there was fear from the respondents that the information given would leak to competitors. However, the researcher assured respondents ethical measures would be undertaken. Additionally, the researcher guaranteed the respondents that the information collected from the study was purposely for academic use only

Further, because the repondents were the top management from the telecommunication application service firms, the study expected a low response rate The low response rate among the managers was due to their hectic schedules which made it difficult to respond to the questionnaires within the time given. However, the researcher adopted the drop and pick approach to mitigate this issue, giving the managers sufficient time to respond to the questionnaires. In addition, due to Covid-19 pandemic, the researcher experienced delay in data collection from respondents, however to mitigate this, online circulation of questionnaire and follow-ups were undertaken.

1.8 Organisation of the Study

There are five chapter in this thesis. Chapter one comprises an introduction and background of the study, the dependent , independent , moderating and the mediating variables of the study, context of the study, the problem statement, objectives of the research, research hypotheses, significance of the research, scope of the study, and research limitations. Chapter two presents a theoretical and empirical review of literature related to the study variables. Research gaps have then been drawn from the literature review and presented in a table. In addition a conceptual framework is developed from the concept and inline with objectives and hypotheses. The third chapter contained the research philosophy, research design, target population and

variable measures. In the same chapter, the empirical models used in this study to assess the study's hypotheses, as well as ethical considerations are described. The fourth chapter covers the outcomes of this study by providing discussions and interpretations of each result presented using tables and figures. Chapter five summarizes the findings, draws conclusions and gives recommendations for both practical and policy implementation. It also covers areas that could be the focus of future research.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

Theoretical and empirical literature appropriate to address the issues in the research have been reviewed in this chapter. To start with, discussions on the theories relevant for this study is done to develop an outline for the research. Following that, a review of the empirical literature on the study's variable is undertaken, followed by a summary of empirical review and conceptual framework.

2.2 Theoretical Review

The intention of this study's theoretical review is to establish a link between first mover strategy and firm performance. The study further examines the Goal Setting Theory, Game Theory, Dynamic Capabilities Theory and Entrepreneurial Orientation posits and advancements.

2.2.1 Goal Setting Theory

The Goal Setting Theory proponents Locke and Latham, (1990) posits that actions are as a results of intended goals. Further, they defined goals as objective or action aimed at achieving specific task within a specified time limit. Latham,Seijts and Slocum, (2016) advanced this theory by identifying three types of goal; behavioral goal where the behavior demonstrated by an individual is measured for a given time period, performance goals that are focused on outcomes such as sales, profitability and learning goals that emphasis implementation of effective plans, processes or procedures necessary to perform a task The greatest level of effort and performance were achieved when the goals are most difficult. When a goal is very specific, performance is less varied due to elimination of vagueness on the expected outcome, (Locke, Chah, Harrison & Lustgarten, 1989). Further, goals were perceived to be future valued outcomes, therefore goal setting was a discrepancy-creating process, implying that there must be some dissatisfaction with the current situation and thus a need to achieve a certain outcome.

Building on prior research Locke and Latham, (2006), discussed four mechanisms that elaborate effects that are instrumental to specific goals in order to achieve high performance. These are the choice to exert effort in a certain direction or certain task,

persistence when doing so until the goal is achieved and the strategy. Additionally Locke and Latham, (2015) postulated performance can be maximized given four conditions. First, the knowledge or skill, ability to do the task, second commitment to the goal, third, feedback on goal progress and lastly, situational resources that is lack of situational constraints. Donovan and Williams, (2003) proposed that current goal choice was influenced by past performance. Setting learning goals when the focus is on a specific performance outcome in a novel and complex task can be minimize tunnel vision (Seijts & Lataham, 2001). Further, Seijts, Latham, Tasa and Latham, (2004), researched on goal setting effects as a trait postulated that performance is highest where there is a learning orientation and learning is set as a goal.

Neubert and Dyck, (2016) argument on development of a sustainable goal theory, proposed that a sustainable goal theory focused on the performance that encompasses several stakeholders both present and in the future. The outcomes sort-after are more than the limited range of short-term task performance goals. Learning enhances well-being of an individual and long-term sustainable performance. In addition, Chong and Tak-Wing, (2015), postulated that budgetary goal setting participation led to better performance. According to goal setting theory, having defined and difficult goals leads to improved performance. Thus, goal setting can lead to employees who are engaged, exhibit increased levels of workplace optimism, where increased optimism improves performance in an individual. Managers can strive to improve performance by implementing the goal setting process, (Medlin & Jr, 2009). Therefore demanding performance goals is a common aspect in firms, (Welsh & Ordóñez, 2014).

In view of this, firm can set specific goals that are influenced by past performance. Clarity of goals is when a goal is clear, measureable and timely. In addition, difficulty in goals attainment motivates firms to strive for positive goal achievement. Goal commitment makes the firm make deliberate efforts to achieve the goals. Feedback helps adjust goal setting while task complexity makes achieving of goals easier by laying down processes and steps (Locke & Latham, 2006). Participation within the firm in goal setting develops into a sense of responsibility which in turn improves performance (Mazzei, Flynn & Haynie, 2016). Hence,the independent and dependent variables were informed by the postulates and advancements of the goal setting

theory. These propositions raise the need of telecommunication application service firms to set specific performance measures based on past performance.

2.2.2 Game Theory

Proponents of Game Theory,Neumann and Morgenten, (1944), define the theory as a branch of mathematics concerned with analyzing strategies when dealing with a competitive environment in which the participants outcome is dependent on the outcomes of other participants (Cano, Capone, Carello & Cesana 2016). Game theory is based on two primitives, game form and strategy. According to Rubinstein, (1991), game form includes a list of decision problems for each participants, while strategy is the comprehensive explanation of the players actions in the game from the start to the end. The cooperative game theory and the non-cooperative game theory are the two perspectives on the theory. Cooperative game theory approach assumes that there is communication among players, they can form temporary alliances and that agreements can be signed to bind them together. While in the non-cooperative theory, there is no communication between the players and thus it is not possible to have a contract that is binding. Shubik, (1972), postulated game theory constituted a wider scope of theory that gives a language which formally describes goal orientation, conscious and process for which players make decisions.

According to Camerer, (1991) when in a situation of interdependence of outcomes, then analysis of the rational behaviour is undertaken. The game theory rationale states that an algorithm built or a decision rule is based on an equilibrium strategy and that firm uncover the equilibrium by introspection. Introspection is a process seen as mental or computational which stimulate results of varying alternatives, dismiss those options that will not yield the anticipated results or reconfigure them. According to Chau, (1996), game theory is not founded on classic theory of probability, but it is the strategic aspects emphasised or aspects that can be manipulated by participants. Hence the reason behind why it has been adapted in studies concerned with competition, there are a number of common factors such as interests that conflict, information that is incomplete, the interplay of chance and rational decisions. Employing the rules of the game is the main goal, so as to project the equlibrium outcome in terms of maximizing profits as well as improve market price fluctuations

that can jeopardize sustainability of the firm, where products face challenges of market prices that are risky (Sahin,Yildirim & Miran, 2009).

Game theory is related to the action of decision makers who are conscious that their actions affect each other. Charilas and Panagopoulos, (2010) opined that the decision makers actions are conscious and they have an effect on each other. Further, there is a set of finite of players and a principal, whose selection of strategy is influenced by the objective of maximizing utilities. In addition game theory provides a framework that guides in the understanding of first mover strategy and its effect on performance of selected telecommunication application service firms. This theory posits the rationale of strategies developed by examining a firms existing situation and then developing alternative strategies based on the information provided. When analyzing how payoffs are achieved then the best strategy is based on the anticipated actions of its competitors and other relevant information gathered that leads to attaining superior firm performance. According to the theory, a first mover can influence the outcome when they aware of competition thereby making the right strategic decision.

2.2.3 Theory of Entrepreneurial Orientation

The Theory of Entreprenurial Orientation was postulated by Miller, (1983) and Lumpkin and Dess, (1996). According to Miller, (1983), firms that are entrepreneurial oriented engage in innovation which are product-market driven, pertakes fairly risky projects, proactively initiates innovations thus performing better than competitors. Conversely, Lumpkin and Dess, (1996),cited entrepreneurial orientation (EO) as processes, practices and activities leading to decision making which marshal towards an entry that is new. Additional Covin and Slevin, (1993) proposed three important components which are proactiveness,innovativeness and risk- taking (Miller, 1983). Accordingly,innovativeness is the propensity of firm to undertake ideas that are new, processes and experiments that are creative resulting to processes,services and products that are new (Lumpkin & Dess, 1996). According to Miller and Friesen, (1978) risk taking is a reflection of activities of entrepreneurial firms such as making resource commitments to obtain soaring proceeds through taking advantage of the opportunities provided in the market.

In line with this, Wiklund and Shepherd, (2005), argued that allocation of resources to projects that can be seen to have a high probability of failure and the outcomes are also unknown is opined as risk-taking. Venkatraman, (1989) refered to proactiveness as the process of seeking new opportunities where firms are proactive by anticipating the demands of the future and market opportunities, participating in markets that are emerging, environmental shaping to introduce new products and brands prior to the rivals. According to Lumpkin and Dess, (1996) by predicting and taking up opportunities in new emerging markets, firm are perceived to be proactive. Building on prior analysis on proactiveness, Wiklund and Shepherd, (2005) argued that proactiveness encourages the identification new market opportunities and enabling the firm to promotely respond to opportunities swiftly in order to gain advantages of being a first mover, thereby achieving exceptional entrepreneurial profits.

Lumpkin and Dess, (1996) advanced the theory by proposing other dimensions, that is, competitive aggressiveness and autonomy. The propensity to respond to competitors promptly as well as exceedingly in order to improve on its position or even perform bettter than the rivals in the industry was perceived as competitive aggressiveness. Competitive aggressiveness was percieved as the response towards achieving competitive advantage in the market place. Whilst individuals or team that focused on the creation of a business vision from the start to finalization is referred to as autonomy. Autonomy which roots from Mintzberg and Water, (1985) opines that entrepreneurs are leaders who are strong, whose decision making process necessiates decisive and risky actions, thus entrepreneurial autonomy can be linked to entrepreneurs freedom to action and make decision that are not dependent.

A measurement scale for tapping firm-level entrepreneurship can be traced to Khandwalla (1976/77). Miller, (1983) combined all the three dimensions into a unified way of measuring EO. Covin and Slevin, (1986) developed and validated the scale. They also conceptualised and hypothesized how the EO construct was related to performance and went further to perform empirical studies. Building from prior studies Covin and Slevin, (1991) developed a model to identify antecedents, consequences and the moderating variables of an entrepreneurial orientation and performance. Zahra, (1993) critiqued Covin's work and offered suggestions to revise and extend the model. Advancing from prior postulates, Lumpkin and Dess, (1996),

acknowledged the major entrepreneurial processes and labeled these as entrepreneurial orientation. They also defined entrepreneurship as new entry, which included the activities of individuals and firms alike.

EO was then associated with how new entry is accomplished through actions that are autonomous, innovative, risky, proactive and competitively aggressive. As a result, EO is thought to have evolved from the resource-based view and the dynamic capabilities view (Teece, 2007; Barney, 1991; Grant 1991).The mediating variable indicated in the conceptual framework are informed by the theory of entreprenuerial oreintation. Specifically, this study has adopted innovativeness, risk-taking, proactiveness,competitive aggressiveness and autonomy as dimensions of entrepreneuarial orientation.

2.2.4 Dynamic Capability Theory

Dynamic Capability Theory was developed by Teece and Pisano (1994) as an advancement of the resource based view. Introducing this theory, the proponents argued that the mechanisms which enhance competitive advantage are addressed in the resource-based view, however there does not exist an explanation on the operations of this mechanisms. Accordingly, Teece and Pisano, (1994) as well as Teece, Pisano and Shuen, (1997) dynamic capability is based on three factors namely: processes, asset position and pathways. Asset positions are the legacy resources that include technical skills,knowledge and organisational competence that mould the options of the firm for future capability expansion. A firm depends on a set of higher-order routines to shape its adaptability. Capabilities are cumulative and develop over time, they involve commintements to paths (Pisano, 2017).

Adner and Helfat, (2003) advanced the theory by introducing the dynamic managerial capability concept to expound variance in corporate strategy and managerial decisions.Thus the proposal that managerial guidance is critical and it could influence performance in a firm. Other dynamic capability concepts are adaptive, absorptive and innovative capabilities,(Wang & Ahmed, 2007). While Ambrosini and Bowman, (2009) postulated external factors that include market and firm's history and internal factors of managerial behaviour and social capital as drivers and inhibitors of dynamic capabilities. Nabil and Gizawi, (2014) posits that for firms to attain competitive

advantage, they should be able to quickly react and have flexibility in product innovation, possess specific firm capabilities that enhance the management and coordination of competency both internally and externally.

Building on the basic tenets of RBV, IT capabilities are valuable because they have an effect on firm performance, heterogeneously distributed across firms and imperfectly mobile. Thus managing of IT as a capability can create uniqueness and provide competitive advantage for a firm (Bhatt & Grover, 2005). Accordingly, Lu and Rarnamurthy, (2011) postulated Information Technology capability in three dimensions. Information Technology infrastructure capability which is the ability of the firm to implement platforms that are shareable. Information technology business spanning capability which is the ability of management to clearly envision and exploit resources in IT to enhance and support the business objectives. Lastly, information technology proactive stance is when the firm has the ability to be proactive in searching for ways to seize IT innovations or exploit existing IT resources to create business opportunities.

Whilst Ong and Chen, (2013) classified IT capabilities into human IT resources, IT-enabled intangible resources and IT infrastructure which influence firm performance positively. Chen, Wang, Nevo, Benitez-Amado and Kou, (2015) advanced this knowledge by denoting IT capabilities as a second order construct that can be measured in terms of IT integration, IT infrastructure flexibility, IT business alignment and IT management.

IT capabilities enable a firm to organise resources that are IT-based while at the same time consolidate with other capabilities and resources. These capabilities are capable of assisting firms perform better than competitors through cost reduction, increasing profitability and other performance indicators (Chen *et al*., 2015). Given the uncertainity in the market, flexible IT infrastructure is a critical capability that should be considered by managers to aid in the achievement of superior performance. The dynamic capability theory provides a theoretical base of examining factors internal to the firm that can be a source of superior performance. Thus information technology capability, the moderating variable of this study was informed by the postulates and advancements of dynamic capability theory.

2.3 Empirical Literature Review

The purpose of this section is to present a review of existing empirical evidence of the variables adopted in this study.

2.3.1 Barrier to Entry Strategy and Firm Performance

Niu, Dong and Chen, (2012) investigated the various dimensions of barrier to entry and the effectiveness on performance. The survey was conducted on Chinese business executives in pharmaceutical manufacturing,food processing, tourism industries, financial services and steel products. The results were subjected to a comparative analysis of China and the Western countries. The finding showed that there were both similarities and differences on barrier to entry factors. Financial requirements and incumbent advantages were found to be common effective measures of barriers to entry, while differences were found on government policy, sunk costs and managerial experience. Switching costs, patents and intellectual property were found not to be measures of barrier to entry. Different contexts yield varing results, therefore if replicated in a developing environment such as Africa, the study is likely to have different results. Judgemental sampling used in selecting the sample size can lead to bias from the researcher therefore may not be a strong basis for generalising the study.

Kappes and Merkert, (2013) examined on the perception of managers on barrier to entry strategy. The sample comprised of 58 airline companies that operate in the European market. The findings indicated that barrier to entry is an effective strategy in the airline sector. The most significant barrier to entry strategy indicators perceived by airline managers were superior geographical space, high competition from other sectors, setup costs, perceived industry standard and buyer switching costs. Because the research as conducted among European airline firms, the findings cannot be extended to other sectors. The study focused on the barrier to entry strategy and perception of managers while this study focused on barrier to entry strategy and firm performance.

Yang, Jaebeom and Yang, (2013) investigated characteristics of barrier to entry and strategies undertake by firm to achieve market dominance in th ICT industry in Korea. The measures of barrier to entry adopted in the study were switching costs, economies of scale, absolute cost advantage and incomplete information. The results indicated

that market entry barrier determinants that are developed by companys in the ICT industry may have minimal influence. Technological innovation of service providers is the most dependable method of entry into the ICT market. However the study recommended new service providers in the ICT should consider niche market strategy. Base diffusion model was adopted for data analysis while this study adopted multiple regression model. According to the study, barrier to entry strategy is not an effective strategy as niche market penetration strategy. Further, the study was done in an environment where technology is at an advanced stage therefore results may differ in developing environment.

Niñerola, Sanchez-Rebull and Hernandez-Lara, (2017) examined the mode of entry for Spanish companies in China and barriers to entry encountered. The research design was an exploratory case study, the sample size was 140 consulting firms. Barrier to entry in China are found to differ compared to other regions. The barriers identified to be significant were bureaucracy,legal barriers,human resource, culture,trust and language. To overcome these barriers, international organisations should form collaborations with Chinese companies,partner with the relevant authorities and in addition invest in qualified management teams. Diverse culture and political ideologies provide varing results. In addition expertise and intellectual property protection of the brand by the investing firms may also provide varing results. The study operationalised barrier to entry as bureacracy,legal barriers, human resource, culture, trust and language while this study adopted switching costs,economies of scale,patents and proprietary technology.

Lado-sestayo, Vivel-búa and Otero-González, (2017) investigated the drivers and barriers of entry in Spanish hotel sector. The sample size comprised of 8992 hotels found in the SABI database. The dependent variable measured was the number of new hotels. Profitability, collaboration,externalities,investment, efficiency, age and idle capacity were used to measure barrier to entry. Existence of idle capacity and high initial investments costs were found to be significant dimensions of barrier to entry strategy. The study further confirmed the importance of economies of scale. Negative Binomial regression model was used to analysis while this study adopted multiple regression model.

From empirical literature reviewed, most of the studies gave emphasis to diverse aspects of barrier to entry in establishing the relationship existing between various constructs. The studies variations in context,concept and methodology influenced the operationalization of the study variable thus limiting generalising the results. However, building from the views as espoused by Kappes and Merkert, (2013) and Yang *et al*., (2013) on barrier to entry, barrier to entry strategy was conceptualised as proprietary technology,switching costs,economies of scale and patents.

2.3.2 Quality Improvement Strategy and Firm Performance

Atalay, (2013) investigated quality improvement in the context of Turkish automobile sector,quality improvement was operationalized as innovation and the effect on firm. According to the findings, product and process innovation influence firm performance positively while organisational and marketing innovation do not positively influence performance of the automotive firms. In addition, significance of product and process innovation on firm performance can be explained by industry characteristics. The automotive industry being a capital intensive industry based on mass production requires firm to continously improve their process and products quality to remain competitive. Quality improvement was conceptualised as innovation. Accordingly, innovation that creates new processes, new products and new marketing techniques leads to significant improvement in business pratices. The study operationalised quality improvement as innovation while this study operationalised quality improvement strategy as new product development, efficiency on delivery, product differentiation and maintenance service.

Lin, Tan and Geng, (2013) investigated how market demand affects quality improvement and performance of motorcycle manufacturing firms in Vietnam. Data was collected from January to July 2011 from a sample size of 208 firms. Quality improvement was conceptualised as green products innovation while performance was measured as market position improvement, increase in sales, profits and enhanced reputation. Regression analysis was applied to analyse data. The results indicated green product innovation positively influence performance of motorcycle manufacturing firms. However,favourable influence of quality improvement strategy on firm performance is achievable when a firm is able to manage its demand. The study focused on the mediating effect of quality improvement on market demand and

firm performance while this study's focus is on the direct effect of quality improvement strategy on performance of telecommunication application firms.

Thomas, (2013) focused on the effectiveness of computed-based and face-to face communication channels on product quality improvement and market performance of manufacturing firms in United States. The sample size of the study was 185 manufacturing firms. The results reported efficiency and effectiveness in quality improvement can lead to sales, market share and profit objectives being achieved. A process that is effective results in products that achieve technical performance as well as customer requirements. Higher level of performance can be achieved through knowledge between the buyer and seller when exchanged at a higher level. Face-to face communication had a significant effect on knowledge exchange compared to video conferencing. Knowledge exchange was found to have a mediating role. The adopted Structural Equation Modeling for data analysis while this adopted a multiple regression model.

Herzallah, Gutherrez and Rosas, (2016), investigated quality improvement, competitive strategies and financial performance of Palestinian manufacturing firms. Quality improvement was examined at different levels of competitive strategies. Quality improvement was measured as customer focus, process management,teamwork and training.The findings indicated that quality improvement strategy is positively related to financial performance. The ability to implement quality improvement leads to competitive advantage. Firms are able to pursue new opportunities through differentiation and innovation and at the same time exploit current abilities. The results indicated that financial performance is achieved when product quality improvement demands searching ways that decrease costs. Quality improvement was measured as customer focus,process management,teamwork and training while this study measures quality improvement as new product development,efficiency on delivery and product differentaition. The study adopted structural equation modeling to analysis while this study adopted multiple regression model. Further the focus of the study was on financial performance while this study focused on both financial and non-financial measures of performance in the telecommunication sector.

Ho, Chang and Yen, (2016) focused on the use of modified Importance-Performance Analysis (IPA) model to define quality improvement strategy. Multiple regression analysis approach evaluated the data collected from a case study of an air-conditioning system manufacturer in Taiwan with eight branches. The objective of the study was to deduce characteristics that were most suitable to measure quality improvement strategy. Quality characteristics that were found to be significant for quality improvement strategy were; serviceability, product features,repair services and price. In addition quality characteristics when enhanced could lead to market competitive advantage. The research was a case study in the context of manufacturing firm in Taiwan, thus some of the characteristics cannot be applied in this current study.

The literature reviewed emphasises the importance of considering innovation in quality improvement strategy. Additionally the analysis revealed that new product development was consistently adopted as a measure of quality improvement strategy. Studies were mostly conducted in the sector of manufacturing, thus the need to conduct in the service sector. The studies have shown the importance of quality improvement strategy and the positive relationship to performance, however other factors have mediated or moderated the relationship.

2.3.3 Mass Market Dominance Strategy and Firm Performance

Abel, (2008) investigated the resources and capabilities of first movers for establishing market domimance in the context of digital audio player. The study traced the history of MP3 category identifying the inventor, the product pioneer and the first to market. Qualitative and statistical data was gathered from archival sources. The study indicated that Apple was able to gain market dominance because they were a recognised brand , possesed more resources and capabilities and cost the of production was low. The control of distrubution channels reduced price competition to gain market share. The product met the customer requirements thus leading to customer loyalty. This study proposed that followers with resources and strategic timing of entry are capable of establishing market dominance. The study was based on a historical case study of a single radical innovation from conception to maturity and while this study is a survey of twenty-one telecommunication application service firms.

Hartigh, Ortt, Kaa and Stolwijk, (2015) exploratory case study investigated market dominance of Apple and IBM companies and its effect on competitive advantage. The findings indicated that the measures of market dominance, technology,strategy and network factors are related and are significant to competitive advantage. This study focused on two market leaders' strategy of gaining market dominance. Data was collected from secondary sources while this study will collect primary and secondary data. In addition, the study was an exploratory case study while this study is an explanatory survey.

Velu, (2015) investigated the mass market dominance strategy and competition in the context of securities sector in America. The study used purposive sampling in choosing interviewees. The research design adopted in the study was qualitative case study, while analysing was carried out by coding, grouping, triangulation and discussions. Findings indicated that firms adopted coopetition as a mass market dominance strategy to be competitive in the sector. Firms were able to protect the market, grow the market share, improve incrementally the business models while some firms radically altered their business models. Market dominance strategy was viewed as a defensive strategy to protect existing business models.This study percieved market dominance strategy as an adaptive strategy for firms in the telecommunication sector. The study was a case study conducted in the security sector while this study is a survey in the telecommunication sector.

Wang, Zhang, Sun and Zhu, (2016) investigated the effects of standardization and innovation on mass market dominance of manufacturing companies in China. Data was collected from 204 manufacturing firms randomly selected from the Pearl River Delta. The results indicated that mass market dominance is significantly and positively related to efficiency. Thus the study reveals that standards significantly affect product and process innovation. Secondly standardization and innovation are effective dimensions for measuring mass dominance. Partial least squares was used to analysis the data therefore a possibility of multicollinearity. This study ensured multicollinearity does not exist, tested using the Variance Inflation factor (VIF).

The reviewed literature indicates that mass market dominance is especially effective when dealing with a product or service that had gained consumer favor (Abel, 2008 ;

Hartigh, Ortt, Kaa & Stolwijk, 2015). Mass domiance strategy has an influence on competition. Customer satisfaction is one of the key outcomes of the strategy. Thus mass market dominance strategy has variant conceptualization.

2.3.4 Niche Penetration Strategy and Firm Performance

Toften and Hammervoll, (2010) investigated the strategic capabilities owned by firms that adopted niche marketing strategy in seafood and wine industries. The study adopted exploratory research due to the limited literature on niche strategy. The sample size comprised of six firms located in France, Norway and Portugal. Data was collected through semi-structured in-depth personal interviews with key informants. The findings concur with prior studies in niche marketing that specialisation, differentiated products, strong relationships and limited target affirm niche marketing strategy assumptions. The strategic capabilities were found at different level of the value chain and are imperative for the success of the firms. The study adopted exploratory research design focused on niche products while this study adopted an explanatory research design and focus was telecommunication services.

Cuthbert, (2011) investigated adoption of niche strategy as an adaptive strategy for niche markets. This study was conducted in the context of agricultural small and medium enterprises in New Zealand and Canada. Data was collected in the blackcurrant industry, from eleven firms in New Zealand and Canada in the blackcurrant industries. The findings indicated that to sustain a niche market strategy, competition is limited by creation and maintainance of barriers to entry. Alliances, horizontal and vertical networks developments leads to success of niche market strategy. Resources can be shares by SME's through the adoption of horizontal alliances, while the distance between the firm and its final customer can be shorten through vertical alliances. Further horizontal and vertical alliances provide a way for market research and customer relationship management. The study implies that niche marketing strategy is successful when supported by barrier to entry strategy and collaborations with other firms in the value chain. The study was on case studies with discussion and interpretation derived from descriptive analysis while this study is a survey and discussion derived from inferential and descriptive analysis.

Jensen, Cobbs, Groza and Groza, (2014) focused on key elements of a niche strategy and how it can be succesfully applied to managerial decision making in the context of entertainment and sporting industry, case study on Formula1 racing. Data from 19 countries was analysed using hierarchical regression analysis.The study operationalised niche strategy in terms of targeted geographic niche and niche market resources categorised as participants,spectators,sponsors and media attention. The findings showed that advertising does not translate into increased demand for a product or service, the availability of a particular market resource is significant to its the success. Further, when considering niche market strategy, nuances between different geographical markets must be acknowledged. The study was a case study, data was analysed using hierachial regression, while this study was a survey where data was analysed using mutiple regression.

Ottosson and Kindström, (2015) investigated niche market strategy and firm performance. The research design adopted was qualitative in-depth case study on a sample size of three global Swedish steel firms. The findings indicated that niche market penetration strategy was adopted proactively, setting business goals that relate to expansion and growth, customer relationships and profit margins. Proactive niche strategy results to deeper customer knowledge,higher margins, strong brand equity,greater customer loyalty and achievement of a strong position in the marketing channel. The study operationalised niche market penetration strategy in terms of customer referral,multiple customer interactions, opportunities for business development, preferred supplier status achievement and extension of services offered, while this study opertionalised niche market penetration strategy in terms of market segment, specialization and relationship management.

The literature reviewed indicate that niche market penetration is considered when the product is unique or niche. Most of the firms that adopt this strategy perceive as proactive strategy, but the actions indicate its more of a defensive strategy. Thus it may not be straightforward for a product that is highly competitive. Generalisation of the findings is not applicable due to the research approaches adopted.

2.3.5 Entrepreneurial Orientation and Firm Performance

Gruber-muecke and Hofer, (2015) evaluated the effect of market and entrepreneurial orientations on performance of firms in an emerging market. Responses from 170 queationnaire was analysed using linear regression. EO was operationalised in three dimensions of innovativeness,proactivenness and management professionalization. The findings indicated that EO and firm performance have moderate correlation,thus EO has an impact on performance of firms in emerging market. The study examined the direct connection between entrepreneurial orientation and firm performance, while this study focused on the mediating role of entrepreneurial orientation.

Zehir, Can and Karaboga, (2015)study examined the relationship between EO and firm performance, mediated by innovation performance and differentiation strategy. The study was a survey conducted with a sample size of 331 firms in the manufacturing industry in Turkey. EO was conceptualised as innovativeness, competitive aggressiveness, risk-taking, as well as autonomy. Descriptive data was analysed using regression analysis. The outcome showed that innovativeness, proactiveness and autonomy significantly affect performance of firms. Differential strategy and innovation mediated EO and firm performance relationship. The study was done in a country whose economy is defined as an emerging market economy, there is likely to be different results in various markets, therefore a replicate of the research should be done in the context of a developing market-based environment.

Shirokova *et al.,* (2016) investigated the association of entrepreneurial orientation and performance of firms that experience varying levels of hostility in the environment in the market. The study was conducted on SME's in European part of Russia and Finland . Data set from Russia and Finnish comprising of 163 SME were analysed using hierarchical regression analysis. The difference found in the regression slopes across environmental configurations were addressed by supplementing post hoc analysis. From the analysis there was an indication the relationship between eo and performance is significant therefore confirming that positive benefits that firms can achieve positive benefits from the adoption of EO, as indicated in the RBV and DC theories. However the configuration of variables in the external environment determined the direction and strength of the relationship.This study was conducted in

two countries though it was not a comparative analysis, therefore data was decultured for generalizability of the context. This is likely to have different results in other market environments.

Sok, Snell, Thomas and Sok (2017) focused on the underlying processes and the specific conditions that facilitate EO to contribute to performance. Data was collected from a random sample of 3000 small service firms. Descriptive statistics was done using hierarchical regression. The results indicated that the association of EO and firm performance was mediated by marketing capability and moderated by marketing resources. Hence EO significantly and positively relates to firm performance in small firms. Further, performance of small firms was influenced by entrepreneurial activities that focus strongly on marketing capability. The limitation of the study was the firm size whereas that was not a limitation in this study.

Rezaei and Ortt, (2018) study examined entrepreneurial orientation's influence on functional performance of firms in Netherlands. The sample size comprised of 279 small to medium high tech enterprises. EO was conceptualised in terms of innovativeness, risk-taking and proactiveness, while functional performance was in terms of marketing, production,sales and R&D. According to the results, EO dimensions are associated in varing ways to performance. Innovativeness and R&D performance have a relationship that is positive. However, risk-taking and production performance are negatively related while marketing and R&D and production have a sequential positive relationship to overall performance of firms. The study focused on functional firm performance while this study focused on financial and non-financial measures of firm performance.

As indicated from the above analysis, entrepreneurial orientation significantly influence firm performance and hence the direct relationship. The studies also indicates that firms need to develop towards adopting entrepreneurial orientation. There seems to be a consensus on the dimensions of EO in most of the studies. Innovativeness, competitive aggresiveness,risk-taking and autonomy were used as indicators of entrepreneurial orientation in the study.

2.3.6 Information Technology Capability and Firm Performance

Chae, Koh and Park, (2017) study investigated the association of information technology capability, performance of firms and the role of industry. IT capability was conceptualised as the firm's capability to generate business value using IT assets and know-how that comprise of IT infrastructure and human IT resources. The results indicate that superior IT capability is critical in all industries, however it is essential particularly in the transform industry as it plays an important role for competitiveness. Banking, aviation,media and advertising are some of the transformative industries where IT may drastically alter firm operations. The study focused on how IT capability relates to performance of firms while this study examined how IT capability moderates the association of first mover strategy and performance in firms. The study further investigated the role on industry, while this study focused on the telecommunication sector.

Parida and Daniel, (2015) investigated the influence of network capability, IT capability and financial slack on innovation performance in small technology-based Swedish firms. The study conceptualised IT capability in terms of application of a wide array of technologies strategically for business purposes. A sample of 1471 firms were randomly selected with the findings deduced from a response rate of 21%. Descriptive statistcs was done usiing hierachial regression. The findings indicated that IT capability has a positive and significant relationship to innovation performance. IT capability is a potential antecedent for small firm innovation performance. Firms that adopt IT capability benefit from mechanisms of enviromental scanning which further provides market intelligence that can result in identifying of opportunities in innovation.Thus IT capability enhances small firm's ability to access external resources,information and efficiency on the use of existing resources. The study was an exploratory study while this study research design was descriptive and explanatory in nature. Further,the study adopted three dimensions to measure IT capability that is IT use for internal purposes, collaboration and communication while this study adopted IT connectivity, compatibility and modularity.

Huang, Wei and Huang, (2014) study aimed to extend knowledge on how IT capability affect internet-enabled supply chain integration which eventually could

lead to improved performance of firms. The study emphasises was on the role of IT transformational capability and IT operational capability. IT transformational capability emphasised the deployment of IT applications that are new. While IT operational capability deployes IT applications to create a reliable and consistent IT support to the current business as well as new business opportunities.

The survey was conducted in China, unit of observation were top management in manufacturing and service firms. Firm performance was measured in terms of operational performance. The partial least squares was used to analysis descriptive statistics. The results indicated that demand process integration and internet-based supply have a positive significance to IT capability.The study was focused on operational firm performance measures as response to new market place demand, customer requirements, response to demand changes, entry in new markets and addressing customer complaints, while this study focused on financial and non-financial performance of telecommunication application service firms.

Liu *et al.,* (2013) investigated the impact of IT capability on firm performance in the context of manufacturing firms in China. A sample of 1000 firms provided a response rate of 28.6%. IT capabilities were operationalised as flexible IT infrastructure and IT assimilation.Flexible IT infrastructure was viewed as the ability to setup a set of technological resources that are complete thus providing foundation for development of IT applications. While IT assimilation is the ability to routinize and diffuse IT applications in business processes within and across the firm. From the results, the study proposed that IT capabilities exert influence on firm performance through absorptive capacity and supply chain agility. This study evaluated lT capabilities and firm performance in an developed economy therefore it is most likely to have different results in a developing market

According to the reviewed empirical literature, majority of studies were not conducted in Kenya or Africa therefore findings from the empirical evidence presented cannot be generalized to the context of this study. Additionally, prior studies conducted examined a direct association between IT capability and firm performance. However, this study examined how IT capability influenced the association of first mover

strategy and performance of selected telecommunication application service firms in Kenya.

2.4 Summary of Research Gaps

Though studies conducted on first mover strategy, entrepreneurial orientation, IT capability and firm performance have been in developed countries, and that the studies reviewed have measured the effect of the mediator and moderator to firm performance directly, the questions still remains unanswered on the assocation between first mover strategy and firm performance, the mediating role of entreprenuerial orientation and the moderating role of IT capability.

In order to address the paucity of knowledge it was paramount to conduct research in an African context. This study investigated the relationship between first mover strategy and firm performance, the mediating role of entrepreneurial orientation and moderating role of IT capability of telecommunication application service firms in a Kenyan environment.

Table 2.1 gives a presentation summarising empririical literature reviewed on the study variables, that is barrier to entry strategy, quality improvement strategy, mass market dominance strategy, niche market penetration strategy, entrepreneurial orientation, IT capability and firm performance.

Table 2.1 Summary of Empirical Reviews and Research Gaps

Author(s)	Focus of the Study	Key Findings	Knowledge Gap Identified	Focus of Current Study
Niu, Dong and Chen, (2012)	The investigated the various dimensions of barrier to entry and the effectiveness on performance.	Financial requirements and incumbent advantages were common barrier to entry in China and the Western countries. Switching costs, patents and intellectual property were not important barrier to entry dimension.	Replication of the study in a different context such a developing environment may yield different results. Judgemental sampling method applied may result to researcher bias.	This study was conducted in a developing economy in Africa.
Kappes and Merkert, (2013)	The perception of managers on barrier to entry strategy	Barrier of entry strategy is an effective strategy with superior space geographical being the most effective.	The study was conducted among European airlines therefore results cannot be generalised to other sectors of the economy. The focus was on perception of managers on barrier to entry strategy.	The focus was barrier to entry strategy and firm performance in the telecommunication sector.

Yang, Jaebeom and Yang, (2013)	Characteristics of barrier to entry and firm strategies for market dominance.	Barrier to entry strategy is not an effective strategy in the ICT industry. Niche penetration strategy is an effective strategy.	Base diffusion model was adopted to analysis data. The study was conducted in an environment where technology is advanced therefore results cannot be generalised to other markets. The focus was on achieving firm performance.	This study adopted multiple regression model to analysis data. The focus was on barrier to entry strategy and firm performance.
Niñerola, Sanchez-Rebull and Hernandez-Lara, (2017)	Spanish companies mode of entry into China's market and the barriers to entry encountered	Legal barriers, bureaucratic, culture, language, trust and human resource are the most effective barriers. Collaborations through relationships and qualified top management help overcome barriers.	Focused on consultancy firms investing for Spanish firms therefore limits generalization of results. Barrier to entry was conceptualised as bureaucracy, legal barriers, human resource, culture ,trust and language	This study focused on application service firms in Kenya. Barrier to entry was conceptualised as switching costs, economies of scale, patents and proprietary technology.
Lado-sestayo,	Investigated the	Significant barriers to entry	Focused on the number of	This study focused on

Vivel-búa, and Otero-gonzález, (2017)	drivers and barrier to entry in Spanish hotel sector	examined were existence of idle capacity, high initial investment costs and economies of scale	hotel start-ups as the dependent variable. Negative Binomial regression model for analysis, therefore the results of the dependent variable must be non-zero integers.	performance of firms. Multiple regression model for analysis therefore explaining the relationship between the variables.
Atalay, (2013)	Quality improvement in terms of innovations and firm performance.	Process and product innovation had a significant effect on firm performance.	Quality improvement was conceptualised as innovation.	This study operationalised quality improvement strategy as new product development, efficiency on delivery, product differentiation and maintenance service
Lin, Tan and Geng, (2013)	Influence of market demand on quality improvement and firm performance	If a firm managed its market demand, quality improvement strategy had positively affected firm performance	Conceptualisation of quality improvement as green product innovation limited generalizability of results. Quality improvement was a mediating variable	This study focused quality improvement strategy and its association with performance of firm.

Thomas, (2013)	Effectiveness of computer-based and face-to-face communication channels on product quality improvement and market performance.	Efficiency and effectiveness in quality improvement leads to achieving market share, sales and profit objectives.	Structural Equation Modelling adopted in the study assumes the sample size should be more than 200.	This study adopted multiple regression model with a sample of 21 firms.
Herzallah, Gutherrez and Rosas, (2016)	Investigated quality improvement strategy and its association to financial firm performance.	Quality improvement strategy was positively related to financial performance. Implementation of quality improvement led to competitive advantage. Product quality improvement is a continuous process	The study focus was on financial performance. Structural Equation Modelling was adopted for data analysis.	Performance of firms was measures as financial and non-financial indicators. Multiple regression model for was adopted to analyse data.
Ho, Chang and Yen, (2016)	Developed a modified IPA model to define quality	Serviceability, product features, repair services and product price were found to	The study was a case study on the characteristics of quality improvement	This study adopted an explanatory research design.

	improvement strategy.	significantly influence overall satisfaction.	strategy.	
Abel, (2008)	Resources and capabilities of first movers in order to establish market dominance	Brand recognition, resources and capabilities that cost of production and control of distribution channels led to market dominance. Followers with resources and strategic timing of entry are capable of establishing market dominance.	Study was a historical case study investigating a single radical product thus cannot be generalised.	This study examined the performance of firms offering various services in the telecommunication sector.
Hartigh, Ortt, Kaa and Stolwijk, (2015)	Effects of market dominance of Apple and IBM companies and the competitive advantage	The dimensions of mass dominance , technology, strategy and network factors interact for a positive effect on competitive advantage	The study was an exploratory case study. The findings were based on descriptive analysis.	This study adopted both descriptive and inferential analysis.
Velu, (2015)	Mass market dominance strategy and competition in the securities sector.	Firms adopted co-opetition as a mass market dominance strategy in order to be more competitive.	Qualitative case study approach. Purposive sampling to select respondents	The study adopted both qualitative and quantitative research design.

		Some firms maintained their business models while others radically altered their business models in order to remain competitive. Mass market dominance strategy was viewed as a defensive strategy		
Wang, Zhang, Sun, and Zhu, (2016)	Effects of standardization and innovation of mass market dominance.	Mass market dominance has a positive association with firm efficiency. Standardization and innovation are effective dimensions for mass market dominance	Study focused on firm efficiency as an outcome. Partial least squares was used to analysis data therefore possibility of multicollinearity.	This study focused on firm performance as an outcome. VIF test to ensure no multicollinearity.
Toften & Hammervoll, (2010)	Investigated the strategic capabilities possessed by firms that selected niche market strategy	Firms that select niche market strategy had differentiated high quality products, implemented specialisation, limited target market and strong customer relationship. Strategic capabilities were vital for the	Study focused on strategic capabilities and niche strategy. Study focus was on niche products.	This study focused on direct relationship of niche penetration strategy and firm performance. This study investigated the telecommunication sector.

		success of such firms.		
Cuthbert, (2011)	Investigated why firms seek niche marketing strategy as an adaptive strategy and how this strategy is implemented at firm level.	To sustain niche strategy, competition needs to be limited by establishing and maintaining barriers of entry, forming alliances and develop both horizontal and vertical networks	Conclusion of the study were based on descriptive statistics.	The conclusions were based on both descriptive and inferential statistics.
Jensen, Cobbs, Groza and Groza, (2014)	Investigated key elements of a niche market penetration strategy and how they can be applied successfully to managerial decisions	Creating awareness does not translate to demand of a niche product. Nuances in geographical markets must be acknowledged.	Study was a case study therefore limiting generalisation. Study also implied that niche strategy is successful when supported by barrier to entry	This study focused on firm performance as an outcome.
Ottosson and Kindström, (2015)	Niche market penetration and firm performance	Niche market penetration strategy positively influences firm performance	The study was an in-depth case study, lacked inferential statistics for analysis.	This study adopted descriptive and inferential statistics.
Gruber-muecke	The influence of	EO positively influences firm	The study examined how	This study focused on the

and Hofer, (2015)	market orientation, EO and firm performance in an emerging market	performance in emerging markets.	EO moderates the association of market orientation and performance.	mediating role of EO on first mover strategy and firm performance.
Zehir, Can and Karaboga, (2015)	Examined the connection between EO and firm performance, mediated by innovation and differentiation strategy.	Differentiation strategy mediated EO and firm performance	EO and firm performance was mediated by differentiation strategy and innovation.	Focused on EO mediating on first mover strategy and firm performance.
Shirokova, Bogatyreva, Beliaeva, and Puffer, (2016)	Investigated the relationship between EO and performance of firms in hostile environments and growth in market.	EO has positive influence with firm performance. However relationship varies by the configurations of external environment.	Research was conducted in two countries. De-culturing of the data was applied to allow generalization in the two counties	This study was conducted in Kenya, a developing economy.
Sok, Snell, Lee and Sok,	Investigated the underlying process	There is a mediating and moderating effect of marketing	Focused on EO and firm performance, mediated by	The mediation and moderation of EO and IT capability on the

(2017)	and conditions through which EO can contribute for firm performance.	capability and marketing resources on EO and firm performance.	marketing capability and moderated by marketing resources. Low response rate of 16% limits generalization	association of first mover strategy and performance of telecommunication firms was investigated.
Rezaei and Ortt, (2018)	Investigated the relationship between EO and functional performance.	The three function of R&D, production and marketing and sales directly influence each other and ultimately influence overall firm performance.	Emphasis on the functional firm performance	This study focused on financial and non- financial performance.
Chae, Koh and Park, (2017)	Examined the relationship between IT capability and firm performance and the role of industry	Superior IT capability is important in all industries, but significant in the transform industry.	The focus was to examine the association of IT capability and firm performance.	This study focused on the moderating role of IT capability
Parida and Daniel, (2015)	Investigated the influence of financial slack, IT and network capabilities on	IT capability is significant to innovation performance. IT capability enhances environmental scanning.	Explanatory research was adopted in the study.	Descriptive and explanatory research was adopted.

	innovation performance			
Huang, Wei and Huang, (2014)	Investigated on the effect of IT capability on internet-enabled supply chain.	Internet-based supply and demand process integration significantly impact IT capability.	The dependent variable was operational performance.	This study focused on financial and non-financial performance.
Liu *et al.*, (2013)	IT capability influence on firm performance	Performance of firms is influenced by IT capability through absorptive capacity and agility of supply chain.	The study was focused on the direct relationship between IT capability and firm performance.	IT capability was a moderating variable.

Table 2.1 Summary literature review and review gaps

Source: Author,(2019)

2.5 Conceptual Framework

The Proposed conceptual framework is presented in Figure 2.1

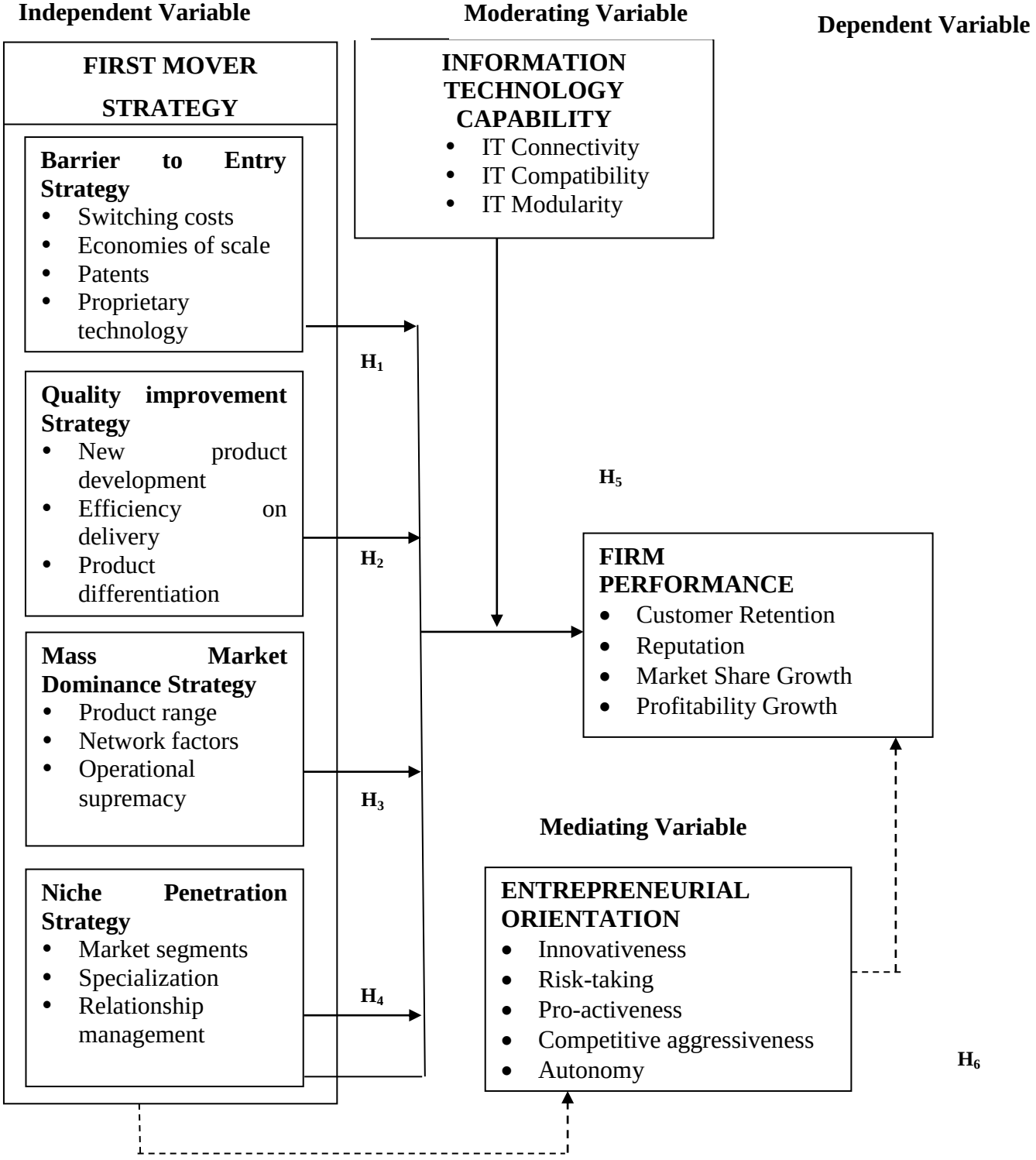


Figure 2.1: Conceptual Framework

Source : Author,(2019)

The conceptual model presented was extracted from the deliberations in the literature review. The conceptual framework (Figure 2.1) proposed presents the relationship between first mover strategy and firm performance. The role of entrepreneurial orientation as a mediator variable and technological capability as the moderator variable is also reflected. First mover strategy, the independent variable was operationalised with the following indicators : Barrier to entry strategy, Quality improvement strategy, Mass dominance strategy and Nice market penetration strategy. The dependent variable was firm performance and measured as customer retention, reputation and market share and profitability growth. Entrepreneurial orientation, the mediating variable and has been operationalized as risk-taking, innovativeness, pro-activeness competitive aggressiveness and autonomy, (Rezaei & Ortt, 2018). IT capability was the moderating variable and has been operationalized as IT connectivity, IT compability and IT modularity (Liu *et al.*, 2013).

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This section discusses the methodology adopted to answer the hypotheses. The chapter was structured into the following sections: the philosophy of the research, the research design, empirical models, the target population,the sampling procedure, the data collection procedure, reliability and validity of research instrument, data analysis an ethical considerations.

3.2 Research Philosophy

The research philosophy aids in the refinement and clarification of the overall research strategy to be used in the study**,** (Crossan, 2015). It relates to the development of knowledge whose purpose is simply answer a specific problem of a particular nature, nonetheless developing new knowledge (Saunders, Lewis & Thornhill, 2009). Ontology and epistemology are the two main philosophies that inform on how people come to know. Ontology refers to what is real, the nature of reality and what can be learned about it.While epistemology deals with the issues that are regarded as knowledge that is acceptable in a discipline together with the researcher and researched interaction (Byrman & Bell, 2018).

The two main research paradigms in social sciences are interpretivism and positivism which are also viewed in terms of qualitative and quantitive approaches (Muchemi, 2013). According to Eriksson and Kovalainen, (2015) positivism in research generates facts and accounts that are in consistence to the reality that is perceived to be independent, emphasises on observation,additionally it has no value judgement. Thus the essence of sciencitific examinations is found in observation and measurement. On the contrary, interpretivism states that reality the individual observing cannot be separated from the reality. According, Saunders, Lewis and Thornhill, (2009), by using an interpretivist philosophy the researcher adopts an empathetic stance, that is the researcher tries to understand from their perspective the research subject's world.

Thus, this study epistomological position is positivism because positivism is based on facts that are real, it is objective can be measured ,results are neutral and valid, (Saunders, 2011). Epistemology enhances the understanding on what it means to

know,the state of knowledge acquired including how it will be relayed to the users. Additionally, positivist paradigm aims to establish objective facts by empirically discovering relationships between variables. Furthermore,, it is based on existing theories from which hypotheses may be derived. The hypotheses were subjected to testing leading to either acceptance or rejection. According to Mugenda and Mugenda, (2003) the observer is independent from the observations conducted and thus there is an objective measurement of data. Consequently , becauase the researcher is independent, the study findings bear additional value to research. Therefore the focus of the study was on the variables cause and effects. In addition, the research sought to examine first mover strategy and firm performance connection by verification of hypotheses through empirical tests.

3.3 Research Design

In order to explain the different aspects of the research problem, descriptive research design which is cross-sectional in nature was adopted together with explanatory research design. Cross- sectional research seeks to obtain accurate data from the respondents at a specific point in time (Copper & Schindler, 2003), to describe the phenomenon and how the variables are related. Descriptive research design provides an accurate description of predictions, characteristics of the phenomena and the narration of facts. The design comprises of data collection,determination of the relationship between the variables in the study and the specification of objectives. Saunders *et al.,* (2009) proposes the researcher to adopt a descriptive approach for an explanation of the phenomenon.

The researcher used the explanatory research design to collect quantitative data, compile it for qualitative follow-up, and then to enable a clear understanding of the quantitative results, (Creswell & Clark, 2011). Explanatory research approach enabled further evaluation in order to identify the relationship between variables,(Sekaran & Bougie, 2010). The purpose of the study was to determine the relationship between first mover strategy and performance of application service in Kenya, hence the research approach that was considered to be the most relevant for this study was explanatory research design. Additionally the combination of explanatory and descriptive research design enabled the researcher to achieve the study objectives.

3.4 Empirical Model

Empirical models were used in this study to test the statistical significance of the relationship between barrier to entry strategy,quality improvement strategy, mass market dominance strategy, niche market penetration strategy, IT capability, entrepreneurial orientation and firm performance. The effect of the predictor variable on the outcome varaible was analysed using mutiple regression models. According to Cooper and Schindler, (2011), multiple regression model is suitable for predicting values of dependent variable where various independent variables are involved. The combined multiple regression model for determining the effect of mutiple predictor variables was stated as follows:

$$\mathbf{YF = \beta_o + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \varepsilon} \quad \textbf{.....3.1}$$

Where:

Y_F= Composite Index for performance of Telecommunication Application Service Firms

β_o= Constant

β_1- β_4 = Regression coefficients of independent variables that is X_1,X_2,X and X_4 respectively

X_1 = Barrier to Entry strategy

X_3= Quality Improvement strategy,

X_3 = Mass Market Dominance strategy

X_4 =Niche Market Penetration strategy

ε = Error term

Model 3.1 was used to establish the relationship between performance of telecommunication application service provider and the independent variables that is barrier to entry strategy, quality improvement strategy, mass market dominance strategy and niche market penetration strategy.

3.4.1 Test for Moderation

The study adopted Whisman and McClelland, (2005) approach to determine the effect of IT capability, the moderator, on the first mover strategy and performance of selected telecommunication application firms in Kenya. The two-step model asserts where an overall effect to be moderated exists, the test of moderation involves determining if the coefficient for the interaction term statistically differs from zero. Whisman and McClelland, (2005) recommend the most appropriate statistical test of interactions is the comparison of the additive model and moderator in which the product of the additive component have been added.

$$\mathbf{Y_F = \beta_0 + \beta_1 X + \beta_2 Z + \varepsilon} \quad \text{……..…..3.2}$$

$$\mathbf{Y_F = \beta_0 + \beta_1 X + \beta_2 Z + \beta_3 X*Z + \varepsilon} \quad \text{……...…….....……3.3}$$

Where; YF = Firm Performance Composite Index

β_0 = Constant

$\beta_1, \beta_2, \beta_3$ = Beta coefficients

X = First Mover Strategy Composite Index

Z = IT Capability Composite Index

X*Z = First Mover Strategy and IT Capability Interaction

Table 3.1 Decision Criteria for Moderation

Model 3.3	Model 3.3	Total Effect	Conclusion
β_1 is not significant	-	-	No overall effect to moderate
(p>0.05)	β_2 is not significant	-	Moderating variable is an explanatory variable
β_1 is significant	(p>0.05)	β_3	Moderating variable has a moderating effect

Source: Whisman and McClelland (2005)

Given that moderation is reflected, the strength and direction of the moderating variable would be determined by the coefficient (β3) of the interaction term (First Mover Strategy * Information Technology Capability) in Model 3.3.

3.4.2 Test for Mediation

To evaluate the if entrepreneurial orientation mediates first mover strategy and performance of selected telecommunication application service firms in Kenya, this study used Baron and Kenny's (1986) four-step causal path. According to Mackinnon, (2000), the three main ways of analysing statistical mediation are casual steps, difference in coefficients and lastly, product of coefficients. The casual steps approach by Baron and Kenny (1986) is the most widely used (Mackinnon, Fairchild & Fritz, 2007). The approach is appropriate because of to its ability to assess linear effects, nonlinear effects and interaction effects between variables. It is has been supported by Imai, Keelel and Tingley, (2010) and Maina, (2014) since it is more robust to certain forms of specification error than product of coefficients approach proposed by Fairchild and Mackinnon, (2009) to test indirect effects and total effects.

Step 1: Regression analysis where the independent variable predicts dependent variable.

$$YF = \beta 0 + \beta 1 X1 + \varepsilon \quad \ldots\ldots 3.4$$

Step 2: Regression analysis with independent variable predicting mediating variable.

$$Me = \beta 0 + \beta 1 X1 + \varepsilon \quad \ldots\ldots 3.5$$

Step 3: Regression analysis where the mediating variable predicts the dependent variable

$$YF = \beta 0 + \beta 1 Me + \varepsilon \quad \ldots\ldots 3.6$$

Step 4: Regression analysis with independent and mediating variables predicting dependent variable

$$YF = \beta 0 + \beta 1 X1 + \beta 2 Me + \varepsilon \quad \ldots\ldots 3.7$$

Where; Y_F = Firm Performance Composite Index

X_1 = First Mover Strategy Composite Index

M_e = Entrepreneurial Orientation Composite Index

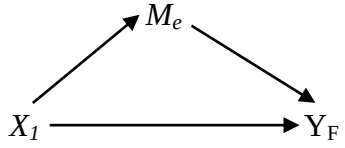
β_0 = Constant

β_1, β_2, = Beta coefficients

ε =Error Term

Testing for mediation required determining whether First Mover Strategy (independent variable) is significantly related to Performance of Application Service Firms (dependent variable). Step 1-3 demonstrates if there is a relationship existing among the variables. If the relationship is non-significant in one or more of the conditions, then mediation is not likely. If it exists, proceed to Step 4. The four-step casual path approach is presented in the diagram form in Table 3.2

Table3.2: Mediation Casual Step Path Diagram

Step	Equation	Path diagram
Step 1	$Y_F = \beta_0 + \beta_1 X_1 + \varepsilon$	$Y_F \longrightarrow X_1$
Step 2	$M_e = \beta_0 + \beta_1 X_1 + \varepsilon$	$M_e \longrightarrow X_1$
Step 3	$Y_F = \beta_0 + \beta_1 M_e + \boldsymbol{\varepsilon}$	$Y_F \longrightarrow M_e$
Step 4	$Y_F = \beta_0 + \beta_1 X_1 + \beta_2 M_e + \varepsilon$	

Source: Baron and Kenny (1986)

Complete mediation happens when the mediating variable is controlled and the independent variable no longer affects the independent variable, while partial mediation occurs when there is a relationship between the independent and dependent variables even after controlling the mediator variable. The decision criteria table is presented in Table 3.3

Table 3.3: Decision Criteria for Mediation

	Outcome	Conclusion
1	If β_1, in model 3.4 is significant If β_1 in model 3.5 is significant If β_1,is not significant and β_2 in model 3.7 is significant	Complete mediation
2	If β_1, in model 3.4 is significant If β_1,in model 3.4 is significant and more than β_1 in model 3.6 and β_1 in model 3.7 is significant	Partial mediation
3	If β_1, in model 3.4 is not significant If β_1 in model 3.5 is not significant If β_1,in model 3.6 is significant and equivalent to β_1 and β_2 in model 3.7 is not significant	No mediation

Source: Baron and Kenny (1986)

3.5 Generating Variable Composite Indices

To transform the qualitative data from the Likert scales for hypotheses testing, a composite index was computed for each of the study variables. In accordance with Gupta, (2008), the weighted harmonic mean was used to compute the composite index. In order to provide a relative weight for each variable, the harmonic mean value was hence adjusted as shown below:

$$C_i = \sum_{i=1}^{N} \left(\left(\frac{n}{\sum_{i=1}^{n} \frac{1}{x_i}} \right) W_i \right)$$

Where:

C_i= Variable i Composite Index. Barrier to entry strategy, Quality improvement strategy, Mass market dominance strategy, Niche market penetration strategy are the variables to be computed.

N= Components total that constituted the particular variable

n= The total of respondents that participated

x_i= The average score for each component expressed as a percentage for Telecommunication

Application Service Firm where on each statement of the variable, the ratio of the actual

score to the maximum possible score is calculated

W_i= For each of the Telecommunication Application Service Firms, the weight of the average score for each variable which is calculated as the ratio of the average score on each variable to the sum of all the mean scores.

3.6 Target Population

The target population comprised of all twenty one telecommunication application service firms selected from the list of Application Service Providers as provided by Communications Authority (Appendix V). The targeted application service firms were those telecommunication firms currently benefiting from the first mover advantages. The twenty-one telecommunication application firms were purposely selected based on mechanisms that lead to the first mover advantages. The mechanisms for this selection were switching costs, technological leadership and pre-emption of scarce resources and switching costs.

The study was a census of the twenty one selected application service firms in the telecommunication. The respondents of the study were the managing director, heads of marketing, finance, operations and heads of strategy or business development. The study hence comprised of 105 respondents. The unit of analysis for the study was the twenty-one selected telecommunication application service firms in Kenya. The unit of observation was the heads of the functional areas of marketing, finance, operations and strategy/business development as well as the managing director in each of the selected firms. The managing director and heads of marketing, finance, operations and strategy/business development are all involved in strategy both at the corporate and business level therefore considered most appropriate for the study.

3.7 Data Collection Instrument

The main source of data the researcher made use of was primary data. In order to collect primary data, a semi-structured questionnaire was utilized (Appendix II). According to Creswell, (2009), a questionnaire is widely accepted as a reliable and efficient tool for collecting information on individual's views, perceptions and behavioral characteristics. The questionnaire was developed in line with the objectives and hypotheses of the study. Additionally, the questionnaire was guided by the literature review and the theories underpinning the various study variables. The

questionnaire consisted of the Likert type and open-ended questions. The questionnaire was composed of two sections. The demographic information of the respondents was addressed in section A. While first mover strategy, entrepreneurial orientation, IT capability and performance of telecommunication application service firms variables were addressed in section B.

Section B adopted a 5-point Likert scale that ranged from "not at all" to "very large extent" to measure variables. Open ended questions in the research instrument were used to substantiate responses in the respective section. Further, in order to get additional information as well as validate the primary data collected, the researcher obtained secondary data such as annual reports from Communications Authority.

3.8 Reliability and Validity of Data Collection Instrument

Validity and reliability of the data collection instrument are critical issues in research. According to Field, (2012), the purpose of validity is to confirm whether the research instrument is able to measure what it was set out to measure, while reliability checks if a research instrument can be interpreted consistently across situations that may be varying.

3.8.1 Validity of Data Collection Instrument

Golafshani, (2003), recommends that based on the results, validity ensures the accuracy and meaningfulness of inferences. The concerns of validity is to ensure integrity of the conclusions from the study. It estimates the accuracy of data representing a specific variable or constructs in the study, (Mugenda & Mugenda, 2003). To ensure validity of the data collection instrument, two types of validity were checked that is content, face and construct validity.

The extent to which a measuring instrument is able to sufficiently cover the topic under study show content validity is observed. Content validity indicates the extent to which a measuring instrument can provide adequate coverage of the topic under study. Content validity determination is judgmental and intuitive and can be determined by subjecting the instrument to panel persons who share their judgment on how well the instrument meets the standards. The researcher made certain the content validity was observed by ensuring the questions confirmed to the research objectives. In addition, the research instrument was subjected to face validity to make certain that

it was a representative on the face value and it appeared satisfactory. To ensure this, the research instrument was subjectively establishing that the concepts it claimed to measure were measured, (Resnick & Jenkins, 2000). The questionnaire was subjected to reviews from lectures and supervisors in the School of Business as well as experts in the area of specialization to ensure that the questionnaire possessed face and content validity. Construct validity was ensured through extensive review of existing relevant literature which guided the identification of the appropriate indicators for the study variables. This allowed accurate operationalization of the variables as guided by the extant literature, thus used for justification the study's conceptual framework.

3.8.2 Reliability of Data Collection Instrument

A measuring instrument is said to be reliable if it provides consistent results on repeated measures. Thus, reliability is a critical component in data collection because it provides the estimates of degree to which yields expected measure of consistency (Saunders *et al,* 2009). A pilot test before actual data collection was on 10% of the sample done to ensure research instruments yielded consistent results on repeated trials. The Cronbach's alpha coefficient has been extensively applied as a measure of reliability in social science (Bonett & Wright, 2014), it establishes the internal consistency of the research instrument. According to Field (2009), a Cronbach Alpha of 0.7 and above is considered a satisfactory indicator of reliability and hence adopted in this study.

A pilot study was conducted on by distributing 10% of the questionniaires to selected respondents,who were not considered in the final study. The aim of the pilot study was to determine the reliability of the instrument that was to be used for data collection. Cronbach Alpha was calculated for each variable which formed a scale in the study. A Cronbach Alpha of 0.70 was used as a determinant of internal consistency and therefore reliability of the study instrument. The findings are shown in Table 3.4.

Table 3.4: Summary of the Reliability Tests

Variable	Cronbach's Alpha	No. of Items	Remarks
Barrier to entry Strategy	.875	8	Reliable
Quality improvement strategy	.949	8	Reliable
Mass market dominance strategy	.926	6	Reliable
Niche penetration strategy	.924	6	Reliable
Entrepreneurial orientation	.968	14	Reliable
Information technology adaptability	.945	6	Reliable
Firm performance	.958	10	Reliable
Overall	**.876**	**79**	**Reliable**

Source: Survey Data (2021).

From the findings in Table 3.4, a total of six variables were considered. The Cronbach's Alpha values for all the variables were found to be greater than the threshold of 0.7 implying that the research instrument was reliable with no editing on the variables of the study required. The findings are supported by Sekaran and Bougie (2009) that a Cronbach's Coefficient Alpha of 0.7 and above confirms that the research instrument is reliable to proceed with research. Similarly, a Cronbach's Alpha Coefficient above 0.8 indicates a very good strength of association to consistently measure variables (Hair, Money, Samouel & Page, 2007). A construct composite reliability coefficient (Cronbach Alpha) of 0.7 or above as shown in Table 3.4 is considered adequate.

3.8.3 Operationalization and Measurement of Variables

In this study, first mover strategy is the independent variable while the performance of telecommunication application service firms is the dependent variable. Entrepreneurial orientation mediated first mover strategy and firm performance while IT capability moderated first mover strategy and firm performance. Table 3.5 presents the measurement scale and operationalization of the variables of the study.

Table 3.5: Operationalization and Measurement of the Study Variables

Variable	Type	Indicators	Operationalization of the variable	Measurement Scale	Questionnaire item
Barrier to Entry Strategy	Independent	Switching costs Economies of scale Patents Proprietary technology	Customer's cost of moving from one firm to the other Advantages of buying or selling in bulk Products/service that is owned by a firm Technology that been acquired by learning and is unique to the firm	Interval Likert scale (1-5)	Appendix II Section B, Part 2: Questions 4 and 5
Quality Improvement Strategy	Independent	New product development Efficiency in delivery Product differentiation Maintenance service	Development of a new product Quick and timely response to customers Adding unique features/value to an existing product/service Adequate customer complaint system	Interval, Likert scale (1-5)	Appendix II Section B, Part 3: Question 6 and 7
Mass Market Dominance Strategy	Independent	Product range Network factors	Extension of product line Partnerships with suppliers of complementary products/service	Interval, Likert scale (1-5)	Appendix II Section B, Part 4: Question 8 and 9.

		Operation supremacy	Leadership in production and distribution of products/services		
Niche Market Penetration Strategy	Independent	Market segmentation Specialization Relationship management	Focus on niche market segment Focus on particular product/service Building of long-term relationships	Interval, Likert scale (1-5)	Appendix II Section B, Part 5: Question 10 and 11
Entrepreneurial Orientation	Mediating	Innovativeness Risk-taking Pro-activeness Competitive aggressiveness Autonomy	Engage and support of new ideas Commitment of finances in new ideas with unconfirmed outcomes Exploitation and anticipation of new opportunities Intensity of competitiveness of the firm Support ideas to completion	Interval, Likert scale (1-5)	Appendix II Section B, Part 6: Question 12 and 13
IT Capability	Moderating	IT connectivity T compatibility	Ability of technology components to communicate Ability of sharing information across technology components	lnterval, Likert scale (1-5)	Appendix II Section B, Part 7: Question 14 and 15

		IT modularity	Ability to reconfigure technology components		
Performance of telecommunication application service firms	Dependent	Customer retention Reputation Market share Profitability	Customer loyalty Expectation of stakeholders Increase in the customer base Increase on return on investment	Interval, Likert scale (1-5)	Appendix II Section B, Part 8:Question 16 , 17 and 18

Source: Author and Literature review (2019)

3.9 Data Collection Procedure

Letter of introduction obtained by the researcher from the university assisted in accessing the data required from the targeted respondents. In addition, the researcher acquired further permission from NACOSTI in order to conduct the research and before contacting any of the respondents. The two methods that were used by the researcher to distribute or administer the questionnaire were the drop-and-pick and online circulation. This methods gave the respondents enough time to peruse and fill the questionnaire. In order to collect data, the research made use of research assistants However, the researcher ensured the research assistants are well trained beforehand. The training assisted the assistants in convincing the respondents to give relevant data and also seek any clarification where necessary. The research assistants made sure to get appointments with the respondents in the organisations in advance to allow them to administer the questionnaire personally.

3.10 Data Analysis and Presentation

After the collection of data, the researcher prepared the data for statistical analysis. Data cleaning was done to ensure questionnaires are properly completed, clear, and accurate and consistency has been observed. Coding was done to facilitate the analysis of qualitative data and the recording of quantitative data into the Statistical Package for Social Sciences (SPSS). Analyses quantitative data was done using descriptive and inferential statistics. Descriptive statistics was done using mean scores, frequencies, standard deviations, and percentages while inferential statistics were carried out using correlation and multiple regression analysis. The nature and the strength of the associations was demonstrated using the Pearson's correlation coefficient (r). The coefficient of determination (R2) was used to measure the variation amount on the outcome variable as explained by the predictor variable. Step-wise multiple linear regression was used to ascertain the effects of the moderating and mediating variables.

The research hypotheses testing was conducted at a 95 percent level of confidence to determine whether the influence of the independent variable is significant or not. In order to make decision on the null hypothesis, the researcher used the p-values in the hypothesis test. If found that the p-value was less than 0.05, then the null hypothesis was rejected and therefore the alternate hypothesis accepted. Qualitative data should

be analyzed using conceptual content analysis to establish meaning, interpret and draw conclusions (Glesne, 2015). To analyze responses on qualitative responses, data was grouped into common themes to further interpret the findings.

Table 3.6 Test of Hypotheses

Research Objectives	**Hypotheses**	**Statistical Model**	**Interpretation**
i)To establish the effect of barrier to entry on performance of selected telecommunication application service firms in Kenya	H_{01}: Barrier to strategy has no significant effect on performance of selected telecommunication application service firms in Kenya.	$Y_F = \beta_o + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \varepsilon$ Where: Y_F= Composite Index for performance of Telecommunication Application Service Firms β_0=*Constant* β_1 ,β_2, β_3, β_4=*Regression coefficient* X_1=Barrier to Entry strategy X_2-Quality Improvement strategy X_3=Mass Market Dominance strategy X_4= Niche Market Penetration strategy ε=Error term	R^2 value F-statistic Regression coefficients P-value < 0.05 reject null hypotheses
ii)To determine the effect of quality improvement strategy on performance of selected telecommunication application service firms in Kenya	H_{02}:Quality improvement strategy has no significant effect on performance of selected telecommunication application service firms in Kenya.		
iii)To establish the effect of mass market dominance strategy on performance of selected telecommunication application service firms in Kenya.	H_{03}:Mass market dominance strategy has no significant effect on performance of selected telecommunication application service firms in Kenya		
iv)To determine the effect of niche market penetration strategy on performance of selected telecommunication application service firms in Kenya.	H_{04}:Niche market penetration strategy has no significant effect on performance of selected telecommunication application service firms in Kenya		
v)To determine the moderating effect of information technology	H_{05}:Information Technology capability has no significant	$Y_F = \beta_0 + \beta_1 X_1 + \varepsilon$ $Y_F = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X M_o + \varepsilon$ Where:	R^2 value F-statistic Regression coefficients

capability on first mover strategy and performance of selected telecommunication application service firms in Kenya.	moderating effect on first mover strategy and performance of selected telecommunication application service firms in Kenya	P_F=Composite Index for performance of Telecommunication Application Service Firms β_0=Constant $\beta_1, \beta_2, \beta_3$= Regression coefficient X_1 = First Mover Strategy Composite Index X_2 = IT capability Composite Index XM_o = First Mover Strategy and IT Capability Interaction ε=Error term	P-value <0.05 Two step Whisman & McClelland (2005)
vi)To determine the mediating effect of entrepreneurial orientation on first mover strategy and performance of selected telecommunication application service firms in Kenya.	H_{06}:Entrepreneurial orientation has no significant mediating effect on first mover strategy and performance of selected telecommunication application service firms in Kenya	i) $Y_F = \beta_0 + \beta_1 X_1 + \varepsilon$ *ii)* $M_e = \beta_0 + \beta_1 X_1 + \varepsilon$ iii) $Y_F = \beta_0 + \beta_1 M_e + \varepsilon$ iv) $Y_F = \beta_0 + \beta_1 X_1 + \beta_2 M_e + \varepsilon$ Where: Y_F=Composite Index for performance of Telecommunication Application Service Firms β_0=Constant β_1, β_2= Regression coefficient X_1=First Mover Strategy Composite Index M_e = Entrepreneurial orientation Composite Index	R^2 value F-statistic Regression coefficients P-value <0.05 Four steps causal path analysis to test for statistical mediation (Baron &Kenny, 1986).

Source: Author, (2019)

3.11 Diagnostic Test

To predict the outcome linking variables in this study, regression analysis was used. Relevant diagnostic test were carried out to ensure errors were minimized in order to achieve the objectives. The diagnostics tests carried out included normality, multi-collinearity, heteroscedasticity, and linearity.

3.11.1 Normality Test

According to Field, (2013) when the data set has a prospect of being well- modelled by a normal distribution then the data indicates there is normality. The regression model is premised on the assumption of normality and therefore the normality test is critical for data analysis. Shapiro-Wilk test was used to test normality because the test has higher sensitivity for detecting differences. Shapiro-Wilk statistic ranges from zero to one. Probability significant value >0.05 means that data is normally distributed while probability significance value< 0 mean that data is significantly deviated from normal. For non-normal distribution data, non-parametric tests are recommended.

3.11.2 Multi-collinearity Test

When two or more variables have a strong correlation, then there exists multicollinearity. The reliability of multiple regression models is affected by multicollinearity, this is because as collinearity rises it leads to untrustworthy beta coefficients, and it also limits the size of R thus becoming difficult to assess the individual importance of predictor variables (Field, 2013). The multicollinearity test was done using Variance Inflation Factor (VIF). VIF values greater than 10 indicates a cause for concern, whereas regression indicate bias if the VIF average is considerably greater than one (1). Where a high correlation is detected, the highly correlated variable are removed from the model to avoid bias in the model estimates.

3.11.3 Heteroscedasticity Test

Regression analysis assumes that across observation the error term should remain constant, if not found to be constant, the random variables are said to be heteroscedastic. When heteroskedasticity is present, then the regression analysis is not at optimal. This is because similar weights are assigned to all the observations, situations where observations have larger disturbance variance and contain less

information than observations with r disturbance variance that are smaller. (Williams, 2016).When there is presence of heteroskedasticity, there is bias on the standard errors which may result in making biased inferences, (Machado & Silva, 2013). The heteroscedasticity test was done using Breush Pagan test as per recommendation Warner, (2008. The null hypothesis indicates the error term is constant. If the P value is ≤0.05, the null hypotheses is rejected, indicating the presence of of heteroskedasticity. If P value is ≥0.05, the null hypotheses is accepted implying that heteroskedasticity does not exist. The weighted least squares (WLS) is used to resolve when heteroscedasticity is detected.

3.11.4 Linearity Test

Linearity is established by examining the correlation between explanatory and outcome variables of the study which aids to show both the strength and the direction of the linear relationship. Linearity of the relationship between two variables was tested using Pearson's correlation. A positive correlation indicates a direct relationship where as one variable increases the second variable also increases. On the other hand, a negative correlation indicates an inverse relationship in which as one variable increases, the other decreases, a correlation of zero signifies no relationship between the variables (Field, 2013).

3.12 Ethical considerations

The ethical considerations are concerned with issues that deal with voluntary participation of respondents, respondents participating are not harmed, anonymity and confidentiality is observed, the purpose as well as sponsor are identified, and finally analysis and reporting is done. The researcher was sure to undertake all the necessary steps to ensure the study is carried out ethically. First, by acquiring all the necessary permissions to research the relevant authorities that includes NACOSTI and Kenyatta University. The researcher strived to control or eliminate ethical issues that could lead to low response rate that results to the introduction of response bias by ensuring there is voluntary participation, (Cooper & Schindler, 2011). The researcher also addressed concerns in confidentiality by assuring respondents that data collected would specifically be used for academic purposes.

CHAPTER FOUR

RESEARCH FINDINGS AND DISCUSSIONS

4.1 Introduction

This section presents analysis of data and interpretations. The chapter is organised into sections covering questionnaires response rate, reliability test analysis, respondents' background information, descriptive statistics, diagnostic tests, and tests of hypotheses.

4.2 Descriptive Statistics

4.2.1 Response Rate

This study had a target to reach 105 respondents whose composition was made of the managing director, heads of marketing, finance, operations, strategy and business development. Table 4.1 presents the response rate.

Table 4.1: Response Rate Analysis

Responses	Frequency	Per Cent
Returned Questionnaires	80	76.19
Unreturned Questionnaires	25	23.81
Total	**105**	**100**

Source: Survey Data (2021)

Table 4.1 indicates there was response rate of 76.19% shows that 80 respondents returned the questionnaires properly filled, which was acceptable to conduct analysis. The busy schedules of the respondents accounted for the unreturned questionnaires at 23.81%. Saunders, Lewis and Thornhill (2007) argued that a response rate of above 50% is justifiable for conducting analysis. Hence, based on that recommendation, this study proceeded with data analysis for the purpose of drawing conclusions and making inferences.

4.3 Background Information of Respondents

The details of the respondents that was investigated in this study included, gender of the respondent, the respondent's position in the organisation and the duration in terms of years that the respondent had worked for the firm. The findings are presented in Tables and Figures.

4.3.1 Respondent Gender

The findings on the gender of respondents was analysed and presented in Figure 4.1.

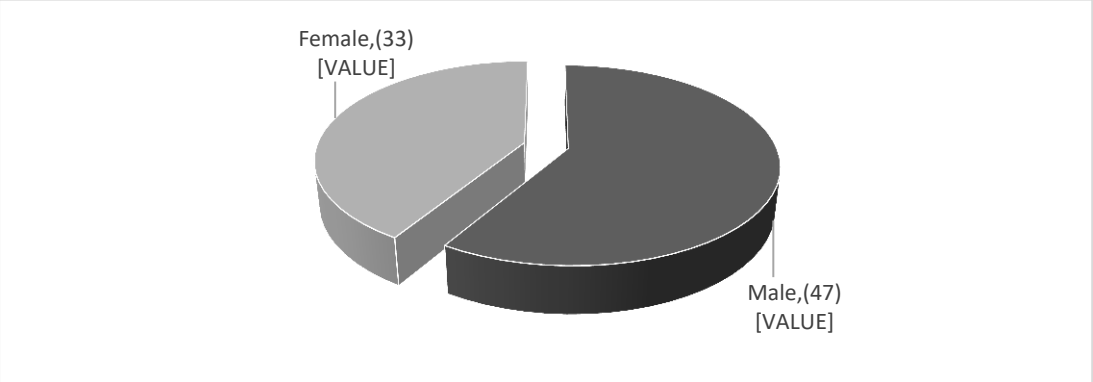


Figure 4.1: Respondent Gender

Source: Survey Data (2021).

Regarding gender of the respondents, the results shown in Figure 4.1 reveal that male participants were 58.8%, while 41.3% were female, and therefore low gender disparity in the sample selected for the study. Further, this is an indication that as stated in the Constitution of Kenya, Article 27(8) which indicates that to ensure that affirmative action is observed the State requires that all measures are undertaken to ensure that two thirds of elective or appointive bodies do not belong tote same gender. Hence the telecommunication sector have compiled to the one third gender rule particularly at management level.

4.3.2 Respondents Post in the Organization

The position held by the respondents in the respective organisations is another general information that was established. The findings are as shown on Table 4.2

Table 4.2: Post of Respondent in the Organization

Post held in the Organisation	Frequency	Percent
Chief Executive Officer	6	7.50
Head of Finance	16	20.00
Head of Marketing	19	23.75
Head of Operations	17	21.25
Head of Strategy	8	10.00
Head of Business Development	14	17.50
Total	**80**	**100**

Source:Survey Data (2021).

The findings in Table 4.2 show that the highest respondents were heads of marketing at 23.75%, followed heads of operations at 21.25% and heads of finance at 20%. Other positions represented in the sample were heads of business development at 17.70%, heads of strategy at 10% and chief executive officers at 7.50%. The results imply that different heads of the functional areas responsible for corporate strategy, policy formulation, and implementation of strategy were considered for the study. In addition, the respondents are involved in strategic management both at corporate and business level and are therefore appropriate in providing reliable information.

4.3.3 Years Worked for the Firm

Information on the duration the respondents had worked in the organization was also established. The results are as exhibited in Figure 4.2.

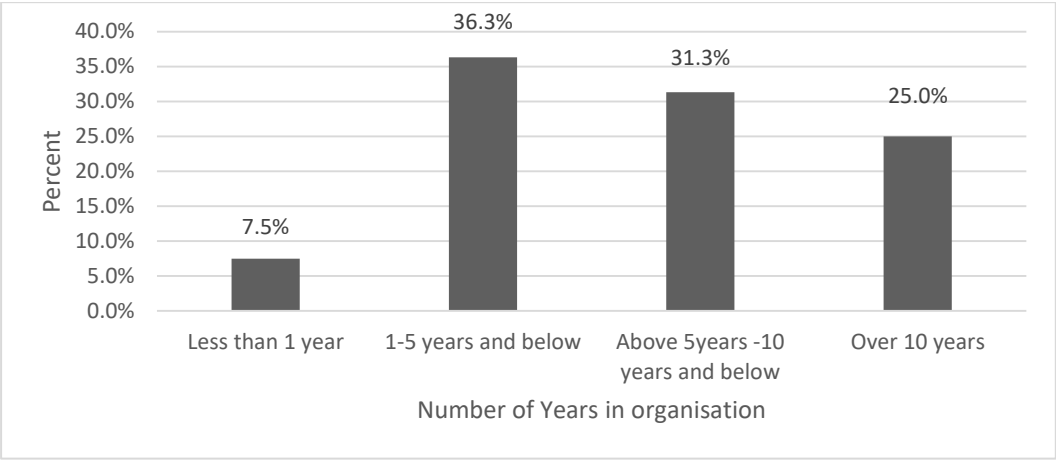


Figure 4.2: Number of years worked in the organisation

Source: Survey Data (2021).

Results on Figure 4.2 reveal that 36.3% had worked in their respective firms for a period of 1 to 5 years followed by 31.3% who had worked for a period of 5 to 10 years, 25% whose duration of working in the firm exceeded 10 years and 7.5% respondents had worked in their respective firms for less than 1 year. As indicated by the results majority of heads of the functional areas had relatively long period of association with the firm and were hence aware of the strategies and policies implemented to enhance firm performance.

4.4 Descriptive Statistics on Study Variables

This section presents descriptive statistics on each variable under the specific study objectives. The responses were rated on a 5-point Likert scale and the findings are presented in this section. Summarized results on each variable were done using mean and standard deviations.

4.4.1 Barrier to Entry Strategy

This section presents results on the opinions of respondents regarding barrier to entry strategy as applied by selected telecommunication application service firm. The questionnaire was formulated with items that represented a set of strategies designed to enhance barrier to entry. The responses were analysed using the mean and standard deviation (SD). The Likert scale that was applied ranged from 1-5 (5= Very Large Extent, 4=Large Extent, 3= Moderate Extent, 2= Little Extent and 1= No at all). The results are shown in Table 4.3.

Table 4.3: Descriptive Statistics on Barrier to Entry Strategy

Statement	Mean	Std. Deviation
Customers who buy products from the firm in bulk enjoy certain advantages	4.11	1.02
The proprietary technology (unique technology) owned by the firm have been a source of competitive advantage	4.04	1.14
The firm ensures that new inventions are legally protected (patent)	3.93	1.18
The firm commits to R&D for the development of proprietary technology	3.91	1.12
The firm ensures the telecommunication products acquired for production are bought in bulk	3.83	1.10
The inventions that are legally protected (patent) have had a		1.17

breakthrough effect in the sector	3.61	
The firm ensures that contracted suppliers incur a cost for not supplying product/service to the firm.	3.35	1.46
The firm ensures there is a cost for the customer to switch from the firm product/service to other competitors.	3.14	1.42
Aggregate mean score and standard deviation	**3.74**	**1.20**

Source: Survey Data (2021).

Table 4.3 shows that to a large extent customers who buy in bulk enjoy certain advantages and that the proprietary technology owned by the firm have been a source of competitive advantage as demonstrated by the average scores of 4.11 and 4.04. However there was high variation in observations as shown by the standard deviation of 1.02 and 1.14. In addition to a large extent the firm ensure that patents are legally protected, there is commitment to R& D for the development of proprietary technology, telecommunication products are acquired for production are bought in bulk and the inventions have a breakthrough effect in the sector. This is indicated by mean scores of 3.93, 3.91, 3.83 and 3.61 respectively. However there was high variation in the opinion of respondents as indicated by the standard deviation of 1.18, 1.12, 1.10 and 3.61.

Additionally, the results also show that to a moderate extent the firm ensured that contracted suppliers incur a cost for not supplying products or service to the firm and that there is a cost for the customer to switch from the firm products and services to other competitors as indicated by mean scores of 3.35 and 3.14. However, there were variations in the responses as indicated by the standard variations of 1.46 and 1.42.

The aggregate mean score of 3.74 indicates that barrier to entry was adopted by selected telecommunication application service firms in Kenya to a large extent, but there was variation in the respondents' observations as shown by the standard deviation of 1.2.The findings particularly agree with Kappes and Merkert,(2013) and Lado-sestayo, Vivel-búa, and Otero-gonzález,(2017) study on switching costs and economies of scale as critical measures of barrier to entry.

4.4.2 Quality Improvement Strategy

The second objective sought to determine quality improvement strategy effect on performance of selected telecommunication application service firms in Kenya. Presented herein are results on the opinions of respondents regarding quality improvement strategy as applied by selected telecommunication application service firm. The questionnaire was formulated with items that sought to determine respondents' understanding of the benefits of the firm to its customers when it ensures continuous improvement on product or service quality. The responses were analysed using mean and standard deviation (SD). Table 4.4 presents the results.

Table 4.4: Descriptive Statistics on Quality Improvement Strategy

Statement	Mean	Std Dev
The firm strives to respond to serve the market efficiently	4.20	1.06
The firm strives to ensure the unique features of the product are maintained	4.20	1.01
The firm ensures the existing product quality is continuously being improved	4.16	0.97
Customers are happy with the response rate on the complains	4.12	0.96
The customers perceive the firm products have more value than other competitors	4.09	1.05
The firm is constantly putting effort in the development of quality new products that meet the customer's needs	4.09	1.02
The firm strives to ensure that services are delivered at the customers convenience	4.03	0.98
The firm has a system that ensure customer complaints are addressed within the shortest time	3.96	0.95
Aggregate mean score and standard deviation	**4.11**	**1.01**

Source: Survey Data (2021).

The results in Table 4.4 show to a large extent the firm strives to respond to serve the market efficiently and also ensures the unique features of the products are maintained as indicated by the mean score of 4.20. However, the respondents had variation in their observations as indicated by standard deviations of 1.06 and 1.01 respectively. In addition, to a large extent, the firm ensures the existing product quality is continously being improved and customers are happy with the response rate on the complains as indicated by mean scores of 4.16 and 4.12. The standard deviations of 0.96 and 0.96 respectively indicated variation in the respondents observations. Further, to a large extent the customer perceive the firm products have more value than other

competitors, the firm is constantly putting effort in the development of quality new products that meet the customer needs, ensures that services are delivered at the customers convenience and has a system that ensures customer complaints are addressed within the shortest time. This is indicated by means scores of 4.09,4.09,4.03 and 3.96 respectively. The standard deviations of 1.05,1.02,0.98 and 0.95 indicate there was variation in the respondents observation.

Overall, the aggregate mean score of 4.11 indicated selected telecommunication application service firms adopted quality improvement strategy to a large extent but there was high variation on the extent quality improvment strategy was adopted as indicated by a standard variation of 1.01. Yannopoulus,(2013) avers that continous product improvement and additional segment entry improves on performance.

4.4.3 Mass Market Dominance Strategy

The results on the opinions of respondents regarding mass market dominance strategy applied by telecommunication application service firms are presented in this section. The questionnaire was formulated with items that represented a set of mass market dominance strategies designed to enhance performance. Mean and standard deviation (SD) were applied to summarize the findings. The Likert scale that was applied ranged from 1-5 as shown in Table 4.5.

Table 4.5: Descriptive Statistics on Mass Market Dominance Strategy

Statement	Mean	Std Dev
The firm ensures they maintain a good relationship with partners	4.28	0.98
The firm collaborates with providers of complementary products /services	4.08	1.05
The firm strives to always extend a product line	4.04	1.14
The firm strives to maintain leadership in production more than the other competitors	4.01	1.06
The firm strives to maintain leadership in distribution of products more than the other competitors	4.01	1.01
The firm has a wider range of products/services that serve different markets than the competitors	3.80	1.09
Aggregate mean score and standard deviation	**4.03**	**1.06**

Source: Survey Data (2021).

The results on Table 4.5 show that to large extent firms ensure they maintain good relationships with partners, collaborate with providers of complementary products or services and strive to extend a product line demonstrated by average scores of 4.28,4.08 and 4.04 respectively. However there were variation in the respondents opinion as indicated by the standard deviations of 0.98,1.05 and 1.14. Additionally,as revealed by average scores of 4.01 and 3.80, to a large extent firms strive to maintain leadership in production and distribution as well as have a wider range of products or services that serve different markets than the competitors. However, respondents had variation in their opinion as indicated by standard deviations of 1.06,1.01 and 1.09 respectively.

The findings show the aggregate mean score for mass market dominance strategy was 4.03 indicating that respondents to a large extent agree that mass market dominanance strategy is adopted by telecommunication application firms in Kenya. However, respondents had variation in their opnion concerning the extent mass market dominance strategy was adopted as shown by the high standard deviation of 1.06.This study concurs with prior studies that partnerships with providers of complimentary products and leadership in production and distribution improves firm performance, (Hartigh, Ortt, Kaa & Stolwijk, 2015; Markides & Sosa,2013).

4.4.4 Niche Penetration Strategy

Items formulated in the questionnaire sought to determine respondents' understanding on how the firm targets niche markets to retain its market share and profitability. Presented in this section therefore are results on the opinion of respondents regarding niche market strategies applied by telecommunication application service firms. Mean and standard deviation (SD) was applied to analyse the responses. The results are presented in Table 4.6.

Table 4.6: Descriptive Statistics on Niche Penetration Strategy

Statement	Mean	Std Dev
The firm engages in activities that enhance long-term relationship with the customer	4.20	0.99
The firms customized products compete on value	4.19	0.96
The established relationship had led the firm to provide better solutions to the customers	4.09	1.07
The firm has specialized in tailored products for the niche market	4.06	1.00
The market segment is clearly defined by the firm	4.00	1.09
The defined market segment is measurable	3.75	1.04
Aggregate mean score and standard deviation	**4.05**	**1.03**

Source: Survey Data (2021)

Table 4.6 show that to a large extent firms engage in activities that enhance long-term relationship with the customer and customized products compete on value. Further, established relationship had led to providing better solutions to the customers and the firm specialized in tailored products for the niche market. This is demonstrated by the average score of 4.20, 4.19, 4.09 and 4.06 respectively. However, standard deviations of 0.99, 0.96, 1.07 and 1.00 was an indication that there was variation in the opinion of the respondents. In addition, the average score of 4.00 and 3.75 demonstrate that to a large extent the market segment is clearly defined by the firm and the segments are measurable. However, 1.09 and 1.04 standard deviations indicate there was high variation the opinion of the respondents.

The results shows niche market penetration strategy had aggregate mean of 4.05 indicating respondents to a large extent agree that niche market penetration strategy is adopted by selected telecommunication application service firms in Kenya. The 1.02 standard deviation evidenced that the respondents had varied views concerning the extent to which these strategy was adopted. This study prior empirical studies that niche market penetration strategy if adopted leads to achievement of performance goals, (Jensen, Cobbs & Groza, 2014).

4.4.5 Information Technology Capability

Presented in this section is the respondent's opinion of how firms have adopted information technology capability. Results are presented on Table 4.7.

Table 4.7: Descriptive Statistics on Information Technology Capability

Statement	Mean	Std Dev
Different technology components in the firm are able to allow communication within the firm	4.24	0.96
Different technology components within the firm allow communication between the firm and other partners	4.21	0.95
The firm is able to share knowledge across any technology component within the organisation.	4.15	0.98
The firm has the ability to modify technology components with low technological constraints within the firm	3.95	0.99
The firm has the ability to modify customers' technology components with low technological constraints	3.96	0.97
Different types of information can be shared by the firm on any technology component external to the firm	3.83	1.14
Aggregate mean score and standard deviation	**4.06**	**1.00**

Source: Survey Data (2021).

Table 4.7 reveal to a large extent different technology components in the firm are able to allow communication within the firm and also between the firm and other partners, as indicated by mean scores of 4.24 and 4.21. The standard deviation of 0.96 and 0.95 is an indication of the varying opinion by the respondents. In addition, the firm is share knowledge across any technology component within the firm and has the ability to modify the technology components with low technology constraints for customers and also within the firm. These is indicated by mean scores of 4.15,3.96 and 3.95 respectively, however there was high variation in the opinion of respondents as indicated by standard deviation of 0.98,0.97 and 0.99. The average score of 3.83 different types of information can be shared by the firm on any technology component that is external . 1.14 standard deviation indicates a high variation in the respondents opinion.

Further, the results show that the aggregate mean score of 4.06 denotes that the respondents agreed to a large extent that IT capability was adopted in the selected telecommunication application firms in Kenya. However, the results show disparities in the respondents's opinion regarding the adoption of IT capability as evidenced by a standard devaition of 1.00. The study avers prior that IT capability exerts positive influence on firm performance, (Liu *et al.*, 2013).

4.4.6 Entrepreneurial Orientation

Questionnaire items were formulated to seek respondents' understanding on how their firm adopts entrepreneurial orientation. Table 4.8 shows the results.

Table 4.8: Descriptive Statistics on Entrepreneurial Orientation

Statement	Mean	Std Dev
The firm promotes new market opportunities	4.33	0.96
The firm is open to new ideas.	4.33	0.95
The firm is willing to identify new market opportunities	4.31	0.98
The firm provides an environment where entrepreneurship is supported	4.30	0.99
Creativity is encouraged in the firm	4.29	1.05
The firm engages in activities that position as the market leader	4.29	1.06
The firm encourages experimentation of new products /services	4.15	0.96
The managers do not take long to act on new opportunities	4.14	0.96
The firm encourages experimentation of new processes	4.02	1.02
The firm aggressively responds to competitors to achieve competitive advantage	4.00	0.98
The managers are willing to make large resource commitments in projects.	3.83	1.05
The firm encourages individuals or teams to engage in entrepreneurial activities	3.80	1.06
The managers in the firm are willing to risk resource in support of projects where the outcome is unknown	3.61	1.20
The individual or teams formed are allowed to make independent decisions	3.60	1.11
Entrepreneurial orientation average	**4.07**	**1.03**

Source: Survey Data (2021).

From the results shown in Table 4.8, to a large extent the firm promotes new market opportunities, is open to new ideas , willing to identify new market opportunities and provide an environment where entrepreneurship is supported demonstrated by the average scores of 4.33,4.33 4.31 and 4.30 respectively. However, there was high variation in the opinion of the respondents as indicated by the standard deviation of 0.96, 0.95, 0.98 and 0.99 respectively. In addition, to a large extent the firm encourages creativity, engages in activities that position as the market leader, encourages experimentation of new products or services and new processes and the managers do not take long to act on new opportunities. This is demonstrated the

average scores of 4.29, 4.29, 4.15, 4.02 and 4.14 respectively. However standard deviations of 1.05, 1.06, 0.96, 1.02 and 0.96 respectively indicate there was high variation in the opinion of the respondents. Further, to a large extent, the firm aggressively responds to competitors to achieve competitive advantage, managers are willing to commit large resources in projects, individuals or teams are encouraged to engage in entrepreneurial activities while managers are willing to risk resources in support of projects where the outcome is unknown and individuals or teams are allowed to make independent decisions. These are indicated by mean scores of 4.00, 3.83, 3.80, 3.61 and 3.60 respectively. Standard deviations of 0.98, 1.05.1.06, 1.20 and 1.11 respectively indicate high variations in the opinions of respondents.

Entrepreneurial orientation was adopted in the selected telecommunication application firms in Kenya to a large as evidenced by the average score of 4.07. However, the 1.03 standard deviation indicates there was disparity on the extent of entrepreneurial orientation was adopted in telecommunication firms in Kenya. The findings corroborate prior empirical conclusions on the effect of EO and performance, (Gruber-muecke & Hofer,2015;Zehir,Can & Karaboga,2015).

4.4.7 Firm Performance

Firm performance was measured in terms of customer reputation, firm reputation, market growth and profitability. First, the study established the level of performance for the selected application service firms in terms of customer retention and firm reputation. Mean and standard deviation were applied to summarize the findings. The results were presented in Table 4.9.

Table 4.9: Descriptive Statistics on Customer Retention and Firm Reputation

Statement	Mean	Std Dev
Customer Retention		
The customers refer other customers to the firm	4.28	0.86
Most of the customers have increased usage of the firm products	4.25	0.85
The customers have a positive attitude towards the firm	4.25	0.85
Customers prefer the firm products more than the other competitors	4.18	0.90
The firm has retained most of its customers	4.11	0.91

Aggregate mean score and standard deviation	**4.21**	**0.87**
Firm Reputation		
The firm is committed to the customer	4.56	0.94
The firm products and services are viewed to be of high quality	4.43	0.91
The firm is consistent in-service delivery	4.38	0.89
The customers have trust in the firm's services and products	4.31	0.99
The firm is viewed as a leader in the market	4.15	1.02
Aggregate mean score and standard deviation	**4.37**	**0.95**

Source: Survey Data (2021).

The results on Table 4.9 show to a large extent the customers refer other customers to the firm, most of the customers have increased usage of the firm products, the customers have a positive attitude towards the firm and the firm has retained most of its customers as shown by the mean scores of 4.28,4.25,4.25,4.18 and 4.11 respectively. The standard deviation of 0.86,0.85,0.85.0.90 and 0.91 indicate there was high variation in the opinion of the respondents.

Additionally, the firm is committed to the customer to a large extent as indicated by a mean score of 4.56. However, there was high variations in the opinion of respondents as shown by a standard deviation of 0.94. Further, to a large extent the firm products and services are viewed to of high quality, there was consistency in service delivery, customers trust the firm's services and products and the firm was viewed as a leader in the market as indicated by mean scores of 4.43,4.38.4.31 and 4.15 respectively. There was variations in the opinion of the respondents as indicated by standard deviation of 0.91,0.89.0.99 and 1.02.

Overall selected telecommunication application service firms in Kenya had retained customers and firm reputation to a large extent as indicated by a mean scores of 4.21 and 4.37, however there was variation in the opinion of respondents as shown by a standard deviations of 0.87 and 0.95.

In addition, the study sought to determine the performance of selected telecommunication application service firms in Kenya by in terms of market share

growth and profitability growth. Respondents were required to indicate their firm's market share growth and net profit growth for the period 2015-2019 on a 5-point Likert scale, representing a percentage range where 5=Above 30%, 4= Above 20% - 30%, 3=Above10% - 20%, 2= Above 1% - 10% and 1 = Less than 1%. Table 4.10 presents the results.

Table 4.10: Descriptive Statistics on Market Share and Profitability

Statement	Mean	Std Dev
Market Share Growth		
2015	2.89	1.20
2016	2.99	1.11
2017	3.30	1.07
2018	3.38	1.04
2019	3.49	1.13
Aggregate mean score and standard deviation	**3.21**	**1.11**
Net Profit Growth		
2015	2.85	1.20
2016	3.03	1.12
2017	3.26	1.14
2018	3.44	1.15
2019	3.41	1.21
Aggregate mean score and standard deviation	**3.20**	**1.17**

The results on Table 4.10 show that for the period covered in the studythat is from 2015 to 2019, the market share growth was at a constant between 10% to 20% as indicated by the mean scores of 2.89, 2.99,3.30,3.38 and 3.49 respectively. The aggregate standard deviation of 1.11 indicate there was high variation in the responses. Additionally, the study shows that net profit growth between 2015 to 2019 was between 10% and 20% as indicated by the mean scores of 2.85,3.03,3.26,3.44, and 3.41 respectively. The aggregate standard deviation of 1.17 indicates the opinion of the respondents varied.

The overall performance of the selected telecommunication application service firms is as presented in Table 4.11.

Table 4.11 Descriptive Statistics on Performance

	Mean	Std Dev
Customer retention	4.21	0.87
Firm reputation	4.37	0.95
Market share growth	3.21	1.11
Net profit growth	3.20	1.17
Aggregate mean score and standard deviation	**3.75**	**1.03**

Table 4.11 demonstrates aggregate average score of the perfomance measured in terms of customer retention, firm reputation, market share growth and net profit growth. The aggregate mean score of 3.75 indicate that the respondents agree to a large extent, however as indicated by 1.03 standard deviation, there was high variation in the respondents observations.

4.5 Diagnostic Tests

In order to ensure there was compliance to the assumptions of linear and multiple regression in the study, diagnostic tests were undertaken. Normality, linearity, multicollinearity, Breusch-Pagan- Godfrey test for homogeneity of variance (Heteroskedasticity) and correlation tests were performed. The methods as well as results for each test are as indicated in each subsections.

4.5.1 Normality Test

The prospect of the data set being well-modelled by the normal distribution indicates normality. Shapiro-Wilk test ranging from-0.1 to +1.0 was used to test normality as it had more power to detect differences. A - value >0.05 indicates the data collected wa normally distributed. The outcomes are shown in Table 4.12.

Table 4.12: Shapiro Wilk test for Normality

	Shapiro-Wilk		
Variable	**Statistic**	**df**	**Sig.**
Barrier to entry strategy	0.882	80	0.223
Quality improvement strategy	0.827	80	0.124
Mass market dominance strategy	0.845	80	0.402
Niche penetration strategy	0.843	80	0.261
Entrepreneurial orientation strategy	0.81	80	0.136
IT Capability	0.792	80	0.394
Firm performance	0.788	80	0.231
a Lilliefors Significance Correction			

Source: Survey Data (2021).

The findings presented in Table 4.12 reveals all variables were significant since the p-values are greater than 0.05. Therefore data for each of the variables was considered to be normally distributed.

4.5.2 Multi-collinearity Test

Multicollinearity is the existence of a strong correlation between two or more predictor variables. This study tested multicollinearity of predictor variables using Variance Inflation Factor (VIF) as well as tolerance values. Values of VIF that are greater than 10 imply existence of multicollinearity just as corresponding tolerance values below 0.1. Results are presented in Table 4.13.

Table 4.13: Variance Inflation Factor (VIF)/Tolerance test for Multicollinearity

	Collinearity Statistics	
Variable	**Tolerance**	**VIF**
Barrier to entry strategy	0.415	2.409
Quality improvement strategy	0.286	3.492
Mass market dominance strategy	0.395	2.533
Niche penetration strategy	0.303	3.302

Source: Survey Data (2021).

The results on Table 4.13 evidence the independent variables had VIF below 10 and tolerance values greater than 0.1 as suggested by Field (2009) which implies that there was no problem of multicollinearity.

4.5.3 Heteroscedasticity Test

Existence of heteroskedasticity makes a regression analysis not to be optimal as it gives similar weight to all observations (Williams, 2016). This makes standard errors to have bias leading to biased inferences. This study used the Breusch-Pagan test recommended to test for homoscedasticity, which asserts that to satisfy the assumption of homoscedasticity, the probability value must be greater than 0.05. The findings are presented in Table 4.14.

Table 4.14: Breusch-Pagan Test of Homoscedasticity

Breusch-Pagan Test for Homoscedasticity
Ho: Constant variance
$chi^2(1)$ = 1.64
Prob > chi2 = 0.2108

Source: Survey Data (2021).

According to the results in Table 4.12, Prob > Chi2 value represents p-value > 0.05. Therefore this suggested the presence of homogeneity and the regression model was appropriate for this investigation.

4.5.4 Linearity Test

Field, (2013) recommends consideration of linearity for a regression model that is the outcome variable should be linearly related to the predictor variable .This assumption was tested using scatter plots as recommended by Dancey and Reidy, (2004). The test for linear association between the independent and dependent variables is presented in Figure 4.3

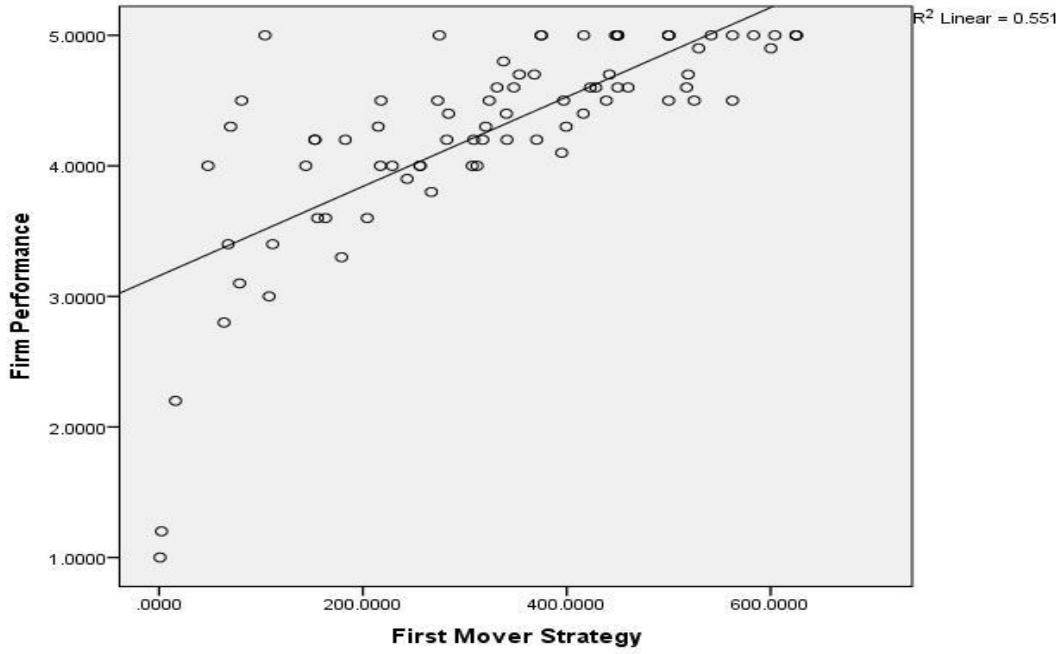


Figure 4.3: Scatter plot test for Linearity of First mover strategy and performance

Source: Research Data (2021).

Figure 4.3 demonstrates a positive linear relationship between the predictor variable first mover strategy, and the outcome variable firm performance. Figures 4.4 to 4.7 represent scatterplots for each of barrier to entry strategy, quality improvement strategy, mass market dominance strategy and niche market strategy against firm performance.

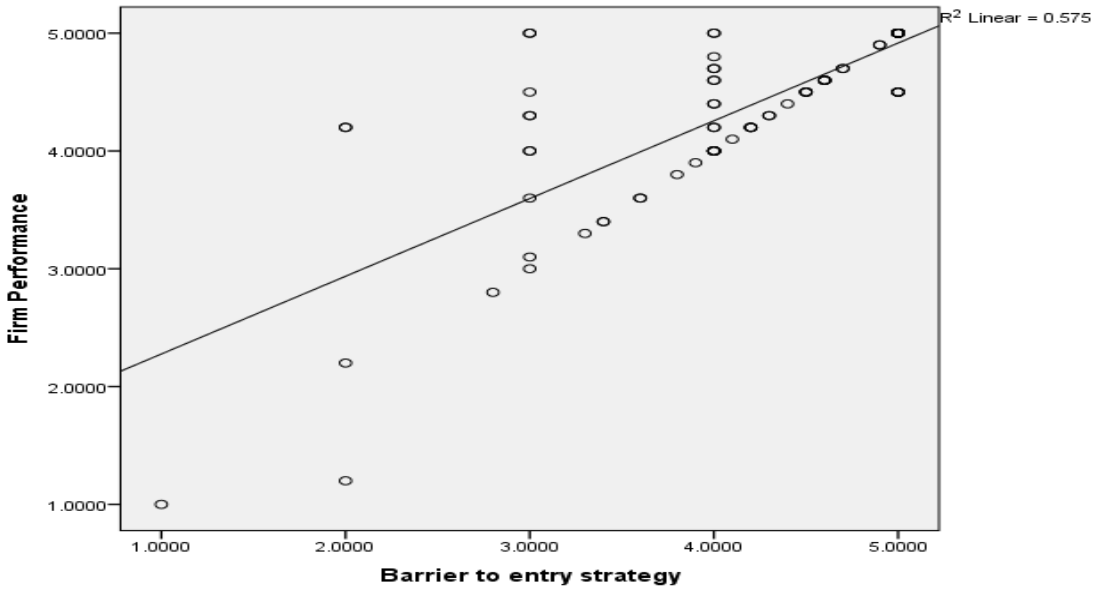


Figure 4.4: Scatter plot test for Linearity of Barrier to Entry Strategy and firm performance

Source: Research Data (2021).

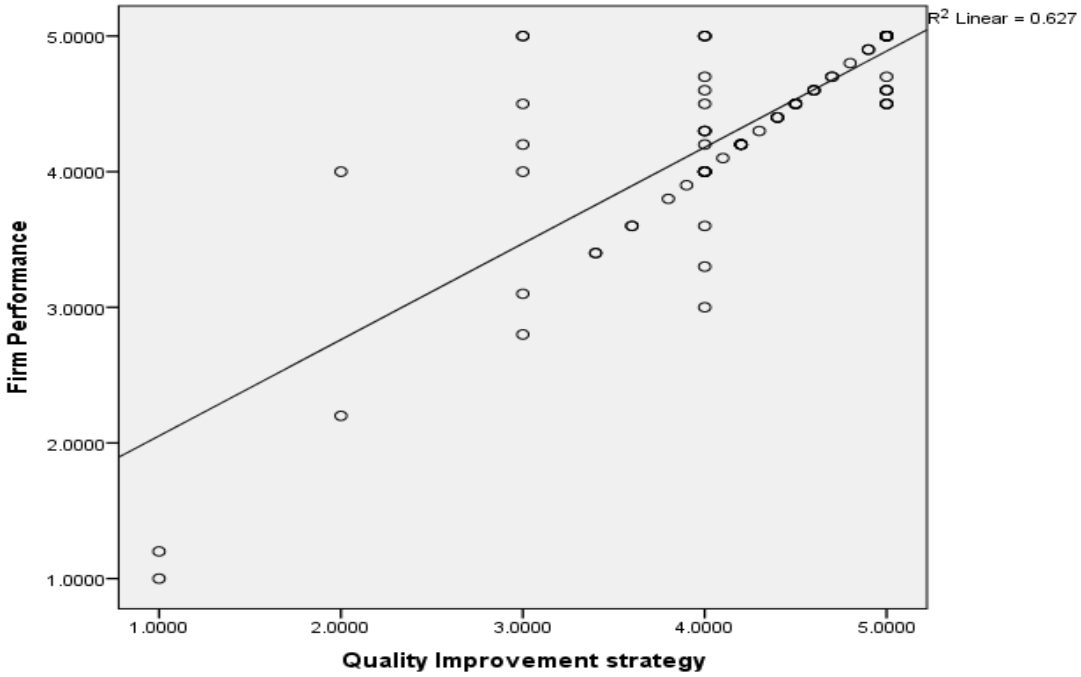


Figure 4.5: Scatter plot test for Linearity of Quality Improvement Strategy and firm performance

Source: Research Data (2021).

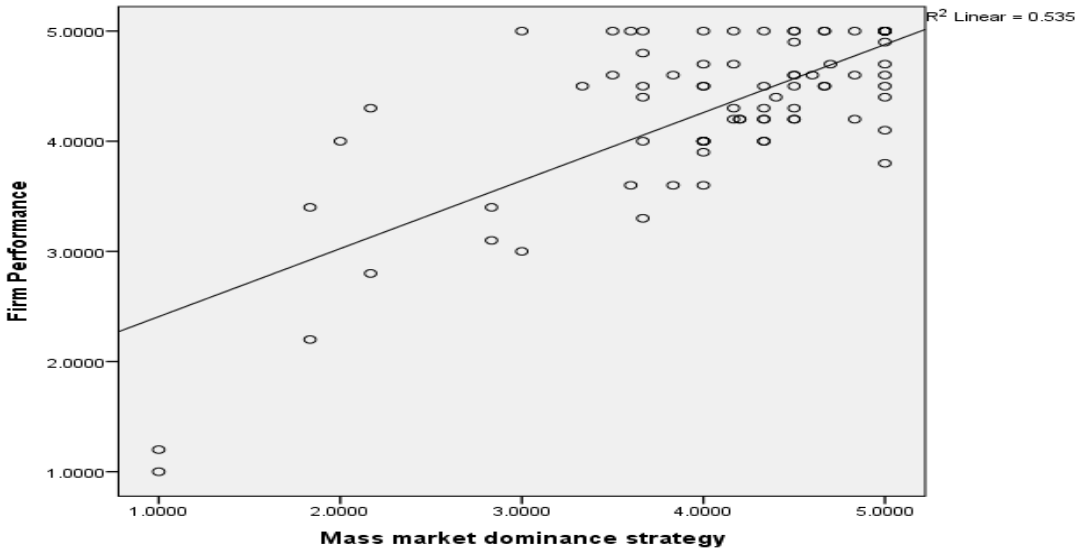


Figure 4.6: Scatter plot test for Linearity of Mass Market Dominance Strategy and firm performance

Source: Research Data (2021).

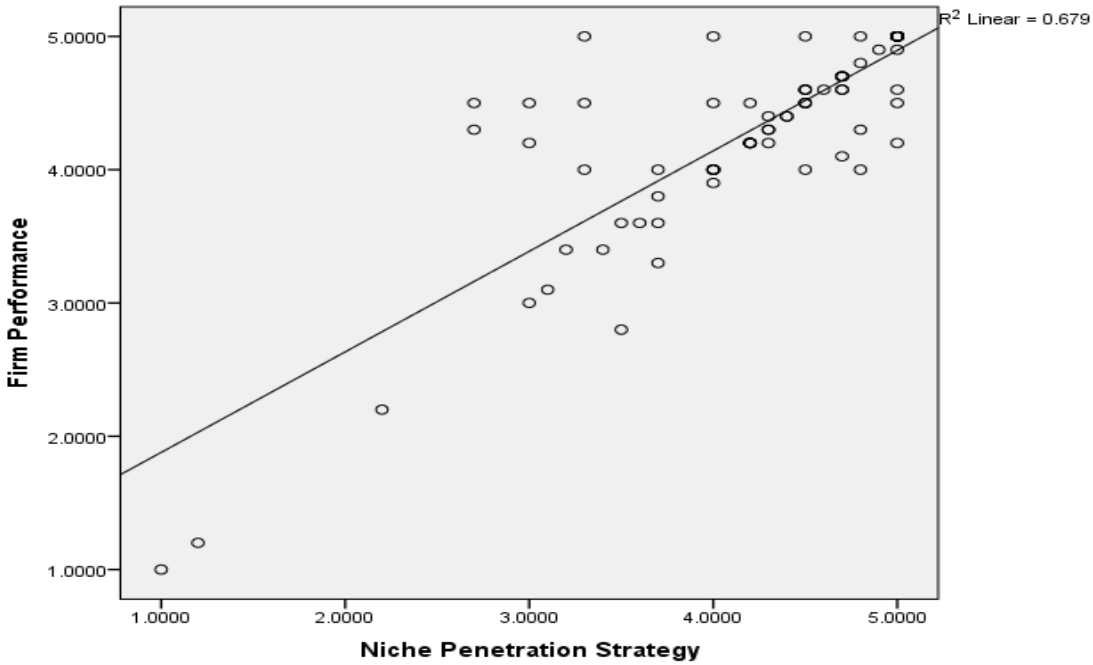


Figure 4.7: Scatter plot test for Linearity of Niche Market Penetration Strategy and firm performance

Source: Research Data (2021).

Figures 4.4 through 4.7 shows a positive linear relationship appears between barrier to entry, quality improvement, mass market dominance and niche penetration strategy and the selected telecommunication application service firm performance.

4.6 Correlation Analysis

The study used correlation analysis to reveal the magnitude and direction of the association between the variables as recommended by Cooper and Schindler (2008). Table 4.15 gives a presentation of the findings.

Table 4.15: Correlation Matrix Test for Linearity

		Barrier to entry strategy	Quality improvement strategy	Mass market dominance strategy	Niche penetration strategy	Performance
Barrier to entry strategy	Pearson Correlation	1				
	Sig. (2-tailed)					
Quality improvement strategy	Pearson Correlation	.710**	1			
	Sig. (2-tailed)	0				
Mass market dominance strategy	Pearson Correlation	.640**	.748**	1		
	Sig. (2-tailed)	0	0			
Niche penetration strategy	Pearson Correlation	.727**	.791**	.711**	1	
	Sig. (2-tailed)	0	0	0		
Performance	Pearson Correlation	.758**	.792**	.732**	.824**	1
	Sig. (2-tailed)	0.000	0.000	0.000	0.000	
	N	80	80	80	80	80

** Correlation is significant at the 0.05 level (2-tailed).

Source: Survey Data (2021).

According to Schober, Boer and Schwarte, (2018), a correlation coefficient of 0.9 to 1 means a very strong correlation, 0.7 to 0.89 means a strong correlations, 0.4 to 0.69 means moderate correlation, 0.10 to 0.39 means a weak correlation and 0.to 0.1 means

a negligible correlation. The findings presented in Table 4.15 therefore show that niche penetration strategy has highest correlation of 0.727, mass market dominance and niche penetration strategy have a strong correlation.

4.7 Test of Hypotheses

This study was based on the assumption that first mover strategy has an effect on the performance of selected telecommunication service firms in Kenya. Further, an assumption was made that firm performance was moderated by IT capability and mediated by entrepreneurial orientation. These hypotheses were tested using multiple regression analysis and was interpreted through p-values at $p<0.05$ and R^2 values.

4.7.1 Test of Direct Relationship Hypothesis

A multiple regression analysis was done to test the hypotheses. The model was fitted to test whether barrier to entry strategy, quality improvement strategy, mass market dominance strategy, niche penetration strategy predicted performance of selected telecommunication application service firms in Kenya. The model adopted is as follows:

$$\mathbf{YF = \beta_o + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \varepsilon} \quad \textbf{.....3.1}$$

Where:

Y_F= Composite Index for performance of Telecommunication Application Service Firms

β_o= Constant

β_1- β_4 = Regression coefficients of independent variables that is X_1,X_2,X and X_4 respectively

X_1 = Barrier to Entry strategy

X_3= Quality Improvement strategy,

X_3 = Mass Market Dominance strategy

X_4 =Niche Market Penetration strategy

ε = Error term

Tables 4.16, 4.17 and 4.18 show the results of the multiple regression model.

Table 4.16: Empirical Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.877	0.769	0.757	0.382685

a Predictors: (Constant), Barrier to entry strategy, Quality improvement strategy, Mass market dominance strategy, Niche penetration strategy

Source: Survey Data (2021).

Table 4.16 shows that the correlation coefficient (R) is .877 illustrating that the independent variable and firm performance are strongly and positively correlated. The coefficient of determination denoted by R-square was 0.769 which implies that barrier to entry, quality improvement strategy, mass market dominance and niche penetration strategy accounted for 76.9% of the variation in performance of selected telecommunication application service firms in Kenya. Conversely, 23.1% of the variation in firm performance was explained by other factors not considered in the regression model of this study.

Table 4.17: Empirical Model ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	36.576	4	9.144	62.439	.000
	Residual	10.984	75	0.146		
	Total	47.56	79			

a Dependent Variable: Firm Performance
b Predictors: (Constant), Barrier to entry strategy, Quality improvement strategy, Mass market dominance strategy, Niche penetration strategy

Source: Survey Data (2021).

Table 4.17 shows that the computed F is 62.439, which is higher than the critical value of 2.494 and has a p-value of 0.000 < 0.05 level of significance is fit to predict the relationship between barrier to entry strategy, quality improvement strategy, mass market dominance strategy, niche penetration strategy and performance of selected telecommunication application firms.

Table 4.18 shows the regression coefficients of the model constructed to examine the effect of first mover strategy on the performance of selected telecommunication application service firms in Kenya. These results were used in test of hypotheses.

Table 4.18: Empirical Model Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	**Std. Error**	**Beta**	**t**	**Sig.**
1	(Constant)	0.701	0.231		3.032	0.003
	Barrier to entry strategy	0.205	0.075	0.236	2.736	0.008
	Quality improvement strategy	0.189	0.093	0.212	2.04	0.045
	Mass market dominance strategy	0.132	0.075	0.156	1.766	0.081
	Niche penetration strategy	0.343	0.092	0.375	3.716	0.000

a Dependent Variable: Firm performance

Source: Survey Data (2021).

The results of Table 4.18 summarises the regression model as below:

Peformance of selected telecommunication application service firms = 0.701 +0.205 Barrier to entry strategy + 0.189 Quality improvement strategy + 0.132 Mass market dominance strategy + 0.343 Niche penetration strategy.....Model 3.1

4.7.2 Test of Hypothesis One

The first hypothesis tested was the null hypothesis that barrier to entry strategy has no significant effect on performance of selected telecommunication application service firms in Kenya. Results in Table 4.18 show a p-value 0.008 < 0.05 level of significance. The study consequently rejects the null hypothesis concluding that barrier to entry strategy significantly affects performance of selected telecommunication application service firms in Kenya at 0.05 level of significance.

Table 4.18 shows a beta coefficient of 0.701, implying that keeping other factors constant, performance of selected telecommunication application service firms would be 0.701. In addition, coefficient of barrier to entry is 0.205 implying that a unit

increase in barrier to entry strategy keeping other factors constant at zero would result to 0.205 increase in performance of selected telecommunication application service firms in Kenya.

The results agree with Kappes and Merkert, (2013) findings that barrier to entry is an effective strategy for performance. In addition, the results agreed with Yang *et al*., (2013) findings on the measures adopted by study for barrier to entry strategy and the effect to performance and with Lado-sestayo *et al*., (2017) on the importance of economies of scale as important measure of barrier to entry. The findings are in support of Game Theory, where in a competitive environment, the firm chooses a non-cooperative game to maximize in creating value, in this context performance in terms of customer retention, firm reputation, market share growth and net profitability, (Ross,2018).

4.7.3 Test of Hypothesis Two

The second hypothesis tested was the null hypothesis that quality improvement strategy has no significant effect on performance of selected telecommunication application service firms in Kenya. Results in Table 4.18 show a p-value of $0.045 \leq 0.05$ for quality improvement strategy. Therefore the study rejects the null hypothesis concluding that quality improvement strategy significantly affects performance of selected telecommunication application service firms in Kenya.

Table 4.16 shows constant has coefficient of 0.701 and a beta coefficient of 0.189 for quality improvement strategy, implying that keeping other factors constant, performance of selected telecommunication application service firms would be 0.701. In addition, a unit increase in quality improvement strategy keeping other factors constant would result to 0.189 increase in performance of selected telecommunication application service firms.

The results agree with the Lin,Tan and Geng,(2013) that quality improvement strategy does not significantly influence performance however performance can be significant when a firm is able to manage demand. The study fails to agree with Herzallah, Gutherrez and Rosas, (2016), that quality improvement is positively related to performance. Conversely, the study further notes that performance can only be achieved if costs are managed. The results agree with Goal Setting Theory that when

dealing with a high goal, other extant strategies or new strategies can be discovered in order to attain the goal, (Latham, Seijts & Slocum, 2016).

4.7.4 Test of Hypothesis Three

The third hypothesis that was tested by this study is that mass market dominance strategy has no significant effect on performance of selected telecommunication application service firms in Kenya. Table 4.18 show a p-value 0.081 > 0.05 for mass market dominance strategy. Therefore the study did not reject the null hypothesis and concluded that mass market dominance strategy does not significantly affect performance of selected telecommunication application service firms in Kenya.

Table 4.18 show mass market dominance strategy has a beta coefficient of 0.132 implying that a unit improvement in mass market dominance strategy keeping other factors constant at zero would result to an insignificant increase of 0.132 unit in performance of selected telecommunication application service firms in Kenya.

The results agree with Velu,(2015) that mass market dominance strategy may be insignificant to performance if adopted as an adaptive strategy. The study fails to agree with Abel,(2008) and Wang *et al,* (2016) study that mass market dominance strategy is significant to firm performance.

4.7.5 Test of Hypothesis Four

The fourth hypothesis tested was the null hypothesis that niche market penetration strategy has no significant effect on performance of selected telecommunication application service firms in Kenya. Results in Table 4.18 show p-value of 0.000 < 0.05 meaning that the study rejected the null hypothesis concluding that niche market penetration strategy significantly affects performance of selected telecommunication application service firms.

Table 4.16 show that constant had a beta coefficient of 0.701 and niche penetration strategy beta coefficient of 0.343.This implies that a unit improvement in barrier to entry strategy keeping other factors constant at zero would result to 0.343 unit improvement in performance of selected telecommunication application service firms in Kenya.

The results agree with the findings of Ottosson and Kindström, (2015) who argued that when niche market penetration strategy is adopted proactively through setting business goals that relate to expansion and growth, customer relationships and profit margins, organisational performance is enhanced. Similarly, Toften *et al.*, (2010) found that specialisation, differentiated products, strong relationships and limited targeted support niche marketing strategy assumptions which ultimately improves firm performance. Hammervoll,Mora and Toften, (2015) contends that successful implementation of the niche strategy has numerous benefits that include increased profits and competitiveness and high growth and market shares.The results support the Goal Setting Theory that when a firm sets goals that specific and challenging then there is high peformance, contending that a firm adopting niche market penetration strategy should be specific on the target market and thus can realise increased performance Latham, Seijts & Slocum, (2016).

4.7.6 Test of Hypothesis Five

The fifth hypothesis was to evaluate how IT capability moderates the relationship between first mover strategy and performance of selected telecommunication application service firms, the study applied Whisman and McClelland (2005) two-step model approach. The two models fitted are as shown below and follow from the base regression model:

$Y_F = \beta_0 + \beta_5 FMS + \beta_6 ITC + \varepsilon$ ..... (3.2)

$Y_F = \beta_0 + \beta_7 FMS + \beta_8 FMS*ITC + \varepsilon$ ..... (3.3)

Where;

Y_F = Firm Performance Composite Index

β_0 = Constant

$\beta_{5 \text{ to}} \beta_8$ = Beta Coefficients

FMS = First Mover Strategy Composite index

ITC = IT Capability Composite index

FMS*ITC = Interaction of First Mover Strategy and IT Capability

The first model was fitted with Information Technology Capability as an independent variable as shown in Table 4.19.

Table 4.19: Testing for Moderating Effect of Information Technology Capability

		Unstandardized Coefficients		Standardized Coefficients		
		B	**Std. Error**	**Beta**	**t**	**Sig.**
(Constant)		2.43	0.273		8.892	0.000
First Mover Strategy		0.002	0.012	0.53	5.214	0.000
Information technology Capability		0.258	0.087	0.303	2.981	0.004
R square	0.597					
Adjusted R Square	0.587					
F Statistic	57.103, (p-value=0.000)					

a Dependent Variable: Firm performance

Source: Survey Data (2021).

Table 4.19 results show IT capability had a β= 0.258, p-value =0.004 < 0.05, implying information technology capability significantly predicts performance as an explanatory variable. The second model treated information technology capability (ITC) as a moderating variable by interacting it with composite index of first mover strategy (FMS) to create interaction variable (FMS*ITC). The results are shown in Table 4.20.

Table 4.20: Testing for Moderating Effect of Information Technology Capability

		Unstandardized Coefficients		Standardized Coefficients		
		B	**Std. Error**	**Beta**	**t**	**Sig.**
(Constant)		3.067	0.143		21.501	0.000
First Mover Strategy		0.006	0.002	1.211	3.681	0.000
FMS*ITC		0.001	0.000	-0.481	-1.464	0.147
R square	0.563					
Adjusted R Square	0.552					
F Statistic	49.596, (p-value=0.000)					

a Dependent Variable: Firm performance

Source: Survey Data (2021).

The results in Table 4.20 show that when information technology capability was used as a moderating variable through interaction, β= 0.001 and p-value=0.147 > 0.05. The null hypothesis was not rejected, thus Information technology capability does not significantly moderate first mover strategy and performance of selected telecommunication application service firms in Kenya. This means performance of

telecommunication application service firms in Kenya dependent on first mover strategy are not moderated by information technology capability.

The findings in this section coincide with the sentiments of Liu *et al.,* (2013) who proposed that IT capability exert little influence on firm performance through suppressed absorptive capacity and lack of supply chain agility. However, the results fail to agree with suggestions of Chi, Ravichandran and Andrevski, (2010) that with the use of information technology, it is possible to derive some benefits from the implementation of IT network structures. Liu *et al*., (2013) also view IT capability as inherent capability that shapes higher-order capabilities that eventually affect firm performance.

4.7.7 Test of Hypothesis Six

To test the mediator, entrepreneurial orientation effect on first mover strategy and performance of selected telecommunication application service firms in Kenya, the study fitted models 3.4, 3.5, 3.6 and 3.7 which were examined in four steps as suggested by Baron and Kenny (1986). Testing for mediation required determining whether first mover strategy as the independent variable is significantly affects performance of application service firms as the first step. The next two steps are done to determine if there is a relationship existing among the variables with mediation not likely if the relationship is non-significant in one or more of the conditions. The four-step casual process of determining mediation is presented in the following sub-sections.

Step 1: Regression analysis with First Mover Strategy predicting firm performance

In the first step, a base model was fitted in order to test whether a composite index of First Mover Strategy comprising the predictor variables predicted firm performance as shown:

$$Y_F = \beta_0 + \beta_1 X_1 + \varepsilon \quad \text{.....3.4}$$

Where; Y_F = Firm Performance Composite index

X_1 = First Mover Strategy Composite index

β_0 = Constant

β_1 = Beta coefficient

ε =Error Term

The F-statistic and p-value for the effect of first mover strategy on performance are as shown in Table 4.21.

Table 4.21: Step One in Testing for Mediating Effect of Entrepreneurial Orientation

	Unstandardized Coefficients		**Standardized Coefficients**		
	B	**Std. Error**	**Beta**	**t**	**Sig.**
(Constant)	3.157	0.13		24.354	0.000
First Mover Strategy	0.003	0.000	0.742	9.78	0.000
R square	0.551				
F Statistic	95.648, (p-value=0.000)				

a Dependent Variable: Firm performance

Source: Survey Data (2021).

$Y = 3.157 + 0.003X+\varepsilon$
Y= Firm performance
X= First Mover Strategy
ε = Error term

As shown in Table 4.21, The F-statistic was 95.648 and p-value was 0.000 <0.05 which shows that the model was significant. Regression coefficient results also show that first mover strategy composite had β= 0.003, p-value =0.000. This means that first mover strategy through barrier to entry, quality improvement, mass market dominance and niche penetration significantly predicted performance of selected telecommunication application service firms in Kenya.

Step 2: Regression analysis with First Mover Strategy predicting entrepreneurial orientation (mediating variable).

In the second step, the study fitted a model to test whether the composite of first mover strategy (X) predicted entrepreneurial orientation (M_e) as shown:

$M_e = \beta_0 + \beta_1 X + \varepsilon$ ……..……..……..…….....3.5

The F-statistic and p-value for the effect of first mover strategy on mediating variable are as shown in Table 4.21.

Table 4.22: Step Two in Testing for Mediating Effect of Entrepreneurial Orientation

	Unstandardized Coefficients		**Standardized Coefficients**		
	B	**Std. Error**	**Beta**	**t**	**Sig.**
(Constant)	2.94	0.181		16.282	0.000
First Mover Strategy	0.003	0.003	0.628	7.12	0.000
R square	0.394				
F Statistic	50.700, (p-value=0.000)				

a Dependent Variable: Entrepreneurial orientation

Source: Survey Data (2021).

$M_e = 2.94 + 0.003X+\varepsilon$
M_e = Entrepreneurial orientation
X= First Mover Strategy
ε = Error term

The F-statistic as shown in Table 4.22 was 50.7 with a p-value of 0.000 <0.05 implying that the model was significant. A regression coefficient 0.003 and p-value =0.000 for first mover strategy composite also shows it significantly predicted entrepreneurial orientation. This implies that entrepreneurial orientation of selected telecommunication application service firms in Kenya are dependent on the first mover strategies that the firms apply as the relationship is positive and significant.

Step 3: Regression analysis with mediating variable predicting dependent variable

In the third step, the study fitted a model to test whether the mediating variable, entrepreneurial orientation predicted firm performance as shown:

$$Y_F = \beta_0 + \beta_1 M_e + \varepsilon \quad \text{.....3.6}$$

Where,

Y_F = Firm Performance Composite index

M_e = Entrepreneurial Orientation Composite index

β_0 = Constant

β_1 = Beta coefficient

ε =Error Term

Table 4.23 presents the F-statistic and p-value for the effect of mediating variable (entrepreneurial orientation) on firm performance.

Table 4.23: Step Three in Testing for Mediating Effect of Entrepreneurial Orientation

	Unstandardized Coefficients		**Standardized Coefficients**		
	B	**Std. Error**	**Beta**	**t**	**Sig.**
(Constant)	1.678	0.254		6.595	0.000
Entrepreneurial orientation	0.639	0.061	0.766	10.52	0.000
R square	0.587				
F Statistic	110.667, (p-value=0.000)				

a Dependent Variable: Firm performance

Source: Survey Data (2021).

$Y = 1.678 + 0.639M_e + \varepsilon$
Y= Firm Performance
M_e= Entrepreneurial orientation
ε = Error term

The F-statistic as shown in Table 4.23 was 110.667 with a p-value of 0.000 <0.05 implying that the model testing the effect of entrepreneurial orientation was significant. A regression coefficient of 0.639 and p-value =0.000 also shows that entrepreneurial orientation positively and significantly predicted firm performance. This implies that performance of selected telecommunication application service firms in Kenya is predicted by entrepreneurial orientation.

Step 4: Regression analysis with independent and mediating variables predicting dependent variable

In the final step, the study fitted a model to test whether composite index of first mover strategy as well as mediating variable (entrepreneurial orientation) predicted firm performance as shown:

$Y_F = \beta_0 + \beta_1 X_1 + \beta_2 M_e + \varepsilon$ ….....……..…...…….3.7

Where; Y_F = Firm Performance Composite index

X_1 = First Mover Strategy Composite index

M_e = Entrepreneurial Orientation Composite index

β_0 = Constant

β_1, β_2 = Beta coefficients

ε =Error Term

Results on this step are presented in table 4.24.

Table 4.24: Step Four in Testing for Mediating Effect of Entrepreneurial Orientation

	Unstandardized Coefficients		Standardized Coefficients		
	B	**Std. Error**	**Beta**	**t**	**Sig.**
(Constant)	1.943	0.224		8.681	0.000
Entrepreneurial orientation	0.413	0.067	0.495	6.169	0.000
First Mover Strategy	0.002	0.000	0.431	5.375	0.000
R square 0.699					
F Statistic 89.567, (p-value=0.000)					

a Dependent Variable: Firm performance

Source: Survey Data (2021).

$Y = 1.943 + 0.002X + 0.413M_e + \varepsilon$
Y= Firm Performance
X=First mover Strategy composite
M_e= Entrepreneurial orientation
ε = Error term

As shown in Table 4.24, F-statistic is 89.567 while the p-value for model significance is 0.000 <0.05. This confirms that first mover strategy composite and entrepreneurial orientation significantly predicted performance. A regression coefficient of 0.413 and p-value =0.000 also shows that entrepreneurial orientation positively and significantly predicts firm performance as does first mover strategy composite whose regression coefficient is 0.002 and p-value is 0.000. A summary of the mediation tests is presented in Table 4.25.

Table 4.25: Summary of Mediation Test

Step	Model	Result	Conclusion
1	$Y = 3.157 + 0.003X+\varepsilon$	P<0.05	Significant
2	$Me = 2.94 + 0.003X+\varepsilon$	p<0.05	Significant
3	$Y = 1.678 + 0.639Me +\varepsilon$	p<0.05	Significant
4	$Y = 1.943 + 0.002X+ 0.413Me+\varepsilon$	p<0.05	Significant

Source: Survey Data (2021).

Therefore Table 4.25 shows that the effect of first mover strategy on the performance of selected telecommunication application service firms in Kenya remained significant even after introduction of mediating variable of entrepreneurial orientation. From this result, the study did not accept the null hypothesis that entrepreneurial orientation has no significant mediating effect on between first mover strategy and performance of selected telecommunication application service firms in Kenya. The study concludes that entrepreneurial orientation partially mediated the relationship between first mover strategy and performance of selected telecommunication application service firms in Kenya.

Table 4.26 summarizes the results of the study's hypotheses with a conclusion on rejection/failure to reject the null hypothesis also included.

Table 4.26: Overall Summary of Test of Hypotheses

Hypotheses	Analysis Results	Conclusion
H_{01}	(β_1= 0.205, p =0.008)	Reject H_{01}
H_{02}	(β_2= 0.189, p=0.045)	Reject H_{02}
H_{03}	(β_3= 0.132, p =0.081)	Failed to reject H_{03}
H_{04}	(β_4= 0.343, p =0.000)	Reject H_{04}
H_{05}	(β_5= 0.001, p =0.147)	Failed to reject H_{05}
H_{06}	P<0.05 in models 3.4, 3.5, 3.6 and 3.7 Partial mediation observed	Reject H_{06}

Source: Survey Data (2021).

4.8 Qualitative Data Analysis

Qualitative data collected from the open-ended questions on barrier to entry strategy, quality improvement strategy,mass market dominance strategy, niche market penetration strategy, information technology capability, entrepreneurial orientation and firm performance was analysed using conceptual content analysis. The results of the analysis were grouped in themes and inferences presented in the following sub-sections.

4.8.1 Barrier to Entry Strategy

Generally, the respondents felt barrier to entry strategy was implemented in the selected telecommunication application service firms. In addition, the respondents were of the opinion that brand loyalty, rapid change in technology, and collaboration and partnerships enhanced barrier to entry strategy in the firms. Further, firms can consider employee retention strategies in order to keep value employees longer than competitiors and reduce movement to competitors. Development of policy that protects incumbent firms from unfair competition that leads to reduction in market share.

4.8.2 Quality Improvement Strategy

Overall the respondent viewed quality improvement strategy as a continous process that improved the performance of the selected telecommunication application firms. In addition firms that are customer centric increased customer satisfaction and retention. Effective quality improvement was also reflected by reduction in customer complains. Further, respondents felt that customer retention management through customer surveys in order to gather feedback and information on customer satisfaction. Protection of telecommunication infrastructure to minimize disruption in telecommunication services is critical for quality improvement. Thus according to respondents new product development and product differentition can be enhanced through innovation, however there must be availability of resources.

4.8.3 Mass Market dominance Strategy

Generally, according to most of the respondents, mass dominance strategy negatively affected performance of telecommunication firms through pricing strategies that decreased profitability. However innovation and customer perception through

understanding customer experiences have a critical role in pricing for mass market dominance strategy.

4.8.4 Niche Market Penetration Strategy

Niche market penetration strategy was considered by selected telecommunucation application service firms in Kenya. According to respondents, niche market penetration was achieved through customer feedback , collaboration with firms that offer complementary service or products and R&D. Firms that implemented niche penetration strategy were keen on providing additional value to their customers and that reputation was critical for relationship management.In addition niche market penetration strategy resulted in customer satisfaction and thus customer retantion.

4.8.5 Information Technology Capability

According to respondents, IT capability is fundamental telecommunication application service firms. Firms were able to upgrade to the latest technology in order to improve on performance. Partnership with other firms offering information technology products and service improved on the ability of the firms to support upgrades, improve efficency in service delivery both internally and external to the firm.

4.8.6 Entepreneurial Orientation

Generally, according to respondents, EO is encourages and improved firm performance. Firms that adopt EO employees are motivated, they set goals which they strive to achieve and this has resulted in improved performance in the firm. Motivated emloyees are less likely to move from one firm to another, therefore there is more consistency in the delivering of services to the customers and hence customer satisfaction and rentention.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

Summary the outcomes based on the specific objectives, the conclusion, policy implications and recommendations, contribution of the study to knowledge, limitations and finally, areas for future research are presented in this section. Furthermore, the research findings are used to derive the conclusion and recommendation in this section.

5.2 Summary

This study sought to investigate the effect of first mover strategy on performance of selected telecommunication application service firms in Kenya. Specifically, to establish the effect of barrier to entry strategy, quality improvement strategy, mass market dominance strategy and niche market penetration strategy on performance of selected telecommunication application service firms in Kenya. The moderating effect of information technology capability as well as mediating effect of entrepreneurial orientation on first mover strategy and performance of selected telecommunication application service firms in Kenya was also established.

With regard to the first objective which determined the effect of barrier to entry strategy on performance of selected telecommunication application service firms in Kenya and the null hypothesis barrier to entry has not significant effect on performance of selected telecommunication application service firms in Kenya. Barrier to entry strategy was operationalized as switching costs, economies of scale, patents and proprietary technology. The study rejected the null hypothesis concluding that barrier to entry significantly affect performance of the selected telecommunication application service firms. In addition, the study revealed switching costs, economies of scale, patents and proprietary technology influence performance of selected telecommunication application service firms in Kenya.

In the second objective of the study determined the effect of quality improvement strategy on performance of selected telecommunication application service firms in Kenya. The study rejected the null hypothesis and concluded that quality

improvement strategy significantly affect performance of selected telecommunication application service firms in Kenya. Descriptive analysis established that quality improvement strategy was adopted by telecommunication application firms. In addition activities related to new product development, efficiency on delivery and product differentiation, quality improvement strategy were employed by the telecommunication application service firms.

The third objective of the study established the effect of mass market dominance strategy on performance of selected telecommunication application service firms in Kenya. Drawing from inferential analysis, the study failed to reject the null hypothesis concluding, mass market dominance strategy positively but insignificantly affected performance of selected telecommunication application service firms in Kenya. Conversely, from the descriptive findings, this study showed that mass market dominance strategy was adopted by the selected telecommunication application service firms. Further, network factors that involve collaboration with providers of complementary products as well as ensuring that there are good relationships with partners, operation supremacy that ensures leadership in production and distribution of products and service and adoption product range strategies were practised in the telecommunication firms.

The fourth objective of this study investigated the effect of niche market penetration strategy on performance of selected telecommunication application service firms in Kenya. Results from the study rejected the null hypothesis and concluded market penetration strategy significantly affect performance of selected application service firms in Kenya. Descriptive analysis found niche market penetration strategy is adopted by telecommunication application service firms. In addition, activities related to that relationship management, specialization and market segmentation are practised by the selected telecommunication application service firms.

The fifth objective of this study determined the moderating effect of information technology capability on first mover strategy and performance of selected telecommunication application service firms in Kenya. Inferential analysis reveal that information technology capability does not have a significant moderating effect on first mover strategy and performance of selected telecommunication application

service firms in Kenya. Dimensions examined for IT capability were information technology connectivity, information technology compatibility and information technology modularity. Descriptive analysis revealed that information technology capability is employed by telecommunication application firms.

The final objective determined the mediating effect of entrepreneurial orientation on first mover strategy and performance of selected telecommunication application service firms in Kenya. The study rejected the null hypothesis thus concluding entrepreneurial orientation partially mediates first mover strategy and performance of selected telecommunication application service firms in Kenya. Descriptive results showed that the dimensions of entrepreneurial orientation that is pro-activeness, innovativeness, competitive aggressiveness, autonomy and risk-taking are practised by telecommunication application service firms.

5.3 Conclusions

The general objective of the study was to investigate the effect of first mover strategy on performance of selected telecommunication service firms in Kenya. With regard to each of the specific objective this study draws the following conclusions. Barrier to entry strategy positively and significantly affects performance of telecommunication application service firms in Kenya. The researcher concluded that firms that adopted barrier to entry strategy are likely to improve their performance. In this regard, the firms would significantly improve their performance by setting high cost for the customer to switch from the firm products, extending certain advantages to customers who buy products in bulk, patenting or legally protecting inventions, ensuring that proprietary technology is legally owned and committing to R&D for the development of proprietary technology.

Regarding the second objective, telecommunication application service firms that adopt quality improvement strategy will positively and significantly affect performance. Putting effort in the development of quality new products to meet the customer's needs, ensuring existing product quality is continuously being improved, striving to ensure that services are delivered at the customers convenience, ensuring the unique features of the product are maintained and having a system that ensures

customer complaints are addressed within the shortest time are some of quality improvement strategies that can be adopted to improve performance.

On the third objective, the researcher concludes that mass market dominance strategy positively but insignificantly affected performance of selected telecommunication application service firms in Kenya. In regard to this mass market dominance strategy can be adopted to improve performance, though this effect may be minor. This include having a wider range of products and services that serve different markets, extending a product line by collaborating with providers of complementary products and services and maintaining a good relationship with partners. Moreover, telecommunication application service firms can prioritize maintainance of leadership in production.

Further, this study concludes that niche market penetration strategies positively and significantly affected performance of selected telecommunication application service firms in Kenya. By properly defining market segment to be measurable, specializing in tailored products for the niche market, engaging in activities that enhance long-term relationship with the customer and providing better solutions to the customers, selected telecommunication application service firms in Kenya can improve their performance.

This study also concludes that information technology capability does not significantly moderate first mover strategy and performance of selected telecommunication application service firms in Kenya. However, performance can be improved by having different technology components to allow communication within the firm. Further, firms through configuration of different technology components, can promote sharing of knowledge both within the organisation and with other external organisations.

Lastly, this study concludes that entrepreneurial orientation partially mediates first mover strategy and performance of selected telecommunication application service firms in Kenya. By continously exploiting and anticipating new opportuinities and encouraging the development of new ideas, the firm is are able to intensify their competitiveness. However, there is need to commit finances in new ideas to completion although there outcomes maybe uncomfirmed.

5.4 Policy Implications and Recommendations

As the nature of global competition undergoes rapid change and more companies work towards joining telecommunication application service sector, it is incumbent that firms within this sector adopt and leverage on first mover strategy to gain competitive advantage over other firms willing to enter into the sector. Competitive advantage of incumbent firms in telecommunication application service is expected to positively influence performance. While this is tenable in a static world, in dynamic environment that is rapidly changing, it is of utmost importance that the firms considers new entrants strategies of penetrating the markets. This study therefore recommends incumbent telecommunication application service firms to build and maintain various barriers to entry that deter entry of any new competition as this was empirically shown to improve performance. This study further recommends management of telecommunication application service firms in Kenya to maintain barrier to entry to improve on performance. For instance, switching cost can be achieved by customer and supplier lock-in that include offering loyalty programs and long-term benefits, price discounts for products bought in bulk and strategically reduce costs in order to offer lower prices to customers.

This study also recommends telecommunication application service firms in Kenya to strive and improve the quality of their products and services as this positively and significantly improves performance. In addition, loss of customers also known as churn,significantly influences profitabilty, therefore firms could consider churn management strategies that will address customer satisfaction,loyalty and complains management. In order to continonously improve on the product offer, telecommunication firms can exploit opportunities in complementary network such as bundling of different products and services to increase customer retention and consequently market share growth.

Regression analysis indicates niche market penetration strategy has the highest coefficient of 0.343, therefore this study recommends that telecommunication application service firms should consider adopting niche market penetration strategy as this positively and significantly improves firm performance. Further, in order to efficiently serve the target market, knowledge of consumer needs is critical, firms

should consider relationships management strategies that can provide information that allows the firm to serve customers' needs and wants.

Telecommunication application service firms therefore ought to make themselves conversant with the first mover strategies that enhance performance so as to correctly allocate their resources and capabilities.

Further, this study recommends telecommunication application service firms in Kenya to strive to align their strategies along entrepreneurial impetuses as they determine the effectiveness of any first mover strategy to improve performance. Consequently, there is need to position themselves better to encourage innovation of new ideas and processes with an aim of producing new products and services which enhance performance.

Telecommunication application firms are also affected by global competition, therefore goverment should consider barrier to entry policies that will protect firms telecommunication application firms in Kenya. In addition, in order to reduce on customer complaints, government should consider policy that will guide telecommunication application firms on continous quality improvement. Further government should consider developing policy that protects telecommunication infrastructure to protect telecommunication firms from costs incurred from breakdowns.

5.5 Contribution of the Study to Knowledge

The study contributes to theory by introducing a conceptual framework outlining how first mover strategy influences performance of telecommunication application service firms in Kenya and how entrepreneurial orientation mediates the relationship between first mover strategy and firm performance. Second, this study makes a contribution to literature by conceptualizing first mover strategy as barrier to entry, quality improvement, mass market dominance and niche market penetration, no previous study has introduced first mover strategy under these constructs. Further, the study validates conceptualization of entrepreneurial orientation as innovativeness, risk-taking, pro-activeness, competitive aggressiveness and autonomy.

Third, this study provides empirical evidence on the effect of first mover strategy on performance of selected telecommunication application service firms in Kenya. In addition, the study contributes to the body of knowledge of strategy by providing empirical evidence that first mover strategy enhances firm performance. The results of this study are useful to the management of telecommunication application service firms in Kenya that seek to improve firm performance such as improve reputation and customer retention, increase market share and net profit margin by adopting various first mover strategy.

5.6 Areas for Further Research

The study obtained empirical evidence on the effect of first mover strategy on the performance of selected telecommunication application service firm in Kenya. The study therefore recommends further research in other sectors of the economy Accordingly, the study focused on barrier to entry, quality improvement strategy, mass market dominance strategy and niche penetration strategy as the most applicable first mover strategies in the selected telecommunication application service firms, however, there could be other first mover strategies that are not covered. Therefore, the study recommends a study on other first mover strategies that would influence performance of these firms.

In addition the study tested the moderating effect of information technology capability on first mover strategy and performance of selected telecommunication application service firms in Kenya and established that information technology capability does not moderate first mover strategy and firm performance, a replicate of the study using other indicators that were not used in the study may yield different outcomes. Further, the study tested mediating effect of entrepreneurial orientation on first mover strategy and performance of selected telecommunication application service firms in Kenya. However, there could be other components that could mediate and moderate first mover strategy and performance of selected telecommunication application service firms. The research study hence prescribes other studies to examine in order to establish the moderating and mediating effect of other factors such as regulatory framework and environment velocity on first mover strategy and firm performance.

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APPENDICES

Appendix I: Variable Communalities

Communalities		
Barrier to entry strategy		
	Initial	**Extraction**
The firm ensures there is a cost for the customer to switch from the firm product/service to other competitors.	1	0.831
The firm ensures that contracted suppliers incur a cost for not supplying product/service to the firm.	1	0.649
The firm ensures the telecommunication products acquired for production are bought in bulk	1	0.514
Customers who buy products from the firm in bulk enjoy certain advantages	1	0.601
The inventions that are legally protected (patent) have had a breakthrough effect in the sector	1	0.756
The firm ensures that new inventions are legally protected (patent)	1	0.831
The proprietary technology (unique technology) owned by the firm have been a source of competitive advantage	1	0.834
The firm commits to R&D for the development of proprietary technology	1	0.792
Quality Improvement Strategy		
	Initial	**Extraction**
The firm is constantly putting effort in the development of quality new products that meet the customer's needs	1	0.756
The firm ensures the existing product quality is continuously being improved	1	0.828
The firm strives to respond to serve the market efficiently	1	0.766
The firm strives to ensure that services are delivered at the customers convenience	1	0.729
The customers perceive the firm products have more value than other competitors	1	0.808
The firm strives to ensure the unique features of the product are maintained	1	0.796
The firm has a system that ensure customer complaints are addressed within the shortest time	1	0.686
Mass Market Dominance Strategy		
	Initial	**Extraction**
The firm has a wider range of products/services that serve different markets than the competitors	1	0.593
The firm strives to always extend a product line	1	0.808
The firm collaborates with providers of complementary products /services	1	0.722
The firm ensures they maintain a good relationship with partners	1	0.777
The firm strives to maintain leadership in production more than the other competitors	1	0.743
The firm strives to maintain leadership in distribution of products more than the other competitors	1	0.763
Niche Penetration strategy		
	Init	**Extrac**

	ial	tion
The market segment is clearly defined by the firm	1	0.74
The defined market segment is measurable	1	0.626
The firm has specialized in tailored products for the niche market	1	0.757
The firms customized products compete on value	1	0.79
The firm engages in activities that enhance long-term relationship with the customer	1	0.716
The established relationship had led the firm to provide better solutions to the customers	1	0.731
Information Technology Capability		
	Initial	**Extraction**
Different technology components in the firm are able to allow communication within the firm	1	0.853
Different technology components within the firm allow communication between the firm and other partners	1	0.831
The firm is able to share knowledge across any technology component within the organisation.	1	0.806
The firm is able to share any type of information across any technology component external to the firm	1	0.655
The firm has the ability to modify technology components with low technological constraints within the firm	1	0.826
The firm has the ability to modify customers' technology components with low technological constraints	1	0.791
Entrepreneurial Orientation		
	Initial	**Extraction**
The firm is open to new ideas.	1	0.879
The firm encourages experimentation of new products /services	1	0.778
The firm encourages experimentation of new processes	1	0.855
Creativity is encouraged in the firm	1	0.842
The managers are willing to make large resource commitments in projects.	1	0.792
The managers in the firm are willing to risk resource in support of projects where the outcome is unknown	1	0.927
The firm is willing to identify new market opportunities	1	0.762
The firm promotes new market opportunities	1	0.879
The managers do not take long to act on new opportunities	1	0.778
The firm aggressively responds to competitors to achieve competitive advantage	1	0.855
The firm engages in activities that position as the market leader	1	0.842
The firm encourages individuals or teams to engage in entrepreneurial activities	1	0.792
The individual or teams formed are allowed to make independent decisions	1	0.927
The firm provides an environment where entrepreneurship is supported	1	0.762
Firm Performance		
	Initial	**Extraction**
Customer Retention		

The firm has retained most of its customers	1	0.77
The customers refer other customers to the firm	1	0.705
Most of the customers have increased usage of the firm products	1	0.724
Customers prefer the firm products more than the other competitors	1	0.726
The customers have a positive attitude towards the firm	1	0.744
Firm Reputation		
The firm is committed to the customer	1	0.599
The customers have trust in the firm's services and products	1	0.72
The firm is viewed as a leader in the market	1	0.713
The firm products and services are viewed to be of high quality	1	0.836
The firm is consistent in-service delivery	1	0.762

Appendix II: Research Questionnaire

The study strives to establish THE EFFECT OF FIRST MOVER STRATEGY ON PERFORMANCE OF SELECTED TELECOMMUNICATION APPLICATION SERVICE FIRMS IN KENYA. The questionnaire has been outlined to gather information absolutely for scholarly purposes. The data collected will be treated with most extreme privacy. Names or any other identification are not required on the questionnaire.

Tick or fill the blank as indicated on the question.

SECTION A

Part 1: DEMOGRAPHIC INFORMATION

1) Gender of the respondent: Male [ ] Female [ ]
2) What is your position in the organization?

Chief Executive Officer [ ]
Director [ ]
General Manager [ ]
Marketing Manager [ ]
Finance Manager [ ]
Operations Manager [ ]

Other .....

3) For how long have you worked in the organisation?

Less than 1 year [ ] 1-5 years and below [ ]
Above 5years -10 years and below [ ] Over 10 years [ ]

SECTION B

Part 2: Barrier to Entry Strategy

4)The section below seeks to understand your opinion on the strategies applied by your firm in order to enhance performance. On the listed statements, clearly indicate by applying a scale of 1-5, the extent the firm undertakes the following actions.

5 = Very Large Extent 4 = Large Extent 3 = Moderate Extent

2 = Little Extent 1 = No at all

Barriers to Entry	1	2	3	4	5
The firm ensures there is a cost for the customer to switch from the firm product/service to other competitors.					
The firm ensures that contracted suppliers incur a cost for not supplying product/service to the firm.					
The firm ensures the telecommunication products acquired for production are bought in bulk					
Customers who buy products from the firm in bulk enjoy certain advantages					
The inventions that are legally protected (patent) have had a breakthrough effect in the sector					
The firm ensures that new inventions are legally protected (patent)					
The proprietary technology (unique technology) owned by the firm have been a source of competitive advantage					
The firm commits to R&D for the development of proprietary technology					

5) Do you have any other comments on the effects of obstacles to entry (barrier to entry) strategy on your firm performance?

.....

.....

.....

Part 3: Quality Improvement Strategy

6) This part seeks your understanding of the benefits of the firm to its customers by ensuring there is continuous improvement on product or service quality that creates value which the customer is willing to pay for. Using a scale of 1-5 on each of the statements, clearly indicate the extent of application of the actions stated;

5 = Very Large Extent 4 = Large Extent 3 = Moderate Extent

2 = Little Extent 1 = Not at all

Quality Improvement Strategy	1	2	3	4	5
The firm is constantly putting effort in the development of quality new products that meet the customer's needs					
The firm ensures the existing product quality is continuously being improved					
The firm strives to respond to serve the market efficiently					
The firm strives to ensure that services are delivered at the customers convenience					
The customers perceive the firm products have more value than other competitors					
The firm strives to ensure the unique features of the product are maintained					
The firm has a system that ensure customer complaints are addressed within the shortest time					
Customers are happy with the response rate on the complains					

7) Do you have any other comments on the effect of quality improvement strategy on your firm performance?

.....

.....

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.....

Part 4: Mass Market Dominance Strategy

8) This part seeks your understanding on how the firm implements mass market dominance strategy to retain its market share and profitability. Applying a scale of 1-5 on each of the statements listed your understanding of the actions in your firm;

5=Very Large Extent 4= Large Extent 3=Moderate Extent

2= Little Extent 1 = Not at all

Mass market dominance strategy	1	2	3	4	5
The firm has a wider range of products/services that serve					

different markets than the competitors					
The firm strives to always extend a product line					
The firm collaborates with providers of complementary products /services					
The firm ensures they maintain a good relationship with partners					
The firm strives to maintain leadership in production more than the other competitors					
The firm strives to maintain leadership in distribution of products more than the other competitors					

9) Do you have any other comments on the effect of mass market dominance strategy on your firm performance?

.....

.....

Part 5: Niche Penetration Strategy

10) This part seeks your understanding on how the firm targets niche markets to retain its market share and profitability. Applying a scale of 1-5 on each of the statements listed your understanding of the actions in your firm;

5=Very Large Extent 4= Large Extent 3=Moderate Extent
2= Little Extent 1 = Not at all

Niche penetration strategy	1	2	3	4	5
The market segment is clearly defined by the firm					
The defined market segment is measurable					
The firm has specialized in tailored products for the niche market					
The firms customized products compete on value					
The firm engages in activities that enhance long-term relationship with the customer					
The established relationship had led the firm to provide better solutions to the customers					

11) Do you have any other comments on how your firm targets a narrow group of customers and the effect to firm performance?

.....

.....

Part 6: Entrepreneurial Orientation

12) This part seeks your understanding on how the firm adopts entrepreneurial orientation. Applying a scale of 1-5 on each of the statements listed your understanding of the actions in your firm;

5 = Very Large Extent 4 = Large Extent 3 = Moderate Extent

2 = Little Extent 1 = Not at all

Entrepreneurial Orientation	1	2	3	4	5
The firm is open to new ideas.					
The firm encourages experimentation of new products /services					
The firm encourages experimentation of new processes					
Creativity is encouraged in the firm					
The managers are willing to make large resource commitments in projects.					
The managers in the firm are willing to risk resource in support of projects where the outcome is unknown					
The firm is willing to identify new market opportunities					
The firm promotes new market opportunities					
The managers do not take long to act on new opportunities					
The firm aggressively responds to competitors to achieve competitive advantage					
The firm engages in activities that position as the market leader					
The firm encourages individuals or teams to engage in entrepreneurial activities					
The individual or teams formed are allowed to make independent decisions					

The firm provides an environment where entrepreneurship is supported					

13) Do you have any other comment on your firm's entrepreneurial orientation the effect on firm performance?

.....

.....

Part 7: Information Technology Capability

14). In order to carry out business for Application Service Firms, the firm requires IT Capability. Applying a scale of 1-5 on each of the statements listed your understanding of the actions in your firm;

5 = Very Large Extent 4 = Large Extent 3 = Moderate Extent

2 = Little Extent 1 = Not at all

IT Capability	1	2	3	4	5
Different technology components in the firm are able to allow communication within the firm					
Different technology components within the firm allow communication between the firm and other partners					
Different types of information can be shared by the firm on any technology component external to the firm					
The firm is able to share any type of information across any technology component external to the firm					
The firm has the ability to modify technology components with low technological constraints within the firm					
The firm has the ability to modify customers' technology components with low technological constraints					

15) Do you have any other comments on your firm's IT capability the effect on firm performance?

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Part 8: Performance of Telecommunication Application Service Firms in Kenya

16) The section below sets out your understanding on the overall performance of the firm. Each statements demonstrates the degree the firm endeavours to achieve firm performance. For each of the statements listed below, apply a scale of 1-5 where;

5=Very Large Extent 4= Large Extent 3=Moderate Extent

2= Little Extent 1 = Not at all

Customer retention	1	2	3	4	5
The firm has retained most of its customers					
The customers refer other customers to the firm					
Most of the customers have increased usage of the firm products					
Customers prefer the firm products more than the other competitors					
The customers have a positive attitude towards the firm					

17) The below statement indicates the extent to which the firm endeavours to maintain its reputation. Applying on each statement a scale of 1-5 where;

5=Very Large Extent 4= Large Extent 3=Moderate Extent

2= Little Extent 1 = Not at all

Reputation	1	2	3	4	5
The firm is committed to the customer					
The customers have trust in the firm's services and products					
The firm is viewed as a leader in the market					
The services and products owned by the firm are viewed to be high quality					
There is consistency in-service delivery by the firm					

18) Indicate your firm's market share growth for the past five years; 2015-2019 in a scale of 1-5 where;

5=Above 30% 4= Above 20% - 30% 3=Above10% - 20%
2= Above 1% - 10% 1 = Less than 1%

Year	Less than 1%	Above 1% - 10%	Above10% - 20%	Above 20% - 30%	Above 30%
2015					
2016					
2017					
2018					
2019					

19) Indicate your firm's net profit margin growth form the past five years; 2015-2019 in a scale of 1-5 where;

5=Above 30% 4= Above 20% - 30% 3=Above10% - 20%
2= Above 1% - 10% 1 = Less than 1%

Year	Less than 1%	Above 1% - 10%	Above 10% - 20%	Above 20% - 30%	Above 30%
2015					
2016					
2017					
2018					
2019					

20) What is your opinion on the overall performance of your firm?

.....

.....

.....

THANK YOU FOR PARTICIPATING

Appendix III: List of Selected Telecommunication Application Service Firms in Kenya

1 Airtel Network Kenya Limited
2. Binbit Kenya Limited
3. Cable One Limited
4. Cellulant Kenya Limited
5. Craft Silicom Limited
6. Commcarrier Satellitte Service
7. Databit Limited
8. Eskay Communications Limited
9. Endeavour Africa Limited
10. Frontier Optical Networks
11. Internet Solutions
12. Iway Africa Kenya Limited
13. Jamii Telecommunications Limited
14. Liquid Telecommunications Kenya Limited
15. Mawingu Networks
16. Mobile Telephone Networks Business (K) Limited
17. Poa Internet Kenyaa
18. Safaricom Plc
19. Vodacom Business (Kenya) Limited
20. Wananchi Group Kenya Limited
21. Xtranet Communications Limited

Source: Author, (2019)

Appendix IV: Transmittal Letter

1st December, 2019

RAHAB WANJIKU NGUGI
P.O. Box 230777
Nairobi.

Dear Madam/Sir,

RE: **REQUEST FOR PARTICIPATION IN RESEARCH STUDY**

Am a KENYATTA UNIVERSITY student, School of Business PhD program, strategic management specialization. I seek to undertake a research on THE EFFECT OF FIRST MOVER STRATEGY ON PERFORMANCE OF SELECTED TELECOMMUNICATION APPLICATION SERVICE FIRMS IN KENYA.

It is my humble request that you spare some time from your busy schedule to kindly complete the questionnaire enclosed. I would also like to assure you that the data collected is absolutely for scholarly purpose and will be treated with extreme privacy.

Thanking you in advance for your kind consideration.

Sincerely,

RAHAB WANJIKU NGUGI

Appendix V: Research Approval

KENYATTA UNIVERSITY
GRADUATE SCHOOL

E-mail: kubps@yahoo.com
dean-graduate@ku.ac.ke
Website: www.ku.ac.ke

P.O. Box 43844, 00100
NAIROBI, KENYA
Tel. 810901 Ext. 57530

Internal Memo

FROM: Dean, Graduate School

DATE: 5th February, 2020

REF: D86/CTY/30730/15

TO: Ms. Rahab W. Ngugi
C/o Department of Business administration
KENYATTA UNIVERSITY

SUBJECT: APPROVAL OF RESEARCH PROPOSAL

This is to inform you that the Graduate School Board at its meeting 29th January, 2020 approved your Ph.D. Research Proposal entitled "First Mover Strategy and Performance of Selected Telecommunication Application Service Firms in Kenya."

You may now proceed with your Data collection, subject to clearance with the Director General, National Commission for Science, Technology & Innovation.

As you embark on your data collection, please note that you will be required to submit to Graduate School completed supervision Tracking and Progress Report Forms. The Forms are available at the University's Website under Graduate School webpage downloads.

By copy of this letter, the Registrar (Academic) is hereby requested to grant you substantive registration for your Ph.D. studies.

Thank you.

REUBEN MURIUKI
FOR: DEAN, GRADUATE SCHOOL

c.c. Chairman, Department of Business Administration
Registrar (Academic) Att; Mrs. Lucy Njenga

Supervisors:

1. Dr. Anne Muchemi
   C/o Department of Business Administration
   KENYATTA UNIVERSITY
2. Dr. Samuel Maina
   C/o Department of Business Administration
   KENYATTA UNIVERSITY

RM/cao

Appendix VI: Rettsearch Permit

REPUBLIC OF KENYA

NATIONAL COMMISSION FOR SCIENCE,TECHNOLOGY & INNOVATION

Ref No: **346185**

Date of Issue: **08/March/2020**

RESEARCH LICENSE

This is to Certify that Ms.. Rahab Wanjiku Ngugi of Kenyatta University, has been licensed to conduct research in Mombasa, Nairobi on the topic: FIRST MOVER STRATEGY AND PERFORMANCE OF SELECTED TELECOMMUNICATION APPLICATION SERVICE FIRMS IN KENYA for the period ending : 08/March/2021.

License No: **NACOSTI/P/20/3889** Ammended

346185

Applicant Identification Number

Director General
NATIONAL COMMISSION FOR SCIENCE,TECHNOLOGY & INNOVATION

Verification QR Code

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THE SCIENCE, TECHNOLOGY AND INNOVATION ACT, 2013

The Grant of Research Licenses is Guided by the Science, Technology and Innovation (Research Licensing) Regulations, 2014

CONDITIONS

1. The License is valid for the proposed research, location and specified period
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3. The Licensee shall inform the relevant County Director of Education, County Commissioner and County Governor before commencement of the research
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