

**IMPACT OF TECHNOLOGICAL INNOVATION ON
CUSTOMER RETENTION AT SAFARICOM PLC IN KENYA**

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UNITED STATES INTERNATIONAL UNIVERSITY - AFRICA

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**IMPACT OF TECHNOLOGICAL INNOVATION ON CUSTOMER
RETENTION AT SAFARICOM PLC IN KENYA**

BY

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**A Research Project Report Submitted to the School of Business in Partial
Fulfillment of the Requirement for the Degree of Masters in Business
Administration (MBA)**

UNITED STATES INTERNATIONAL UNIVERSITY - AFRICA

SPRING 2019

DECLARATION

I'm the undersigned, I declare that this is my original work and has not been submitted to any other college, institution or university other than the United States International University in Nairobi for academic credit.

Signed: _____

Date: _____

Michael Hinga, Student ID 651517

This project has been presented for examination with my approval as the appointed supervisor.

Signed: _____

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ABSTRACT

The general objective of the study was to establish the impact of technological innovation on service user retention by Safaricom PLC in Kenya. The specific objectives were to; examine the impact of product innovation on customer retention of Safaricom PLC in Kenya, assess the impact of process innovation on customer retention of Safaricom PLC in Kenya and establish the impact of service innovation on customer retention of Safaricom PLC in Kenya.

To achieve these objectives, the study adopted a descriptive research design and a target population of 147 respondents which consisted of employees working in Safaricom Customer Service Centres and Technical and Innovation Departments based at Safaricom Care Center. Probability sampling design was utilized in selecting the sample size of the study. The sample size consisted of 107 respondents. Primary data was collected with the help of self-administered questionnaires that were administered by dropping and picking later. Data was analyzed using quantitative and qualitative approaches, quantitative approaches involved use of descriptive statistics that entails percentages, frequency, mean and standard deviation while qualitative approach used content analysis. Correlation analysis and regression analysis were used to establish existing relationships between technological innovation and customer retention at Safaricom PLC in Kenya.

The findings established that product innovation recorded the highest overall mean of 3.818 followed by service innovation with a mean value of 3.725 and lastly, process innovation that attained a mean value of 3.461. Correlation findings of product innovation revealed that mobile money and Safaricom fibre recorded a strong correlation with customer retention ($R=0.772$ and $R=0.762$, respectively), however network quality was weakly and moderately correlated to customer retention ($R=0.554$). Correlation findings of process innovation revealed that KYC attained a strong correlation with customer retention ($R=0.749$); customer service attained a moderately strong correlation with customer retention ($R=0.622$) while switching barriers attained a weak correlation with customer retention (0.450). Correlation results of service innovation established that both support and interactive services were strongly and moderately correlated to customer retention ($R=0.562$ and $R=0.682$, respectively).

The coefficient of determination for; product innovation was 67.5%, process innovation was 63.5% and service innovation was 42.5%, these implied that the regression equation used for the study was a good fit for the data. Overall regression model adopted in the study was significant as evidenced by the p-values of product innovation, process innovation and service innovations which were all below 5% (0.000, 0.000 & 0.000). Product innovation was significantly linked to customer retention because p-values of all its predictor variables (mobile money, Safaricom fibre and network quality) were below 5%. Similarly, process innovation and customer retention were significantly linked since p-values of its predictor variables: KYC and customer services were below 5% except switching barriers which was insignificant. Service innovation and customer retention was significantly related since p-values of predictor variables: support and interactive services was below 5%.

The study concluded that product innovation was used to a great extent with its sub-variables namely mobile money being a key contributor towards customer retention followed by Safaricom fibre and network quality. Correlation results showed that product innovation was strongly correlated to customer retention. It was further revealed that product innovation was positively and significantly linked to customer retention as evidenced by all its predictor variables: mobile money, Safaricom fibre and network quality.

Process innovation was the least used compared to product and service innovation: KYC greatly contributed to customer retention followed by customer services and lastly switching barriers. Process innovation attained a moderately strong correlation with customer retention. Process innovation was positively and significantly related to customer retention as revealed by its predictor variables: KYC and customer services. However, switching barriers was insignificantly linked to customer retention.

Service innovation was used to a great extent with both support services and interactive services contributing greatly towards customer retention. There was a moderately strong correlation between service innovation and customer retention. Service innovation was positively and significantly related to customer retention as revealed by predictor variables: support services and interactive services.

The study recommends that telecommunications firms need to do a comparison of what their competitors are offering in the market to ensure that developed products serve specific and unmet needs of the customers. Also, there is need for telecommunication firms to invest on continuous training and development programs to ensure that employees are updated and conversant with the systems and processes so as to effectively execute their roles. Telecommunication firms should integrate and align customer feedback mechanisms to enhance efficiency in customer feedback, and improved access and flexibility to customer response services.

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DEDICATION

I dedicate this work to my family for their constant support and motivation that gave me strength when I was writing the project.

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LIST OF ABBREVIATIONS

CAK	Competition Authority of Kenya
CSSR	Call Set Up Success Rate
FTTH	Fibre to the home
GSM	System for Mobile Communication
KARA	Kenya Alliance of Residents Association
KPI's	Key Performance Indicators
KYC	Know Your Customer

CHAPTER ONE

1.0 INTRODUCTION

1.1 Background of the Study

Firms do business in an uncertain environment which is characterized by risks and uncertainties. Technological changes and competition have forced firms to devise survival mechanisms in order to remain competitive in the market place (Rosli & Sidek, 2013). Customer needs keep on evolving and firms must accommodate their needs in order to attract and retain them by offering products and services that add value (Simon & Yaya, 2012). According to Stark (2015), in the modern global environment, customers are becoming more demanding, segmented, and sophisticated and expect more in respect to customization, quality, price, and newness. For survival in modern market conditions, businesses have embraced technological innovation so as meet consumer preferences and market demands (Panayides, 2016). Technological innovation, it involves introducing a new product, service, device, or an idea or method. Macomber (2016) notes that technological innovation, as a component of technological change, allows firms to test new ideas at prices and speeds that were never anticipated ten years ago.

According to Goh (2012), technological innovation entails the process of producing technological advances. This process of innovation comprises of a set of activities that contribute to increasing the production capacity. As such, the technological concept is connected to the notion of a flow generation, the application as well as dissemination of technologies. Kwashie (2012) asserts that technological innovation is regarded as one of the primary indicators of a firm's competitive advantage and is equally a critical element in ensuring customer loyalty and retention. Within the global banking industry, technological innovation like the case of mobile money transfer is growing at a fast pace (Gupta, 2013). This fast pace is because rapid changes in technological innovation lead to challenges for businesses to enhance customer satisfaction and at the same time ensure customer loyalty through the provision of innovative products.

In the 21st century, the focus has been directed to the manner business environments together with human behavior are affected by technology. The sociological and psychological factors involving organizational environments and the quality of work impact on the demand placed on employees, the management, and also individuals in different societies (Ouyang & Shen, 2017). However, the modern environment is coupled with uncertainty, changing workforce demographics, political and social pressures, market challenges and also technological changes. A perfect example of the manner technological innovation continues to change the normal rules is through increasing the capacity of generating more information than what people can absorb together with faster interdependencies than what is manageable as well as accelerated change than any person's ability to keep pace (Velmurugan, 2017).

All players in the global market continue to experience significant change. The United Nations (2013) maintain that technology is critical for both organizations and nations, and technological innovation is essential in enabling firms to survive competition at the global level. Telecommunication firms operate under severe pressure by competitors offering similar or the same products. Shqipe, Gadaf and Veland (2013) note that telecommunication firms are face under immense pressure from customers whose needs keep evolving, as such the firms devise ways to accommodate customer needs to survive and remain competitive in the market. As a result of these pressures, telecommunication companies keep improving existing products and services to add value to the customers. Therefore, in the modern highly digital world, it is becoming important for firms to make effective use of digital innovations to serve customer demands (Gabison & Pesole, 2014). When technological innovation is driven by competition, it goes through several stages that entail launching of new products to the market, renewing existing products, use of new inputs, exploring new markets where technological innovations lead to increased profitability and improved customer satisfaction including new marketing approaches.

According to Roopadarshini and Shilpa (2014), technological innovations are also driven by the need for firms to remain competitive and the urge to continuously offer products and services that address diverse customer needs. Firms that embrace technological innovations compete in the global markets and can easily provide tailor made products and services at competitive rates. A review of recent trends of pioneer firms reveals that technology innovation is a critical ingredient for firms wishing to successfully achieve growth and sustainability in the long-run (Rosli & Sidek, 2013). According to Bae and Ashcroft (2014), over the years, technological innovation has changed human lives tremendously especially in the telecommunication firms where there has been a massive innovation of mobile phones. Technological innovation has had a significant impact on the business environment with regards to the manner in which firms conduct business, the way they relate and how they convey information to customers (Damanpour & Damanpour, 2011).

Dhar and Sundararajan (2017) assert that technological innovation has equally eased movement of goods and services, specifically with the elimination of physical transactions as a result of use of internet. For example, people are using mobile phones to send and receive money, and it is also possible to withdraw and deposit money directly from bank accounts using mobile phones. In Porter and Miller's (2011) view, technological innovations are essential in enabling competitive advantage since they contribute to operational efficiency. In a study conducted by Nemati, Khan and Iftekhhar (2010) in Pakistan, the researchers sought to understand the connection between innovation and customer loyalty. From the study findings, it was revealed that customers' level of satisfaction improved due to innovative products, but failed to demonstrate loyalty as a result of price sensitivity. In a different study by Hu and Huang (2011) in Taiwanese air cargo services, innovation capability was found to be positively associated with customer satisfaction. Silva and Yapa (2013) found out that the landscape of the Sri Lanka telecommunication industry has changed drastically following the deregulation of the sector, which took place in the early 1990s. The number of service providers has drastically changed from the initial one, which was owned by the state, to over 70 in a short period. As a result of the increased competition, telecom service providers have found it challenging to retain the existing clients. As a result, strategies like technology innovation were adopted as a means of remaining competitive.

Kyei, Thomas, and Bayo (2017) did a study on the link between innovation and customer loyalty in Ghanaian telecommunication firms and the results showed a significant link between innovation and customer loyalty. The findings further established that telecommunication firms that needed to improve their level of customer retention had no choice but to make huge investments in service innovation, market innovation and process innovation. In their study in Nigeria, Siew *et al.* (2011) tested the link between technological innovation and customer satisfaction among GSM telecommunication firms and the findings showed that innovations especially technological innovations was positively linked to customer satisfaction. In a study conducted by Letangule and Letting (2012) in Kenya, the researchers evaluated the impact of innovation strategies on the performance of organizations in the telecommunication sector. From the study, innovation strategies were found to have contributed to improving firms' performance in the telecommunication industry. Mathenge (2013) sought to understand how innovation affects competitive advantage among Kenyan telecommunication companies. The researcher revealed that financial innovation has positive effects on the competitive advantage of telecommunication firms to a large extent.

Njoroge, Muathe and Bula (2016) sought to understand the impact of technology on the performance of the Kenyan mobile sector. It was established that there was need for mobile telephony firms to make more investments in modern technology in order to deal with the challenges of innovations especially technological innovations. Oguko and Ragui (2012) studied the impact of technological innovation on performance of Safaricom Limited and the findings revealed that use of technological innovations enabled the firm to offer superior products and services compared to its customers. The findings also showed that Safaricom Limited recorded significant reduction in cost and improved efficiency in processes and firm operations. This led to improved overall performance of Safaricom Limited. Ngugi and Mutai (2014) explored the determinants of growth of mobile telephony in Kenya and the findings established that innovation was a key contributor of growth of mobile telephony especially technological innovation. As a result of competition among the players in the Kenyan telecommunication industry, it has led to an increase in provision of data and voice services (Oteri, Kibet & Ndung'u, 2015).

Some of the technological innovations currently offered by Safaricom PLC include voice communication services, M-Shwari banking, mobile money transfer services including mobile data and messaging services. In Kenya, Safaricom serves as the leading provider of converged communication solutions. According to Oteri *et al.* (2015), Safaricom has the widest network in Kenya with more than 25.2 million subscribers and a market share of 64.7 per cent. Safaricom has a mobile internet that rides on GPRS/EDGE technology and also tested 3G/HSPA technology, which is for MMS and high-speed data while at the same time introducing its own international gateway services back in 2006. Across East Africa, it was the first to provide 3G internet technology and installed 4G/LTE connectivity across major cities in Kenya. The company equally introduced the Kipokezi service back in 2000, which enabled its clients to send and receive an email as well as online chat while using standard mobile phones. In addition, Safaricom launched mobile money services (M-PESA) back in March 2007, where Vodafone is a majority shareholder with 40 per cent.

M-PESA has growth tremendously where by December 2011 in Kenya alone; this service is used by 17 million subscribers (Wafula, 2018). Safaricom PLC have tried to maintain its level of competitiveness through embracing global practices practiced by global telecoms, this has enabled the firm to make tremendously achievements in technological innovations. One of the strategies that Safaricom PLC adopts is strategic collaboration with retailers in the mobile sector; as such it has successfully created a niche in the local market. In view of this, Njuguna (2012) contends that huge investments in modern technology, innovations and research are some of the factors that have largely propelled growth of Safaricom PLC's market share. The current study sought to evaluate the impact of technological innovation on customer satisfaction within Safaricom PLC in Kenya.

1.2 Statement of the Problem

Firms have been forced to invest in modern technologies and innovate to improve efficiency on how they do business, this involves use of integrated approach to systems and processes that mitigate costs and enhance information sharing. Pulles and Schiele (2016) opine technological innovation also involves developing superior products and services that address customer needs more efficiently while addressing untapped market segments to meet customer needs and to boost their level of satisfaction. Ettlie and Rosenthal (2014) insist that technology is a critical source of innovation and an important factor for improved market competitiveness which results to customer retention. In view of this, Nemati, Khan and Moazzan (2010) explored the link between technological innovation and customer retention of mobile phones in Pakistan and the findings revealed that technological innovations were significantly linked to customer retention. Folarin and Zubair (2015) did an investigation on the effect of technological innovation on customer loyalty among Tesco retail outlets in Malaysia and the findings showed that technology innovation was significantly linked to customer loyalty. It was further revealed that through technological innovation Tesco retail outlets recorded significant cost reductions and improved efficiency.

In the Africa region, Ameme and Wikero (2016) tested the link between technological innovations on customer retention among commercial banks in Ghana and the findings established that use of technological innovations improved commercial banks' efficiency, convenience and significant cost savings. The findings further showed that a continuous investment in technological innovations by commercial banks led to improved customer satisfaction which resulted into customer retention. In Kenya, Memia (2014) did an investigation on the effect of technological innovation on customer satisfaction in commercial banks in Kenya and the findings showed existence of a positive relationship between technological innovation and customer satisfaction. The results further established that technological innovations improved efficiency and quality of services and this improved customer satisfaction levels. Many studies have dwelt on the effect technological innovation on customer satisfaction while the current study is focusing on customer retention.

Secondly, the studies have been conducted in commercial banks while the current study focused on telecommunication firms with a specific focus of Safaricom PLC hence, the need to conduct this research.

1.3 General Objective

The general objective of the study was to establish the impact of technological innovation on customer retention within Safaricom PLC in Kenya.

1.4 Specific Objective

The study was guided by the following objectives:

1.4.1 To examine the impact of product innovation on customer retention in Safaricom PLC in Kenya.

1.4.2 To assess the impact of process innovation on customer retention in Safaricom PLC in Kenya.

1.4.3 To determine the impact of service innovation on customer retention in Safaricom PLC in Kenya

1.5 Significance Of The Study

The study was important to the following stakeholders;

1.5.1 Safaricom PLC

The study is significant to management of Safaricom (K) limited given its role as the implementers of strategies in the firm. The study has given recommendations for implementation which can be employed by the top management to boost customer retention at Safaricom PLC through effective use of technological innovations.

1.5.2 Government and Policy Makers

The study is significant to the government particularly on policy setting and regulation of telecommunication sector. The study examines the technological innovations that are critical to the telecommunication industry in Kenya and this will aid in policy and decision making in the regulation of telecommunication sector to boost customer retention in the industry while protecting customer experience.

1.5.3 Third Party Innovating Companies

Most of the telecommunication service providers lack innovation functions and rely mainly on third parties to provide them with innovations. As such, they engage in partnerships while external firms provide suitable innovations to mobile companies. Additionally, the study

provides insights to the innovating firms particularly identifying customer needs and devising efficient and effective means of satisfying such needs.

1.5.4 Scholars and Academia

The study will add to the academic research on the impact of technological innovation on customer retention. The study further provides further insights on the contribution of technological innovation on customer retention. This will be because further studies in this area will be to identify the areas covered and further dwell on the untapped fields of research.

1.6 Scope Of The Study

This study sought to establish the impact of technological innovation on customer retention within Safaricom PLC in Kenya. Specifically the study sought to examine the impact of product innovation, process innovation and service innovation on customer retention in Safaricom PLC in Kenya. The study will target employee of Safaricom PLC in Nairobi County. Questionnaires were used in collecting primary data in the period between September 2018 and April 2019.

1.7 Definitions of Terms

1.7.1 Product Innovation

Product innovation is the development and introduction of a new product to the market or the modification of existing products in terms of function, quality consistency, or appearance (Stark, 2011).

1.7.2 Customer Retention

Customer retention refers to the activities and actions companies and organizations take to reduce the number of customer churn. High customer retention means customers of the business tend to return to and continue to buy from business (Panayides, 2016).

1.7.3 Process Innovation

Process innovation involves creating and improving the method of production and the adoption of new elements) to the firm's production process (Wasike, 2016).

1.7.4 Service Innovation

Service innovation is a service product or service process that is based on some technology or systematic method. It helps businesses find new revenue streams by satisfying their customer's need to get things done (Mathenge, 2013).

1.8 Chapter Summary

Chapter one has reviewed the introduction of the study. The areas of discussion contained within are the introduction, background of the problem, statement of the problem, general objectives of the study, specific objectives, significance of the study, scope of the study and definition of terms. Chapter two is the literature review; the chapter reviews the literature related to the specific objectives of the study which are to examine the impact of product innovation on customer retention in Safaricom PLC in Kenya, to assess the impact of process innovation on customer retention in Safaricom PLC in Kenya and to determine the impact of service innovation on customer retention in Safaricom PLC in Kenya. In chapter two, the research methodology is discussed and which comprises the study population, data collection methods and instruments. It further provides details of the research procedure and data presentation method used. Chapter three primarily described the research design together with the methodology that the researcher adopted to ascertain the effect of technological innovation on customer retention within Safaricom PLC in Kenya. Chapter four covers the interpretations of findings and discussion thereof. Chapter five looks at the summary of the discussion, conclusion of the research and the recommendations obtained from the study.

CHAPTER TWO

2.0 LITERATURE REVIEW

2.1 Introduction

This section examines the existing findings on technological innovation impact on customer retention within Safaricom PLC in Kenya. Specifically, the chapter focuses on the manner product innovation impacts customer retention within the firm, assess the manner process innovation impacts customer retention within the organization, and evaluates how customer retention is impacted by service innovation within the company.

2.2 Impact of Product Innovation on Customer Retention

Product innovation entails the introduction of a product or service that is completely new or improved significantly in respect to its traits or intended purposes that comprise of; major improvements in the technical aspects, materials and components, user-friendliness, incorporated software or other functional components (OECD, 2014). If an organization is to remain competitive and sustainable, product development is inevitable. However, it is important noting that the process of product innovation is challenging, which is driven by new technologies, changing needs of customers, limited product life cycles as well as increasing competition on the global level. According to Akova *et al.* (2015), for product innovation to be successful, it must involve strong interaction within the organization and equally between the organization and its suppliers and customers. Through product innovation, firms are presented with the most obvious means of revenues generation. On the other hand, process innovation provides the measures of quality safeguarding and improvement and cost-saving. Hall and Saias (2016) assert that improved and radically changed products are deemed imperative especially for long-run business growth and serve in enhancing customer retention. To retain a strong market presence, products and services must be updated and renewed completely. To OECD (2014), in most cases, product innovation involves the creation of new capabilities through the use of these combinations.

In their work, Forbes and King (2013) emphasize that product innovation is very crucial in enabling businesses to adapt to turbulent environments, which as a result translates to competitive advantage and sustainability.

The authors emphasize that irrespective of the fact that firms require a continuous innovation process to respond to the environmental conditions that are ever-changing and that sustainability must be coupled with new ways of conducting business. According to Homas and Eigelt (2014), where an enterprise introduces an innovative product, it should take into consideration the products of competitors and the abilities of the organization.

2.2.1 Mobile Money

According to Gewald, Lelived, and Pesa (2015), MPESA mobile money transfer service is regarded as an innovation that has experienced rapid growth, which as a result has attracted significant attention with major diffusion in the Kenyan economy. Kibaara (2017) defines the term MPESA as ‘M’ to represent Mobile and ‘PESA’ to mean money. This service was introduced by the mobile phone operator Vodacom Company back in March 2017. Since its introduction, the mobile money service has spread significantly with the first year alone following its introduction receiving over 2 million subscribers. In a study conducted by Etim (2016), the researcher revealed that 90 per cent of Kenyan households uses the service. According to Jack and Suri (2017), by the year 2016, MPESA was regarded as the most successful mobile-phone-based financial service across the developing world with around 27 million subscribers in Kenya. The World Factbook asserts that by the year 2016, 87 per cent of the global population was using mobile phones (Dastan & Gurler, 2016). Safaricom’s M-Pesa product provides services such as wireless airtime top-up, loans, and money transfers, bill payments, ticketing, and betting. By the close of the financial year that ended March 2016, transactions that amounted to 5.29 trillion shillings were conducted. According to Safaricom (2016), this figure is equivalent to 85% of the overall national economic output. Across the nation, the service is praised for enabling millions of individuals to gain access to the formal financial system. Additionally, crime reduction is regarded as a positive social impact of the service. Interestingly, the M-Pesa system of mobile payment does not need an application, a smartphone, or a connection with the internet. The service is initiated directly through the mobile carrier network with 2nd and 3rd generation cell phone equally compatible.

Through the provision of new features and services, Safaricom has enhanced the M-Pesa product. These features and services comprise of Pay Bill/Customer to Business payments, which allow M-Pesa subscribers to pay their bills using the M-Pesa menu. According to

Safaricom (2017), send money together with withdrawing cash are the key features that are widely used by individuals to receive and remit money. Business to Customer Payments serves as the other important feature of the service that enables firms to distribute money to large groups of people. This service is of particular importance to organizations that pay wages or salaries to workers in the lower-income bracket and do not have bank accounts. Furthermore, Mshwari is another important paperless service offered through M-Pesa service and provides subscribers with an opportunity of saving money at no cost while earning interest and also accessing microcredit (Kibaara, 2017). There is also Lipa Na M-Pesa service, which allows business people to receive payments for their products through M-Pesa (Safaricom, 2017). The Pay Bill or Buy Goods application helps merchants to receive payments for the products or services they offer. In order to pay for goods and services while using M-Pesa, it involves accessing the M-Pesa icon, click on the Buy Goods or Lipa na M-Pesa option, enter the pay bill or till number of the business owner, amount, and password, and then pay. Safaricom (2017) asserts that the Lipa na M-Pesa service helps customers across the country to pay for goods and services without or with minimal fee meaning that it is possible for one to pay from as low as Kshs 10 to 70,000.

2.2.2 Safaricom Fiber Home

From the time FTTH was incepted, it has proved to be the ideal choice of internet provision due to its broadband capacity. According to Chardy (2012), if customers are entirely served by the optic-fibre, there is a high possibility of increasing the bandwidth in the coming days. Therefore, FTTH serves as a solution to internet speed as well as connectivity in the long-run, especially for those facing internet challenges. It has the capability of providing a solution for many years through the provision of broadband service like VoIP, HD TV, Video on Demand, and Online Gaming among others. Safaricom owns a 3,236 km of fiber network, which is used in over 15,000 homes (Safaricom Ltd., 2016).

According to Telegeography (2016), the year 2016 saw Safaricom enter in a Memorandum of Understanding (MoU) with Kenya Power in launching a one year fiber-optic pilot project that aimed at connecting at least 12,000 homes in Nairobi to the FTTH. The partnership signified that Safaricom leased the fiber infrastructure of Kenya Power to provide households with last

mile internet connections. Since Kenya Power has a fiber infrastructure that covers more than 4,000 km, the partnership would help in providing Kenyan households with faster, reliable, and equally affordable broadband services. This partnership was hoped that it would augment this figure to over 1 billion by 1 billion shillings by the close of 2017. CAK (2017) asserts that Safaricom has continued to work hard with an aim of improving its fiber to the home network, which is believed to be connected to more than 200,000 households. Additionally, the firm has equally announced a partnership with Kenya Alliance of Residents Association (KARA), which would enable the company use the existing fiber to the home network as well as its cloud services in connecting members of KARA estates to a surveillance system. According to Safaricom (2017), the company claims that it has created a department that is fully tasked with the role of providing fiber together with other value-added products to household clients.

2.2.3 Network Quality

Mobile telecommunications companies in Kenya mainly rely on the Global System for Mobile Communication (GSM). All operators and regulators globally usually ascertain the quality of service provided in GSM through the use of Key Performance Indicators (KPI's). These KPI's are generally drawn from counters fixed in certain elements of the GSM network that maintains the records of all events that take place in the different interfaces.

Specific formulations relating to the relevant encounters that are standardized so as to ensure uniformity in ascertaining the actual quality of services help in obtaining various KPI's (Kumar, Anuradha & Naresh, 2012). According to the Communications Authority of Kenya (2017), notable KPI's measured by the industry regulator comprise of: Call Completion Rate, Call Drop Rate, Speech Quality, Call Set Up Time, Call Block Rate, Receive Levels, and Handover Success Rate. Measurement of KPI's usually happens through the use of specialized telecommunication equipment and often avoids customer surveys. As GSMA Intelligence (2015) notes, considering that the current study focuses on perceptions of consumers, the indicators of interest to this study are those where the end user has actual perception together with experience based on the fact that the interest is to understand the specific level of service performance. After incurring a fine of Kshs 270.1, which was imposed by the Communications Authority of Kenya in March 2017 for providing services of poor quality, Safaricom is currently collaborating with Flash Network, a firm that provides mobile internet

optimization as well as monetization solutions for the purpose of improving its network quality by providing customers with faster mobile browsing. Safaricom (2018) asserts that Flash Networks web optimization solution for Safaricom took the first position for mobile performance network that was undertaken by P3 communications, company that independently tests and measures network. As a result, Safaricom has improved the quality of experience, which consequently increases customer satisfaction while at the same time enabling the firm to adhere to the stringent requirements of an operator who conducts operations on the global context.

2.3 Impact of Process Innovation on Customer Retention

Process innovation involves implementing a new or significantly improved delivery production method. As such, it requires major changes techniques, software and/or equipment. Bauer and Leker (2013) assert that process innovation is essential in enabling the administration of the organization's operations thus ensuring efficiency and effectiveness. In their definition He and Wong (2014) attribute process innovation as a new or partly-improved process of an organization, which is achieved as a result of new equipment, materials or re-engineering of operational processes. Based on the fact that innovations mostly focus on the end users, they tend to possess an effect of second-order on the manner the new product performance while in comparison with the R&D of a product that must be followed by a new product at first hand (Bauer & Leker, 2013).

Gopalkrishnan *et al.* (2016) assert that, irrespective of the fact that process innovations have an impact on the client due to improved efficiency during production; it is very rare to notice these innovations on the customer's part. According to Cohen and Klepper (2016), process innovations primarily involve more tacit knowledge due to the fact that the latter is connected to products and thus easy to observe. Tacit knowledge cannot be easily codified, it must be experienced for it to be comprehended, which as a result makes it challenging for others to copy. Tonatzky *et al.* (2016) assert that process innovations generally rely on systemic knowledge, signifying that they are drawn from a lot of knowledge areas within a firm that are intricately connected to one another such as social systems, processes, or intra-organizational structures.

2.3.1 Know Your Customer

Lin and Wang (2016), Know Your Customer (KYC) processes are employed by firms to ensure their proposed agents, distributors or consultants comply with anti-bribery policies. KYC is a due diligence process that Safaricom together with other regulated firms must observe to identify their customers and ascertain critical information before engaging with those customers (Lin & Wang, 2016). For the purpose of preventing money laundering, identity theft, and terrorist financing among other crimes, telecommunication firms are mandated to establish a policy framework to know their clients before they begin engaging with them. another such as social systems, processes, or intra-organizational structures.

Currently, M-Pesa agents are using photo identification as a measure to curb M-Pesa fraud. This approach is part of continued efforts by Safaricom to curb M-Pesa fraud, irrespective of the fact that fraudsters often manage to devise new measures that they use to con individuals. This prevention measure is referred to as 'Know Your Customer' and requires M-Pesa agents to use the Customer ID together with the photo as verification documents. Safaricom (2018) asserts that the photos are used in identifying customers while carrying out transactions of either depositing or withdrawing money. Business Daily Reports (2018) claim that the company has equally made an announcement that it has already distributed more than 25,000 pre-programmed mobile phones for use in while registering new SIM cards. M-Pesa agents have an obligation of taking a photo of new customers and the information will be saved automatically on the company's database. In the case of the existing clients, their photos will be added to the company's database.

2.3.2 Customer Service

Turban (2012) asserts that customer service involves a series of activities aimed at enhancing customer satisfaction level. This means the feeling that a good or service meets the expectations of a customer. Customer service importance is dependent on products or services, industry, and customer. Retail stores maintain a section that is devoted to deal with customer complaints, returns, and exchanges or undertake related functions at the point of sale. Other options chosen by organizations that clients use to reach the organization are contact centers. These are especially beneficial where customers are at different geographical points and are equally convenient to the customers. Generally, customer service aims at winning new

customers, nurturing and retaining those already dealing with the company; entice previous customers back, and limit the costs of client service and marketing. Customer service is deemed a critical concept with an aim of bridging the gap between the ever-growing customer demands for flexibility and also the need to reduce costs of distribution and production. Bridging this gap helps in achieving competitive advantage and sustainability. This signifies that customer service is perceived in the lens of competitive strategy. Buzzell and Gale (2017) attribute strategy in this context as the policies and crucial decisions that have significant effects on performance and the competitive organization of a firm. Maltz and Maltz (2016) attribute customer service effectiveness as the relationship between customer service performance as well as the market place that is measured using indicators like customer satisfaction and attitude, performance levels, margin, market share, and repurchase intentions.

Safaricom intends to become the best telecommunications firm in Africa and to achieve this milestone, it is strongly focused on the quality of services it provides to its customers and at the same time ensuring that it remains competitive and relevant in the market where it operates. This will as a result help the firm to be accessible to clients who intend to enquire using the latest as well as effective channels of communication. It will equally enable the firm to implement best practices borrowing from the vast international experience of Vodafone and their knowledge of the Kenyan local market has been in operation for more than 10 years in the country.

Safaricom focuses on enriching the lives of customers by helping persons, businesses and communities connect with each other in a mobile world by offering services that are tailored to meet the customer needs (Kagendo, 2015). Safaricom maintains an integrated social media website, which serves as part of the strategy of managing customer relationships that focuses at attracting new and also retaining new clients by ensuring efficient access to customer service platforms like social media for better response. These findings are similar to those of Kamau (2015) who found out that managing customer relationship plays a critical role in retaining existing customers and attracting new ones.

2.3.3 Switching Barriers

According to Kim *et al.* (2014), a switching barrier refers to possible factors that make it costly or difficult for clients to change providers. In other words, switching costs comprise of costs that are associated with shifting from one supplier to another. Jones *et al.* (2014) assert that there are different reasons that may prompt customers to incur switching costs. Possible examples of switching costs are: costs incurred to inform others about a new phone number after switching an operator; costs associated with the process of learning how to use the interface of a new mobile phone, which is different from the initial brand; and costs associated with time lost due to the paperwork needed while shifting to a different electricity provider. There are various types of switching costs that comprise of; learning costs, equipment costs, exit fees, emotional costs, exit fees, installation costs, social risk, together with psychological costs, and cognitive costs. Generally, clients face three types of risk after switching from one service to another. These are: financial switching costs such as reward points lost together with fees required to terminate the contract; relational switching costs such as like personal relationships; and procedural switching costs such as uncertainty, effort, and time. Examples of exit fees involve contractual obligation that a customer is required to pay to the easing supplier together with compensatory damages that may possibly be as a result of breaching a contract.

Vendors mostly combine sign-up incentives together with penalties with an aim of limiting early cancellation (Mulki & Stock, 2014). Careful buyers are not surprised by exit fees because they have knowledge about the information provided in the fine print. Other costs which are generally expected comprise of learning costs, search costs, and the incurred expense while finding an alternative supplier. However, there are other costs that both consumers and sellers have a tendency of overlooking, which comprise of emotional, psychological, and social costs of switching. There are specific rules of thumb that are imperative in helping to understand the reasons that make most consumers delay in switching from a product or service they were used to the improved ones even where the cost of switching is minimal. This is based on the sensitive nature of humans to the advantages and disadvantage of any change. Therefore, irrespective of the improvements on a new product or service, it must possess significant benefits than those found in the one the consumer is using

prior to switching. Additionally, different individuals have different reference points. For example, in the case of a high-tech salesman, he would evaluate the benefits provided by a mobile phone over a landline phone and the opposite would be true for a homebound retiree. According to Kim and Yoon (2014), the resulting pain a customer experiences upon giving up a benefit has a huge impact that the consequent pleasure of gaining the benefit. A customer faces three barriers of switching from a product or service to another. These barriers comprise of the cost, effort, and time spent while switching to another service provider as well as market attraction.

In a study conducted by Lee and Feick (2013) in France, on mobile services, the findings revealed a strong connection between switching cost and the level of customer satisfaction. From the study findings, it was found out that although customers were unsatisfied with the services they received, they opted to stay with the same mobile services provider as a result of perceived high cost of switching to an alternative mobile services provider. Same findings were found in Britain where fixed line telephone companies attributed switching barriers to have a major effect on customer retention. Oyeniya and Abiodun (2013) assert that switching barriers significantly impact customer retention. In different studies conducted Kim *et al.* (2014); Kim and Yoon (2014) within the Korean telecommunication market equally revealed that switching barriers significantly impacted customer retention.

In the study conducted by Sadia *et al.* (2016), the researchers examined Pakistan's telecommunication industry to ascertain the level of customer satisfaction and their findings were in tandem with those of previous researchers that demonstrated that customer satisfaction was affected by switching costs.

2.4 Impact of Service Innovation on Customer Retention

A service entails a product which has an intangible benefit either in its individual right or as a major element of tangible product where a certain exchange satisfies a specific need and is impossible to store. Only a few services have constant demand always, most have unpredictable demand patterns (Farias, Aguiar & Melo, 2014). The intangible process trait that defines services like personal care, reliability, attentiveness of employees, and it is possible to define their friendliness upon purchase and consumption of a service (Batnasan, 2014). According to Tassej (2012) there are various types of innovations that are based on the

“Radical Innovation model.” The model is attributed to allow organizations to achieve re-combinative innovation or formalization innovation. Re-combinative innovation is also regarded to as architectural innovation and is achieved where a new service is developed either when two traits or various existing services are combined (budding). It may equally result from splitting an existing service (unbundling). On the other hand, formalization innovation takes place on the basis of clarifying the relationship between technical as well as final traits. The primary approach in quantifying satisfaction is to compare the perception of a client regarding an experience or component of the experience with the existing individual perception. Xu (2011) attributes this approach as the customer retention disconfirmation model. By using this approach, it helps in categorizing clients’ retention on the basis of their levels of satisfaction. When the model is applied, clients satisfaction is determined if their perceptions are met. Service innovation presents firms with an opportunity of creating highly satisfied clients, which leads to loyalty.

As a result, an organization reaps significant benefits as loyal clients spread positive word-of-mouth, which make them become walking-talking advertisements for the brand. According to Xu (2011), in the situation where an organization has a lot of loyal customers, it incurs less cost of promotion. Additionally, highly satisfied customers tend to be more forgiving signifying that even if an organization slips occasionally, it still maintains the loyal customers (Wang, 2009). It is for this reason that some experts attribute maintaining highly satisfied customers as similar as having an insurance policy that covers against a risk in the process of providing services. It is thus possible to perceive service innovation as a combination of three crucial characteristics of final, competence, and technical. Final traits serve as the customer benefits, technical traits entail both tangible and intangible systems of an organization used in service production. Lastly, competence characteristics comprise of personal skills of the customer and the service provider (Gavigan, Scapolo & Keenan, 2015).

According to Sunbo and Gallouj (2014), it is possible to view innovation as an internally oriented as well as externally oriented interaction process. Organizations providing services treat their innovation activities like differentiated unsystematic patterns and in most instances, as opposed to the manufacturing industry, systematic or formalized structures are given little attention (Sunbo & Gallouj, 2014). Service innovation can equally be perceived as an external

process that basically deals with interaction with potential clients with the final objective of establishing high-quality customer value. Sunbo and Gallouj (2014) assert that, traditionally, it is easier for service organizations to define a core service surrounded by supportive services in the process of delivery. Solomon (2014) defines a service to comprise of four characteristics: intangibility, heterogeneity, perishability, and simultaneous production and consumption. Intangibility of a service is regarded as the primary aspect in the development of a new service because it is impossible to see, feel, or touch the output. According to Jalali and Sardari (2015), as a result of this immaterial nature of a service, vendors should work closely with consumers so as to adequately define the relationship together with terms of service and also help to prevent accidental misrepresentation or confusion. Irrespective of the complexity, developing new service is easier because patent applications are not required. However, some prototype documents must support new services.

In order to remain competitive and sustainable in the market, it must provide products and services that are tailored to meet its customers' needs. According to Darroch and McNaughton (2014), innovation is the key to remain competitive through meeting customer needs. As such, organizations attempt to come up with superior value at all times to have innovation as a practice and culture. This signifies that innovation serves in increasing the chances of an organization to meet customers' needs and at the same time offering the opportunity to the organization to satisfy its clients. Firms should focus on the needs of their clients so as to understand the overall buyer value chain (holistic needs. Once equipped with this understanding, firms should then use it to mix and match their different products/services and evolve or adjust existing processes to deliver and maintain the respective services so as to meet the needs of customers with an objective of influencing the perceived value of the offering on the part of the customer.

Dotzel, Shankar and Berry (2015) assert that service innovations can be referred to as a value-creating process. However, on its own, innovation has a lesser significance because it entails the innovation value as perceived by the client that leads to the offering advantage (Carborg, Kindstrom & Kawalkoski, 2014). The state of customer's perception is typically transformed by service innovations. This influence contributes to the client's perception of the service value, as demonstrated by various findings. Viewing service innovation as an activity that

creates value or one that adds/influences the perceived value of the offering is imperative because it not only suggests but equally emphasizes the positive connection between service innovation as well as perceived customer value.

2.4.1 Interactive Service Innovation

Non-arguably, service-oriented business operations are the leading economic activities in most nations. The service industry characteristics make it dynamic and equally complex. Therefore, for organizations to survive in the modern business environment, it is important innovating value-added services so as to create customer loyalty, access new markets, and gain a competitive advantage over competitors (Ettlie & Rosenthal, 2014).

Although the performance as well as the development of a firm is based on its abilities to innovate, this aspect is neglected by some organizations in the service industry is neglected somehow. To survive and be competitive, organizations must shift the innovation paradigm to an approach that is more customer-oriented. Additionally, Stickdorn and Schneider (2014) claim that, for organizations to be innovative, they should come up with a dynamic service industry, which creates value-added services for the clients, the organizations must possess the required absorption capabilities to tap into knowledge together with information available in the external environment. Successful innovation by firms requires efficient use of internal effective service process and integrating it with the competitive strategy. As a result of differences between service innovation and product innovation, businesses should have a long-term view of their innovation strategy as opposed to short-run ones. According to Srivastava (2015), other than focusing on the firm-oriented form of innovation appraisal, the focus should be more customer-oriented.

2.4.2 Supportive Service Innovations

To achieve services that are highly innovative and at the same time cut on costs associated with R&D of new service lines together with processes, organizations should have the capability of tapping into external knowledge by forming alliances with external partners. Trigo (2014) attributes this open form of innovation to have been proved to lead to enormous benefits for both organizations and third-parties. As such, in order to improve innovative services in telecommunication industry, telecommunication firms should consider partnerships with service centers, universities including government agencies. Industry cooperation also

serves as an alternative option towards achieving high innovative service that has great quality and value at a cost that is relatively lower. Africa is coupled with low acceptance of industry cooperation. According to Rosell, Lakemond, and Wasti (2014), the reason for low participation in such type of alliance is associated with various factors like inadequate motivation for Applied Research and organization's perception on the possibility of losing to competing firms through the availability of certain crucial information that becomes public as a result of the alliance. Also, limitation of funds could impact negatively on partnerships and formation of alliances.

Players in the telecommunications industry provide service innovations by ensuring consumer participation in some of the development process. Such developments comprise of upgrading of the distribution system of transferred services. Two elements are found in this approach with the first element referring to innovation in the client interface and that in the distribution system. When it comes to consumer interface innovations, it involves overall developments in the interface that happens between telecommunications services providers and clients. Examples are employees' innovations in the manner they attend to customers together with innovations around the network. Service distribution innovation involves all the innovations that are incorporated at the invisible stage and client experience that is offered by telecommunication firms. Trigo (2014) asserts that this type of innovation comprise of positive effects of employees that emanate from management changes or the organization together with the positive impacts that happen in a commercial enterprise.

2.5 Chapter Summary

The chapter reviewed extant literature on technological innovations and customer retention. This study aimed at establishing the effect that technological innovations had on customer retention at Safaricom PLC in Kenya. The literature review section involved a detailed discussion of technological innovations including factors that affect technological innovations and how these factors impact on customer retention. The next chapter discusses the research methodology which comprise of the study population, data collection instruments and methods. Furthermore, it provides details of the research procedure and data presentation method used.

CHAPTER THREE

3.0 RESEARCH METHODOLOGY

3.1 Introduction

The current section discusses the research design, study population, sample together with sampling techniques, data collection methods, and data analysis as well as presentation.

3.2 Research Design

According to Ahuja (2016), a research design entails a plan, structure and strategy of a study adopted so as to come with the research question answers and to control variance. Polit and Beck (2015) define a research design as a thorough outline of the manner a study will take place. Generally, it entails how to collect data, tools to use for data collection, and the application of the tools together with the intended means of data analysis. In the definition by De Vaus (2017), a research design is the overall strategy adopted to integrate various components of the study in a manner which is coherent and logical, as such, ensuring that the research problem is addressed effectively.

The current study relied on a descriptive approach, structured in a formal study. The study comprised of clearly stated investigative queries that sought to understand who, what, where, when as well as how much (Fink, 2016). According to Ethridge (2015), a descriptive research gives a description of the characteristics of the study population or the phenomenon under investigation. The approach was considered useful in enabling the researcher to conduct in-depth investigation with the objective of collecting detailed information which might be either qualitative or quantitative in nature.

3.3 Population and Sampling Design

3.3.1 Population

According to Creswell (2015), a population is what the researcher wants so as to generalize the findings of a study and cautions that population selection should be guided by consistency of the population as opposed to the convenience. The current study focused on employees at

Safaricom customer service centers in Nairobi County as well as technical together with innovation departments at the company’s care center in Westlands Nairobi County.

On the other hand, a population group entailed the subject on which to obtain measurements. As such, it is the entirety of a study. In respect to the current study, Safaricom care center located in Westlands Nairobi County is the unit of study. For the current study, the target population comprised of 147 employees at Safaricom customer service centers in Nairobi as well as technical together with innovation departments at the company’s care center in Westlands (Safaricom Human Resources Division, 2018).

Table 3.1: Target Population

Category	Frequency
Customer Service employees	86
Technical and Innovation employees	61
Total	147

Source: Safaricom PLC. Human Resources Division (2019)

3.3.2 Sampling Design

3.3.2.1 Sampling Frame

The current study sampling frame comprised of the employees at Safaricom customer care center in Nairobi County. The researcher considered these employees to have important information regarding technological innovation and customer retention within Safaricom Company in Kenya. According to Kvale (2016), the sampling frame involves an objective list of the population from which the researcher makes a selection. It equally comprised of a list of element from which the researcher drew the sample.

3.3.2.2 Sampling Technique

By studying a sample selection, a researcher is presented with an opportunity for greater accuracy of results, improved speeds of data collection, and minimal costs of research as well as availability of the population elements. The current study adopted stratified random sampling in selecting 107 respondents. The use of random sampling was deemed imperative in

that it frequently limited the sampling error in the population. According to Ahuja (2016), this as a result leads to an increase in the precision of possible estimation methods applied.

It is important to select a representative sample through the use of a sampling frame (Polit and Beck, 2015). The sampling frame helped in selecting the required number of respondents, subjects, elements, or organizations in making a sample. The study respondents were stratified into three strata where the sample size of the respondents comprised of 107 employees in the customer care center.

3.3.2.3 Sample Size

The sample frame comprised of a list of all 147 employees, from where the researcher selected the respondents. The Krejcie and Morgan formula was applied in the current study to arrive at the intended sample size.

The selection formula was presented below:

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

Where n= the sample size required

N = is the Target Population (147 employees), e = accuracy level required. Standard error = 5%

Sample calculation

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

$$n = 147 / 1 + (147-1) 0.05^2$$

$$n = 147 / 1.365 = 107 \text{ respondents}$$

Therefore, through the use of Krejcie and Morgan formula, out of 147 employees, the sample size comprised of 107 respondents, which represents 73 per cent of the target participants. The sample was sufficient in that the respondents understood the effect of technological innovation on customer satisfaction within Safaricom Company in Kenya. For an entire population under study, Fink (2016) proposes a sample size that ranges between 10-50 percent.

Table 3.2: Sample Size

Department	Frequency	Proportion	Sample
Customer Service employees	86	73%	63
Technical and Innovation employees	61	73%	44
Total	147	73%	107

3.4 Data Collection Method

The researcher employed self-administered questionnaires from the target respondents. The use of this approach is appropriate in that it allows a participant to provide feedback that is at least slightly expansive as opposed to a situation where close-ended questions are applied. Additionally, it is easier to quantify responses from self-administered questionnaires than where completely open-ended response is used. The preference accorded to questionnaires is based on Polit and Beck (2015) claim that these instruments are effective for data collection as they allow respondents to give their personal opinions in relation to the issue/s under investigation. For the current study, the researcher will administer them using a drop and pick method. Additionally, the researcher will equally conduct a follow-up for the respondents who may intend to fill the questionnaires at varied times.

The questionnaire comprised of both open-ended as well as closed-ended questions to enhance ease of collecting qualitative and quantitative data. In structuring questions was aimed at addressing various aspects of the study variables. Qualitative data that was collected helped in providing a deeper understanding of the firm with regard to the study variables. To obtain intended information from the study respondents, the questionnaire was divided into five sections. The first section (A) comprised of the respondents demographic data. Section B comprised of the impact of product innovation on retention of customers. Section C, comprised of questions on the effect of process innovation on customer retention. Section D comprised questions on the effect of service innovation on customer retention, whereas, section E entailed customer retention in Safaricom PLC in Kenya.

3.5 Research Procedures

In the current study, data collection took place through individually administered questionnaires so as to collect the necessary information. To ensure that all the questionnaires presented to the respondents were returned, the researcher exercised care and control. In achieving this objective, a register of questionnaires was maintained by the researcher, tracking the sent-out questionnaires against the number received. Drop and pick method was utilized to administer and collect the questionnaires. Ascertaining validity and reliability is important in every study in that validity entails the degree to which the instrument applied in measuring truly measures the intended aspect, whereas, reliability relates to the internal consistency of the instrument used in measuring.

Babbie (2016) assert that the importance of conducting a pilot study is to detect possible weakness in design and instrumentation as well as the need to provide proxy data for data selection based on a probability sample. Pilot study was conducted by administering questionnaires to 10 respondents who were not part of the final study. This helped the researcher to fine tune the questionnaires and to ensure efficiency and objectivity of the process. To complete the questionnaires, every response was estimated to take fifteen minutes.

3.6 Data Analysis Methods

The current study employed both qualitative and quantitative methods of data analysis. Babbie (2015) attributes quantitative analysis as the numerical representation as well as manipulation of study observations with an aim of describing and also explaining the phenomena reflected by those observations. Once the data was collected, the questionnaires were checked for completeness and accuracy. Furthermore, the questionnaire was coded in respect to every study variable to minimize margin of error and equally assure accuracy during the process of data analysis. Both qualitative and quantitative techniques were used to analyze the coded data. In the case of quantitative techniques, the specific one applied was descriptive statistics that comprised of the mean, percentages, frequency and standard deviation. Data analysis was conducted using Statistical Package for Social Sciences (SPSS), and tables and charts were used to present the results. A correlation analysis was conducted in the study to ascertain the strength of the relationship between the dependent and independent variables. The use of

correlation analysis helped in detecting the possible chance of multi-collinearity. The study objective was to establish the impact of technological innovation on customer retention at Safaricom PLC. In data presentation, the researcher relied on tables and pie charts primarily because they are friendly. Additionally, a multiple regression was utilized to establish the relationship between technological innovation and customer retention with the help of SPSS.

3.7 Chapter Summary

Chapter three primarily described the research design together with the methodology that the researcher adopted to ascertain the effect of technological innovation on customer retention within Safaricom PLC in Kenya. The study employed a descriptive survey design with the help of a structured questionnaire. The sample frame was obtained from employees of Safaricom PLC who worked in Customer Care department. Sample data collection was done using a convenience non-probability sampling method. SPS data analysis tool was used in data analysis. The next chapter is chapter four that covers the interpretation of findings and discussions.

CHAPTER FOUR

4.0 RESULTS AND FINDINGS

4.1 Introduction

The chapter covers a discussion of the results and findings of the study that have been done in line with the broad objective of this study which was to establish the impact of technological innovation on customer retention of Safaricom PLC in Kenya. Primary data was collected using semi-structured questionnaires.

4.2 Response Rate and Background

This section presents the background information about the respondents, the organisation and the response rate.

4.2.1 Response Rate

Out of 107 questionnaires which were distributed to the respondents, 92 were duly filled, completed and returned successfully representing a response rate of 85.98% which was considered sufficient in representing the whole population. This is consistent to the recommendations of Sekaran (2008) who posited that a response rate of 60% and above was a satisfactory representation of a sample from an entire population.

4.2.2 Background Information

This section covers the demographic traits of the respondents and that of the organisation from which primary data was sourced.

4.2.2.1 Length of Service

The respondents were requested to indicate the period that they had served in the organisation. The results are shown in Figure 4.1.

In Figure 4.1, majority (50%) of the respondents had served between 7-9 years, 35% of the respondents had served between 3-6 years, 10% respondents above 10 years while only, 5% respondents served between 0-2 years.

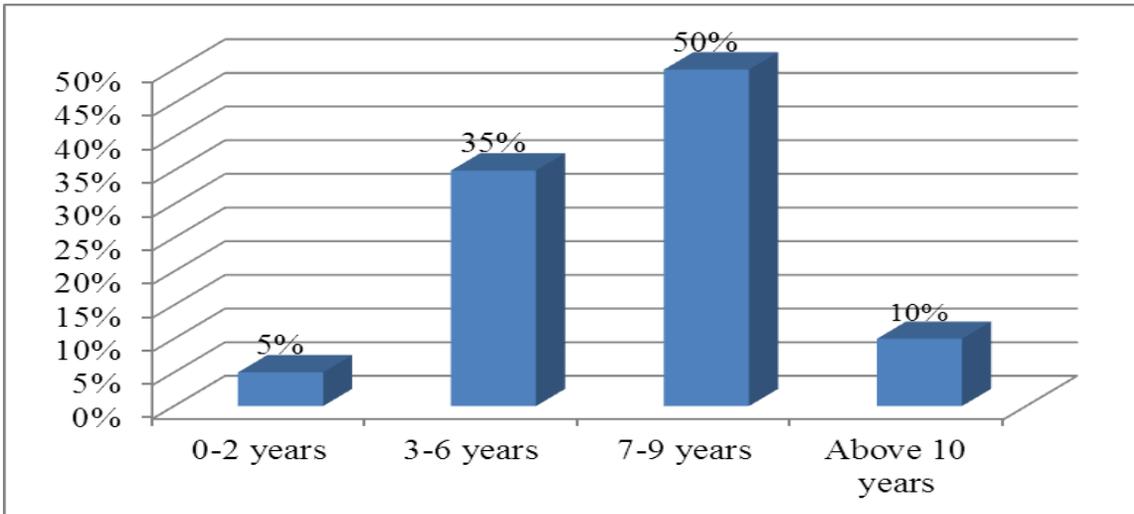


Figure 4.1: Length of Service

4.2.2.2 Level of Education

The respondents were requested to indicate their level of education. The results are depicted in Figure 4.2.

The results demonstrate that majority (60%) of the respondents had bachelor's degree, 37% of the respondents had master's degree, 3% respondents attained diplomas and none of the respondents attained a certificate. These imply that most of the respondents had a better understanding of technological innovations and customer retention.

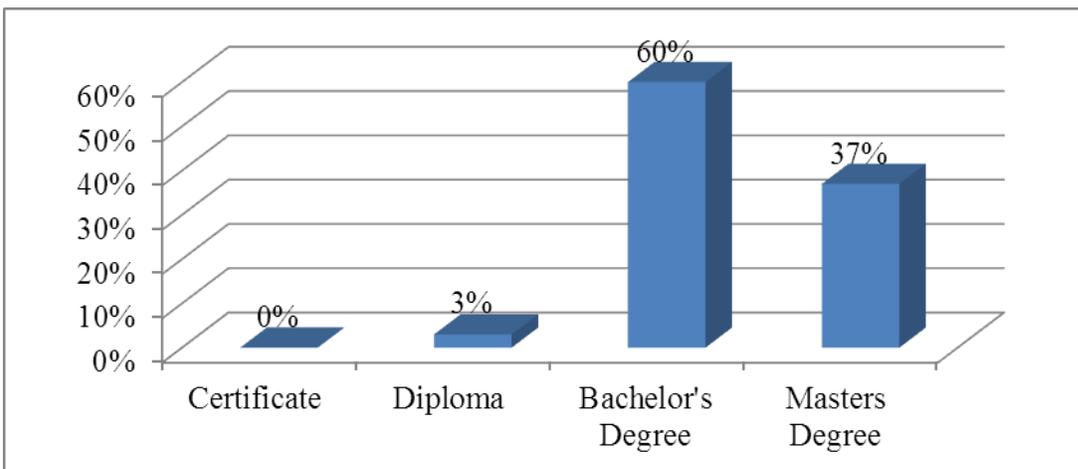


Figure 4.2: Level of Education

4.3 Impact of Product Innovation on Customer Retention

The respondents were requested to indicate the extent to which product innovation influenced customer retention at Safaricom PLC. The results are provided in Table 4.1.

The overall mean of mobile money was 3.913 which is higher than product innovation grand mean which is 3.818; this implies that mobile money greatly contributed to customer retention. Concerning use of mobile money, the respondents were in agreement that; it was an effective means to send and receive money, there was easy and convenient access to money and improved security since customers did not have to carry money (M=4.05, M=3.89 & M=3.80, respectively).

The overall mean of Safaricom fibre was 3.853 which is slightly higher than the overall grand mean which was 3.818, these imply that Safaricom fibre largely contributed to customer retention. Regarding Safaricom fibre, the respondents agreed that Safaricom fibre: provided a faster and cheap source of internet, the organisation was able to effectively utilize two-way communication approach that allowed feedback mechanism and an opportunity for customers to engage in international calls (M=3.96, M=3.85 & M=3.75, respectively).

The mean of network quality was 3.687 which is slightly lower than the grand mean of 3.818. These imply that network quality made the least contribution to customer retention in comparison to mobile money and Safaricom fibre. With regard to network quality, the respondents were in a consensus that; effective network quality lowered customer complaints, improved communication among mobile subscribers and attracted more customers to the mobile network provider (M=3.80, M=3.65 & M=3.61, respectively).

Table 4.1: Effect of Product Innovation on Customer Retention

	N	Mean	Std. Deviation
Mobile money has enabled the customers to access money more easily whenever they need it (MM)	92	3.89	0.565
Mobile money is an effective way of sending and receiving money (MM)	92	4.05	0.631
There is improved security by using mobile money since one does not have to carry cash (MM)	92	3.80	0.672
Safaricom fibre provides a fast and affordable internet (SF)	92	3.96	0.723
Fibre provides an affordable communication method (SF)	92	3.85	0.954
Through fibre customers are able to communicate to their family and friends all over the world (SF)	92	3.75	0.744
A good quality network enhances communication between clients (NQ)	92	3.65	0.755
A good quality network minimizes customer complaints (NQ)	92	3.80	0.802
A good quality network draws more customers to the network provider (NQ)	92	3.61	0.771
Grand mean	92	3.818	0.735

4.3.1 Diagnostic Tests

Before carrying out regression analysis, diagnostic tests were carried out to establish whether the data was normally distributed and determine the coefficient and significant values of the study variables.

4.3.1.1 Normality Test

Normality tests were executed to find out if the data set used was modeled in a normal distribution and to detect the possibility of a random variable which underlie the data to be distributed normally. The results are depicted in Table 4.2

Table 4.2: Tests of Normality

The results in Table 4.2 show that mobile money, Safaricom fibre, network quality are distributed normally since their level of significance (p-value) exceeds 5% (0.631, 0.103 & 0.581, respectively).

	Tests of Normality					
	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Mobile money	.159	92	.200 [*]	.947	92	.631
Safaricom fibre	.204	92	.170	.871	92	.103
Network quality	.175	92	.057	.943	92	.581

*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

4.3.1.2 Correlation Analysis of Product Innovation and Customer Retention

Correlation analysis was carried out to establish the relationship between product innovation and customer retention. The results are shown in Table 4.3.

Table 4.3: Correlation Analysis of Product Innovation and Customer Retention

Correlation analysis output between mobile money and customer retention show presence of a strong correlation depicted by the correlation coefficient of 0.772. Safaricom fibre and customer retention showed a strong correlation coefficient of 0.762 while network quality and customer retention showed a moderately strong correlation coefficient of 0.554. These imply that mobile money had the greatest influence on customer retention followed by Safaricom fibre while network quality attained the least effect on customer retention.

	Customer Retention	Mobile money	Safaricom Fibre	Network Quality
Customer Retention	1			
Mobile money	0.772 ^{**}	1		
Safaricom Fibre	0.762 ^{**}	0.742 ^{**}	1	
Network Quality	0.554 ^{**}	0.425 ^{**}	0.450 ^{**}	1

4.3.1 Regression Analysis of Product Innovation and Customer Retention

Regression model was employed to establish the link between product innovation and customer retention.

Table 4.4: Summary of the Model

Results demonstrate that the coefficient of determination was 0.885 (88.5%) variance in customer retention. Adjusted R² (0.434) 43.4% explains the percentage of variance which is explained by product innovation that affect customer retention.

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.885 ^a	.675	.434	.329

Table 4.5: Analysis of Variance

Analysis of variance demonstrates that the overall regression equation utilized was significant (on the relationship between technological innovation and customer retention) since its probability value was lower than 5%, (0.000). The numerator degrees of freedom (df) =3 and denominator (df) =88 with a critical F-value of 2.60. The output reveals that the computed F-value is 3.943. This is an indication that the regression equation was significant because the computed value of F was greater than the critical value (3.943>2.60).

ANOVA ^a					
Model	Sum of Squares	Df	Mean Square	F	Sig.
Regression	3.112	3	1.037	3.943	.000 ^b
Residual	23.110	88	.263		
Total	26.222	91			

a. Dependent variable: customer retention

Table 4.6: Study Coefficients

The regression model realized is as follows:

$$\text{Customer retention} = 0.009 + 0.043X_1 + 0.621X_2 + 0.127X_3 + \varepsilon$$

Mobile money, Safaricom fibre, network quality were positively related to customer retention (0.043, 0.621 & 0.127, respectively). This means that a unit increase in each of the variables

leads into a corresponding increase in customer retention. Mobile money, Safaricom fibre and network were found to be significantly related to customer retention since the p-values was less than 5% (0.000, 0.034 & 0.050, respectively).

Model	Unstandardized Coefficients		Standardized coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	.009	.772		1.101	.131
Mobile money	.043	.115	.046	2.219	.000
Safaricom fibre	.621	.132	.449	1.367	.034
Network quality	.127	.139	.125	0.998	.050

a. Dependent variable: customer retention

4.4 Impact of Process Innovation on Customer Retention

The respondents were requested to indicate the extent to which process innovation impacted on customer retention at Safaricom PLC. The results are captured in Table 4.7.

Table 4.7: Impact of Process Innovation on Customer Retention

The overall mean of KYC was 3.887 whose value is greater than the grand mean of 3.461 implying that KYC contributed greatly to customer retention. As to whether KYC was used to boost customer retention at Safaricom PLC, the respondents agreed that KYC enables the organisation to have a better understanding of its customers, minimize fraudulent activities and shield customers from any exposure to money laundering and thus improve customer service (M=4.10, M=3.81 & M=3.75, respectively).

The findings further established that the overall mean of customer service was 3.780 whose value was higher than the grand mean of 3.461. These imply that customer services highly contributed to customer retention. On the extent to which customer services influenced customer retention, the respondents agreed that the organisation; maintain a close interaction with its customers, it considered customer complaints as a basis towards improving customer services and customer complaints are handled soon as they are reported (M=3.89 & M=3.77 & M=3.68, respectively).

The overall mean of switching barriers was 2.903 whose value is significantly lower than the grand mean of 3.461. These imply that switching barriers least contributed to customer retention as compared to KYC and customer services. On whether switching barriers influence customer retention, the respondents moderately agreed that the organisation's superior products and services relative to its competitors make customers loyal, it provides good terms on its products and service offerings this increase switching costs. There are no restrictions to prevent customers to abandon their products and services, products and services are offered at competitive rates and this attracts customers to their products and services (M=3.31, M=3.10, M=2.65 & M=2.55, respectively).

	N	Mean	Std. Deviation
KYC prevents the organization from being used for money laundering activities	92	3.81	0.991
KYC helps the organization to understand its customers, this prevents fraudulent activities	92	4.10	0.681
KYC helps the organization to protect its customers from fraudsters hence improving customer service	92	3.75	0.781
Customers complaints are dealt with immediately they are communicated (customer service)	92	3.68	0.532
The organization is able to interact with its customers through online platforms hence its able to understand the customers' needs (customer service)	92	3.89	0.346
Customer's complaints are usually taken as a challenge. The organization uses them to improve its services (customer service)	92	3.77	0.711
The organisation's relative advantage on its products and services makes it difficult for customers to switch to competitors (SB)	92	3.31	0.882
The organisation offers its products or services at competitive rates and this attracted customers to their products or services(SB)	92	2.55	0.778
The organisations offer fair terms on products and services to its customers making it difficult for them to stitch to competitors (SB)	92	3.10	1.100
The organisation does not put any restrictions so as to make difficult for customers to leave its products or services (SB)	92	2.65	0.791
Grand mean	92	3.461	0.760

4.4.1 Normality

Normality tests have been conducted to establish whether the data used in the study is distributed normally and to compute the likelihood of existence of a random variable that might underlie the data to be normally distributed. The outcome is outlined in Table 4.8.

Table 4.8: Tests of Normality

The outcome in Table 4.8 depicts that KYC, customer service and switching costs are normally distributed since their level of significance (p-value) exceeds 5% (0.208, 0.811 & 0.192, respectively).

	Tests of Normality					
	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
KYC	.141	92	.200*	.670	92	.208
Customer service	.248	92	.056	.644	92	.811
Switching costs	.341	92	.601	.788	92	.192

*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

4.3.1.1 Correlation Analysis of Process Innovation and Customer Retention

Correlation analysis was conducted to find out the link between process innovation and customer retention. The results are provided in Table 4.9.

Table 4.9: Correlation Analysis of Process Innovation and Customer Retention

	Customer Retention	KYC	Customer service	Switching barriers
Customer Retention	1			
KYC	0.749**	1		
Customer service	0.622**	0.604**	1	
Switching barriers	0.450**	0.098	0.151	1

Correlation analysis results between KYC and customer retention depict existence of a strong correlation as depicted by the correlation coefficient of 0.749. Customer service and customer service revealed a moderately strong correlation with a coefficient of 0.622 while switching

barriers and customer retention showed a weak correlation (0.450). These imply that KYC recorded the highest effect on customer retention followed by customer services and then switching barriers had the least effect on customer retention.

4.4.1 Regression Analysis of the link between Process Innovation and Customer Retention

Regression equation adopted for testing the link between process innovation and customer retention is as follows:

Table 4.10: Summary of the Model

The results established that the coefficient of determination recorded 78.5% variation in customer retention. Analysis of variance is significant because its p-value is lower than 5%, (0.000). Adjusted R² 0.384 (38.4%) is the proportion of variation explained by process innovation which impact on customer retention.

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.785 ^a	.635	.384	.429

Table 4.11: Analysis of Variance

ANOVA ^a					
Model	Sum of Squares	Df	Mean Square	F	Sig.
Regression	2.322	3	0.774	2.888	.000 ^b
Residual	23.621	88	.268		
Total	31.265	91			

b. Dependent variable: customer retention

The numerator degrees of freedom (df) =3 and denominator df=88 with a critical F-value of 2.49. The results show that the computed F-value is 2.888, implying that the regression equation adopted is significant as its computed F-value exceeds the critical value (2.888>2.60).

Table 4.12: Study Coefficients

$$\text{Customer retention} = 0.011 + 0.053X_1 + 0.461X_2 - 0.127X_3 + \varepsilon$$

KYC and customer service were positively associated to customer retention (0.053, 0.461 & 0.127, respectively). This implies that a rise in one unit of each of these variables results into a corresponding increase in customer retention. KYC and customer services had a significant relationship with customer retention since their probability values are less than 5% (0.000, 0.002 & 0.064, respectively). However, switching to competitors was insignificantly related to customer retention (0.064) since its p-value was higher than 5%, (0.064).

Coefficients^a

Model	Unstandardized Coefficients		Standardized coefficients	t	Sig.
	B	Std. Error			
1 (Constant)	.011	.899		1.101	.124
KYC	.053	.125	.046	2.346	.000
Customer service	.461	.136	.449	1.367	.002
Switch to competitors	.127	.140	.129	0.998	.064

a. Dependent variable: customer retention
Regression equation obtained is as follows:

4.5 Impact of Service Innovation on Customer Retention

The study participants were requested to indicate the extent to which service innovation influenced customer retention at Safaricom PLC. The outcome is provided in Table 4.13.

Table 4.13: Impact of Service Innovation on Customer Retention

The results further discovered that the mean of interactive services was 3.78 which is higher than the grand mean of 3.725. This means that interactive services significantly led to customer retention. As to whether interactive services impacted on customer retention, the respondents agreed that Safaricom PLC; creates customer focused services that are easily accessible, the company incorporates modern technologies when rolling out new products or services to customers, provides interactive platforms where customers can access products and services (M=4.05, M=3.92 & M=3.78, respectively).

Overall mean of support services was 3.82 which is higher than the grand mean of 3.725. This is an indication that support services contributed greatly towards customer retention. Concerning support services, the respondents agreed that customer services are available 24 hours, customer queries are handled on real-time basis, through customer experience the firm is able to retain its customers; the firm has an internal team that monitors automated service systems to offer the best solutions to customers and it focuses on customer needs to develop customer driven service innovations (M=3.82, M=3.69, M=3.58, M=3.51 & M=3.45, respectively).

	N	Mean	Std. Deviation
Safaricom continuously create new customer driven services that are easily accessible (interactive services)	92	4.05	1.003
Safaricom incorporates new technologies in rolling out new services to customers (interactive services)	92	3.92	0.841
Safaricom provides online interactive platform where customer can access services needed (interactive services)	92	3.78	0.931
Our internal team monitors automated service systems to give the best to our customers (support services)	92	3.51	0.771
Focusing on customers need helps in creating customer driven service innovation (support services)	92	3.45	0.991
Differentiated customer experiences helps in retaining our customers (support services)	92	3.58	0.872
Through service innovation customer queries are resolved real-time (support services)	92	3.69	0.561
Through service innovation customer services are available for 24/7 (support services)	92	3.82	0.501
Grand mean	92	3.725	0.809

4.5.1 Normality Tests

Table 4.14: Tests of Normality

The outcome in Table 4.14 shows that interactive and support services are normally distributed since their p-value is above 5% (0.290 & 0.896, respectively).

	Tests of Normality					
	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Interactive services	.191	92	.200*	.911	92	.290
Support services	.162	92	.200*	.971	92	.896

*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

4.5.2 Correlation Analysis of Service Innovation and Customer Retention

The study carried out a correlation analysis to detect the link between service innovation and customer retention. The results are illustrated in Table 4.15.

Table 4.15: Correlation Analysis of Service Innovation and Customer Retention

The correlation analysis between interactive services and customer retention showed a moderate correlation coefficient of 0.682. Similarly, the correlation analysis between support services and customer retention revealed a moderate correlation coefficient of 0.562. Both interactive and support services attained a similar level of correlation which was moderate implying that their effect on customer retention was equally similar.

	Customer retention	Interactive services	Support services
Customer Retention	1		
Interactive service	0.682**	1	
Support services	0.562**	0.639**	1

4.5.1 Regression Analysis of Service Innovation and Customer Retention

Regression equation applied to test the effect of service innovation on customer retention and the outcome is as follows:

Table 4.16: Summary of the Model

The findings disclosed that coefficient of determination was 0.425 implying that service innovation explained 42.5% variance in customer retention. The adjusted R^2 was found to be 0.286 (28.6%) which is the percentage of variation that is explained by service innovation which affects customer retention.

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.655 ^a	.425	.286	.229

Table 4.17: Analysis of Variance

Results from analysis of variance demonstrate that the p-value is lower than 5%, (0.000) this means that the regression equation employed is significant. Numerator whose degrees of freedom (df)=2 and denominator df=89 and a critical F-value of 2.60. The results demonstrate that the computed F-value is 3.740 which is an indication that the regression equation applied is significant since the computed F-value exceeds the critical value (3.740>2.60).

ANOVA^a

Model	Sum of Squares	Df	Mean Square	F	Sig.
Regression	2.012	2	1.006	3.740	.000 ^b
Residual	24.004	89	.269		
Total	29.016	91			

c. Dependent Variable: customer retention

Table 4.18: Study Coefficients

Regression equation is as follows:

$$\text{Customer retention} = 0.012 + 0.043X_1 + 0.131X_2 + \varepsilon$$

Interactive services and support services were positively associated with customer retention (0.043 & 0.131, respectively). This means that a unit rise in these variables would result into a corresponding rise in customer retention. Interactive and supportive services were found to be significant since their p-values were less than 5%, (0.021 & 0.045, respectively).

Coefficients^a

Model	Unstandardized Coefficients		Standardized coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	.012	.711		0.895	.115
Interactive services	.043	.115	.043	2.104	.021
Support services	.131	.135	.131	1.115	.045

a. Dependent Variable: customer retention

4.6 Chapter Summary

The chapter discusses findings and interpretations guided by the research questions. In the first section, is a demographic analysis of the respondents and the organisation. The second section covered technological innovations and its impact on customer retention: product innovation and customer retention, process innovation and customer retention and service innovation and customer retention.

Chapter five covered a summary of the discussion, conclusion and recommendations arising from the study.

CHAPTER FIVE

5.0 DISCUSSION, CONCLUSION AND RECOMMENDATION

5.1 Introduction

This chapter summarizes the findings on the impact of technological innovations on customer retention at Safaricom PLC in Kenya. The chapter further gives a comprehensive discussion of summary of the findings, conclusions and recommendations for the study.

5.2 Summary

The purpose of this study is establishing the impact of technological innovations on customer retention of Safaricom PLC in Kenya. The research sought to find answers to these questions: impact of product innovation on customer retention, impact of process innovation on customer retention and impact of service innovation on customer retention. The chapter further covers a summary, conclusion, recommendations and discussion.

Descriptive research design was used and primary data was collected from employees at Safaricom PLC with the aid of self-administered questionnaires. Semi-structured questionnaires were employed to collect primary data from a sample of 107 respondents, out of which, 92 of these respondents successfully filled and gave back questionnaires representing a response rate of 86% that was considered a sufficient representation of the entire population. Data collected was later analysed using SPSS and then presented in the form of Tables and Charts.

The study found that product innovation attained the highest mean value of 3.818 as compared to process and service innovations with its sub-variables: mobile money attaining the highest mean of 3.913 followed by Safaricom fibre with a mean value of 3.853 then network quality with a mean value of 3.687. Correlation results revealed that mobile money and Safaricom fibre were strongly correlated to customer retention ($R=0.772$ and $R=0.762$, respectively) however network quality was moderately correlated to customer retention ($R=0.554$). From the regression results, the study established that coefficient of determination was 67.5%, which was deemed a good fit for the data. The adjusted R square was found to be 43.4% showing the proportion of variance that explained product innovation that impacted on customer retention. Overall regression model was found to be significant since its probability value was below the threshold of 5% (0.000).

Mobile money, Safaricom fibre and network quality were found to be significant since their p-values less than 5% (0.00, 0.034 & 0.050, respectively).

Process innovation recorded the least overall mean value of 3.461, which was lower than that of product innovation (M=3.818) and service innovations (M=3.725) with its sub-variables KYC recording a mean value of 3.887 followed by customer service (M=3.780) and switching barriers (2.903). The correlation results showed that KYC was strongly correlated to customer retention (0.749) and customer service was moderately and strongly correlated to customer retention (0.622) while switching barriers was weakly correlated to customer retention (0.450). Regression results established that the coefficient of determination was a good fit for the data (63.5%) and adjusted R square (38.4%) adequately explained process innovation which impacted on customer retention. Overall regression equation was statistically significant since its p-value was way below 5% (0.000). KYC and customer services were statistically significant because their p-values were less than 5% (0.00 & 0.002, respectively) while switching barriers was insignificant since its p-value exceeded 5% (0.064).

Service innovation attained overall higher mean of 3.725 than process innovation (3.461) but less than product innovation (M=3.818) with its sub-variables support services which attained a mean value of 3.82 and interactive services a mean value of 3.78. The correlation results established that both interactive and support services attained moderate correlation of $R=0.682$ and $R=0.562$, respectively. Coefficient of determination was 42.5% implying the regression model was a good predictor and that adjusted $R=28.6\%$ explained service innovation which affected customer retention. Overall regression equation used in this study was significant as revealed by predictor variables interactive and support services which were significant (0.021 & 0.045, respectively).

5.3 Discussions

This section of the chapter discussed key study findings in relation to product, process and service innovations and their effect on customer retention. The discussion gave a comprehensive highlight of the link between the study findings and how these findings relate to prior empirical studies.

5.3.1 Impact of Product Innovation on Customer Retention

Regarding how product innovation impacts customer retention, the respondents were in agreement that 3.913 was the mean of mobile money, which represented a higher figure than the overall grand mean of product innovation of 3.818 signifying that mobile money significantly influenced customer retention. In relation to the use of mobile money, the respondents generally agreed that the means was effective for sending and receiving money, it led to ease and convenience in accessing money as well as improved security as clients did not have to carry cash with a mean of 4.05, 3.89 & 3.80 respectively. In line with this is a study by Hall and Saias (2016), who discovered that mobile money was convenient, flexible and secure and this contributed towards customer loyalty.

Safaricom fiber had an overall mean of 3.853, which is partly higher than the overall grand mean of 3.818. These figures signify that Safaricom fiber significantly contributed to customer retention. In respect to Safaricom fiber, the study participants were in agreement that Safaricom fiber offered a faster and equally cheap internet source, the company managed to effectively utilize two-way communication process where feedback mechanism was allowed as well as an opportunity for clients to engage in international calls with mean figures of 3.96, 3.85, & 3.75 respectively. These views are consistent to the Dastan and Gurler (2016) who found that Safaricom fibre enhanced communication especially customer feedback which resulted to customer retention. Network quality had an overall mean of 3.687 which is less than the grand mean of 3.818. The findings reveal that network quality makes the least contribution in enhancing customer satisfaction while compared to the other aspects of mobile money together with Safaricom fiber.

Regarding network quality, there was a consensus by the respondents that effective network quality limited customer complaints, improved communication, and attracted more clients to the mobile network provider with means of 3.80, 3.65, & 3.61 respectively. These findings are consistent to the observations of Forbes and King (2013), who established that effective network quality lowered customer complaints and communication costs resulting into improved communication.

Results of the correlation analysis showed that there was a strong correlation between product innovation and customer retention. These findings are consistent to a study by Nemati *et al.* (2010), who revealed that product innovation was strongly correlated to customer retention. Coefficient of determination was 67.5% which was considered to be a good predictor. Product innovation was significantly related to customer retention. These findings conform to a study by Folarin and Zubair (2015), who established existence of a significant relationship between product innovation and customer loyalty.

5.3.2 The Impact of Process Innovation and Customer Retention

In relation to the impact of process innovation together with customer retention, there was a general agreement from the respondents that KYC had an overall mean of 3.887, a value that is higher than the grand mean of 3.461 signifying that KYC made a significant contribution to customer retention. The respondents further agreed that KYC enabled the firm to have a better understanding of its clients, shield customers from exposure to money laundering, and minimize fraudulent activities, which as a result translated to improved customer service with a mean of 4.10, 3.81 & 3.75 respectively. These views are anchored in the arguments by Bauer and Leker (2013), who assert that KYC deepens the firm's understanding of its customers while minimizing fraud. In support of this is a study by Lin and Wang (2016), who established that KYC enabled the firm to understand its customers and minimize fraudulent activities. This contributed positively towards customer retention. The finding further revealed that customer service overall mean was 3.780, a higher figure than that of the grand mean of 3.461. These findings signify that customer services were major contributors to customer retention.

Regarding the extent to which customer retention was influenced by customer services, the respondents were in agreement that the company maintains a close interaction with its clients, customer complaints are handled immediately upon receipt, and customer complaints are

considered a means of improving customer services with a mean of 3.89, 3.68 & 3.77 respectively. These findings conform to the observations of Buzzell and Gale (2017), who established that effective customer service helped to build strong bonds with the customers which resulted to improved customer retention.

Switching barriers had an overall mean of 2.903, a value that is significantly lower while compared to the grand mean of 3.461. This reveals that switching costs were the least contributors to customer retention while compared to other metrics of customer services and KYC. Regarding whether switching barriers impacted customer retention, there was a moderate agreement from the respondents that the firm's superior products and services while compared to those of its competitors ensure customer loyalty, the company provides good terms on the products and services it offers, which as a result increases switching costs as evidenced by Cohen and Klepper (2016). There are no restrictions that limit clients from abandoning the products and services, products and services are offered at competitive rates, and this attracts clients to their products and services with a mean of 3.31, 3.10, 2.65 & 2.55 respectively. These views are also supported by Maltz and Maltz (2016), who concluded that multiple switching barriers hindered customers from switching from one company to the other.

The correlation outcome showed that there was a moderately strong correlation between process innovation and customer retention. In view of this is a study by Lin and Wang (2016), who found existence of a strong correlation between process innovation and customer retention. Coefficient of determination was 63.5%; this percentage was regarded to be a better fit for the data. Consistent to these views is the observations of Kamau (2015) who established that the coefficient of determination was a good predictor. KYC and customer services were positively and significantly linked to customer retention but switching barriers was insignificantly linked to customer retention. Consistent to these findings is Kim *et al.* (2014), who found a significant link between KYC and customer retention while switching barriers was inversely linked to customer loyalty.

5.3.3 The Impact of Service Innovation and Customer Retention

In respect to the impact of service innovation on customer retention, there was an agreement between the respondents that interactive services mean was 3.78, a value that is slightly higher than the grand mean of 3.725. This is an indication that interactive services are significantly associated with customer retention. Regarding the impact of interactive services on customer retention, there was an agreement from the respondents that the company establishes customer-focused services that are easy to access, the firm incorporates modern technologies whenever rolling out new products or services, provides interactive platforms that help clients to access products and services with a mean of 4.05, 3.92 & 3.78 respectively. Consistent to these findings is a study by Farias *et al.* (2014), who established that service innovations enabled customers to easily gain access to products and services and this contributed towards customer retention.

Support services had an overall mean of 3.82, a figure that is higher while compared to the grand mean of 3.725. These figures reveal that support services made a significant contribution towards customer retention. In relation to support services, there was an agreement that customer services are provided on a 24-hour basis, handling of customer queries happens on a real-time basis, customer experience enables the company to retain customers, the company has an internal team tasked with a responsibility of monitoring automated service systems to ensure the best solutions to clients, and it focuses on the needs of customers to come up with customer-driven service innovations with a mean of 3.82, 3.69, 3.58, 3.51 & 3.45 respectively. These findings are consistent to Gavigan *et al.* (2015), who discovered that firms that provided customer support services consistently registered minimal customers' complaints leading to customer retention.

Results of correlation analysis show existence of a moderate correlation between service innovation and customer retention. These views are anchored in a study by Kyei *et al.* (2017) who discovered that service innovation was moderately correlated to customer loyalty with support services recording the highest correlation of 0.782. Results of regression analysis established that the correlation of determination was 42.5% which was regarded as a satisfactory predictor. These findings are supported by Memia (2014), who established that the coefficient of determination was a good predictor and that the regression model adopted was a

good fit for the data. Analysis of variance was less than 5% (0.000) implying that the regression equation used was significant. These results abide by the suggestions of Ameme and Wikero (2016), discovered that the analysis of variance was below 5 per cent hence the model of regression applied was regarded as significant. Support and interactive services was positively associated with customer retention as revealed by a study carried out by Folarin and Zubair (2015), who established that support services was significantly linked to customer loyalty. The findings further established existence of a significant relationship between service innovation and customer retention as revealed by predictor variables: support services and interactive services. These results contradict the views of Nemati *et al.* (2010), who discovered that there was an insignificant relationship between service innovation and customer retention.

5.4 Conclusions

This section provides the study conclusion based on the specific objectives of the study. It consists of major research findings from descriptive statistics results and inferential statistics results.

5.4.1 Product Innovation

Product innovation led to customer retention. Mobile money was found to have a significant impact on customer retention. The respondents claimed that mobile money was deemed effecting in sending and receiving money, was easier and convenient, and was secure as it limited the need to carry cash. Safaricom fiber was the other component of product innovation that made significant contribution to ensure customer retention.

Safaricom fiber provided customers with faster and equally cheap internet source, the company managed utilize a feedback mechanism was allowed as well as an opportunity for clients to engage in international calls. Lastly, network quality partly influenced customer retention, though in a lower level than the other aspects of product innovation.

5.4.2 Process Innovation

Process innovation was found to be a major contributor to customer retention. KYC was one of the components of process innovation found to have a significant impact in boosting customer retention. Customer service was the other component of process innovation that led to customer retention. This was associated with the firm's ability to maintain a close

interaction with its clients, customer complaints are handled immediately upon receipt, and customer complaints are considered a means of improving customer services. Although switching barriers were considered important in ensuring customer retention, their impact was limited.

5.4.3 Service Innovation

Service innovation was found to have a positive impact on customer retention. Interactive services and support services were the aspects of service innovation that led to customer retention within Safaricom PLC. Interactive services were found to improve customer retention due to their ability to establish customer-focused services that are easily accessible, the company incorporating modern technologies when rolling out new products or services, and providing interactive platforms to the customers. Support services influenced customer retention by ensuring real-time response to queries, providing customer services on a 24-hour basis, and maintaining an internal team that monitors the automated service systems.

5.5 Recommendations

This section provides various recommendations that have been put forward in line with specific objectives of the study to address the research problem.

5.5.1 Recommendations for Improvement

5.5.1.1 Impact of Product Innovation on Customer Retention

The study recommends that telecommunications firms need to do a comparison of what their competitors are offering in the market. This is to ensure that competitors are not offering products with favourable attributes. This aid in product innovation particularly when modelling products to meet specific customer needs. As such, telecommunication firms will have similar products serving different customer needs.

5.5.1.2 Impact of Process Innovation on Customer Retention

There is need for telecommunications firms to invest on continuous training and development programs to ensure that employees are updated and conversant with new systems and processes. This will improve employees' skills and knowledge resulting to improved efficiency in service delivery, operational processes and clarity on terms and conditions.

5.5.1.3 Impact of Service Innovation on Customer Retention

Telecommunication firms need to integrate and align their feedback mechanisms to boost efficiency in customer feedback and improve access and flexibility to customer response services. This will improve service innovation and result to significant decline in customer complaints leading to customer satisfaction.

5.5.2 Recommendations for Further Studies

Future researchers need to do a replica of this research in other industries other than telecommunication industry. Other sectors of importance might include the banking sector that has similar areas of intervention considering stiff competition facing the industry. This will give a detailed review on the nature of the relationships found in a study. Technological innovations impacts on efficiency, cost reduction and value addition which are essential indicators of performance. There's need for future researchers to do a study on how technological innovations affects overall firm performance then findings can be compared after which a plausible conclusion may be drawn.

REFERENCES

- Ahuja, R. (2016). *Research methodology*, New Delhi: Rawat Publication
- Akova, B., Ulusoy, G., Payzin, E., & Kaylan, A.R., (2015). New product development capabilities of the Turkish electronics industry. *Fifth International Product Development Management Conference*, 863-876, Como, Italy.
- Ameme, B., & Wikero, J. (2016). Impact of technological innovations on customer retention in the banking sector in Ghana. *The Business and Management Review*, 7(3), 20-24
- Awasthi, S., & Bhadauria, D. (2014). Performance analysis of fifth network Using OCDMA Technique. AEICT.
- Bae, B.B., & Ashcroft, P., (2014). Implementation of ERP systems: accounting and auditing implications. *Information Systems Control Journal*, 5, 43-48.
- Batnasan, J. (2014). *Exploring relationships among service innovations, customer satisfaction and customer value in airport* (Master's Thesis). Asia University, Department of Business Administration, Taiwan.
- Bauer, M., & Leker, J. (2013). Exploration and exploitation in product and process innovation in the chemical industry. *R&D Management*, 43(3), 196-212.
- Bersali, M. N. & Guermat, C. (2014). Loyalty and innovation: Evidence from Algerian mobile service providers. *International Journal of Technology Management & Sustainable Development*, 13(1), 73-96
- Buzzell, R. D., & Gale, B.T. (2017). *The PIMS Principles: Linking Strategy to Performance*, The Free Press New York.
- Carlborg, P., Kindström, D., & Kowalkowski, C. (2014). The evolution of service innovation research: A critical review and synthesis, *The Service Industries Journal*, 34(5), 373-398.
- Ceylan, C. (2013). Commitment-based HR practices, different types of innovation activities and firm innovation performance. *The International Journal of Human Resource Management*, 24(1), 208-226.
- Chardy, M. (2012). Optimizing splitter and fiber location in multilevel optical FTTH network. *European Journal of Operational Research*, Elsevier B.V, 430-440.
- Choi, S.M. (2015). Attribution approach to understanding celebrity/product congruence effects: Role of perceived expertise. Unpublished Doctoral dissertation, *Michigan State University, Lansing*.

- Cohen, W. M., & Klepper, S. (2016). A reprise of size and R & D. *The Economic Journal*, 925-951.
- Communications Authority of Kenya. (2017). *Quarterly Sector Statistics Report Fourth Quarter of the Financial Year 2017*. Nairobi: Communications Authority of Kenya.
- Communities, B. (2015). What fiber broadband can do for your community. 11th edition, p. 4. FTTH Councils Global Alliance - FCGA. (2016). Retrieved from <https://www.fiberbroadband.org/page/what-is-ftth>.
- Creswell, J. W. (2015). *Qualitative inquiry and research design: Choosing among five approaches* (3rd ed.). Thousand Oaks, CA: Sage.
- Damanpour, F. (2017). The adoption of technological, administrative, and ancillary innovations: Impact of organizational factors. *Journal of management*, 13(4), 675-688.
- Darroch, J., & McNaughton, R. (2014). Examining the link between knowledge management practices and types of innovation. *Journal of Intellectual Capital*, 3(3), 210-222
- Dastan, İ., & Gürler, C. (2016). Factors affecting the adoption of mobile payment systems: an empirical analysis. *EMAJ: Emerging Markets Journal*, 6(1), 16-24
- De Vaus, D. A. (2017). *Research design in social research*. London: SAGE, Trochim, William M.K.
- Dean, D. H., & Biswas, A. (2015). Third-party organization endorsement of products: an advertising cue affecting consumer pre-purchase evaluation of goods and services. *Journal of Advertising*, 30(4), 41-57.
- Dhar, V. & Sundararajan, A. (2017). Information technologies in business: a blueprint for education and research. *Information Systems Research*, 18(2), 125–141.
- Dotzel, T., Shankar, V. & Berry, L. L (2013). Service innovativeness and firm value. *Journal of Marketing Research*, 1(4). 259–276
- Dotzel, T., Shankar, V., & Berry, L. L. (2015). Service innovativeness and firm value. *Journal of Marketing Research*, 1(4). 259–276
- Doyle, P. (2016). Building successful brands: The strategic Options. *Journal of Consumer Marketing*, 7(2), 5-20.
- Eid, R., & El-Gohary, H. (2013). The impact of E-marketing use on small business enterprises marketing success. *Published PhD Thesis*, <http://www.cemi.com.au/node/497>
- Emmanuel T. (2012). Collymore Next Safaricom CEO. Daily Nation. Retrieved 2019-10-01.

- Ethridge, D.E. (2015). *Research methodology in applied economics*. John Wiley & Sons, 24
- Etim, E., S. (2016). Mobile banking and mobile money adoption for financial inclusion. *Research Review*. Retrieved on 28/10/2018 from <http://www.aabri.com/manuscripts/141840.pdf>
- Ettlie, J.E. & Rosenthal, S.R. (2014). Service innovation in manufacturing. *Journal of Service Management*, 23(3), 440-454.
- Evans, M., Wedande, G. & Ralson, L. (2013), Consumer interaction in the virtual era: some qualitative insights, *Qualitative Market Research: An International Journal*, 4(3), 15-19.
- Farias, S. A., Aguiar, E. C., & Melo, F. V. S. (2014). Store atmospherics and experiential marketing: A conceptual framework and research propositions for an extraordinary customer experience. *International Business Research*, 7(2), 87.
- Fink, A. (2016). *How to conduct surveys* (5th ed.). Thousand Oaks, CA: Sage
- Folarin, T.O., & Zubair, H. (2015). Effect of technological innovation on customer loyalty of Tesco retail outlets. *International Journal of Accounting and Business Management*, 3(1), 16-38
- Pulles, J, N., & Schiele, H. (2016). The impact of customer attractiveness and supplier satisfaction on becoming a preferred customer. *Industrial Marketing Management*, 54, 129-140
- Gabison, G., & Pesole, A. (2014). *An overview of models of distributed innovation - open innovation, user innovation and social innovation* (No. EUR 27035 EN). Luxembourg: Institute for Prospective Technological Studies.
- Gavigan, J., Scapolo, F. & Keenan, M (2015). *A practical guide to regional foresight*, McGraw-Hill, New York, NY.
- Gewald, J., Leliveld, A., & Pesa, I. (2015). *Transforming innovations in Africa: Explorative Studies on Appropriation in African Societies*. Leiden: Brill.
- Gopalakrishnan, S., Bierly, P., & Kessler, E. H. (2016). A reexamination of product and process innovations using a knowledge-based view. *The Journal of High Technology Management Research*, 10(1), 147-166.
- GSMA Intelligence. (2015). *The mobile economy sub-Saharan Africa 2015*. Retrieved November 25, 2015, from <http://www.gsmaintelligence.com>
- Gupta, S.P. (2013). *Statistical methods*. New Delhi: Sultan Chand & Sons.

- He, Z. L., & Wong, P. K. (2004). Exploration vs. exploitation: An empirical test of the ambidexterity hypothesis. *Organization science*, 15(4), 481-494.
- Hu, K. C., & Huang, M. C. (2011). Effects of service quality, innovation and corporate image on customer's satisfaction and loyalty of air cargo terminal. *IJOR* 8(4), 36-47.
- Imran, A., Safwan, N., Rehman, K., Afzal, H., Yilmaz, A.K., & Ali, J.F. (2015). Determinants of consumer retention in cellular industry of Pakistan. *African Journal of Business Management* 4(12), 2402-2408.
- Jalali, S. M. & Sardari, M. (2015). Study the effect of different aspects of customer relationship management (CRM) on innovation capabilities with mediator role of knowledge management (Case Study: Mahram Company). *Mediterranean Journal of Social Sciences*, 6(6), 343-360
- Jaskyte, K. (2015). Predictors of administrative and technological innovations in nonprofit organizations. *Public Administration Review*, 71(1), 77-86.
- Jones, M.A., Mothersbaugh, D.L., & Beatty, S.E. (2015). Why customers stay: Measuring the underlying dimensions of services switching costs and managing their differential strategic outcomes. *Journal of Business Research*, 55(6), 441- 450.
- Kagendo, R. (2015). Electronic marketing practices and customer retention. *Unpublished MBA project*, University of Nairobi
- Kamau, T. (2015). Customer relationship management practices adopted by Safaricom to Sustain Competition. Unpublished thesis. *United States International University-Africa*.
- Kasuni J. S. (2016) Strategic management case analysis of Safaricom (K): *International Journal of Economics & Finance (IJEF)* 2 (6), 181-214
- Kelly S (2016). Analytical CRM: the fusion of data and intelligence. *Interactive Marketing*, (3), 262-267.
- Kibaara, B. (2017). *Rural financial services in Kenya: What is working and why?* 2-57. Paper presented at International Conference on Rural Finance Research, FAO Headquarters, Rome, Italy.
- Kim, H.S., & Yoon, C.H. (2014). Determinants of subscriber churn and customer loyalty in the Korean mobile telephony market. *Telecommunications Policy*, 28(9/10), 751-765.
- Kim, M., Park, M., & Jeong, D. (2014). The effects of customer satisfaction and switching barrier on customer loyalty in Korean mobile telecommunication services. *Telecommunications Policy*, 28, 145-159.

- Kumar, V. S., Anuradha, B., & Naresh, V. (2012). Improvement of key performance indicators and qos evaluation in operational GSM network. *International Journal of Engineering Research and Applications*, 1(3), 411-417.
- Kvale, S. (2016). Doing interviews. In U. Flick (Ed.). *The Sage qualitative research kit*. London: Sage
- Kwashie, W. (2012). *The Impact of electronic banking on service delivery to customers of Ghana Commercial Bank Limited*. A Thesis submitted to the Institute of Distance Learning, Kwame Nkrumah University of Science and Technology.
- Kyei, D.A. & Bayoh, A.T.M. (2017). Innovation and Customer Retention in the Ghanaian Telecommunication Industry. *International Journal of Innovation (IJI Journal)*, 5(2), 171-183.
- Lee, J., & Feick, L. (2013). The impact of switching costs on the customer satisfaction- loyalty link: mobile phone services in France. *Journal of Services Marketing*, 15(1), 35-48.
- Letangule, S. L. & Letting, N. K. (2012). Technological innovation and corporate performance. *International Journal of Management & Business Studies, IJMBS*, 2 (3), 66-72
- Lin, H.H., & Wang, Y.S. (2016). An examination of the determinants of customer loyalty in mobile commerce contexts. *Information and Management*, 271-282.
- Macomber J.D. (2013). Building sustainable cities. *Harvard Business Review*, 91(7/8):40–50.
- Maltz, A., & Maltz, E. (2016). Customer service in the distribution channel empirical findings. *Journal of Business Logistics*, 1(3), 54-60
- Mathenge, J. (2013). *The effect of innovation on competitive advantage of telecommunication companies in Kenya*. Unpublished research project. University of Nairobi
- Memia, F.K. (2014). Technological innovation and customer satisfaction in Kenya Power and Lighting Company Limited, *Unpublished MBA Project*, University of Nairobi
- Moller, K. & Halinen, A. (2016). Relationship marketing theory: Its Roots and Directions, *Journal of Marketing Management*, 16(1–3): 29–54.
- Morawczynski, M. (2015). Designing mobile money services: Lessons from M- PESA, *Innovations* 4 (2), 77-92, MIT Press.
- Mulki, J.P. & Stock, J. (2014), Evolution of relationship marketing, *proceedings of conference on historical analysis and research in marketing (CHARM)*, East Lansing, May 15–18; 52.

- Nemati, A. R., Khan, K., & Iftikhar, M. (2010). Impact of innovation on customer satisfaction and brand loyalty: A study of mobile phones users in Pakistan. *European Journal of Social Sciences*, 16(2), 299-306.
- Nemati, A.R., Khan, K., Moazzan, I. (2010). Impact of innovation on customer satisfaction and brand loyalty. A study of Mobile phones users in Pakistan. *European Journal of Social Sciences*, 16 (2), 92-96
- Ngugi, K. & Mutai, G. (2014). Determinants influencing growth of mobile telephony in Kenya: A case of Safaricom LTD. *International Journal of Social Sciences and Entrepreneurship*, 1 (10), 218-230.
- Njoroge, G. J., Muathe, S. & Bula, H. (2016). Effect of technology on performance of mobile telephone industry in Kenya, *International Journal of Education and Research*, 4 (2), 487-50
- Njuguna, V. W. (2012). Competitive strategies adopted by Safaricom Kenya Limited to Tackle Competition. Unpublished research Project. *University of Nairobi*
- OECD (2014). *Oslo manual: Proposed guidelines for collecting and interpreting technological innovation data*. Paris.
- Onguko, M. A. & Ragui, M. (2012). The role of strategic positioning on products performance in the telecommunications industry in Kenya, *International Journal of Science and Research*, 3 (10), 1309-1314
- Oteri, O. M., Kibet, L. P., & Ndung'u, E. N. (2015). Mobile subscription, penetration and coverage trends in Kenya's Telecommunication Sector, *International Journal of Advanced Research in Artificial Intelligence*, 4 (1), 1-7
- Ouyang, J., & Shen, H. (2017). The choice of energy saving modes for an energy-intensive manufacturer considering non-energy benefits. *Journal of Clean Prod*, 141, 83–98
- Oyenyi, O., & Abiodun, A. (2013). Switching cost and customer's loyalty in the mobile phone. *Management of Journal*, 1(1), 100-102
- Panayides, P. (2016). Enhancing innovation capability through relationship management and implications for performance. *European Journal of Innovation Management*, 9(1), 466-83.
- Polit, D.F. & Beck, C.T. (2015). *Essentials of nursing research: Appraising Evidence for Nursing Practice*. 8th Edition, Lippincott Williams & Wilkins, Philadelphia.
- Porter, M.E. & Millar V.E. (2011). *The information revolution is transforming the nature of Competition*. Available at: <http://www.ida.liu.se/~TDEI65/documents/8500002422.pdf>.

- Roopadarshini, S., & Shilpa, S. (2014). A study on impact of information technological innovation in present banking scenario. *Asia Pacific Journal of Management & Entrepreneurship Research*, 3(1), 89-92
- Rosell, D. T., Lakemond, N., & Wasti, S. N. (2014). Integrating knowledge with suppliers at the r&d-manufacturing interface. *Journal of Manufacturing Technology Management*, 25(2), 240-257.
- Rosli, M. M. & Sidek, S. (2013). The impact of innovation on the performance of small and medium manufacturing enterprises: Evidence from Malaysia. *Journal of Innovation Management in Small & Medium Enterprise*, 2013 (2013), 1-16
- Safaricom PLC (2017). *Annual Report & Group Accounts*. Nairobi: Safaricom PLC.
- Saylor, M. (2015). The mobile wave: How mobile intelligence will change everything. In M. Saylor, *The Mobile Wave: How Mobile Intelligence Will Change Everything*. Perseus Books/Vanguard Press
- Shqipe, G., Gadaf, R., & Veland, R. (2013). *Innovation strategies and competitive advantage*
- Silva, P., & Yapa, L. (2013). Customer retention: *With special reference to Telecommunication industry in Sri Lanka*. Kuala Lumpur, Malaysia
- Simon, A., & Yaya, L. H. P. (2012). Improving innovation and customer satisfaction through systems integration. *Industrial Management & Data Systems*, 112(7), 1026 – 1043
- Solomon, M. R. (2014). *Consumer behavior: Buying, having, and being* (10th ed.). Courier/Kendallville: Pearson College Div.
- Song, G. F., Chaipoopiratana, S., & Combs, H., (2014) *A study of Chinese advertising practitioner's perspectives on the selection of celebrity endorsers*. *Journal of Business and Behavioral Sciences*. 19 (1). p. 17-32.
- Stark, J. (2015). *Product lifecycle management*. Available at: www.johnstark.com/ (accessed 15th October 2018)
- Stickdorn, M., & Schneider, J. (2014). *This is service design thinking: Basics, tools, cases*. New Jersey: Wiley.

- Sunbo, J., & Gallouj, F. (2014). *Innovation as a loosely coupled system in services*. in e.by, j. Metcalfe, & i. miles, *Innovation Systems in the Service Economy* (pp. 43-68). Dordrecht: Kluwer Academic Publishers.
- Tassey, G. (2012). Strategy and standards. *Technology Infrastructure and Competitive Position*, 169-203. doi:10.1007/978-1-4615-3608-6_6
- Tornatzky, L. G., Fleischer, M., & Chakrabarti, A. K. (2010). *Processes of technological innovation*. Lexington Books.
- Trigo, A. (2014). The nature of innovation in R & D- and Non-R & D-intensive service firms: Evidence from firm-level latent class analysis. *Industry and Innovation*, 20(1), 48-68
- Turban, E. (2012). *Electronic commerce: A managerial perspective*. Prentice Hall
- United Nations (2013). *World economic and social survey 2013—sustainable development challenges*. Retrieved from <https://sustainabledevelopment.un.org/>
- Velmurugan M. S. (2017). Sustainable perspectives on energy consumption, EMRF, environment, health and accident risks associated with the use of mobile phones. *Renewable Sustainable Energy Rev*, 67,192–206
- Wafula, P. (2018). Safaricom: Kenya's most amazing money maker. *The Standard*. Retrieved 2019-10-01.
- Wang, L. (2009). Customer Interaction and Service Innovation Performance: The Mediating Role of Customer Knowledge Development. *2009 International Conference on Information Management, Innovation Management and Industrial Engineering*, 1(2), 344-354
- Wasike, M. N. (2016). *Effect Of technological innovations on customer loyalty among Commercial Banks in Eldoret Town (Doctoral dissertation, Kisii University)*.
- White, D. W., Goddard, L., & Wilbur, N. (2016). The effects of negative information transference in the celebrity endorsement relationship. *International Journal of Retail & Distribution Management*, 37(4), 322-335.
- Xu, L. (2011). Managing customer services: Customer knowledge management in service innovation. *ICSSM11*. doi:10.1109/icssm.2011.5959325

APPENDICES

Appendix I: Introduction Letter

United States International University

RE: Survey Questionnaire

Dear Respondent,

I am a post-graduate student studying a degree of Master's in Business Administration (MBA) at the United States International University. The **PURPOSE OF THE STUDY IS TO ESTABLISH THE IMPACT OF TECHNOLOGICAL INNOVATION ON CUSTOMER RETENTION WITHIN SAFARICOM PLC IN KENYA.**

You are requested to fill in the questionnaire. Your honest answers will be completely anonymous, but your views, in combination with those of others are extremely important in this research. All the information you provide will be treated with strict confidentiality and used for the purpose of completing this study only. Please answer the questions as accurately as possible.

Thank you for your cooperation

Michael Hinga

Appendix II: Questionnaire

Kindly tick appropriately

Part A: General Information

1. Indicate your designation

.....

2. How long have you been working in the organization

0-2 years ()

3-6 years ()

7-9 years ()

Above 10 years ()

3. Indicate your level of Education

Certificate ()

Diploma ()

Bachelor's Degree ()

Master's Degree ()

Part B: Product Innovation

4. What is your level of agreement on the following statements about the impact of product innovation on customer retention in Safaricom PLC in Kenya? Using the scale 1- strongly disagree, 2- disagree, 3- moderate, 4-agree, 5-strongly agree.

Statements	1	2	3	4	5
Mobile money has enabled the customers to access money more easily whenever they need it (MM)					
Mobile money is an effective way of sending and receiving money (MM)					
There is improved security by using mobile money since one does not have to carry cash (MM)					
Safaricom fibre provides a fast and affordable internet (SF)					
Fibre provides an affordable communication method (SF)					
Through fibre customers are able to communicate to their family and friends all over the world (SF)					
A good quality network enhances communication between clients (NQ)					
A good quality network minimizes customer complaints (NQ)					
A good quality network draws more customers to the network provider (NQ)					

5. Indicate other effects of product innovation on customer retention in Safaricom PLC in Kenya

.....

Part C: Process Innovation

6. What is your level of agreement on the following statements about the impact of process innovation on customer retention in Safaricom PLC in Kenya? Using the scale 1- strongly disagree, 2- disagree, 3- moderate, 4-agree, 5-strongly agree

Statements	1	2	3	4	5
Know your customer					
KYC prevents the organization from being used for money laundering activities					
KYC helps the organization to understand its customers, this prevents fraudulent activities					
KYC helps the organization to protect its customers from fraudsters hence improving customer service					
Customer service					
Customers complaints are dealt with immediately they are communicated					
The organization is able to interact with its customers through online platforms hence its able to understand the customers' needs					
Customer's complaints are usually taken as a challenge. The organization uses them to improve its services					
Switching barriers					
The organisation's relative advantage on its products and services makes it difficult for customers to switch to competitors					
The organisation offers its products or services at competitive rates and this increases customer's switching costs					
The organisations offer fair terms on products and services to its customers making it difficult for them to stitch to competitors					
The organisation does not put any restrictions so as to make difficult for customers to leave its products or services					

7. Indicate other effects of process innovation on customer retention in Safaricom PLC in

Kenya?

.....

.....

Part D: Service Innovation

8. What is your level of agreement on the following statements about the impact of service innovation on customer retention in Safaricom PLC in Kenya? Using the scale 1- strongly disagree, 2- disagree, 3- moderate, 4-agree, 5-strongly agree

Statements	1	2	3	4	5
Interactive services Safaricom continuously create new customer driven services that are easily accessible					
Safaricom incorporates new technologies in rolling out new services to customers					
Safaricom provides online interactive platform where customer can access services needed					
Supportive services Our internal team monitor our automated service systems to give the best to our customers					
Working with customers need helps in creating customer driven service innovation					
Differentiated customer experiences helps in retaining our customers					
Through service innovation customer queries are resolved real-time					
Through service innovation customer services are available for 24/7					

9. Indicate other effects of service innovation on customer retention in Safaricom PLC in Kenya?

.....

.....

Part E: Customer Retention

Indicate your level of agreement on the following statements about customer retention. Using the scale 1- strongly disagree, 2- disagree, 3- moderate, 4-agree, 5-strongly agree

	1	2	3	4	5
Safaricom provides good quality network facilitates that enhances customer loyalty					
Improved customer services promote customer retention at Safaricom					
Safaricom continuously provide automated services to their customer thus enhancing retention					
Safaricom provides affordable and reliable services that promotes customer retention					

THANK YOU

Appendix III: Raw Data

Product innovation	product innovation	product innovation	process innovation	process innovation	process innovation	Service Innovation	Service Innovation	Customer Retention	Customer Retention	Customer Retention	Customer Retention
4	2	2	3	4	4	3	2	3	3	3	4
5	4	4	5	4	4	4	3	4	4	4	4
4	3	4	4	3	3	3	4	4	4	4	4
4	4	4	2	3	4	3	3	3	3	3	4
4	3	3	3	3	4	3	4	2	2	2	3
4	2	2	3	3	4	3	3	2	2	2	2
3	4	4	3	3	4	4	4	4	4	4	3
5	4	4	3	3	4	5	4	4	4	4	4
4	3	3	4	4	4	4	4	4	4	4	5
3	4	4	4	2	2	5	5	3	3	3	3
3	3	4	4	3	3	5	5	3	4	4	4
2	3	3	4	4	4	4	5	5	5	5	4
5	4	4	5	5	5	4	3	3	4	4	3
4	3	4	5	5	4	5	4	3	4	4	5
4	5	5	4	3	3	4	4	5	4	5	5
2	2	3	5	5	3	3	3	4	4	4	4
3	4	4	4	4	5	4	5	3	4	4	4
4	3	3	5	5	5	3	4	3	4	5	5
4	4	4	3	3	4	3	3	4	4	4	4
4	2	3	3	3	3	3	4	3	3	3	5
3	4	4	3	3	4	3	3	3	3	4	4
3	4	4	4	4	4	5	5	4	4	4	3
5	3	4	4	3	4	4	4	4	4	3	3
4	3	3	3	3	4	3	3	5	5	5	4

4	4	4	4	3	4	5	5	3	3	3	4
4	4	4	5	5	4	3	3	4	4	5	5
5	3	4	3	3	3	5	2	3	4	4	4
4	3	4	4	4	4	3	4	5	4	3	5
3	4	4	4	5	5	5	5	5	3	4	4
3	4	4	4	3	2	5	4	4	5	4	5
5	3	3	3	4	4	4	4	4	3	3	3
4	2	3	4	4	4	3	3	4	4	4	3
5	3	4	3	4	5	3	3	5	3	5	2
3	3	4	4	4	4	4	3	4	3	3	4
5	4	4	3	4	4	4	4	5	4	4	5
4	3	3	3	4	4	3	3	4	3	3	3
4	3	3	5	3	3	3	3	3	4	5	4
3	3	4	5	4	5	2	3	3	4	4	3
3	3	3	4	3	4	2	3	3	3	3	3
4	3	3	3	4	4	3	3	2	2	3	3
5	3	5	4	5	5	5	4	5	5	5	4
2	4	4	4	3	3	4	4	4	4	4	4
4	4	4	5	4	4	2	3	4	4	4	5
3	4	3	4	3	3	3	2	4	4	4	3
4	3	4	4	3	2	2	4	3	3	4	5
4	2	5	5	5	4	4	5	5	4	5	4
5	5	4	4	3	5	4	3	4	4	4	4
3	4	3	5	2	3	5	2	5	4	4	4
3	3	3	4	4	4	4	4	4	4	3	4
4	4	4	4	4	4	5	3	3	3	3	3
4	4	4	4	3	4	3	4	3	4	3	5
3	3	3	3	3	3	3	5	3	3	3	3
2	2	2	4	3	5	3	4	2	3	3	3
2	2	2	3	3	3	4	4	4	4	4	4

4	4	4	3	3	3	4	5	4	4	4	5
4	4	4	4	4	4	4	5	2	3	4	3
4	4	4	4	4	5	4	5	4	5	5	4
3	3	3	3	4	3	3	5	4	4	4	4
3	4	4	5	5	4	3	3	3	5	3	4
5	5	5	4	4	4	4	3	3	4	4	4
3	4	4	5	3	4	4	4	4	5	3	2
3	4	4	4	4	4	5	3	4	4	4	5
5	4	5	5	3	2	4	4	4	4	4	4
4	4	4	4	4	5	5	5	4	4	4	4
3	4	4	4	4	4	3	4	4	4	5	5
3	4	5	4	4	4	4	3	4	5	4	4
4	4	4	4	5	5	3	5	4	4	4	4
3	3	3	5	4	4	5	4	3	3	3	4
3	3	4	4	4	4	5	2	2	3	1	4
4	4	4	3	3	4	3	3	4	4	5	5
4	4	3	3	1	4	4	4	2	5	5	3
5	5	5	4	5	5	5	4	5	5	5	4
3	3	3	5	5	3	4	5	4	5	5	5
4	4	5	5	5	4	4	3	2	2	3	3
3	4	4	5	5	5	4	4	5	5	5	4
5	4	3	2	3	3	3	3	5	3	4	2
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4	5	4	3	4	2	5	5	4	3	3	3
4	3	3	4	4	3	4	2	4	3	4	4
4	4	4	3	3	3	4	4	4	3	4	3
5	3	5	3	4	4	2	3	5	5	4	4
4	3	3	3	4	3	3	5	5	3	3	4
5	4	4	5	4	4	3	3	3	3	3	5
4	3	3	3	3	4	4	3	3	3	3	4

3	4	5	3	3	5	3	4	3	4	3	3
3	4	4	3	3	4	4	3	3	3	3	4
3	3	3	4	3	3	4	4	3	2	2	3
2	2	3	3	3	4	5	3	3	3	3	4
5	5	5	2	2	3	5	4	4	4	4	4
4	4	4	3	3	4	5	3	2	4	5	4
3	4	4	4	4	4	4	5	4	4	3	3
5	4	5	3	4	4	3	4	4	3	3	3