MULTI-LEVEL SERVICE DESIGN PRACTICES AND CUSTOMER VALUE CONSTELLATION IN TELECOMMUNICATION FIRMS IN KENYA

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DECLARATION

This research project is my original work and has not been presented for any academic award in any other institution.

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This research project has been submitted for examination with my approval as the University Supervisor.

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DEDICATION

This research work is dedicated to my entire family and friends for their support

encouragement and prayers. I also dedicate this research to staff of four mobile

telecommunication firms who took their time to respond to the research questions.

ABSTRACT

The purpose of this study was to determine the relationship between multilevel service design practices and the customer value constellation among mobile phone companies in Kenya. A survey was used for the study. The research study targeted 60 respondents and a response rate of 68.3% was achieved. The research study revealed that mobile phone companies had adopted MSD at varying degrees as an operational strategy as a way of creating customer value constellation. The key parameters used under the study were Customer service modeling, Service innovation practices, service delivery and customer value castellation. The findings revealed that among strategies that were not popular among mobile companies were partnerships with competitors and the training of suppliers and distributors on customer service. The extent to which MSD practices were used varied from 4.1 for service innovation to 3.1 for customer service modeling. The values were based on a scale of 1 to 5 where 5, was very great extent and 1 was least extent.

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LIST OF ACRONYMS AND ABBREVIATIONS

CA   Communication Authority

CEM   Customer Experience Modeling

CVC   Customer Value Constellation

MSD   Multi-level Service Design

VAS   Value Added Services

MVNO   Mobile Virtual Network Operators

CHAPTER ONE: INTRODUCTION

1.1 Background of the Study

The growing importance of services in the global economy and the need to improve corporate competitiveness has brought service innovation to the forefront of research and practice priorities. Companies need to go beyond merely improving efficiency and refining existing service models, and focus on service innovation by finding new ways of value co-creation for customers and the firm (Patricio & Fisk, 2011). Service design has been identified as a research priority and plays a key role in service innovation because it brings service strategy and innovative service ideas to life. Service design is an emerging interdisciplinary field that integrates different contributions and the interaction between design, management, marketing, operations or technology. As an interdisciplinary field, different service design approaches have been developed (Kimbell, 2011).

Research and practice from interaction design has approached service design with a strong focus on enhancing the customer experience through the design of service interfaces and customer journeys (Meroni & Sangiorgi, 2011). From this perspective, service design can be defined as a process that involves understanding users and their context, understanding service providers and social practices, and translating this understanding into evidence and service systems interaction. Service Science provides a broader view of service design, involving all stakeholders and service system components. From this perspective, service design can be defined as the orchestration of clues, places, processes, and interactions that together create holistic service experiences for customers, clients, employees, business partners, or citizens (Ostrom et al., 2010).

Service design has gained increased attention, but it is still not a well-established practice in most organizations and the management implications of service design are still not well understood. A wider diffusion of service design practices in organizations has significant potential to improve service innovation. However, further work is needed to strengthen the connection between management and service design. Multilevel Service Design (MSD) (Patrício et al., 2011), an interdisciplinary service design method, can contribute to integrate the concepts and tools from these approaches. A study of applying MSD to redesigning a mobile service illustrates how the customer value constellation and the service system architecture models of MSD can be used to integrate management and design decisions and to navigate across different levels of service design (Patrício et al., 2011).

1.1.1 Multi-Level Service Design Practices

Multilevel Service Design (MSD) method has synthesized contributions from interaction design, service science, management and engineering to build an interdisciplinary approach to service design. The Multilevel Service Design (MSD) method enables integrated design of service offerings at three hierarchical levels with a strong focus on the customer experience i.e. designing the firm's service concept, designing the firm's service system, and designing each service encounter. These different levels should be integrated, as it is necessary to make recurrent leaps between designing in detail and designing holistically (Patrício et al. 2011).

With this multilevel perspective, the MSD method offers a holistic view, from the service concept level, to the multi-interface service system level, and to each service encounter. By integrating the concepts and tools of design and management, MSD allows for better integration of two perspectives for service design. First, by merging the stakeholder map and value constellation into the Customer Value Constellation, MSD allows mapping the value network

from which the customer co-creates value, but also analyzing new service concepts and how they reflect the firm's strategic positioning. Second, by developing the Service System Architecture and Navigation, MSD allows mapping and analyzing potential customer journeys and shows how backstage processes and technologies need to be designed to support the customer experience, (Stickdorn & Schneider, 2010).

Fisk (2012) suggests that none of these models have a specific approach on a multi-level design (MSD) scale. By multi-level service scale, we understand as a cloud of different services, to which the client must go through, in order to achieve a given value proposal. According to (Patrício et al., 2011), for companies, an MSD approach enables a new kind of corporate performance, as well as an optimal value proposition for the customer. In order to achieve this, organizations should take into account, not only the remaining services the customer may use during their experience path, but an integrated service layout within those organizations as well, (Patrício & Fisk., 2011).

In the mobile industry multi-level service design practices deployed are Customer Experience Modeling (CEM), Activity Journey Map, Service System Architecture and Service Blueprinting. All these are customer-centric service design practices. Other practices are: Value analysis/Value Engineering, Kano model, Continuous Improvement (CI), Service Innovation practices, Standardization (mass customization and modular design), and Statistical Process Control of service (SPC).

1.1.2 Customer Value Constellation

In today's fast-changing competitive environment, strategy is no longer a matter of positioning a fixed set of activities along that old industrial model, the value chain. The key strategic task is to reconfigure roles and relationships among a constellation of actors--suppliers, partners and customers in order to mobilize the creation of value by new combinations of players. The authors provide three illustrations of these new rules of strategy. (Normann and Ramírez 1993), argue that successful companies increasingly do not just add value, they reinvent it. It breaks down the distinction between products and services and combines them into activity-based "offerings" from which customers can create value for themselves. But as potential offerings become more complex, so do the relationships necessary to create them. As a result, a company's strategic task becomes the reconfiguration and integration of its competencies and customers, (Normann & Ramírez 1998).

Service-logic innovation often includes reconfiguring the value constellation. We use the term value constellation to describe the interplay among multiple actors and resources to co-create value. In this regard, it goes beyond the traditional, linear concept of a value chain. Innovations triggered by changes in a value constellation extend past a new product exchanged between one firm and its customers, (Normann & Ramírez 1998).

A value constellation describes the interplay among market participants, or actors, and resources to co-create value, (Normann and R. Ramirez1998). Compared with a more traditional view, this perspective highlights two key differences. First, market exchange is not restricted to two parties but rather is open to many actors. Second, the idea of a linear value chain gets extended to more complex value constellations, previously referred to as "value stars",(Michael E. Porter

2006). The increasing relevance of value constellations versus firm-bounded value chains stems partially from the end of knowledge monopolies, (Normann and Ramirez 1998).

With the ideas of co-production and interactivity as foundations in the service system, naming the value constellation is relatively straightforward in (Ramirez and Wallin 2000). Value constellation designs are based on the deployment of appropriate capabilities. These capabilities are put together by a supplier in ways that result in the customer-specific, customer-appropriate value-creating offering which enables these very customers to create value. Based on this, value creation can be defined as the process of co-producing offerings (i.e. products and services and information and relationships) in a mutually beneficial seller/buyer relationship. This relationship may include other actors such as sub-contractors and the buyers' customers. In this relationship, the parties behave in a symbiotic manner leading to activities that generate positive values for them. The actors brought together to interact in this process of co-producing value form a value constellation, (Ramirez and Wallin 2000).

Essentially, CVC is a service design tool, containing "a set of service offerings and respective interrelationships", enabling customers to co-create their experience for a given activity. With the customer as the main actor represented in the center of the graphic model, the CVC model decomposes the experience, building a congregated set of existing offers, gifting the customer with an optimized network of organizations that will enable its final goal, (Patrício & Fisk., 2011).

1.1.3 Telecommunication Firms in Kenya

Telecommunications companies operate in increasingly competitive environments. The companies that survive and excel are those offering the most compelling range of products and

services. These services are complex since they touch all aspects of business. Service design and implementation skills are therefore the key for staying on top of the competition. The mobile industry is among the fastest growing industries in Kenya. According to the Communications Authority of Kenya (CA) former CCK, by the end of 2013 there were 32 million registered mobile cell phone subscribers with a projected growth rate of 9.5% per annum. The penetration rate of mobile phones in Kenya is 63% (CCK 2012). With all these statistics and projections the sector has generated a lot of attention from the public and private sectors. The industry has several players who contribute to its growth. There is the mobile industry regulatory body, the Communications Authority of Kenya, the mobile service providers- Safaricom, Airtel, Orange and Yu, the Value Added Services (VAS) companies, the businesses using mobile commercial products example of Mobile virtual Network Operators (MVNOs) and of course the customers Communication Authority of Kenya 2013 (CA 2013).

The mobile industry's rapid growth can be credited to the convenience and affordability of using the mobile cell phone. As technology advances the future of mobile phones is becoming brighter by the day. It has now become unpredictable on how a mobile phone might be in the coming days. This has only been left to our creative imagination to picture the new designs and applications that these gadgets will hold. Mobile telephony has come a long way over the recent past and the revolution in the industry has worked best to improve for the best. The increasing usage of mobile technologies for service provision has created the need to understand customer mobile service experiences and to integrate designer's and technology's perspectives for the design of successful mobile services. This proposal will study on 60 employees working in four mobile service providers, providing an in-depth understanding of the experience factors that contribute to designing improved mobile services.

1.2 Research Problem

Multi-level service design practices form an important pillar in the determination of the competitive dimension of business organizations. Service design is an interdisciplinary field with significant potential to improve service innovation, quality and customer satisfaction/retention. It also improves customer experience in a service system. It should involve a holistic approach to the design by incorporating all the stake- holders' suppliers, customers, subcontractors as co-producers and the organization as a whole in the design process, (Lia Patrício, Raymond P. Fisk 2012). Better integration of design and management perspectives is needed for a wider diffusion of service design.

However this approach is still not a well-established practice in most organizations and the management implications of service design are still not well understood. Further work is still needed to synthesize design and management perspectives so that service design becomes a well-established practice in organizations and become an operational strategy. Managers frequently engage in design activities, as they study the customer experience but make decisions on service concepts and service systems, but they don't recognize them as such, nor do they use formal design methods and tools. According to a study of UK companies, this form of silent design, i.e. the undertaking of design activities by those not trained as or recognized to be designers, (Gorb and Dumas, 1987) appears to be the dominant approach to design in service firms (Tether, 2008).

Multi-level Service Design method recognizes that organizations cannot design customer experiences but service systems can be designed for the customer. "The MSD method offers a systematic view of service design levels and flexible approaches that accommodate the co-

creative nature of customer experience", (Patricio, Fisk, Falcao e Cunha & Constantine, 2011). It has been argued that to satisfy customers, organizations should incorporate multilevel service design in their design programs. This can be achieved by realizing that definition of their service concept is necessary at the strategic level and operational level during service design planning, particularly in integrating service strategy into the service delivery system (Goldstein, Johnston, Duffy & Rao, 2002).

Customer value constellation remains a key concern to managers in an environment characterized by stiff competition and increasing customer demands. The influence of multi-level service design has proved to be a strong multidimensional tool and strategy for customer value constellation in telecommunication firms. According to Moritz, London (2005), through service design, organizations can create competitive advantage; retain loyal satisfied clients and higher profit margins. Improving services is essential, not only to drive organizations forward but economies (Stefan, 2005).

Local studies done earlier were not exactly on Multi-level service design in Kenya but on service design. One study on service design was done on banks, a case study of Barclays Bank (Tima, 2013). The study reveals that, the benefits of information system service design is greatly felt in the bank, however certain challenges are experienced, these include majorly on integration between the back end and front end of the system. These affect the system's effectiveness and increase the system downtime. Additionally, the changes in customer preferences also have a big impact on information system service design (Tima, 2013). JepChirchir (2012) in her study project noted that customers have a general feeling of poor customer service. This study research focused on customer service in Gracia resort hotel. The

two studies investigated the impact of use of information systems service design practices on the customer service delivery.

Since none of the studies has addressed the issue of multi-level service design in telecommunication firms, this study therefore seeks to fill the research gap by seeking to determine the influence of multi-level service design practices on customer value constellation in telecommunication firms in Kenya.

This research will attempt to establish if multi-level service design in telecommunication firms has impact on customer value constellation, by answering the following question, what effect does multi-level service design practices have on customer value constellation?

1.3 Objectives of the Study

The research will seek to achieve the following two study objectives:

(i) To establish the multi-level service, design practices adopted by telecommunication firms in Kenya.

(ii) To determine the relationship between multi-level service design and customer value constellation in telecommunication firms in Kenya.

1.4 Importance of the Study

The research study will benefit scholars and the academic community through the generation of new knowledge. The study will identify the impact of the multi-level service design practices adopted by telecommunication firms in Kenya and for policy recommendations that will benefit

the firm on service design strategies. The research gaps identified shall form a basis for further research in the area of multi-level service design.

The study findings will be beneficial to service operators and all stake holders in the telecommunication industry, for example investors. The findings from the research study will be helpful to both operations managers and marketing personnel for better decision making. It is a worthwhile operational strategy service firms can adopt to achieve competitive advantage and enhance customer satisfaction on services delivery.

2.1 Introduction

This chapter covers the theoretical framework and the empirical related literature. The conceptual framework and studies on multi-level service design practices and customer value constellation have been covered.

2.1.1. IS Success Model   Theory

In the Delone and Mclean IS Success Model, systems quality measures technical success, information quality measures semantic success and use, user satisfaction, individual impacts, and organizational impacts measures effectiveness success. The model suggests that an information system is first created, containing various features, which can be characterized as exhibiting various degrees of system and information quality. Moreover, users and managers experience these features by using the system and are either satisfied or dissatisfied with the system or its information products.

The model of Delone and McLean was developed to measure the success of information systems, fostering net benefits for users or user groups, (Delone & McLean, 2004). In brief, the model consists of different components. On one hand, there is the quality component, which is divided into system quality, information quality, and service quality. On the other hand, the usage component is given, where the usage of the website and the from-usage resulting satisfaction is addressed. Lastly, the net benefits of the user are a component as well (Delone & McLean, 2004).

2.2 Service Design

Service Design is the design of the overall experience of a service as well as the design of the process and strategy to provide that service. Service Design is a process across the four D's; Discover, Define, Develop and Deliver. It's about to understand the client, organization and the market, develop ideas, translate them into feasible solutions and implementing them. Service Design is involved in the ongoing life-cycle of services and offers continuous evolution. Services can be constantly changing in time, (Rae, 2005). Service Design is offering a competitive advantage for organizations and ensuring quality experiences for clients.

For example, it helps organizations to offer better services than their competitors and to raise client's awareness of the service they consume. Service design addresses services from the perspective of customers. It aims to ensure that service interfaces are useful, usable and desirable from the customer's point of view, and effective, efficient and distinctive from the supplier's point of view (Mager, 2004). In other words, it's the connection between prototyping and understanding the needs, wants, feelings of customers at a given period of time during a specific service. It is a strategic approach that helps providers to develop a clear strategic positioning for their service offerings. Services are systems that involve many different influential factors, so service design takes a holistic approach in order to get an understanding of the system and the different actors within the system. Services are delivered and consumed over time.

Service design looks at the experience by focusing on the full customer journey, including the experiences before and after the service encounters (Rae, 2005). Service design focuses on

developing existing services and innovating new ones from the customers, receivers and users point of view. It utilizes the methods and principles of design thinking and emphasizes the meaning of customer experience. There are several key factors that can be used as ideas regarding what service design provides and what it can do for a company; a) Identifies new value added services for service providers, b) Improves efficiency and effectiveness of already accessible services, c) It can be both tangible and intangible and creates inimitable customer experiences, (Fritsche, 2010).

2.2.1 Multi-level Service Design (MSD) Practices

The Multi-level Service Design (MSD) method has synthesized contributions from interaction design, service science, management and engineering to build an interdisciplinary approach to service design. The Multi-level Service Design (MSD) method enables integrated design of service offerings at three hierarchical levels with a strong focus on the customer experience i.e. designing the firm's service concept, designing the firm's service system and designing each service encounter (Patrício et al, 2011).

The MSD process involves four steps (Patrício et al, 2011). Following a service design approach, Step 1 starts with an in-depth study of the customer experience, but it does so at different levels. In-depth studies with customers enable the decomposition of the different activities and context of the customer experience and the identification of the most important experience factors.

In Step 2, based on the study of the customer experience, the customer value constellation (CVC) model enables designing the service concept. The CVC represents the set of service offerings and respective interrelationships that enable customers to co-create their value

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constellation experience for a given customer activity. In Step 3, the firm's service system is designed through the Service System Architecture (SSA) and Service System Navigation (SSN). The SSA defines the structure of the service system, providing an integrated view of the multi-interface offering and support processes across the service experience. The SSN maps the alternative paths customers may take across different service encounters forming the service experience. Each path represents one possible customer journey across different touch points or service encounters. In Step 4, The MSD method uses the Service Experience Blueprint (SEB) diagram (Patrício et al, 2008) to design each concrete service encounter. With this multi-level perspective, the MSD method offers a holistic view, from the service concept level, to the multi-interface service system level, and to each service encounter.

By integrating the concepts and tools of design and management, MSD allows for better integration of these two perspectives for service design. First, by merging the stakeholder map and value constellation into the CVC, MSD allows mapping the value network from which the customer co-creates value, but also analyzing new service concepts and how they reflect the firm's strategic positioning. Second, by developing the Service System Architecture and Navigation, MSD allows mapping and analyzing potential customer journeys and shows how backstage processes and technologies need to be designed to support the customer experience.

2.2.2 Customer -Centric Service Design Practices

Different from traditional marketing survey, many scholars have highlighted the significance of gaining thorough understanding of customers' activities, perspectives and motives (Fisk, R. P. and Constantine, L. 2012). To bring these insights into service development, several service design techniques were crafted to help business analysts understand what a company may offer

to support the desired customer experience (Cunha & Constantine 2011). In this section, we specially introduce the model-based service design practices, which have potential to be used and read by people with different backgrounds.

2.2.3 Customer Experience Modeling Practices

Customer Experience Modeling (CEM) is a model-based method to represent and systematize customer experience drivers (their requirements, activities and surrounding context), so it can guide service design efforts (Fisk & Constantine2012). CEM has a multidisciplinary backbone, embedding contributions from human-computer interaction with Human Activity Modeling (Constantine L. 2009) concepts and notation, and from requirements engineering and service design using customer experience requirements and a multi-level service design approach (Patrício, Fisk, Cunha & Constantine 2011). Previous research on customer experience focuses mostly on its separate drivers, such as the process of service delivery with service blueprinting (Bitner, Ostrom & Morgan 2008) or the roles performed by people with personas and use cases (Booch G. 2005). CEM aims to encompass customer experience holistic nature (Leonieke, Zomerdijk, & Voss 2010) by portraying in a systematic manner the experience drivers, thus allowing service design teams to better understand and communicate current or envisioned experiences.

2.2.4. Activity Journey Map Design Practices

Journey mapping is a tool companies use to help them see what their customers truly want – the real moments of truth and the ways in which customers go about achieving their needs. A customer experience journey map is a document that visually represents the entire experience your customer has while interacting with your company. The customer journey map is an oriented graph that describes the journey of a user by representing the different touch points that

characterize his interaction with the service. In this kind of visualization, the interaction is described step by step as in the classical blueprint, but there is a stronger emphasis on some aspects as the flux of information and the physical devices involved, (Cunha & Constantine 2011).

2.2.5 Service System Architecture Design

Service System Architecture defines the structure of the service offering for services provided in multiple interfaces/ devices (Patrício, Fisk, Cunha &Constantine 2011). In a matrix layout; columns indicating the defined set of activities or tasks performed by the customer and rows showing the available service interfaces, the designers choose where each activity should be supported. This model helps design teams to structure and discuss how and where each service should be provided in order to obtain a seamless customer experience.

2.2.6 Service Design Blueprinting

Service blueprinting is a service design technique introduced by Shostack 1994 and systematizes the service delivery process. While being a graphic tool with a defined notation, it is less formal than other counterparts like Unified Modeling Language (Booch G. 2005). Its easily understandable structure and simplified concepts make it suitable for communicating with all the stakeholders of a service design effort. Also, unlike UML that is focused on systems or Business Process Model and Notation (BPMN) that is focused on internal business processes, service blueprint is customer-centric. A service blueprint has a swim lane structure, dividing tasks in front stage and backstage if, respectively, they are seen or not by the customer. Service experience blueprint is a modified blueprint for multi-interface/device services, with added notation to deal with switching interfaces to accomplish a task, (Patrício & Cunha 2008).

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2.2.7 Kano Model

The Kano model is a theory of product and service design developed Dr. Noriaki Kano, a Japanese professor, who offered a perspective on customer perceptions of quality different from the tradition view that "more is better". Instead, he proposed different categories of quality and posited that understanding them would better position designers to assess and address quality needs. His model provides insights into the attributes that are perceived to be important to customers. The model employs three definitions of quality: basic, performance and excitement. The lesson of the Kano model is that design elements that fall into each aspect of quality must first be determined. Once basic needs have been met, additional efforts in those areas should not be pursued. For performance features, cost- benefits analysis comes into play and these features should be included as long as the benefit exceeds the cost. Excitement features pose somewhat for a challenge. Customers are not likely to indicate excitement factors in surveys because they don't know that they want them. However, small increases in such factors produce disproportional increases in customer satisfaction and generally increase brand loyalty, so it is important for companies to strive to identify and include these features when economically feasible, (William J. Stevenson, 2012).

2.3 Service Innovation Practices

This is the philosophy that seeks to improve all factors related to the process of converting inputs into outputs on an ongoing basis. It covers equipment, methods, materials, and people, (William J. Stevenson 2012). There is no universally accepted definition of innovation. According to Wong et al (2008), innovation is the effective application of processes and products new to the organization and designed to benefit it and its share holders. West and Anderson (1996) define innovation as the generation and acceptance of new ideas, processes

and products or services. According to Van du Ven et al (1986), an imitation is a form of innovation as long as it is new to the people involved. Kimberly (1981) defines innovation as an integration of three elements, namely the process, product /service and attribute. The diversity in definition depends on the discipline of the scholars.

Dampour (1996) argues that Innovation is "a means of changing an organization, either as a response to changes in the external environment or as a pre-emptive action to influence the environment. Hence, innovation is here broadly defined to encompass a range of types, including new product or service, new process technology, new organization structure or administrative systems, or new plans or program pertaining to organization members". Innovation therefore can be viewed in the context of newness in products, service or practices that add value in an organization.

2.3.1 Open Innovation

Open innovation involves working with external actors to enhance internal capabilities which result in increased external competitiveness. Open innovation practices include partnerships, strategic alliances, acquisition startups, mergers or working agreements with external partners.

According to Golightly (2012), Open Innovation is driven by the need to increase the innovation potential of firms through value addition as a means of creating competitiveness.

According to Chesbrough (2003), modern business organizations are increasingly adopting the open innovation paradigm in their operations. He observed that many global l firms were looking outward to enhance competitiveness. Many modern firms attribute their success to open

innovation   strategies and practices. A research study by Golightly et al (2012) reveals that leading global   brands use open Innovation elements in over 50% of their R&D projects and are actively developing their Open Innovation processes to enable them to compete in complex global marketplaces.

2.3.2 Marketing Innovation

According to Hurley & Hult (1998), marketing innovation is a strategy that seeks to increase customer intimacy through differentiated market offerings. Marketing innovation is non-technological innovation. Firms bring innovation in their marketing methods to bring efficiency in their business (Polder et al 2010). Marketing innovation is developing new techniques and methods for marketing. Developing new techniques, methods and tools for marketing have significant role in success of the organizations.

 Marketing innovation may involve changing of collecting customer's information through for instance using computer information. Online marketing innovation is known to have changed the way of doing business through the introduction of formats and stores such as Amason & Paypal, (Chen 2006). Marketing innovation strategies focus on implementing new marketing methods that involve significant changes in the packaging, design, placement and product promotion and pricing strategy. The objective of marketing innovation is to increase sales, market share and opening up new markets. Marketing innovations as opposed to other innovations entails the implementation of new marketing methods not applied in the firm before. Marketing innovation has a positive relation with increased customer loyalty and therefore critical to firm performance, (Nyago'or 1994).

2.3.3 Front End Innovation (FEI)

Front end innovation (FEI) has been defined as the period between opportunity identification and when the opportunity is first judged ready for development, (Kim & Wilemon, 2002). Front innovation (FEI) includes the identification of important problems and opportunities, information gathering, generation of new ideas and exploration of the validity of those ideas (Amabile et al 1996 and Dyck & Allen, 2006).

Various theorists emphasize that a firm's innovation can benefit substantially by improving the front end of innovation (Reinertsen, 1999, Steven & Burly 2003, and Vernorn et al 2008). Research studies suggest that a firm should proactively manage and optimize the FEI to boost the chances of developing successful innovations (Reinertsen 1999 & Boeddrich 2004). The ability to stimulate innovation is dependent on the stock of potential ideas, which are available to feed the new product development (NPD) process (Brennan & Dooley, 2005). This emphasizes the importance of an effective process for idea generation and development also referred to as the front end on innovation (FEI). Empirical evidence reveals that the front end process has the largest potential for improving innovation at the least effort (Nobelius & Trygg 2002, Perttula 2004, Williams 2007, and Backman 2007).

2.3.4 Process Innovation

Process innovation means improving the production and logistic methods significantly or bringing significant improvements in the supporting activities such as purchasing, accounting, maintenance and computing, (Polder et al 2010). Process innovation can also be defined as that which concerns with improvements which can be made concerning the manufacturing or the delivery process. A review of empirical studies reveal there is a close relationship between

process and product innovation (Becker & Egger 2007, Adner & Levinthal 2001). Hence, product or service development and process development are closely related to each other. For instance, an important success factor of new product development (NPD) is optimizing the process of it as well.

Process innovation includes bringing significant improvement in the equipment, technology and software of the production or delivery method. Firms bring novelties in the production and delivery method to bring efficiency in the business. A process is an innovation if it has never been implemented in the organization before. Firms can develop new process either by themselves or with the help of outside firms (Polder et al. 2010). Firms bring process innovation to produce innovative products and amendments are also brought in their processes to produce new products (Adner & Levinthal, 2001). To decrease the production cost, firms go for process innovation. The process innovation is reflected by the cost of the product (Olson et al. 1995).

Firms adopt new process to compete with other firms. Process innovation can be used to bring about increased customer satisfaction. The process innovation can be used to significantly improve on manufacturing, productivity or services. Empirical case studies show that automation in processes and increases efficiency and productivity of organizations (Ettlie & Reza, 1992).

2.4 Customer Value

The difference between what a customer's gets from a product, and what he or she has to give in order to get it. (Woodruff, 1997) defines "Customer value as a customer's perceived preference for and evaluation of those product/ service attributes, attribute performances, and consequences

arising from use that facilitate (or block) achieving the customer's goals and purposes in use situations". Although the multiple contexts, tasks and criteria in the upper definition reflect the richness and complexity of the concept, this definition is more related to the customer but there is also the other side of the businesses.

2.4.1 Customer Value Constellation

In service design, service concept is defined as the firm's positioning in the Customer Value Constellation (CVC), including the service offered and the partnerships established (Patrício et al., 2011). The CVC maps the set of service offerings and respective interrelationships that enable customers to co-create their value constellation experience for mobile telecommunication services. Some of these services are offered by the telecommunication firms (Mobile money transfer services), and some are offered by other companies (e.g. commercial banks). As such, the CVC represents the existing service solution in a broader context, highlighting other offerings that customers use to co-create their mobile telecommunication service experience, which can be reconfigured into innovative service concepts. (Patricio et al. 2011).

With this new service concept, the firm enhanced the customer experience while strengthening its strategic position. The CVC helped expose this opportunity, reconfiguring and repositioning the firm's service offering by integrating service offerings that were previously beyond the firm's boundaries. The goal is not to create value for customers but to mobilize customers to create their own value from the companies various service offerings.

Service-logic innovation often includes reconfiguring the value constellation. We use the term value constellation to describe the interplay among multiple actors and resources to co-create

value. In this regard, it goes beyond the traditional, linear concept of a value chain, (Robert F. & Steven L. 2006). Innovations triggered by changes in a value constellation extend past a new product exchanged between one firm and its customers (Robert F. and Steven L. 2006).

A value constellation describes the interplay among market participants, or actors, and resources to co-create value. This is reconfiguring value constellations (Normann & Ramirez 1998). Compared with a more traditional view; this perspective highlights two key differences. First, market exchange is not restricted to two parties but rather is open to many actors. Second, the idea of a linear value chain gets extended to more complex value constellations, previously referred to as "value stars". (Michael E. 2003). The increasing relevance of value constellations versus firm-bounded value chains stems partially from the end of knowledge monopolies (H. W. Chesbrough HBSP 2003). Many researches show that innovative value constellations fall into one of the two categories. The value constellation thus has shifted radically as a result of Internet-related applications that enable users to seek, share, and explore videos, tasks that once were perceived as arduous and usually limited only to family and friends.

With the ideas of co-production and interactivity as foundations in the service system, naming the value constellation is relatively straightforward in Ramirez and Wallin (2000). Value constellation designs are based on the deployment of appropriate capabilities. These capabilities are put together by a supplier in ways that result in the customer-specific, customer-appropriate value-creating offering which enables these very customers to create value.

Based on this we can define value creation as follows: Value creation is the process of co-producing offerings (i.e. products and services and information and relationships) in a mutually beneficial seller/buyer relationship. This relationship may include other actors such as sub-

contractors and the buyers' customers. In this relationship, the parties behave in a symbiotic manner leading to activities that generate positive values for them. The actors brought together to interact in this process of co-producing value form a value constellation.

2.5 Multi- Level Service Design and Customer Value Constellation

The purpose of service design is to have processes that consistently deliver high quality services to drive customer satisfaction and customer retention, whilst maintaining process efficiency (Johnston and Clark 2005). Thus, good design gives service businesses leverage to gain a competitive edge in the marketplace (Shostack 1984 & Verma et al 2002). Therefore design activity should focus on ensuring high standards of both technical service quality (TSQ), the right service outcome, and functional service quality (FSQ), doing things appropriately in the process of delivery, so that the service is perceived as being of good quality (Mohr & Bitner, 1995) and generates customer satisfaction (Dabholkar & Overby, 2005). Service providers assist customers in unlocking value of the service outcome. Moreover, the main emphasis is on information processing where major transformation of services occur (Vargo and Lusch2004) .Service design comprises both what, which is to be done for the customer and the how which is to be achieved by the service provider (Edvardsson and Olsson1996). For instance, in mobile telecommunication industry, customers can use phones, tablets or electronic devices (internet, computer) delivery processes for a single service outcome. Again, the nature of customer inputs vary according to the channel selected by the customer and will therefore exhibit a variety of process design characteristics.

In mobile telecommunication, the what, is specified by sales and the how is delivered through operations which heavily relies on the information system. If service design do not incorporate

customer in the process the end product will not enhance customer experience and thus no value constellation delivered. The how is achieved by customers accessing the system either through virtual connections internet to carry out a number of transactions e.g. paying bills, Mobile banking and internet banking. The other way the how is achieved is through the back office services which involves the service provider providing the infrastructure platform to carry this services. Both means of interaction with other information system has a direct impact on the customers' service delivery, thus affecting customer satisfaction and customer service based on the customer's experience (Miettinen, 2009).

2.6 Summary of Literature and Research Gap

Service design plays a crucial role in service innovation, and has evolved significantly in the recent past. As an interdisciplinary field, it requires an integration of different perspectives to address the richness of customer experiences and service complexity. However, further work is still needed to synthesize design and management perspectives so that service design becomes a well-established practice in organizations. Multi-level Service Design allows managers and designers to navigate across the different levels of service design, better understanding the interplay between strategic decisions at the service concept level and operational decisions at the service system level (Patricio, Fisk, 2011).

Understanding the crucial role of customer experiences and the growing complexity of service systems creates the need for inter- disciplinary approaches to service design. This paper addressed the integration of service design and management, but hopefully encourages research on the integration of different areas of service design, towards a more holistic approach to service innovation. As seen the problem of complexity in service systems is evident. It can be

addressed by a way to picture it using the Multilevel Service Design (MSD) Method. The method recognizes that organizations cannot design customer experiences but service systems can be designed for the customer. "The MSD method offers a systematic view of service design levels and flexible approaches that accommodate the co-creative nature of customer experience" (Patricio, Fisk, Falcao e Cunha & Constantine, 2011).

2.7 Conceptual Framework

Service design is an interdisciplinary field with significant potential to improve service innovation, but it is still not a well-established practice in most organizations and the management implications of service design are still not well understood. Better integration of design and management perspectives is needed for a wider diffusion of service design. This paper explores how Multilevel Service Design (MSD), an interdisciplinary service design approach, can better connect management concepts and tools with design concepts and tools. A case study of telecommunication firm is presented, using MSD and Customer Value Constellation. The case study illustrates how this approach can help service designers and managers navigate between service concept and service system design levels, and better understand the interconnections between the design of the service at the front stage and the design of support processes and technologies to improve service delivery. The study will be carried out in departments which are involved in one way or another with service design and service delivery. These are strategy, planning and engineering, supply chain, marketing and customer service.

Figure 2.7 Conceptual Framework Model

Independent variables   Dependent variable

| **Service Innovation** |
| Marketing, front end and open innovation |

| **Service Delivery** |
| Speed, flexibility; reliability, stability clarity |

| Multi-level Service Design |
| Contractor and suppliers collaboration |

| **Customer Value Constellation** |
| Customer experience |
| Service offering |
| Customer satisfaction |
| Customer retention |
| Reliability and user ability |
| Compatibility and Convenience |
| Flexibility and Cost |

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

This chapter contains the research methodology and procedures followed in the execution of the research work, which entails: the research design, means of data collection and the data analysis method.

3.2 Research Design

This study adopted a descriptive research design. Donald (2006) notes that a research design is the structure of the research, it is the ''glue '' that holds all the elements in a research project together. The study takes a case study design that aims at assessing the multi-level service design practices adopted by telecommunication firms in Kenya.

3.3 Target Population

The population of study was composed of 60 respondents. All the respondents were persuaded to respond to the research instruments. Low, medium and high level managers in strategy, marketing, customer care, planning/engineering and operations departments were the respondents for the study.

3.4 Sampling

Since the study involved a large population, a sample representing the population was selected by simple random sampling using sampling formula. Because of large populations, a sample size of at least 10% is considered representative enough according to Mugenda & Mugenda (1999).

3.5 Pilot Study

It is important that the research instruments are piloted as a way of fine tuning them (Wiersma, 1995). This is vital as it enables both the reliability and the validity of the instrument to be determined. In an attempt to pilot and pretest the instruments, a pilot study was carried out using a similar population of subjects in mobile telecommunication firms.

3.6 Data Collection

A census survey design was used for the study because of the small number of firms involved in the study. The researcher targeted sixty respondents for the study from the four mobile telecommunication firms in Kenya. Data collection method was through both secondary data and primary data. Out of a total of 60 questionnaires issued to, a total of 41(68.33) fully filled and usable questionnaires were recovered. A response rate of 50% is considered good in surveys as it can be assumed to be a representative of the population under study Mugenda and Mugenda (2003).

Primary data was collected using drop and pick questionnaire as the research instruments. The data was collected by providing questionnaires to first line managers working in four mobile telecommunication firms. The questionnaire consisted of open ended questions that the respondents answered either yes or no; it also had a set of questions in the scale of 1 to 5 based on Likert scale. Secondary data was obtained from past performance records.

3.7 Data Analysis

The main purpose of the study was to determine the relationship between multi-level service design and customer value constellation among telecommunication firms in Kenya. To achieve this objective the research study was guided by two research objectives; to establish the various multi-level service design practices adopted by mobile telecommunication firms in Kenya, and

determine the relationship between multi-level service design practices and customer value constellation in mobile telecommunication firms in Kenya.

After data collection, the filled-in and returned questionnaires was edited for completeness, coded and entries made into Statistical package for social sciences (SPSS version 20). This ensured that the data are accurate, consistent with other information, uniformly entered, complete and arranged to simplify coding and tabulation. With data entry, the data collected will be captured and stored. Descriptive analysis was conducted, which involved the use of frequencies in their absolute and relative forms (percentage). Mean and standard deviations will also be used as measures of central tendencies and dispersion respectively.

Inferential statistic involved making generations, predictions or conclusions about characteristics of a sample from a population. It is used to establish whether a relationship exists in the larger population from which the sample was drawn from. This helped in making relevant generalizations whereby a Pearson correlation co-efficient was calculated to determine and test the correlation between the dependent variable and each independent variable.

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \varepsilon$$

Where

Y = Customer value

X1 = Service innovative

X2 = Service delivery

X3 = Service design

B0, β1, β2, β3, β4 =Regression model coefficients. (B0 is the intercept point of the regression model) while ε is an error term.

CHAPTER FOUR: DATA ANALYSIS, FINDINGS AND DISCUSSION

4.1. Introduction

This chapter presents the results obtained from the research study, data that was collected, the analysis of data, the interpretation of data and the main findings of the research study. The interpretation and discussion of the findings for the research study has also been presented. The chapter also presents the main findings of the research study based on the two main research objectives of the study.

This chapter deals with the analysis of data. The data analysis is in harmony with the objective of the study where findings were investigated through descriptive analysis, trend and inferential analysis which were then interpreted and inferences drawn on them.

4.2 Demographic Profiles of Respondents

The demographic profile of the respondents was important for the research. The researcher therefore was interested to know the age, gender, work experience, education status and the mobile companies they worked for. This was because these parameters have an influence on the validity reliability of quality of the data collected.

4.2.1 Gender of respondents

The respondents were required to indicate what their gender was. This was important for the study because the researcher wanted to know what the distribution of the staff working in the four companies was like by gender. The findings were summarized and presented in the Table 4.2.1.

Table 4.2.1 Gender of Respondents

Gender	Frequency	Percent
male	23	56.1
female	18	43.9
Total	41	100.0

Sources; Research Data, 2014

The study revealed there were 23(56.1%) male and 18(43.9%) female respondents .This would be explained by the fact that majority of the respondents were drawn from engineering and operations departments which are skewed in favor of men.

4.2.2 Age of the respondents

The researcher requested the respondents to indicate their age in the questionnaires. This was because age is a predictor of experience maturity and the ability to understand and respond to the issues under the study appropriately. The findings were summarized and presented in table 4.2.2.

Table 4.2.2 Age of Respondents

Age	Frequency	percent
20-29	14	34.1
30-39	19	46.3
40- 49	5	12.2
50-59	3	7.3
Total	41	100.0

Sources: Research Data, 2014.

The research study revealed that majority of staff was aged between 30 and 39 years. There were 19(46.3%) of the respondents who were aged between 30 and 39. There were 14 respondents who were aged between 20 and 29 years. Those respondents aged above 40 years were 8 representing 19.5 % of the total respondents. The sample was considered adequate and

representative of the population for the purpose of the research study as it represented the trend in the mobile industry in Kenya.

4.2.3 Work experience

The work experience of the respondents was considered important for the study. This was so because more experienced staff would be informed about service design issues than those that are newly employed. The findings were summarized and tabulated as shown in table 4.2.3

There were 11(26.8%) of the respondents who were who had worked for a period of between 0 and 4 years. Those who had worked for between 5 and 9 years were 19(73.2%). Those respondents with work experience of more than 10 years were 11(26.8%). This implied that majority of respondents had worked for more than 5 years. The accumulated wealth of experience therefore placed them in a good position to offer credible information on issues raised under the study relating to MSD. Long work experience by majority of the respondents meant that the workers were well informed about the issues under the study.

Table 4.2.3 Work experience of respondents

Years	Frequency	Percent	Cumulative percent
0-4	11	26.8	26.8
5-9	19	46.3	73.2
10 above	11	26.8	100.0
Total	41	100.0	

Sources: Research Data, 2014.

4.3 Multilevel Service Design Practices (MSD)

One objective of the research study was to determine the multilevel service design (MSD) practices used among the mobile telephone companies in Kenya. The respondents were

therefore required to indicate the extent to which these practices were used in the mobile telephone communication companies. The practices that the researcher was interested in were the customer experience modeling, Activity journey map design, service system architecture, the KANO models and service innovation.

4.3.1 Customer experience modeling

The researcher was interested in knowing the extent to which Customer Experience Modeling was used in to create customer value among mobile phone companies in Kenya. A number of parameters were used based on a scale of 1 to 5 where 1 was very small extent, 2 was small extent, 3 moderate, 4 was great extent and 5 was very great extent. The respondents were required to indicate the extent to which each of the customer value modeling was influenced by each of these parameters.

Table 4.3.1 Customer experience modeling

parameters	N	mean		Std deviation
	Statistic	Statistic	Std. Error	Statistic
Distribution points are adequate	41	3.7805	.16569	1.06095
Partnerships with supermarkets	41	3.6585	.18350	1.17494
use of consultants to monitor customer service	41	3.4878	.16792	1.07522
staff training to increase service quality	41	3.3659	.17375	1.11257
distributor training on customer service	41	3.1220	.17873	1.14445
working with competitors	41	2.3659	.15910	1.01873
Mean	41	3.29	0.1714	1.09781

Sources; Research Data, 2014

The researcher used a total of six parameters to measure the extent to which they were utilized to enhance customer value constellation. The least parameter that was identified contributing the least to customer value was partnership with competitors. Working with competitors was found to be the least parameter that the companies utilized for customer value creation (M=2.37, STD=1.02), which was considered as being to a little extent. The mobile companies were observed not to be keen on working with each other to improve value for the customer.

The highest priority that was used by the mobile companies was partnerships with distribution outlets of other companies such petrol stations ,supermarkets , discount stores , wholesalers and other franchise establishments to ensure that company products such as airtime vouchers , modems , replacement cards and memory modules were available to customers.

 The parameter that was most used was creating adequate distribution points (M=3.78, STD=1.061) and partnerships (M=, STD=1.17). The use of consultants to monitor customer satisfactions and the frequent training of customer care staff were noted to moderate, having scores of (M=3.48, STD=1.08) and (M=3.37, STD=1.11) respectively. The training of distributers on customer service was also ranked moderate (M=3.12, STD=1.14), meaning that the mobile companies did not prioritize the training of distributors as being of critical importance.

4.3.2 Activity Journey Map Design Services

One of the practices identified under the literature as comprising of MSD was the activity journey map practice. The activity journey map defines what service provider does to keep the customer busy as they wait to be served. This can be in the form of entertainment, music or any form of relaxation strategies. The researcher sought to find out the extent to which this was

practiced by mobile phone companies. A total of eight parameters were identified as being important for the research study. The researcher therefore requested the respondents to indicate the extent to which each of the practices was used based on a scale of 1 to 5 where, 1 was very small extent, 2 was small extent, 3 moderate, 4 was great extent and 5 was very great extent. The findings were captured, summarized and presented as shown in table 4.3.2.

Table 4.3.2 Activity Journey Map Design Services

No	Item	Mean			STD
	Parameter	Statistic	Statistic	Std. Error	Statistic
1	Air Conditioning	41	3.8537	.14634	.93704
2	Ambience	41	3.2927	.11710	.74980
3	Customer Care Training	41	3.1951	.12207	.78165
4	Magazines	41	2.9756	.20803	1.33206
5	Drinking Water	41	2.9512	.21513	1.37752
6	Hand Capped Facilities	41	2.7805	.17639	1.12943
7	Adequate Staff	41	2.5610	.20377	1.30478
8	Seats	41	2.5122	.19482	1.24744

Sources; Research Data, 2014

The researcher was interested to know the extent to which the various strategies were applied under the MSD. An analysis of the factors revealed that air conditioning was the most used service design at the mobile phone companies (M=3.85, STD= 0.937). The provision of seats was the least important part of the service design that was applied in the MSD(M=2.51,STD=1.24). There were five parameters that had mean scores of less than 3 and these were magazines, drinking water, facilities for the handicapped, adequate staff and the provision of seats. The means for these parameters were 2.98, 2.95, 2.78, 2.56, and 2.51. This implied that the extent to which the activities were used either moderate or less than moderate. There were three practices whose extent of use was more than 3. These were the use of air conditioning (M=3.85, STD=0.94), ambience in office design (M=3.33, STD=0.75) and the

training of customer care staff on a continuous basis so that they are equipped with skills and knowledge so that they are better place to address the ever changing customer expectations. This was necessary given that the mobile companies keep coming up with new innovations with changing technological advancements.

What was notable was that the companies did consider the provision of special facilities for the handicapped as very important (M=2.95, STD=1.13). The mean for staffing was among the least (M=2.56, STD=1.30). This implied that customer care staff was inadequate a case that may contribute to   low service quality arising from work overload.

4.3.3 Services System Architecture Design Practices

The researcher was interested to know the extent to services system architecture design was used to in MSD to enhance customer value. Respondents were required to indicate to which extent various parameters were applied. This included bench marking, partnerships with vendors to improve customer value, the use of online portals to answer customer queries, computerized customer queries, continuous quality improvement, and automation and quality checks. A Likert scale type of rating was used and the results summarized as shown table 4.3.3

Table 4.3.3 Services System Architecture Design Practices

Parameter	N	Mean		Std. Deviation
	Statistic	Statistic	Std. Error	Statistic
bench marking	41	4.1220	.12195	.78087
Partnership with vendors	41	4.0000	.13066	.83666
technology training	41	3.9756	.13292	.85111
online portals	41	3.8537	.16951	1.08538
computerized data collection	41	3.5366	.16040	1.02707
Improvement of infrastructure	41	3.4878	.14022	.89783
quality checks by external auditors	41	3.1951	.13168	.84319
Automation of service system	41	2.8293	.15966	1.02231
Valid N (listwise)	41			

Sources; Research Data, 2014

The results of the analysis showed that the parameters varied in ranking on the extent to which they were used from bench marking (M=4.12, STD=0.78) to automation of service system to enable customers select what service point to be served on during the queuing to facilitate the first come first served system. This was ranked moderate (M=2.82, STD=1.02).

The practice that seemed to be used to the largest extent seemed to be bench marking with the best practices in the industry (M= 4.12, STD=0.78). This implied that the companies heavily relied on the best practices to improve on customer service. The opinion of the researcher was therefore that the companies had a habit of trying to outperform each other on service offerings based on the best practices in the industry.

The researcher noted that automation of customer service waiting points practiced to the least extent (M=2.83, STD=.030). According to the research study, partnerships with vendors of technology was used to a large extent (M=4.0, STD=0.83) to improve customer service quality. This implied that the suppliers of technology products such as mobile phones, internet hubs, tablets, transmission technology infrastructure worked closely with the mobile firms staff in their offices to ensure that the systems met the required optimal functionality.

The researcher also noted that there a continuous external audit check applied to their operations to ensure that standards were met. This was ranked moderate (M=3.20, STD= 0.84). The use of online portals where customers were able to access services online was noted to be popular with mobile companies who wanted to enrich customer experience by allowing them access a variety of services online (M=3.98, STD=0.85).

The research study also noted that the mobile companies incorporated intelligent data gathering systems to collect data on usage patterns and trends to facilitate better understanding of customer needs. The use of computerized data collection was rated moderate at (M=3.54, STD=1.03).

4.3.4 Kano model practices

The research study sought to find out from the respondents the extent to which Kano models were applied in MSD. The variables used included customer service feedback, quality initiatives, customer training, phone supplies, computer system frequent surveys, open air interactions, adequate staffing. The findings were summarized and presented in table 4.3.4.

Table 4.3.4 Kano model

Parameter	N	Mean	STD
customer service feedback	41	3.6585	.93834
quality department	41	3.2683	1.00061
customer training	41	3.1951	.92789
phone supplies	41	3.0732	1.03417
computer system	41	3.0488	.92063
Frequent surveys	41	2.9756	1.17234
open air interactions	41	2.8293	.99756
adequate staffing	41	2.6341	1.04298
Valid N (list wise)	41		

Sources; Research Data, 2014

The findings revealed that the mobile phone companies relied most on customer service feedback in MSD design compared to other variables (M=3.66, STD=0.94). The study revealed that the mobile phone companies in their MSD design had created departments that were in charge of quality monitoring. These departments were used to a moderate extent to regulate expected performance standards. The parameter with the least ranking was staffing which had a rate of 2.6341. This implied that most respondents felt that the companies did not keep enough staff to meet customer needs and expectations. The respondents were asked to indicate the extent to which the companies used open air interactions with their customers to get views on how to improve on customer value. The findings indicated that the extent to which open air interactions were held was moderate (M=2.83, STD=1.00). The researcher further wanted to know from the respondent if their companies supplied phones to customers at competitive prices. This was important because as an organization it is possible to organize with manufacturers to obtain phones at negotiated and discounted rates.

The findings revealed that the procurement of phones for customers was moderate (M=3.07, STD=1.73).

The researcher wanted to know from the respondents the frequency at which customer surveys were done so that customer perceptions would be monitored adequately and corrective action done. The mean for this parameter was found to be moderate (M=3.0 STD=, 1.17). Customer surveys form part of an MSD strategy. Other practices included the training of staff on a frequent basis and the use of computer systems to track customer expectations and customer behavior patterns. The scores obtained were (M=2.98, STD=1.18) and (M=3.00, STD=1.00) respectively. Scores of 2.98 and 3.0 imply that that the parameters were used to a moderate extent based on the scale used.

4.3.5 Service innovation practices
The researcher was keen to know the extent to which various service innovation practices were used.

Table 4.3.5 Service innovation practices

Parameter	N	Mean		Std. Deviation
	Statistic	Statistic	Std. Error	Statistic
Supplier partnerships	41	3.1463	.16587	1.06210
Customized training for distributors	41	2.6585	.16234	1.03947
Innovation and improvement ideas	41	3.5122	.16425	1.05171
Rewards	41	2.9268	.18276	1.17026
Reward innovative products	41	3.9756	.13292	.85111
New product training	41	3.7561	.15531	.99450
Customers and innovation	41	2.8537	.14211	.90997
Feedback	41	2.9512	.13503	.86462
Valid N (list wise)	41			

The highest score was rewards to staff that are able to come up with new and innovative products (M=3.98, STD=0.85). The companies were also noted to strongly emphasize on the training of their staff on the introduction of new products (M=.3.76, STD=0.99). The respondent

also indicated that their companies encouraged innovative idea generation to a great extent (M=3.5, STD=1.05). It can therefore be concluded that the mobile companies in their MSD design had tried to incorporate the experiences of their members of staff by motivating them to provide innovative problem solutions by rewarding talent.

The training for distributors was considered important for study. The researcher therefore asked the respondents to indicate the extent to which distributors were trained on customer service techniques. The mean value obtained for this parameter was found to be moderate (M=2.66, STD=1.04). It would be argued that though mobile phone companies recognized the important role played by distributors, they did not have a strong mechanism for training them on customer service delivery techniques.

4.4 Customer value constellation

This is the emotional attachment that customers place on the product because of the perceived customer expectation on quality and price. The researcher used secondary data to establish the trends if any on pricing, value added products and other products used by users of mobile services.

The researcher used secondary data which was used to determine if the mobile companies had passed on financial gains to customers. This was because among the key considerations among customers in customer value constellation based in the review of literature was price.
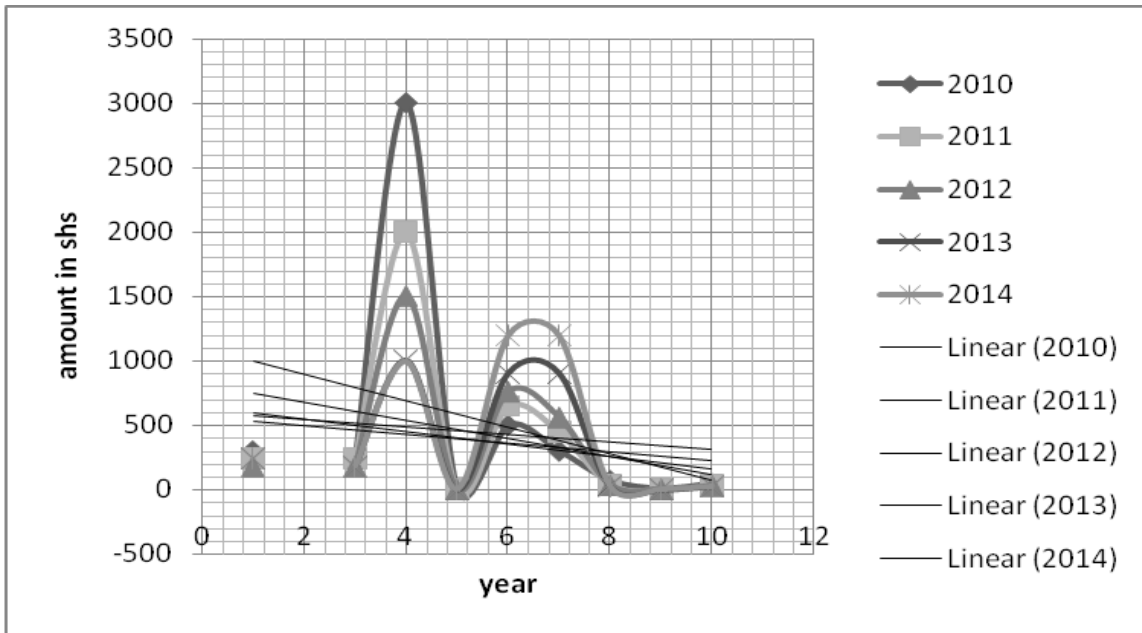
Fig 4.4 Price of average mobile device

Source Business Daily

The values of prices were noted to be coming down which would enhance customer value constellation. This was based on unit prices for phones, data, voice calls and laptops. The graph in fig 4.4.2 shows a downward trend which would explain an increase in customer numbers.

4.4.1 Multi-level service design practices

The researcher tabulated the mean scores for the practices for the purpose of establishing overall extent to which each one of them was being applied.

Table 4.4.1 Multi-level service design practices

Practice	Mean
Multi-level service design practices	3.4
Customer experience modeling	3.94
Kano model practices	3.00
Services system architecture design practices	4.14
Service innovation practices	3.1
Activity journey map	3.04

4.5 Data Analysis and Findings

4.5.1 Regression Analysis

Regression analysis was carried out to determine the linear relationship between the practices that were applied in MSD. The practices applied were the customer value experiences, activity journey map design practices, service system architecture, Kano model practices and service innovation practices. The values for the overall mean as shown in Table 4.5.1

Table 4.5.1 Regression Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.488[a]	.238	.219	.90364
2	.622[b]	.386	.354	.82156
3	.690[c]	.476	.434	.76939

a. Predictors: (Constant), smart phones
b. Predictors: (Constant), smart phones, quality checks
c. Predictors: (Constant), smart phones, quality checks, bench marking

The variable that were used in the study were subjected to regression using forward entering procedure in SPSS The regression model summary revealed that the main predictors of MSD in mobile phone companies in Kenya were the provision of subsidized or competitive high end smart phones especially for those customers that seek to enjoy more applications, the establishment of departments that maintain and monitors quality standards and benchmarking

with best practices. The square for the variables that were identified as the main predictors was found to be 47.6 %. The table of standardized coefficients was used to come up with a regression model that sought to explain multilevel service design amongst mobile telecommunication firms in Kenya.

4.5.2 Standardized coefficients

The coefficients in the standardized table of coefficients for the regression analysis were used to come up with a regression equation which was used to predict the influence of multi-level service design practices on customer value constellation. Three main components were identified as contributing applicable to MSD among the mobile telecommunication firms in Kenya. These were supply partnership, quality control, monitoring and bench marking.

Table 4.5.2 Regression Model For MSD among Mobile Phone Companies in Kenya Coefficients'

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	5.729	.468		12.244	.000
	partnerships	-.473	.135	-.488	-3.492	.001
2	(Constant)	7.071	.614		11.514	.000
	Partnerships,	-.424	.124	-.437	-3.411	.002
	quality checks	-.471	.155	-.388	-3.030	.004
3	(Constant)	5.151	.956		5.389	.000
	partnerships	-.389	.117	-.401	-3.320	.002
	quality checks	-.421	.147	-.347	-2.865	.007
	bench marking	.399	.159	.305	2.515	.016

a. Dependent Variable: department

The regression model used the coefficients to come with a model as shown;

Customer value constellation = 5.729- 389(partnerships s) -421(quality checks and control) + 0.399(Bench marking) + error term.

4.5.3 Factor Analysis

Further analysis was done on the data collected to reduce the dimensionality of the factors used

MSD. A reliability analysis on the data yielded a Chronbach alpha coefficient of 0.92 was

obtained, which implied that the instrument used in the study was reliable. The parameters used

in the study were extracted using principal component analysis, and the results presented in

Table 4.5.3

Total Variance Explained						
Component	Initial Eigen values			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	10.553	27.058	27.058	10.553	27.058	27.058
2	4.514	11.576	38.634	4.514	11.576	38.634
3	3.480	8.922	47.556	3.480	8.922	47.556
4	2.387	6.120	53.676	2.387	6.120	53.676
5	2.137	5.480	59.156	2.137	5.480	59.156
6	1.851	4.747	63.903	1.851	4.747	63.903
7	1.611	4.132	68.035	1.611	4.132	68.035
8	1.306	3.347	71.383	1.306	3.347	71.383
9	1.211	3.104	74.487	1.211	3.104	74.487
10	1.129	2.896	77.382	1.129	2.896	77.382
11	1.099	2.818	80.200	1.099	2.818	80.200
12	.972	2.493	82.694			
13	.906	2.323	85.017			
14	.781	2.002	87.019			
15	.696	1.785	88.804			
16	.654	1.676	90.480			
17	.572	1.466	91.946			
18	.543	1.392	93.338			
19	.440	1.129	94.467			
20	.395	1.014	95.481			
21	.353	.905	96.386			
22	.278	.714	97.099			
23	.226	.580	97.679			
24	.211	.540	98.220			
25	.172	.442	98.661			
26	.146	.375	99.036			
27	.092	.235	99.271			
28	.082	.211	99.482			
29	.068	.175	99.657			
30	.046	.117	99.774			
31	.034	.087	99.861			
32	.023	.058	99.919			
33	.016	.041	99.960			
34	.009	.022	99.982			
35	.007	.018	100.000			
36	3.542E-016	9.081E-016	100.000			
37	1.737E-016	4.455E-016	100.000			
38	-4.325E-017	-1.109E-016	100.000			
39	-2.731E-016	-7.002E-016	100.000			

Extraction Method: Principal Component Analysis. **Source; Research data, 2014**

Table   4.5.3 Factor Analysis

There were a total of 11 factors extracted, whose Eigen values were more than 1. The combined variance of these factors as shown in table 4.5.3 was found to be 80.2 %. This implied that the parameters applied in MSD in mobile phone companies can be largely categorized into 11 broad factors. Component one accounted   for 27.06 % while component two accounted for 11.58%. A total of four components accounted for slightly more than 50 % of the total variance.

4.5.4 Scree plot for extracted factors

A scree plot for the extracted components was drawn for the purpose of visualizing the trend amongst the parameters used in MSD among mobile phone companies as shown in fig 4.5.4.

Figure 4.5.4 scree plot
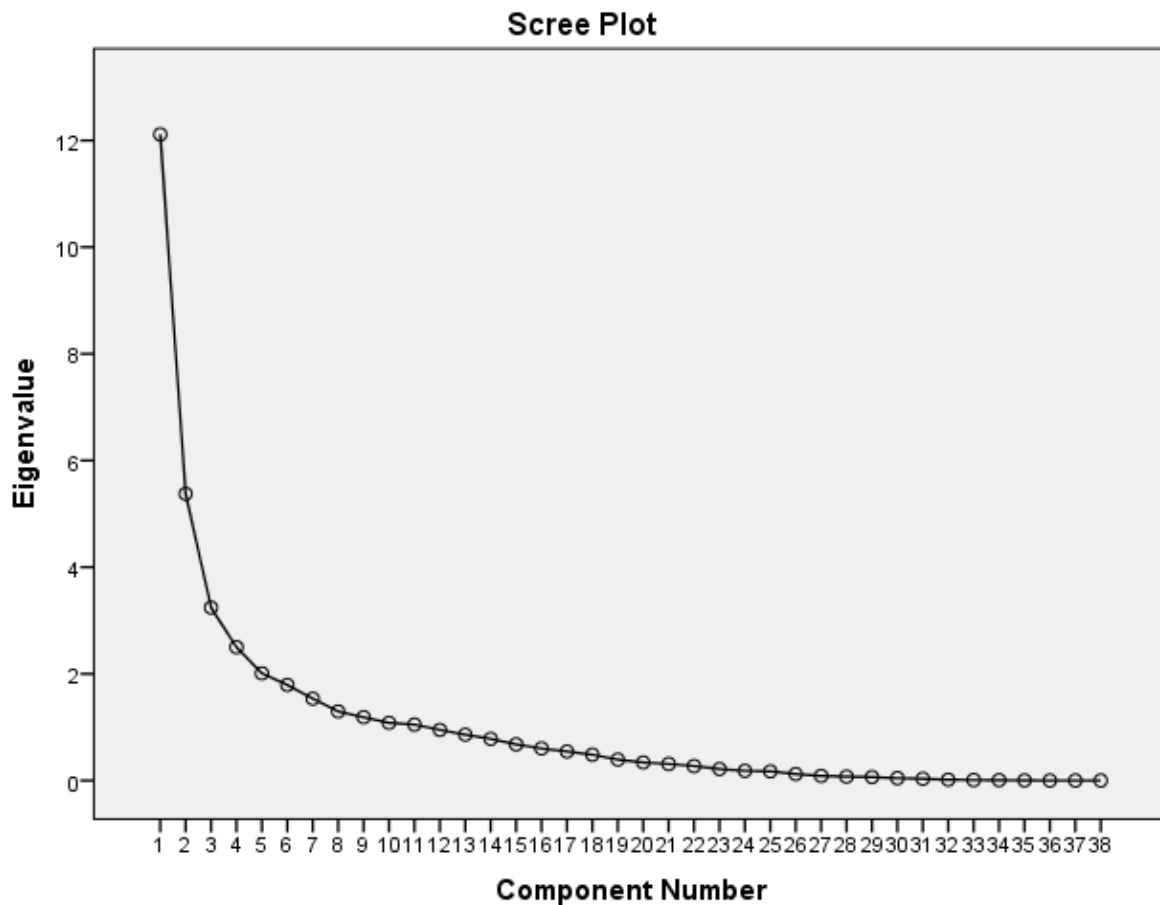
Source; Research data, 2014

4.5.5 Component plot in Rotated space

The variables were subjected to a three dimensional space rotation as shown in table 4.5.5. This was to aid the identification of the distribution pattern for factor loadings for the 38 variables used in MSD. The findings were presented as shown in fig 4.5.5

Fig 4.5.5 Component plot in Rotated space

Component Plot in Rotated Space
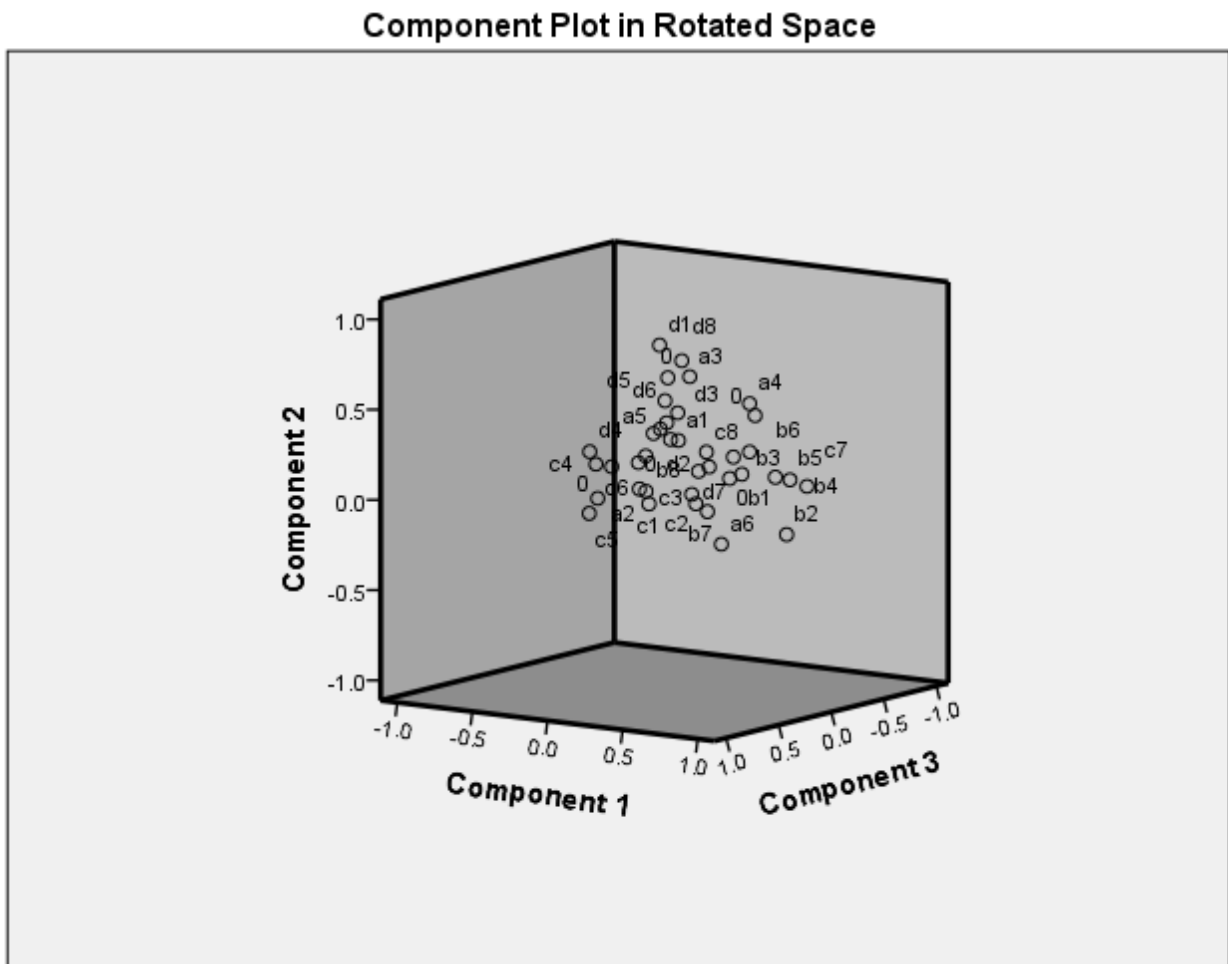
The findings of the rotation according to fig 4.5.5 reveal that the variable are all clustered around the mean. The choice of the practices can therefore be said not to work overwhelmingly in favour of a particular practice over another. There were no practices whose average

standardized score was though there were some factors whose scores were almost zero. Most of the practices used in MSD were found to be near the mean. The opinion of the researcher therefore was that the mobile phone companies needed to be sensitized on the benefits   that would accrue from fully adopting and integrating MSD in their operations.

4.6 Discussion of findings

The research study aimed at determining the multilevel service design practices used in mobile phone firms. The purpose was to determine how the practices were used to achieve customer vale constellation. The findings revealed that the mean for MSD was 3.4 based on a scale of 1 to 5 where 1 was very strong agreement and 1 was no agreement.

The mean for Customer experience modeling was 3.94 while the mean for Activity journey maps was 3.04. The Services System Architecture Design Practices had a mean of   4.14 while the Kano model practices had a mean of 3.00. The use of Service innovation practices was 3.1. The research study revealed that part of the reasons for the low score on innovation was to appreciate the influence of partnerships with competitors and suppliers to enhance customer value.

What was evident was that the mobile telecommunication firms hardly considered training the distributors of their product and services as a customer service practices. The companies were noted not to have incorporated the handicapped customers in their service design architecture of the service process and systems. Bench marking was not noted to be a key determinant in determining MSD practices. The mobile telecommunication firms applied bench marking by comparing with other mobile telecommunication firms elsewhere to implement best practices to enhance customer value.

CHAPTER FIVE: SUMMARY CONCLUSION AND RECOMMENDATIONS

5.1 Summary of findings

The purpose of the study was to determine the relationship between multi-level service design (MSD) practices in mobile telecommunication firms in and the customer value constellation. The research study adopted descriptive census survey design because there were only four mobile telecommunication firms. The research used both primary and secondary data for analysis. Data collection was through the means of questionnaires which were distributed to respondents by dropping and collected later. A total of 41 questionnaires were recovered out a total of 60 that were distributed to respondents and the response rate achieved was 68 % which was considered adequate for analysis.

He study revealed that the mobile phone companies in Kenya were using various MSD strategies in varying degrees. The services System Architecture Design Practices which had a mean score 4.14 were noted to have the highest extent of use. The score was based on a scale of 1 to 5 where 5 was very large extent. Customer experience modeling had a mean of 3.94 while the kano model practices had a mean of 3.0. Service innovation and the activity map had means 3.1 and 3.01 each.

A regression analysis revealed that the main predictors of MSD practices were partnering with suppliers to procure products such phones and services such as money transfer at competitive rates. The companies were also noted to partner with hardware vendors for the operations servicing and maintaining network infrastructure for purposes of enhancing service quality. It also revealed that benchmarking was significantly used.

5.2 Conclusions

The research study revealed that MSD was at the initial stages of development amongst mobile phone companies in Kenya. It was noted that the mobile phone companies were yet to adapt to working together as competitors to improve customer value. This would be achieved through for instance sharing network infrastructure, and encourage the sharing of mobile money transfer services.

5.3 Recommendations

The researcher recommends that MSD practices be prioritized as way of increasing customer value constellation. Policy makers, planners, suppliers, vendors and managers should encourage and develop strategies that will encourage closer collaboration to achieve synchronized synergy in creating customer value. More resources should be committed to training managers on MSD practices and the potential for improved customer value and customer constellation.

5.4 Suggestions for further research

The research study can further be enriched by conducting further research in the following areas:

The influence of MSD on the competitiveness of mobile telecommunication firms in Kenya, the influence of customer service modeling on customer loyalty amongst mobile telecommunication firms in Kenya and the influence of computerized service system designs on customer service quality in mobile telecommunication firms in Kenya.

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Section I; Demographic Details of Respondents

Name of mobile company   --

Your rank /Title   --

Gender   ; male {   }   female   {   }

Age   ;   20-30yrs {   } 31-39yrs {   } 40-49yrs{   }50-59yrs {   }over 60

Department {tick one } Customer Service{   } Marketing {   } Strategy {   } Planning/engineering

{   } Operations {   } Quality Assurance {   }

Years of experience with mobile firm (i) 0- 4 {   } (ii) 5- 9 {   } (iii) more than 10 {   }

Section II Multilevel service design practices

Kindly indicate the extent to which the following practices are used in your department by putting an "X" into the appropriate box alongside each question

Customer Experience Modeling practices

Activity Journey Map Design practices

Service System Architecture Design practices

Kano Model practice

Service Innovation practices

1 = Very Small Extent; 2 = Small Extent; 3 = Moderate; 4 = great extent; 5 = Very great extent

	Scale of measurement	1	2	3	4	5
A	**Customer Experience Modeling**					
Item No.	*This section seeks to find out the extent to which customer experience modeling is applied in your company*					
1	The company works closely with competitors to enhance					

	customer service experience					
2	The company employs consultants to monitor customer experience on customer value					
3	The company continually trains distributors of products on customer service skills to enhance accessibility					
4	The company has adequate distribution points for products such as SIM cards and airtime to create convenience to users					
5	The company has partnered with supermarkets and petrol stations to facilitate easy access to the services provided by the company					
6	the company frequently trains staff to ensure they are knowledgeable on changing customer needs					
B	**Activity Journey Map Design Practices**					
1	Customer care staff are frequently taken for customer care training to improve their skills					
2	The customer service outlets have seats for customer relaxation as they wait to be served					
3	The customer service centers have been equipped with magazines to entertain customers as they queue to be served.					
4	The customer service centers have drinking water for clients					
5	Customer service lines have adequate staff and therefore enquiries are answered promptly					
6	The service centers have been equipped with facilities for the handicapped.					
7	The customer centers are designed with ambience in mind(no overcrowding)					
8	All Service centers are all air conditioned					
C	**Service System Architecture Design Practices**					
1	The company has an online portal where clients scan get information without visiting customer centers					
2	The service system is automated to enable users select the specific services and where to be served					
3	The company has an intelligent data collection system that enables the company identify unique customer needs					
4	The company is working with vendor to introduce new technologies					
5	The company trains it staff on new technologies					
6	The company bench with other world class companies using similar or better technologies to rollout service					
7	The company management always encourages improvements of the existing infrastructure					
8	The company continuously carries out quality checks by use of external auditors and analyst					

D	**Kano model Practices**					
1	The company has a quality department that continually tracks the level of customer satisfaction with various products					
2	The company supplies phone to customers at competitive prices					
3	There are frequent customer surveys to monitor customer needs					
4	Customer service feedback to the management on what to improve on is addressed promptly					
5	The front desk departments are adequately staffed					
6	The company has frequent customer training sessions for staff on how to meet and exceed customer expectations					
7	The company has deployed a computer systems that tracks customer needs to be able to gauge their satisfaction					
8	The company frequently interacts with customers in open on how to better serve customers					
E	**Service innovation Practices**					
1	The company has partnerships with suppliers of mobile phone where customers can get free after sale services					
2	The distributors of the company products get customized training to enhance service quality					
3	The company provides forum for staff to showcase their innovation and improvement ideas					
4	The company rewards staff who come up with innovative and competitive products and service processes					
5	The company has a product and service development department/section					
6	The company trains enlightens all staff on new product and services					
7	The company organizes open day for customers to showcase innovative ideas.					
8	The company has a feedback mechanism which enables the customers to make suggestion on product or service improvement					

SECTION III:

State the extent to which you agree with the following statements using the scale provided by putting an "X" into the appropriate box alongside each question

1 = Strongly Disagree; 2 = Disagree; 3 = Neither Agree nor Disagree; 4 = Agree; 5 = Strongly Agree

		1	2	3	4	5
	Customer value constellation					
Item No.	*This section deals with the emotional attachment that customers place on services to increase retention*					
a	Pricing on voice is the most affordable for on net calls					
b	Pricing on off-net calls is the most friendly					
c	There is a special friendly tariff for heavy voice call users to encourage then stick to our company					
d	Pricing on Data bundles is affordable					
e	Mobile money transfer service has been our strong selling point to customers					
f	The company partners with suppliers to provide customers with affordable smart phones/tablets for high end customers					
g	The company has partnered with suppliers and banks such that suppliers can get bank credit with the mobile firm acting as security guarantee					
h	Distributors of company products such airtime/ credit vouchers receipt very competitive commissions compared to competitors					
i	Dealers of company products such handsets, tablets laptops receipt very competitive discount compared to competitors					
j	The company offers warranties, guarantees and after sales on all its products and services					

The table below shows the prices of various products and services please indicate the average

costs per unit for the years 2010, 2011, 2012, 2013, 2014

		2010	2011	2012	2013	2014
	Customer value constellation					
Item No.	*This section deals with the emotional attachment that customers place on services to increase retention*					
a	Prices of voice calls per minute for on net calls					
b	Prices per unit on off net calls					
c	Special Prices for heavy voice call users to encourage them stick to the company					
d	Pricing on Data bundles per unit.					
e	No of registered money users using mobile money transfer					
f	Customers using lines to pay bills					
g	No of customers using mobile services to do shopping					
h	Average price on standard tablets					
i	Average prices on standard phones					
j	Average prices on laptops					

Please indicate any other products that you think the company has been able specially procure

for customers at competitive rates with other service providers --

----

What is the company most popular products with customers

SECTION IV: The following section seeks your personal opinion on how the services of the company can be improved to retain customers and avoid switching to other operators i. e. enhance customer royalty.

How can the mobile money transfer service be improved to customers-----------------------------
----

Suggest how suppliers can be incorporated in the company to enhance their capacity in service delivery--
----

Suggest if there is any improvement in corporation with police which can be done to enhance recovery of lost mobile devices and fraud related transactions--
----

Kindly give your opinion on what can be done to enhance customer service desk-------------------
----

Kindly give your general comments on how the company can improve service to customers-----
----

Thanking for your time

APPENDIX II: Population Data

Mobile Telecommunication firms data

	Service Provider	% Market Share	Total No. of Employee	No. of Employee in Management	Target Sample 10%
1	Safaricom	67.9	4022	332	33
2	Airtel	16.5	1047	104	10
3	Orange	7.1	1240	124	12
4	YU	8.5	254	54	5
	Total	**100**	**6563**	**614**	**60**

Source: Company annual reports FY2013/2014 , Communication Authority and Media dailies