

**TECHNOLOGICAL INNOVATION AND CUSTOMER
SATISFACTION IN KENYA POWER AND LIGHTING
COMPANY LIMITED**

BY:

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DECLARATION

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

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

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DEDICATION

The research is dedicated to my family members who gave me the needed encouragement and support.

ABSTRACT

Customer satisfaction is a key success factor in the performance of many organizations. As a result most organizations have sought ways to improve the level of service offered to their customers. It is in line with this background that the research investigated whether the technological innovation introduced by Kenya power and lighting company limited had any effect on customer satisfaction. The objectives of the research were to determine the technological innovation deployed by the company and establish the relationship existing between technological innovation and customer satisfaction. A case study was carried out in Kenya Power and lighting Company limited targeting customers having been categorised as domestic, small commercial and large power customers in banking halls. Data was collected using structured questionnaire with help of research assistants who explained to customers as they filled in the data. A response rate of 92 % was achieved as 370 respondents were able to successfully fill the questionnaire out of the targeted 400. The analysis was carried out using descriptive statistics such as frequencies, percentages, and SPSS (Statistical Package for the Social Scientists). The presentation was done using tables, charts and graphs. Customers were satisfied with the new technological innovations provided. However the automated calling system seemed not to have any relationship with customer satisfaction. The responses of the customers were likely to be influenced by the prevailing conditions such as availability of power in general and reliability of M-pesa services that are provided by mobile providers during the time of collecting the data. These conditions may have resulted in biasness on the part of some respondents. The case study was carried at Kenya Power banking halls and some customers may have thought that their views would be implemented and hence may have exaggerated their responses. The study recommended to the organisation to carry out an awareness campaign where all information pertaining to technological innovations implemented was disseminated to the customers as well as increasing investment in the technology improvement so as to offer more innovation. A similar research should be carried out in other towns and rural areas to establish if a similar view would be expressed by the customers. In conclusion, technological innovation has been warmly received by customers and investing more resources to improve the services provided has significantly increased performance by improving products, services, processes, offered by the company. The study revealed that technological innovation has greatly improved the level of customer satisfaction and over roll performance of the organisation.

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LIST OF ACRONYMS

KPLC-----Kenya Power and Lighting Company Limited

CHAPTER ONE: INTRODUCTION

1.1 Background

Today's fast-paced world is becoming increasingly characterized by technology-facilitated transactions. Growing numbers of customers interact with technology to create service outcomes instead of interacting with a service firm employee. Organizations have embraced technology as a way of delighting their customer by making the services they offer simple and easy to use. According to Mick & Fournier (1998), organizations that refuse to adapt technological innovations are likely to be the ones that won't be around in the next few years. Technology and organizational innovations are keys that play important roles in the performance and ability of organizations to gain competitive advantage (Trott, 2005).

In the past firms assessed the level of customer satisfaction by the level of repurchase, loyalty, sales volumes, attractive books of accounts and increased market share. The assumption has been that customer loyalty and repurchase is synonymous with customer satisfaction. However organizations have discovered that loyalty and repurchase are not by themselves an indicator of customer satisfaction as customers may at times feel trapped by the organization for instance in markets where switching costs are very high (such as monopoly and duopoly markets). Under these situations customers may be loyal to the organization not because they adore the services but because they have no other substitute to change to. It is imperative therefore for Organizations to craft a more prevalent and regular review of customer satisfaction so as to identify factors that lead to customer satisfaction and how to enhance them. Augmenting these innovations in the organization's service delivery would lead to customer loyalty and repurchase as a consequence of customer satisfaction and not because customers are trapped in the organization (Cacciopo, 2000).

Equally, today's market is characterised by oversupply, increased competition, little product or service differentiation and declining sales that leaves customers with huge choices for high quality products and services at outstandingly competitive prices. Customer pragmatically becomes a king and it is onus on the organizations to keep him or her happy (Hill, et al, 2003). It is because of these reasons that organizations have found it important to include qualitative measures such as customer satisfaction alongside quantitative measures as a way of measuring organizational success. Measuring customer satisfaction thus becomes critical to any organization because customer satisfaction is a strong predictor of customer retention; loyalty and product repurchase (Smith 2007).

To counter the above problems, organizations have resulted in improving customer service through technological innovation so as to acquire competitive advantage and enhance customer satisfaction. Foremost amongst these innovations are electronic self-service technologies that are driven by information technology, thereby enabling customers to acquire a service without direct employee involvement (Katono 2011). In Kenya the diminishing differences between private and public sector, due to privatization as well as the need to conform to civil sector reform agenda that promotes transparency, learning, appraising, and sanctioning pushes state owned organizations such as Kenya power to embrace customer-centric approach so as to justify their existence (Zairi & Marwa, 2009).

Kenya power has in the past faced numerous problems as a result of ignoring service quality and consequently resulting to customer dissatisfaction. Power interruptions, unexplained high bills as well as long bank queues in the banking halls have been a common feature. Complaints were rarely addressed and often ignored. However with the launch of civil service reform in 1993 (Sawe, 1997) Kenya power embarked on a long journey towards improving its public service delivery systems to address the many problems that it faced. The company has introduced various technological innovations such as query bill, an online bill request (where a customer sends short message through mobile or internet containing the account details to 95551 and spontaneously receives the monthly bill), an online pay bill service, by use of Safaricom's mpesa and Airtel money transfer systems, online tracking service and surveillance report system to facilitate report on vandalism of Kenya power transformers and other assets.

1.1.1 Technological Innovation

Technology refers to the skills, knowledge, experience, body of scientific knowledge and tools used in the design of production of goods and services (Aiken&Keller 2009.) Technology changes very rapidly and timeless skills that are relevant today and remain relevant in the future are therefore very desirable. Technology demands problem solving skills, a range of analysis tools from simple to sophisticated, the ability to identify and probe various approaches to a problem, and the ability to synthesize information to reach meaningful conclusions. . In just a few months an organization technology may be out dated and replaced. Clearly an organization needs to be responsive to advances in the technological environment, its employee's work skills must evolve as technology evolves (Mathew & George, 2003).

There has been a lot of technological development in the world mobile industry in Kenya a perfect example is that just a few years ago Kenyans were calling using landlines until the industry was liberalised and new innovations developed. Today the mobile industry has continued to develop in so fast that almost anything is can be done using the mobile phone including money transactions using payment platforms developed in collaborations between banks and mobile companies. E-Learning has equally been developed by most institutions including university of Nairobi. While students can login in the university web sites and obtain various services including payments and even see their results at the click of a button, all at the comfort of their offices and houses. Kenya power has progressed well on several innovations that have delighted their customers and solved many problems the company faced previously.

1.1.2 Customer Satisfaction

The term customer satisfaction is an amorphous term with no clear definition. There seem to be very many definitions of customer satisfaction depending on the dimension the scholar wishes to view customer satisfaction. As such customer satisfaction measures can be viewed in terms of affective measures (customer's attitude towards a product), cognitive measures (conclusion that the product was useful) or behavioural measures or intention to repurchase in future (Smith 2007).

Customer satisfaction can nevertheless be generally defined as a measure of how organization's total products perform in relation to a set of customer requirements (Hill, et al 2003). A customer is satisfied when they feel they have received at least as much from a buying experience as the effort they put in, and when they reach the conclusion that their buying experience was as good as they believed it would be. Schiffman, & Hansen 2008, gives a more comprehensive definition of customer satisfaction as "an individual's perception of the performance of the product or service in relation to his or her expectations". This research will employ the same definition of customer satisfaction.

The above definitions indicate that customer satisfaction is a subjective measurement that would vary from one individual to the other and thus measurement may not be exact and may require sampling and statistical analysis. The analysis must be undertaken with a clear understanding of the gap between customer expectations and attribute performance perception. One of the drivers of customer satisfaction is employees' attitude towards a

service and customers which impacts on how they deliver a service (Adebanjo 2011) and as such service delivery and customer satisfaction goes hand in hand.

1.1.3 Technological Innovation and Customer Satisfaction.

Innovation is the introduction of a new or improved product, process, or service into the marketplace. Tidd et al (2001) defined innovation as a process of turning opportunity into new ideas and putting these into widely used practice. Afuah (1998) proposed that innovation is the use of new technical and administrative knowledge to offer a new product or service to customers. Therefore, innovation is any practices that are new to organizations, including equipment's, products, services, processes, policies and projects ,(Ekvall, 1999). Innovation is a management discipline, which focuses on the organization's mission, searches for unique opportunities, determines whether they fit the organization's strategic direction, defines the measures for success, and continually reassesses opportunities (Gaynor, 2002). The term innovation refers to both radical and incremental changes in thinking, things, and processes or in services, (McAdam & McClelland (2002).

Organisations have invested a lot of resources as way of attempting to satisfy their customers so that customers can be loyal. Offering superior customer service has become critical element industries and requires companies to continually enhance customer experience and satisfaction, to deliver quality in a competitive environment. Customer satisfaction and customer service are two of most repeated catch phrases in major organizations. Managing the implementation and execution of innovation strategy is an operations-oriented, make-things-happen activity aimed at shaping the performance of core business activities in an innovation strategy-supportive manner (Gaynor, 2002). Customer satisfaction is an ambiguous and abstract concept because the actual manifestation of the state of satisfaction will vary from person to person, product to product and service to service. The state of satisfaction depends on a number of factors which consolidate as psychological, economic and physical factors. The quality of service is one of the major determinants of the customer satisfaction (Parasuraman et al 1985)

1.1.4 Kenya Power and Lighting Company Limited

Kenya Power and lighting company is a limited liability company which transmits, distributes and retails electricity to customers throughout Kenya. It is listed at the Nairobi Stock Exchange (www.KPLC.co.ke retrieved 24.6.2014). The Company is divided into four main regions namely; Nairobi region, West Kenya region Coast region and Mount Kenya

region. The company headquarters is located at Stima plaza building, Nairobi City. The hierarchical structure of the organization divides the company into ten divisions each headed by a chief manager. The divisions are; Commercial Services ,Human Resources and Administration, Design and Construction, Finance, Information Technology and Telecommunications, Procurement and Supply Chain, Operations Maintenance, Corporate Planning and Company Secretary Division (www.kplc.co.ke retrieved on 24th June 2014)

Conspicuous in its value and vision statement, is its savouring commitment to customer service and ultimately customer satisfaction. The company has invested a lot of resources to improve customer satisfaction. This has been re-affirmed by its continuous improvement in customer service through persistent modification of their service delivery systems that has a ripple effect on customer satisfaction. It is this devotion to optimization of customer service that has made Kenya power one of the best performing company in Kenya a fete that need to be copied by other public companies and civil service sector. Kenya Power launched prepaid digital meters (meters that only allow subscribers to use units they have paid for) in April 2009 with an aim of improving Company's customer service by empowering customers to control their electricity consumptions as well as, eliminating estimated bills thus improving billing accuracy and reduce unnecessary disconnection and reconnection. Prepaid meters are expected to decongest the Company's banking halls and enhance ease of bill payment as vendors have been enlisted in various estates. The short message alerts were launched in 2011 and are expected to inform customers of their bills, due dates and disconnection dates and any other issue of importance to Kenya power like scheduled power interruptions to affected customers. The e-billing system is the latest having been initiated in 2012 and is still on-going .It automatically emails bills directly to customers immediately meters are read for those on post-paid system and safe on postage fees incurred by the company as it sends bills , as well and conserve the environment

1.2 Statement of the Problem

Importance of customer satisfaction to organizational performance, growth and overall success cannot be underestimated. In today's organizations, meeting customer needs has become the critical goal and organizations are investing enormous resources in improving customer satisfaction as a way of retaining customers. A satisfied customer improves a firm's bottom line in numerous ways such as through repurchase, loyalty and breeds positive word-of mouth that brings in new customers to the firm (Zeithaml and Bitner, 2003). Organizations

have therefore seen the need to constantly review and introduce new service innovation technologies in order to promote customer satisfaction.

Various studies have been interested in the notion of customer satisfaction and have attempted to find the relationship between technological innovation and level of customer satisfaction. However, the studies conducted have mainly been descriptive and generalised; they have classified the constituent in one homogenous group as opposed to segmenting the population into different segments such as by age, income, gender and the level of education.

Ndung'u(2012) in his study of internet banking service quality and customer satisfaction at Barclays bank of Kenya found that more customers were satisfied than dissatisfied with the technological innovations the bank had introduced to its customers. However the study did not investigate how customer satisfaction varied with level of income. Equally, Omondi (2010) in his study of the Influence of modern technology on customer Satisfaction in banks observed that continuous employment of technology increases customer satisfaction. His study further recommended that Banks need to train customers to have adequate skills in the usage of technology. The study however escaped from the notion of the level of intellectual capacity as a factor in determining the level of satisfaction.

Forooz et.al (2013) concludes that Innovation management and customer orientation have been widely recognized as key factors in enhancing the business performance and customer satisfaction. Businesses that make the purchase transaction process faster and easier through adopting technological systems was seen to increase the likelihood of customers making repeat purchases and moving toward loyalty (Anderson & Swaminathan 2011). The studies also fall short of discussing the influence of different social dispensation and orientation of customers towards their level of customer satisfaction.

Based on the above findings, the study examined various technological innovations employed by Kenya power and lighting company ltd and tried to address the following questions. Is there a relationship between technological innovation and the level of customer satisfaction in Kenya power and Lighting co. ltd?

1.3 Research Objectives

The research objectives were:

1. To determine the technological innovation deployed by Kenya Power and Lighting Company Ltd
2. To determine the relationship between technological innovation and customer satisfaction in Kenya Power & Lighting Company Limited

1.4 Value of the Study

By clearly defining and understanding customer satisfaction, companies can identify opportunities for product and service innovation in order to serve as the basis for performance appraisal and improvement. It can also serve as the basis for a customer satisfaction surveying program that ensures quality improvement efforts outlining service dimensions that are most important to the customer and directly contribute to customer satisfaction. The research will also contribute to the knowledge on customer satisfaction and assist future researchers to access literature.

The findings of this research will also assist the managers of Kenya Power and lighting company to understand how the customers perceive the innovations introduced in order to improve their service and identify areas of further improvements. Other organizations will be able to use the research findings to develop and implement customer satisfaction programs that will ensure attainment of organization's objectives. The findings of the research will be critical in formulation and implementation of employees' performance appraisal and reward programs to ensure they ultimately re-enforce culture that supports customer satisfaction as a means of improving productivity.

Further, this research has provided an important insight on the role of technological innovations in improving service delivery in the public service as well as providing vital input on ways of ensuring the public companies and civil service align themselves with the vision 2030 and more so justify their existence

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

This chapter explores and discusses what other authors have written in regard to the concepts customer satisfaction, and technological innovations. Similarly drivers of customer satisfaction, role of demographics in customer satisfaction as well as the risks and difficulties that emerge in the process of service innovation, as written by other researchers will be analysed.

2.2 Technological Innovation

Innovation has been described as either “incremental innovation”, ideas that are completely new for a company, or “radical innovation”, ideas that concern a world novelty (Hall et al, 2009). Technological innovation is, currently, recognized as one of the key factors on the firm’s competitive advantage as well as a critical element in improving the economic and financial results of firms. Indeed, increased economic and financial performance have been observed among firms capable of using innovation to improve their processes or differentiate their products and services in relation to their competitors. Kenya Power & Lighting Company Limited is an example of a company that has been successful due to its introduction of technologically improved services to its customer and continues to expand and grow its customer base as a result of introducing varying customer oriented business portfolios which are a product of thorough research on customer needs and benefits of technological innovations.

The introduction of technology in a service can be both beneficial and detrimental (Mick & Fournier 1998). Forcing technology on customers’ particularly difficult technologies that do not enhance the exchange process may create hostile customers. It is therefore crucial that a balance between the operational gains and benefits of the technologies be employed to facilitate service provision with perception behaviour of the customer (Walker & Craig 2002) by determining the most effective, efficient and commonly acceptable use of technology in accordance to customer perception. Nikbin, et al (2011) noted that no matter how excellent a company designs and delivers a service, challenges and errors still do occur in meeting the expectations of modern customers, who tend to be more demanding and less loyal than ever before. Most of these service failures and challenges occur at the introductory phase because of poor design (Silvestro & Silvestro 2003), inefficient and ineffective integration and poor adoption of technology in service delivery (Walker & Craig 2002).

The central issue for service providers is to decide if a new and available technology would enhance the position of the provider and be acceptable to customers without detracting the overall service experience (Walker et.al 2002). Poor design, integration and adoption of technology leads to increased risk of service failure and other undesirable consequences for organizations. These undesirable consequences range in a spectrum from customer anger, complaint intentions, a desire to hurt the firm's business (Folkes, 1984), dissatisfaction (Bitner, 1993), to exit/switching (Keaveney, 1995). According to Nazımog˘lu and Ozsen (2010) the risks associated with service technologies that impacted most on all processes were 'dissatisfied customers', then 'delayed solutions' and 'low employee morale' in that order. Walker et al (2002) similarly identified other potential risks or disadvantages associated with the use of technology enabled service delivery. They included independence of the customer, access, frustrations, and intimidation of the users, depersonalization of service encounter and creation of the distance between customer and service personnel (Spreng & Mackoy, 1996).

It is generally agreed that risk is any uncertainty that upon occurrence would have an effect on achievement of one or more objectives (Hillson & Simon 2007).The focus of risk management has often been on managing or controlling hazards such as deceitful behaviour, security breaches, pilfering, compliance breaches, damage to property so as to reduce or eliminate the negative effects of risks, and to some extent accept some, or all, of the consequences of a particular risk (Nazımog˘lu & Ozsen 2009). This is normally done through systematic development and enactment of strategies and plans that maximise managerial resources. However this area requires further research and will not be covered by the scope of this study

2.3 Customer Satisfaction

Customer satisfaction, is a business term used to measure how products and services supplied by a company meet or surpass customer expectation (East, 199).Satisfaction and quality are two concepts that are the core of business theory and practice in Katono, (2010). The two concepts are distinct though obviously related .Satisfaction is a rating of customer's experience with the outcome of a service, whereas quality is evaluation of a firm's resources and competence. It's thus usual for a customer to rate the product or service as quality and yet be unsatisfied. This is because quality must conform to the expectations and the personal needs of the customer for satisfaction to occur (Zeithaml et al, 2003). This therefore means

that quality is an antecedent of satisfaction and thus there is quality without satisfaction but there is no satisfaction without quality, (Saurina & Coenders, 2002).

The drivers or attributes of customer satisfaction depend on whether the product involved is a tangible good or a service Dimitriadis, (2006). The special attributes of services such as the inherent intangibility and perishability of services, as well as inability to separate production and consumption makes measurement of customer satisfaction to be different depending on the characteristics of the offering as customer satisfaction with services and with goods may be influenced by different factors and should be treated as separate and distinct Veloutsou et al., (2005). Studies conducted shows that customer satisfaction may be affected by demographics.

Demographics are statistics that measure observable aspects of a population, such as size, age, education, gender, ethnic groups, income, occupation and family structure Solomon et al (2000). In the context of customer satisfaction, some demographic aspects such as population size, family structure, occupation and ethnic background may not be of much relevance but studies have shown that age, gender, income and level of education may influence the extent and level of satisfaction.

Majority of literature concurs that age, gender and to an extent level of income are determinants of customer satisfaction. The level of education in the context of the extent to which a customer is literate, seem to have escaped the attention of the scholars. There seem to be no literature that relates the level of literacy or education of customers and the degree of satisfaction. Those that seem to dwell on the education as a demographic consideration do so in the context of level of awareness of the product and not the level of literacy.

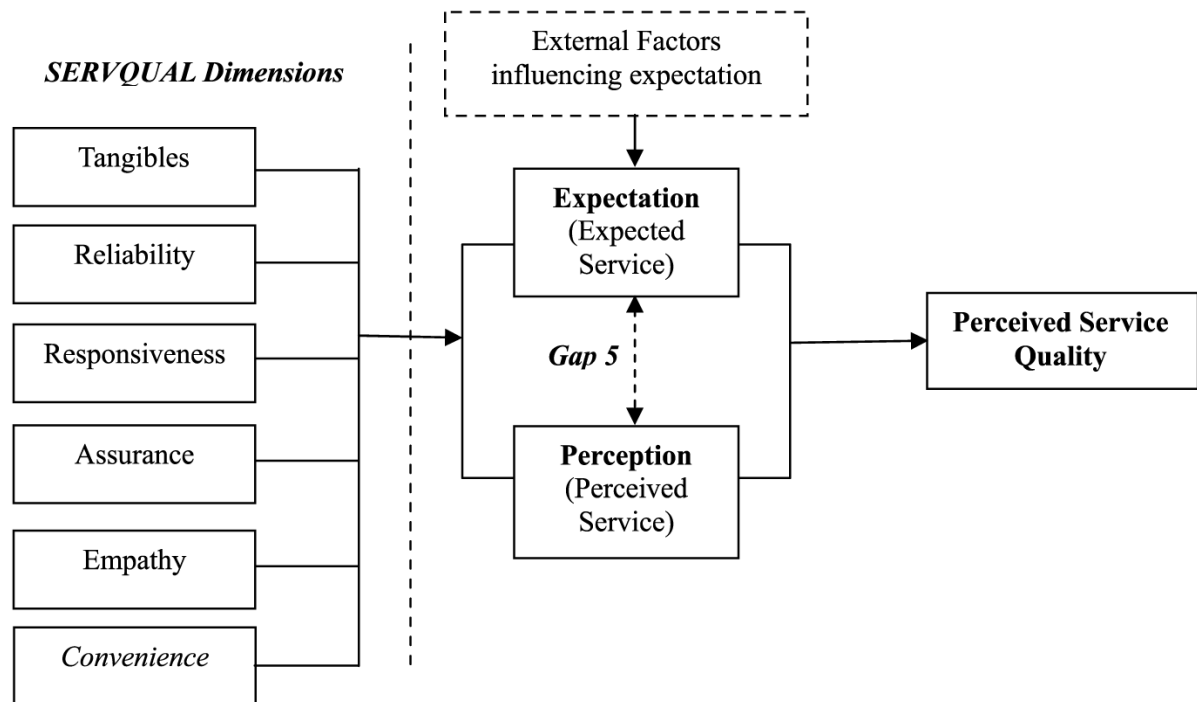
Level of income is another demographic factor rarely addressed by scholars. The few that have investigated such as Bruce, et al (2007) found a positive relationship between the change in satisfaction and change in income. Foscht, et al (2009) found age as an important demographic characteristic in assessing customer satisfaction with online purchasing or use of technologically enhanced services. Their studies found that generally the older the respondent, the less satisfied they were. Their results indicated that as young people grew older, their needs become more multifaceted and as a result, their interests change as well as the determinants of satisfaction.

2.4 Measuring Customer Satisfaction

Several literatures that have tried to examine the relationship between gender and customer satisfaction with most literatures concurring that women report greater overall satisfaction (Buller & Buller, 1987) compared to men (Lyon & powers 2002) though men were found to be more consistent in satisfaction responses over time while women tend to experience more dissatisfaction as time goes by. As for the usage of m- commerce, Leppaniemi & Karjaluo (2008) reported that women were found to be more active in responding to mobile advertising campaigns than men and are therefore more responsive to the innovations in m-commerce as opposed to male. There exist many approaches of measuring customer satisfaction due to the many perceptions of the term and factors that influences it. Berry et al, (2002) came up with ten dimensions of satisfaction that includes quality, value, and ease of access, inter-departmental team work, environment, front line service behaviors, efficiency, timeliness, commitment and innovation. These dimensions are often used to develop customer satisfaction questionnaire questions. Each set of questions focus on each dimension of customer satisfaction in a service environment. The argument is based on the fact that customer satisfaction is influenced by perceived quality of product and service attributes features and benefits and is moderated by customer expectations regarding the product or service.

As shown in figure 2.4, the ability to measure service quality, is a step towards determining and achieving customer satisfaction and as such customer's perception of quality is the single greatest predictor of customer satisfaction (smith 2007). This method is an easy and straight forward means of determining customer satisfaction and this research gladly adopts it. The research uses SERVQUAL scale as recommended by Parasuraman et al (1985) and Carrillat et al (2007) to measure service quality and by extension customer satisfaction.

Figure 2.4: Influence of quality on customer satisfaction



Source: Mukesh Kumar et al. (2009)

Figure 1 accentuates the fact that perceived quality is a precursor to customer satisfaction. Perceived quality as discussed later, is influenced by many attributes or drivers and therefore most literatures concur that it is difficult to define a comprehensive list of customer satisfaction measures or drivers. This measure is dependent on the type of product, customer, and expectations of the customer as well as the expressed contract. Adebajo (2011) consequently inferred that the customer is the ultimate judge of satisfaction and therefore it is imperative to seek customer views directly in order to determine whether they are satisfied or not.

2.5 Quality Concepts and Customer Satisfaction

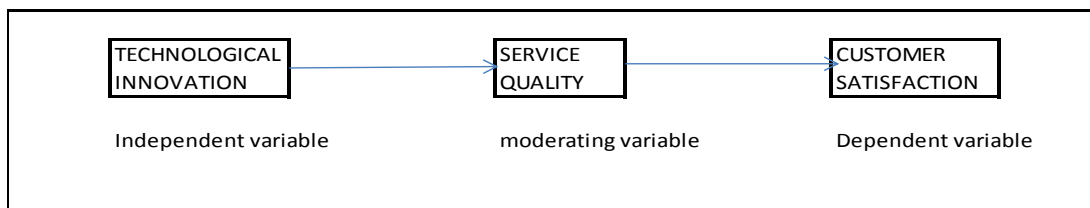
The definition, concept, and measurement of service quality have been greatly influenced by the works of Parasuraman et al., (1985) who conceptualized service quality as the relative perceptual distance between customers' expectations and evaluations of service experiences and service quality. They developed a tool for measuring quality named 'SERVQUAL model' that uses the five dimensions of service quality namely tangibles, reliability, responsiveness, assurance and empathy. Other models include Kano (Kano et al 1984), and convenience model by (Copeland, 1923) still exists as other ways of understanding and measuring service quality and performance.

The scholars accentuate the importance of quality perceptions and the relationship between quality, service satisfaction and loyalty (Cronin & Taylor, 1994). Quality improvements results in increases in levels of customer satisfaction and customer loyalty (Zeithaml & Bitner, 2003). It is crucial therefore to identify attributes that have the greatest influence on quality and consequently customer satisfaction (Matzler et al, 1996) given importance of quality as a constituent determiner of customer satisfaction. There are three basic models that have been advanced to measure quality in service delivery. They include SERVQUAL, service convenience and Kano models.

2.6 Conceptual Framework

This conceptual framework shows the relationship between the independent variable and the depended variable. The conceptual framework shows that technological innovation have an effect on service provision which ultimately affect the level of customer satisfaction, as shown in figure 2.6

Figure 2.6: conceptual frame work



Source: Research Data (2014)

Figure 2.6 shows a conceptual framework showing relationship between technological innovation and customer satisfaction. In the concept the technological innovation makes the quality of service to improve the performance, process and this affects the customer satisfaction towards a service or product.

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

In this chapter the method used in conducting the study has been discussed. The research design, population and sampling procedures, data collection methods and instruments, as well as proposed data analysis methods.

3.2 Research Design

This was a case study using a descriptive approach. This design is appropriate because the research aims at giving an in depth information on the responses of customers of Kenya Power & lighting company ltd regarding their experiences in the usage of technological innovation system that has been implemented by the company so as to gauge their level of satisfaction. The case study in this research was selected due to its advantages. Patton (2002) argued that an in-depth case study provides much more detailed information about a limited number of people and cases hence the use of this design. The case study helped in analyzing the service delivery innovation and technologies introduced by Kenya Power & lighting company ltd as they seek to enhance customer satisfaction and find out if the innovations have added value to the company.

3.3 Population and Sampling Procedures

The population under study comprised customers in Nairobi west region. According to the records obtained from Kenya Power Ltd on 30th June 2014 there were 187,672 customers. Due to time and cost constraint, a sample of 384 customers was collected from Nairobi west region in the companies banking halls namely Rongai ,Karen, Westlands as well as Langata, City Centre and Riruta. Kombo and Tromp (2006) advice that it is not easy to study the whole population and thus stratified random sampling was used for to collect data. This sampling procedure applied to the research because data was collected randomly as the customers queued to buy electricity tokens or pay their electricity bills .According to Mugenda (2003) Fischer's formulae is sufficient in determining sample size in cases whereby the study involves one parameter of the population. Since the population size of the study was greater than 10,000, then the fishers Formulae was applied. Fischer's formula is given as:

$$N = \frac{pqz^2}{d^2}$$

Where: n = the desired sample size (the target population must be greater than 10,000).

Z = the standard normal deviation at the required confidence level normally taken to be 95%

p= 0.5

q= 1 – p

Significance level = 5%

If the p is not known in advance 50% should be used. Hence n should will be

$$N = \frac{0.5*0.5*1.96^2}{0.05^2}$$

=384 customers

Table 3.3: Customer distribution

Category of customers	Population	Percentages	Sample
Domestic	165,146	89%	341
Commercial	20,512	10%	38
Industrial	2014	1%	5
Total	187,672	100%	384

Source: KPLC ICS system billing summary cycle 12, 2014.

3.4 Data Collection

The research adopted the use of questionnaires as its data collection tool as attached in appendix I. This method was appropriate as a large amount of data can be collected from a large number of respondents in a short period of time and at a relatively low cost. Questionnaires can be analyzed more scientifically and objectively than other forms of data collection methods. The questionnaires were distributed at Rongai, Karen, Westlands as well Langata, city centres and Riruta banking halls as the customers paid bills either as customers or staff sent by other customers. The respondents filled the questionnaire with the help of research assistants in order to enhance response rates and assist illiterate customers.

The questionnaires were structured as follows: Section 1 covered general information on the respondents and demographic information for each while Section 2 comprised of information relating to the satisfaction of customers on technological innovation deployed. Section 3 sort the customer's perception on the effects of technological innovation as relating to customer satisfaction. A 5-Likert scale was used to rate customers perception on various innovations and their contribution towards customer satisfaction.

3.5 Data Analysis Methods

Analysis of data is a process of transforming and modelling data with the goal of highlighting useful information, suggesting conclusions, and supporting decision making (Bryman, 2008). The study had both quantitative and qualitative data. The questionnaire data was coded and relevant information extracted from it. This involved three steps; the first two steps was examination of the respondents' answers to the questions and grouping them into different categories and the assigning of numbers to the categories.

Completed questionnaire were checked for completeness and accuracy, coded, labeled and entered into a computer for statistical analysis. Frequency diagrams, bar graphs, pie charts and tables were used to analyze the technological innovation deployed by Kenya power and lighting company ltd. Pearson correlation analysis was used to determine the relationship between technological innovation and customer satisfaction.

CHAPTER FOUR: DATA ANALYSIS AND INTERPRETATION

4.1 Introduction

This chapter contains findings of the study based on data collected from the field. Both descriptive and inferential statistical analyses are presented herein and the findings discussed, within the framework of the research questions and objectives. The analyzed data, findings and the appropriate information has been presented in form of pie charts, bar graphs and tables. The response rate was 92% as 370 questioners were properly filled out of 400 distributed.

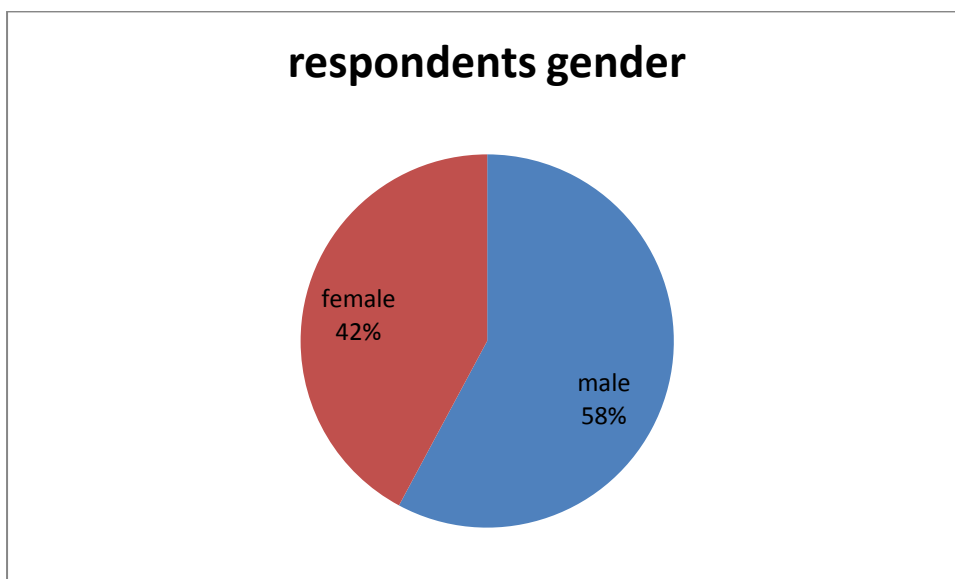
4.2 Demographic Characteristics of the Respondents

Respondents form an important component of the primary data. The research inquired on the personal characteristics of the respondents with a view to understand the unique characteristics of the study population. Data on respondent's gender, age, level of education, average monthly bill consumed and average monthly income was captured and results discussed.

4.2.1 Distribution by Gender

The research inquired whether the respondent was either male or female. The purpose of the inquiry was to assess the gender distribution of the population under the study as shown in figure 4.2.1

Figure 4.2.1: Respondent's Gender



Source: Research Data (2014)

Figure 4.2.1 shows that 58% of the respondents were of male gender compared to 42% female gender. The research can thus conclude that there was equal participation of both genders in the study though the study can deduce that majority of the KPLC customers are of male gender.

4.2.2 Level of Education

The research further inquired on the level of education of the respondent. The respondent were asked to indicate whether their level of education and table 4.2.2 provide summary of their responses. The purpose was to understand the level of literacy of KPLC customers as well as their ability to apply and utilize effectively KPLC technological innovations.

Table 4.2.2 Respondent's Education

Education level	Numbers	Percentage (%)
Primary	5	1%
Secondary	36	10%
diploma	158	42%
degree	171	47%
Total	370	100%

Source: Research Data (2014)

From Table 4.2.2 the research concluded that most KPLC customers in Nairobi region were well educated and hence able to use technological innovations deployed by the company.

4.2.3. Distribution by Age

The research inquired on the age of the respondents which was grouped into four segments namely between ages 18 -29, 30-49, 50-69 and over 70years respectively. The age distribution of the respondents was as in table 4.2.3.

Table 4.2.3: Respondent's Distribution by Age

Age between	Number	Percentage (%)
18-29	88	24%
30-49	140	38%
50-69	101	27%
70 and above	41	11%
Total	370	100%

Source: Research Data (2014)

The result above shows that majority of the KPLC customers who frequent the banking halls fall between 30 years and 69 years. The research can deduce that the outcome is as a result of the banking halls operating in urban centers and during working hours and therefore it is probable that the working age group would frequent the banking hall as opposed to other age brackets.

4.2.4. Distribution by Income

The research further inquired on the respondent’s income which was subdivided into four segments and results were as in the table 4.2.4. The percentages for each segment has been indicated.

Table 4.2.4: Respondent’s Income

Net Income range (‘000)	Number of respondents	Percentage (%)
10-19	44	12%
20-39	63	17%
40-69	196	53%
Above 70	67	18%
Total	370	100%

Source: Research Data (2014)

From table 4.2.4 53% of the respondents who frequented the KPLC banking halls earned between kshs 40,000 to kshs.69, 000. The findings are confirmed by the fact that the area under study was inhabited by middle income citizens who may be KPLC customers .

4.3. Determination of Technological Innovation Deployed in KPLC

The main objective of the research was to determine the technological innovations deployed in Kenya power and lighting Company ltd. In the data collection instrument the respondents were provided with a list of technological innovations that had recently been implemented and which they were required to indicate if they were familiar with or not. At least all the technological innovations were known by most customers and the respondents were able to distinguish between each innovation. However quite a number of respondents did not know some innovations that KPLC had deployed as they could not identify them nor show signs of familiarity. A summary of the respondent’s ability to identify each technological innovation is shown in table 4.3.

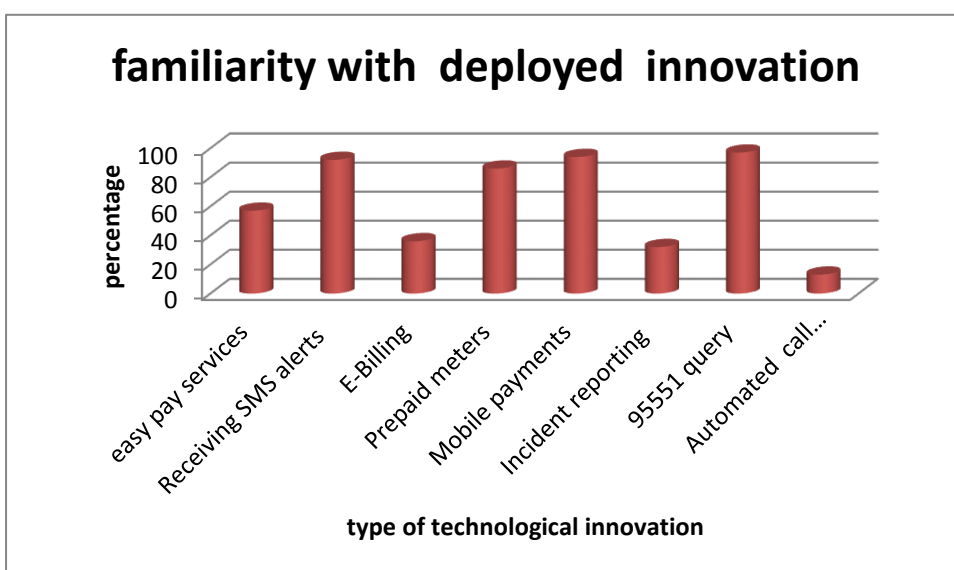
Table 4.3: Technological Innovation Deployed

Number	Service	No of Respondents	Percentage (%)
1	95551 query	362	97%
2	Mobile payments	350	94%
3	Receiving SMS alerts	345	92%
4	Prepaid meters	320	86%
5	Easy pay services	212	57%
6	E-Billing	135	36%
7	Incident reporting	120	32%
8	Automated call services	51	13%

Source: Research Data (2014)

From table 4.3 the results showed that the respondents familiarity with the technological innovations deployed by Kenya Power and lighting company ltd. Most customers were aware of most services with query services 95551 recording the highest awareness of 97%, followed by mobile payments, receiving of alerts, prepaid meters, easy pay services, E-billing, Incident reporting and Automated call services at 94%, 92%, 86%, 57%, 36%, 32% and 13% respectively shown in Figure 4.3

Figure 4.3: Respondent’s Familiarity with Technological Innovation



Source: Research Data (2014)

Further from table 4.3 various reasons can be attributed to the levels of familiarity obtained for each case. The highest awareness in query 95551 services is because the company has made prolonged advertisements in print radio and television. The services for receiving SMS alerts was also very familiar with customer as it is automatically sent to them during outages and during billing this makes customers be aware of the issues affecting their supply. Prepaid metering services and mobile payments services are also very familiar with customers as the services have created convenience to customers making it very popular and easy to use. The corporates were found to be the ones that use the easy pay services as it is easy for them to transfer money through banks as a way of paying their bills. Automated call services and incident reporting services recorded the lowest awareness levels as customer reporting incidences needed to be sure their reports were being acted upon hence most of them wanted to speak to staff employees at the call Centre rather than using machine enabled system. E-billing similarly recorded little awareness since customers using this service needed to use internet all the time to access service which is expensive.

4.5 Satisfaction with Technological Innovation

The research aimed at finding out if technological innovation had made the customers satisfied by posing a specific question to the respondents asking them to rate their level of satisfaction as very satisfied, satisfied, neutral, dissatisfied and very dissatisfied. The results have been analyzed on various categories such as gender, age and income levels.

4.5.1 Customer Satisfaction and Gender

The relationship between gender and satisfaction levels has been summarized in table 4.51 and figure 4.5.1. The research observed that although majority of respondents were very satisfied namely 39% male and 45% female and 31% satisfied the 35% were satisfied. Female were more satisfied than male. Each of the categories were analyzed and shown in table 4.5.1 for comparison purposes of the percentage (%) those that were very satisfied, satisfied, neutral, unsatisfied and very unsatisfied.

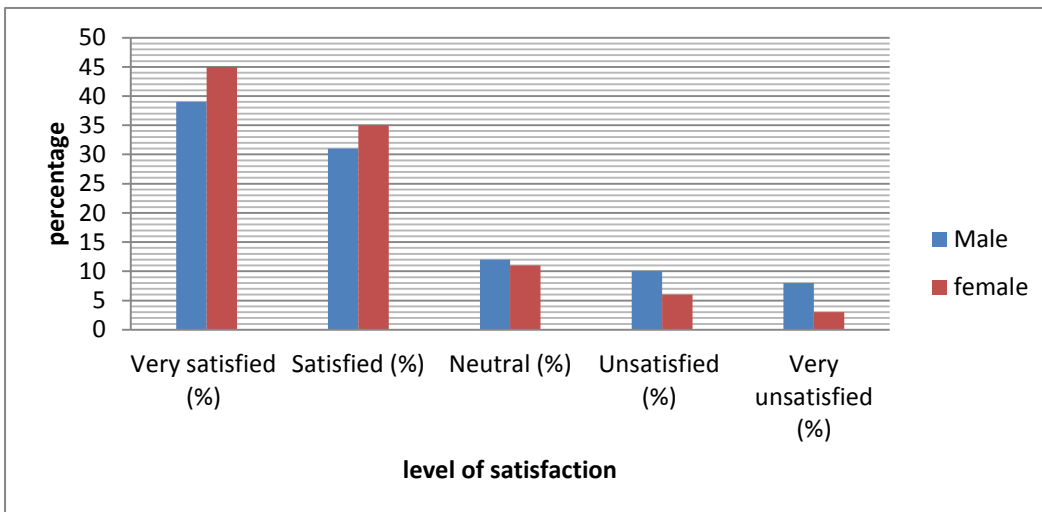
Table 4.5.1 Customer Satisfaction and Gender

Gender	frequency	percentage	Very satisfied (%)	Satisfied (%)	Neutral (%)	Unsatisfied (%)	Very unsatisfied (%)
Male	214	58	39	31	12	10	8
female	156	42	45	35	11	6	3
total	370	100%	84	66	123	16	11

Source: Research Data (2014)

From table 4.5.1 the research demonstrated graphically to show that female are more satisfied than male. A demonstration has been shown in figure 4.5.1 with various percentages shown for each level.

Figure 4.5.1 Customer Satisfaction and Gender



Source: Research Data (2014)

From figure 4.5.1 the research concluded that gender is a factor in satisfaction and that it is easier to satisfy female than male. This could be attributed to the fact that female have more tasks to perform than male and by making many tasks convenient using technological innovation it made them more satisfied, unlike men who generally have fewer tasks

4.5.2 Satisfaction and Age

The research grouped the age of respondents into 4 categories namely ages between 18-29, 30-49, 50-69 and above 70 years. Table 4.5.2 presented the findings. The research showed that most customers were satisfied as most age groups reflected more than 50% satisfaction levels.

Table 4.5.2: Respondent's Age and Satisfaction.

Age	Frequency	Very satisfied (%)	Satisfied (%)	Neutral (%)	Dissatisfied (%)	Very dissatisfied (%)
18-29	88	35	25	14	10	6
30-49	149	29	31	22	15	3
50-69	101	24	26	31	16	3
Above 70	32	13	27	35	21	9

Source: Research Data (2014)

As can be seen from table 4.5.2 most of the respondents were very satisfied or satisfied. However the young were more satisfied than all the groups as 80% were in very satisfied while in ages 30-49 had 70% in these levels of satisfaction and between 50-69 ages had 50% but only 30% of respondents above 70 years were satisfied. Although the research did not ask reasons why the satisfaction reduced as one became old it can be concluded the challenges of using technology could have led to the aged being dissatisfied. In the social language the young are digital compared to the old who are analogue. Hence the challenge to use technologically enhanced applications.

4.5.3 Satisfaction and Education Level

The research sought to find out if education level had any relationship with the respondent's satisfaction. Table 4.5.3 shows the variation of level of education and satisfaction in Technological Innovation.

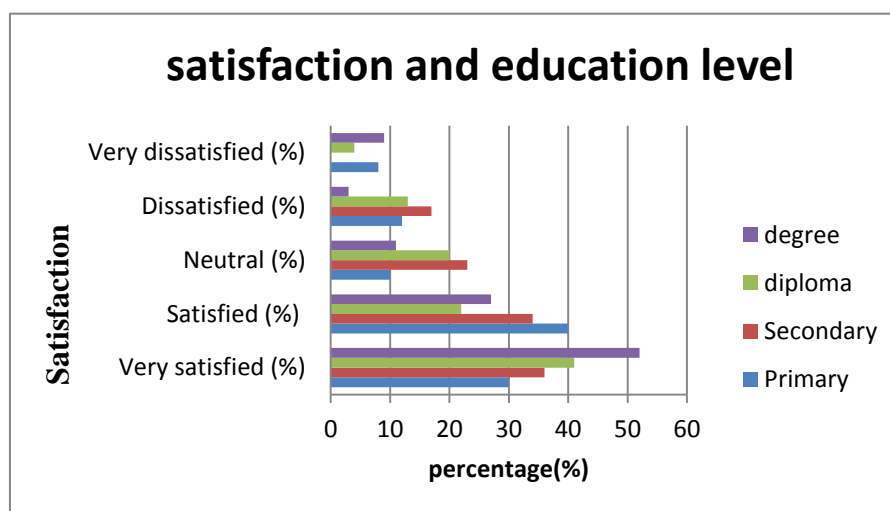
Table 4.5.3: Level of Education and Customer Satisfaction in Technological Innovation

Education level	Frequency	Very satisfied (%)	Satisfied (%)	Neutral (%)	Dissatisfied (%)	Very dissatisfied (%)
Primary	5	30	40	10	12	8
Secondary	36	36	34	23	17	0
diploma	158	41	22	20	13	4
degree	171	52	27	11	3	9

Source: Research Data (2014)

Generally all respondents were satisfied though the research found out that there is a positive relationship between satisfaction and education level. It can be deduced that the more educated one is the higher the appreciation of technological innovation and educated customers would like most transaction to be technological enabled so as to create convenience, save time and make them easier. Figure 4.5.3 is a demonstration of the relationship.

Figure 4.5.3: Relationship Between Satisfaction and Level of Education



Source: Research Data (2014)

4.6 Technological Innovation in KPLC Government Institutions

The research found that only 9% of the respondents rated the level of technological innovation in Kenya power as either very poor or poor compared to other public institutions as shown in Table 4.5

Table 4.6: Technological Innovation in KPLC Verses other Government Institutions

Variable	Frequency	Percentage
Very poor	16	4.5%
Poor	17	4.5%
Good	215	58%
Very Good	89	24%
Excellent	32	9%
Total	370	100%

Source: Research Data (2014)

The table also indicate that majority of the customers view Kenya power level of technological innovation as superior compared to other government institutions showing 58%, 24% and 9% being good, very good and excellent respectively. The research therefore deduced that the level of technological innovation in Kenya power and lighting company limited is regarded by many to be of higher quality and geared towards customer satisfaction compared to other government institutions.

4.7 Technological Innovation in KPLC and Private Institutions

The technological innovation performance at Kenya power was however ranked poor when compared with private as indicated in table 4.7.

Table 4.7: Technological Innovation in KPLC Verses Private Companies.

Variable	Frequency	Percentage
very poor	32	9%
poor	35	9%
good	234	59%
very good	78	23%
excellent	5	1%
Total	370	100%

Source Research Data (2014)

The results show that only 1% of customers thought the company had done excellent work on its technological innovation when compared with other private companies, this shows the company has a long way to go and needed to do more in this area.

4.8 Relationship between Technological Innovation and Customer Satisfaction

The main research objective was to find out the type of relationship that existed between technological innovation and customer satisfaction. The data collected was tested for Pearson correlation subjecting data in SPSS software. The individual technological Innovations and corresponding relationship noted. The level of significant was set at $\alpha = 5\%$

4.8.1. M-pesa Services and Customer Satisfaction

The customers had been asked to rate their experience with M-pesa payment services in a 5 Likert scale which was evaluated and results tabulated in table 4.8.1.

Table 4.8.1: Correlation Between Satisfaction and the Payments Through M-Pesa Service

			Customer Satisfaction					Total	Pearson's R	Approx. Sig.
			Highly Satisfied	Satisfied	Neutral	Not satisfied	Very unsatisfied			
Mobile payments	Strongly Agree	Count	45	224	10	9	6	294	.917	.011
		%	12.2	60.5	2.7	2.4	1.6	79.5		
	Agree	Count	0	30	29	9	1	69		
		%	.0	8.1	7.8	2.4	.3	18.6		
	Neutral	Count	1	1	0	0	0	2		
		%	.3	.3	.0	.0	.0	.5		
	Disagree	Count	0	4	0	0	0	4		
		%	.0	1.1	.0	.0	.0	1.1		
	Strongly Disagree	Count	0	1	0	0	0	1		
		%	.0	.3	.0	.0	.0	.3		
Total		Count	46	260	39	18	7	370		
		%	12.4	70.3	10.5	4.9	1.9	100.0		

Source: Research Data (2014)

Form the table 4.8.1, majority of the respondents agreed that that it was easy for them to pay their electricity bills through M-pesa (79.5% strongly agreed and 18.6% agreed). This therefore affected their satisfaction level which was also found to be strongly associated with the service as the Pearson's correlation coefficient (R) indicates with a positive coefficient of

0.917. This also had a significant value of 0.011 indicating that the association is significant at 5% level in a 2-tailed test. Thus, the pay bill through M-pesa service has a strong and positive correlation with customer satisfaction.

4.8.2 Query Services 95551 and Customer Satisfaction

The analyzed relationship was tabulated and results shown in table 4.8.2

Table 4.8.2: Correlation Between Customer Satisfaction and the Use of 95551 Query Services

			Customer Satisfaction					Total	Pearson's R	Approx. Sig.			
			Highly Satisfied	Satisfied	Neutral	Not satisfied	Very unsatisfied						
95551 query services	Strongly Agree	Count	44	134	10	4	3	195	.923	.009			
		%	11.9	36.2	2.7	1.1	.8	52.7					
	Agree	Count	0	119	28	14	4	165					
		%	.0	32.2	7.6	3.8	1.1	44.6					
	Neutral	Count	1	2	0	0	0	3					
		%	.3	.5	.0	.0	.0	.8					
	Disagree	Count	0	5	1	0	0	6					
		%	.0	1.4	.3	.0	.0	1.6					
	Strongly Disagree	Count	1	0	0	0	0	1					
		%	.3	.0	.0	.0	.0	.3					
	Total		Count	46	260	39	18	7			370		
			%	12.4	70.3	10.5	4.9	1.9			100.0		

Source: Research Data (2014)

The table 4.8.2 indicates that, customers had proper understanding of how to use the 95551 query service. This is according to 52.7% and 44.6% of the respondents who were strongly agreeing and agree respectively. Testing the service's association with customer satisfaction level, this was found to be strongly correlated with a correlation coefficient 0.923 with a significant value of 0.009 at 5% level. Therefore the association is positive and significant.

4.8.3 Prepaid metering services and customer satisfaction

Analysis of prepaid technology usage by customers has been demonstrated in table 4.8.3. Clearly this service is very well understood and customers give very positive view and as nearly all customers rated it very highly as 72.7 % were very satisfied and satisfied respectively. Most customers were familiar with the service and knew how to use it.

Table 4.8.3: Correlation Between Customer Satisfaction and the Prepaid Meter Service

			Customer Satisfaction					Total	Pearson's R	Approx. Sig.
			Highly Satisfied	Satisfied	Neutral	Not satisfied	Very unsatisfied			
prepaid meter services	Strongly Agree	Count	46	82	10	3	2	143	.773	.013
		%	12.4	22.2	2.7	.8	.5	38.6		
	Agree	Count	0	173	29	15	5	222		
		%	.0	46.8	7.8	4.1	1.4	60.0		
	Neutral	Count	0	1	0	0	0	1		
		%	.0	.3	.0	.0	.0	.3		
	Disagree	Count	0	3	0	0	0	3		
		%	.0	.8	.0	.0	.0	.8		
	Strongly Disagree	Count	0	1	0	0	0	1		
		%	.0	.3	.0	.0	.0	.3		
Total		Count	46	260	39	18	7	370		
		%	12.4	70.3	10.5	4.9	1.9	100.0		

Source: Research Data (2014).

According to the findings in the table 4.8.3, customers felt that the prepaid meter do not faulty frequently as majority of the respondents agreed to this aspect where 60% were agreeing and 38.6 strongly agreed. However, 1.4% of the respondents were disagreeing to this aspect where also the table shows that 6.8% of the respondents were unsatisfied with the services. Testing the association between the service and customer satisfaction, the study found out that there is a strong positive correlation between the variables which is also significant testing at a 5% level with a 2-tailed test. This had a correlation value of 0.773 and a significance value of 0.013.

4.8.4 Easy pay services and customer satisfaction

The table 4.8.4 gives the results after analysis. The service is regularly used by most customers and was rated positively. Customers pay their bills in banks and post offices and later these institutions forward data to KPLC for updating. This makes it easier for customers to carry out several transactions at the same time and reduces risks of carrying money from one point to the other. Relationship obtained is shown in table 4.8.4

Table 4.8.4: Correlation Between Customer Satisfaction and the Easy Pay Service

			Customer Satisfaction					Total	Pearson's R	Approx. Sig.	
			Highly Satisfied	Satisfied	Neutral	Not satisfied	Very unsatisfied				
easy pay services	Strongly Agree	Count	46	133	0	1	1	181	.731	.015	
		%	12.4	35.9	.0	.3	.3	48.9			
	Agree	Count	0	121	37	15	6	179			
		%	.0	32.7	10.0	4.1	1.6	48.4			
	Neutral	Count	0	1	0	0	0	1			
		%	.0	.3	.0	.0	.0	.3			
	Disagree	Count	0	3	2	2	0	7			
		%	.0	.8	.5	.5	.0	1.9			
	Strongly Disagree	Count	0	2	0	0	0	2			
		%	.0	.5	.0	.0	.0	.5			
	Total		Count	46	260	39	18	7			370
			%	12.4	70.3	10.5	4.9	1.9			100.0

Source: Research Data (2014)

The table 4.8.4 indicates that, the easy pay services are convenient to the customers which also affect their satisfaction. This is according to the respondents where 48.9% were strongly agreeing, 48.4 were agreeing, 0.3 were neutral and 2.4% were disagreeing. The correlation test result in the table also gives a strong and positive correlation which is also significant in a 2-tailed significance test at 5% level. The correlation value is 0.731 with a significance value of 0.015 indicating presence of positive and strong correlation between the service and the customer level of satisfaction.

4.8.5: Electronic billing (E-billing) technology and customer satisfaction

This service is mostly used by corporate customers who have access to internet. The bills are sent to the customers in their emails automatically once billing is done. The customer's later print and uses the bills to settle their accounts using any of the payment services.

This method saves time and pass information immediately is available in KPLC. An SMS alert would normally be sent to the customer's mobile phone to prompt them to check their bills. The results are as in table 4.8.5.

Table 4.8.5: Correlation Between Customer Satisfaction and the E-Billing System's Availability

			Customer Satisfaction					Total	Pearson's R	Approx. Sig.
			Highly Satisfied	Satisfied	Neutral	Not satisfied	Very unsatisfied			
E-Billing	Strongly Agree	Count	46	81	0	0	0	127	.693	.008
		%	12.4	21.9	.0	.0	.0	34.3		
	Agree	Count	0	165	0	6	4	175		
		%	.0	44.6	.0	1.6	1.1	47.3		
	Neutral	Count	0	12	36	10	3	61		
		%	.0	3.2	9.7	2.7	.8	16.5		
	Disagree	Count	0	1	2	2	0	5		
		%	.0	.3	.5	.5	.0	1.4		
Strongly Disagree	Count	0	1	1	0	0	2			
	%	.0	.3	.3	.0	.0	.5			
Total		Count	46	260	39	18	7	370		
		%	12.4	70.3	10.5	4.9	1.9	100.0		

Source: Research Data (2014)

From the table 4.8.5 it can be observed that, 34.3% of the respondents strongly agreed and 47.3% agreed that the e-billing systems are available throughout. However, 16.5% of the respondents neither agreed nor disagreed to the availability of the services and 1.9% disagreed. In reviewing their satisfaction with reference to the service availability, the study results indicate that the service's availability and customer satisfaction had a correlation of 0.693 and a significance of 0.008. This illustrates that there is a positive correlation between the customer satisfaction and the availability of the e-billing systems.

4.8.6 SMS Alerts System and Customer Satisfaction

Various types of SMS alerts are regularly sent to the customer to provide them with information such as power interruption and monthly bills. Other messages such as system breakdown and unavailability of systems are sent and also customers are reminded to pay their bills on time to avoid disconnection. During festivities like Christmas, Easter holidays the company may send season greetings and wish well their customers. The company may request customers to send important details like change of address or up other data as need may arise. Table 4.8.6 contains the relationship between customer satisfaction and SMS alerts as obtained from Pearson's correction analysis.

Table 4.8.6: Correlation Between Customer Satisfaction and the SMS Alert Notices

			Customer Satisfaction					Total	Pearson's R	Approx. Sig.
			Highly Satisfied	Satisfied	Neutral	Not satisfied	Very unsatisfied			
Receiving SMS alerts		Count	0	85	10	5	4	104	.876	.018
		%	.0	23.0	2.7	1.4	1.1	28.1		
	Agree	Count	45	104	28	12	3	192		
		%	12.2	28.1	7.6	3.2	.8	51.9		
	Neutral	Count	0	65	0	0	0	65		
		%	.0	17.6	.0	.0	.0	17.6		
	Disagree	Count	1	4	1	1	0	7		
		%	.3	1.1	.3	.3	.0	1.9		
	Strongly Disagree	Count	0	2	0	0	0	2		
		%	.0	.5	.0	.0	.0	.5		
Total		Count	46	260	39	18	7	370		
		%	12.5	70.3	10.5	4.9	1.9	100.0		

Source: Research Data (2014)

The table 4.8.6 gives the results on customer satisfaction and the company's alerts on power interruptions through SMS. It shows that, most of the respondents agreed to the aspect where only 2.4% disagreed and 17.6% were neither agreeing nor disagreeing. According to the results, there is a strong and positive correlation between the customer satisfaction level and the level at which the company's alerts affect their satisfaction since the correlation value was obtained as 0.876. This was also proved to be significant testing at 5% level which had a significant value of 0.018.

4.8.7 Integrated incidence reporting services and customer satisfaction

This service technological innovation is used to serve customers fast without staff interface. Customers are expected to call line Kenya power and listen to voice prompts and able to register their complaints without speaking to a physical staff in KPLC. The prompts are sorted out and attended to later using integrated customer services system. Table 4.8.7 shows the results obtained.

Table 4.8.7: Correlation Between Customer Satisfaction and Integrated Incidence Reporting Systems

			Customer Satisfaction					Total	Pearson's R	Approx. Sig.
			Highly Satisfied	Satisfied	Neutral	Not satisfied	Very unsatisfied			
Integrated incidence reporting	Strongly Agree	Count	0	12	0	0	0	12	.679	.007
		%	.0	3.2	.0	.0	.0	3.2		
	Agree	Count	0	125	29	9	2	165		
		%	.0	33.8	7.8	2.4	.5	44.6		
	Neutral	Count	45	117	9	7	5	183		
		%	12.2	31.6	2.4	1.9	1.4	49.5		
	Disagree	Count	1	5	0	2	0	8		
		%	.3	1.4	.0	.5	.0	2.2		
	Strongly Disagree	Count	0	1	1	0	0	2		
		%	.0	.3	.3	.0	.0	.5		
Total		Count	46	260	39	18	7	370		
		%	12.4	70.3	10.5	4.9	1.9	100.0		

Source: Research Data (2014)

Testing the correlation between customer satisfaction and the incidence reporting for problem solving, the study findings indicates that, the integrated incidence reporting helps problems to be solved in time and therefore affecting customer satisfaction. This also had a positive correlation of 0.679 significant at 5% level as indicated by its significance value of 0.007. However, 49.5% of the respondents were neither agreeing nor disagreeing that the service helps timely problem solving where also 2.7% disagreed to this.

4.8.8 Automated Call Services and customer satisfaction

This is a highly computerized service that is mobile call calling system that in automated and has no physical staff in KPLC receiving the calls. The systems records calls and classifies them in coded language which is sent out to field staff automatically and then the staff attend to customer without delay. The information is relayed directly without ant human interface and this makes the operations fast and delights the customers. An SMS notification may at times be sent to the customers to let them know the team that is attending them. This way customers are provided with feedback and information on the process of an issue or complain made to the company. Analyzed results are tabulated in table 4.8.8

Table 4.8.8: Correlation Between Customer Satisfaction and the Automated Call Services

			Customer Satisfaction					Total	Pearson's R	Approx. Sig.
			Highly Satisfied	Satisfied	Neutral	Not satisfied	Very unsatisfied			
automated call services	Agree	Count	0	116	0	0	1	117	.451	.027
		%	.0	31.4	.0	.0	.3	31.6		
	Neutral	Count	45	139	8	8	5	205		
		%	12.2	37.6	2.2	2.2	1.4	55.4		
	Disagree	Count	1	4	30	10	1	46		
		%	.3	1.1	8.1	2.7	.3	12.4		
	Strongly Disagree	Count	0	1	1	0	0	2		
		%	.0	.3	.3	.0	.0	.5		
Total		Count	46	260	39	18	7	370		
		%	12.4	70.3	10.5	4.9	1.9	100.0		

Source: Research Data (2014)

The study findings in the table 4.8.8 indicate that, majority of the respondents neither agreed nor disagreed that automated call service helps staff respond quickly every time there is a technological problem as indicated by 55.4% of the respondents. 31.6% of the respondents were agreeing to this while 12.9% disagreed. The association between the satisfaction level and the automated call service was found to be weak positive as given by the Pearson coefficient of 0.451 which was insignificant with a significance value of 0.027 greater than 0.025 at a 5% level. Thus, there is no evidence of the presence of the association between the service and the customer satisfaction. Among the technological innovations deployed in KPLC this is the only technology that is not used by many customers.

4.9 Summary of Correlation Analysis and Discussion

The research carried out an analysis of all the technological innovation deployed by KPLC ranked them. The findings are shown in table 4.9. It can be concluded that the strength of correlation relationship for each technological innovation exhibited a similar pattern like that shown in figure 4.3 when respondents were asked to indicate the technological innovation they were familiar with. However Easy pay services were ranked better than prepaid meters innovation slightly by a margin of 0.001. The research can deduce that the respondents had a positive Pearson's correlation relationship with technological innovations deployed but of different strength as shown in table 4.9

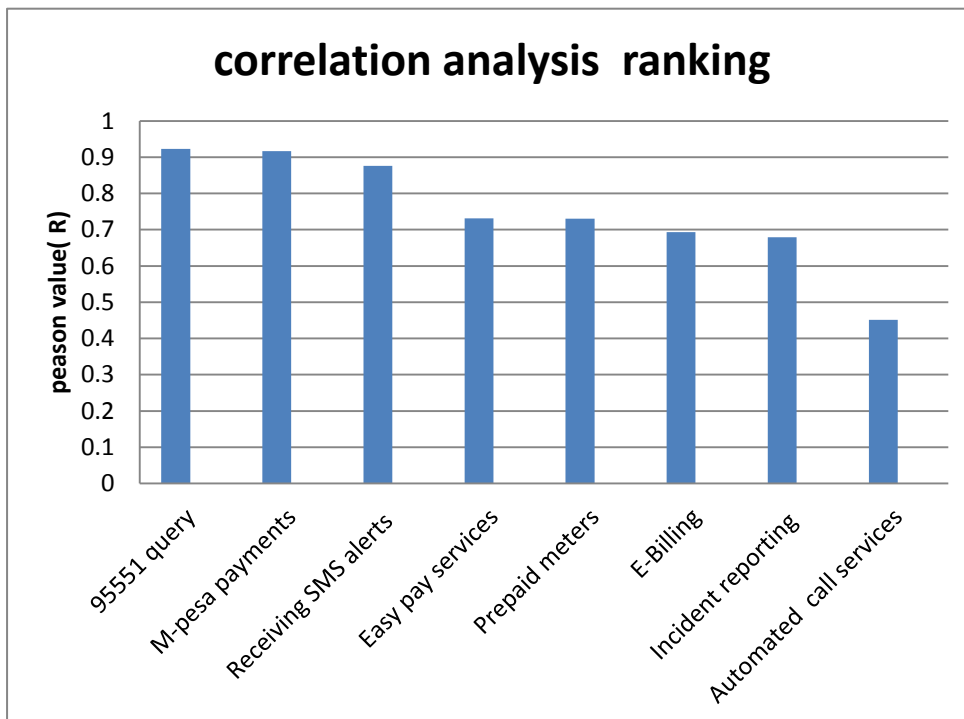
Table 4.9: Summary of Correlation Analysis Ranking as per Pearson value (R)

Rank	Type of Innovation	Pearson Value (R)
1	95551 query	0.923
2	M-pesa payments	0.917
3	Receiving SMS alerts	0.876
4	Easy pay services	0.731
5	Prepaid meters	0.730
6	E-Billing	0.693
7	Incident reporting	0.679
8	Automated call services	0.451

Source: Research Data (2014)

The research can conclude that the positive relationship is an indication of the customer’s appreciation of the technological innovation deployed in KPLC and the effect the technology had on the customer satisfaction. The ranking indicates the level of correlation between each of the technological innovation and customer satisfaction. Figure 4.9 shows relationship between each technological innovation and its likely influence on customer satisfaction.

Figure 4.9: Correlation Analysis Ranking as per Pearson value (R)



Source: Research Data (2014)

CHAPTER 5: FINDINGS, CONCLUSION AND RECOMMENDATION

5.1 Introduction

This chapter summarizes the findings gathered with the analysis of the data. The findings have been summarized in the context of the objectives of the study and conclusions drawn. The recommendations have been given out as inferred from the findings and areas of further research and conclusion made.

5.2 Summary of Findings and Discussion

The main purpose of this research was to find out the relationship between technological innovation and customer satisfaction in Kenya power and lighting company limited. Similarly the research wanted to determine the technological innovations deployed by the company that the customers were familiar with. Further the study looked at the effects of demographics on customer satisfaction. A case study of Kenya Power and lighting customers was carried out through collection of data from 384 respondents from Nairobi West Region as they paid their bills at Kenya Power and lighting banking halls. Duly filled up questionnaires were sorted out, analysed and conclusions inferred.

The research can conclude that majority of the respondents were satisfied with the technological innovation deployed by the organization. These findings can therefore be used to infer that the majority of the customers of KPLC are aware of most of the technological innovations deployed and are satisfied with the performance of the innovations. However there is need for the company to encourage customer to use integrated call services, e-billing and incident reporting services that recorded below 50% familiarity among the customers. This is likely to make more customers adopt the services that will go a long way in increasing the level of customer satisfaction.

The research found out that there was a positive relationship between the levels of education and customer satisfaction. The findings are similar to those of Solomon et al (2000) where in their study of factors affecting use of technology in the banking industry the customers who had achieved degree level of education were more satisfied than those with less qualification. However this differed with findings of Bruce et al (2007) which found that there was a negative relationship between satisfaction and education. Level of customer Satisfaction

was not affected gender since the satisfaction of male and female was found to be nearly even. The study can conclude that the level of customer satisfaction is not dependent on the gender. Therefore according to the research, education played a critical role in influencing the level of customer satisfaction. A possible explanation of the above finding can be explained by the fact that education plays a role in shaping and modifying one's attitude and perceptions towards a given service or organization. As one acquires more education, he or she begins to appreciate the value addition aspects in the services provided and hence becomes more satisfied.

According to the findings technological innovation in service delivery received acceptance across all the age group, though for different reasons. The respondents within the age group of 18-29 were the most satisfied of the three groups and these findings affirms the theory that the older the respondents the less satisfied they are (Foscht et al, 2009). However the research further found that the older generation (above 70 years) were more satisfied than middle age generation (30-49 years). This is an improvement of the Foscht et al (2009) theory and the marginal decline in satisfaction by the middle age group can be attributed to the increase in the level of education and experiences which increased the level of scepticism and inquisitively.

The research tried to explain this variation by suggesting that as customers advanced in age they initially got excited with innovation and technology (because it created time and place utility), then excitement marginally declined as one got accustomed by the technology and hence satisfaction decreased. However the level of satisfaction again increased in old age due to the savings in disposable income derived by innovation and technology in service delivery.

5.3 Conclusions and Recommendations

The customers of Kenya power can be said to be satisfied with the technological innovation deployed by the company though there is room for improvement. The research would recommend to the company to increase awareness of all technological services by disseminating information through SMS alerts and use of brochures and media advertisements so that more customers can use the improved services. It is also important to enhance communication to the customers to explain processes and procedures so that the customers are able use the innovations quickly and without making mistakes. A feedback channel should be established to ensure customer's assurance is maintained and a clear understanding of use of technology be built up to increases the customer satisfaction level of

service. The organization should undertake a continuous countrywide campaign to educate the customers on the E- billing system as it has low usages same for automatic calling services and integrated incident reporting.

5.4 Limitations of the Study and Suggestions for Further Research

The responses of the customers were likely to be influenced by the prevailing conditions such as availability of power in general and reliability of M-pesa services that are provided by mobile providers during the time of collecting the data. These conditions may have resulted in biasness on the part of some respondents. The case study was carried at Kenya Power banking halls and some customers may have thought that their views would be implemented and hence may have exaggerated their responses.

The study was carried out in Nairobi which is an urban area hence the findings may not necessarily reflect views of the rural customers. The research adopted a stratified random sample in that it targeted the customers at the Kenya power banking halls and therefore the findings may not be necessarily be the same if filled customers in the residences.

A more elaborate research should be undertaken among the staff working with Kenya power to establish value addition and benefits realized since technological innovation was implemented in the company. Similar research should be undertaken to establish the challenges being faced by both staff and customers so that any problems noted can be known and ways of mitigation be worked to make service as seamless as possible. It is also important to carry out a similar research in the rural areas to establish whether the findings apply generally to all customers or other issues would come up.

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APPENDIX 1: QUESTIONNAIRE

As part of research aim at exploring the concept of customer satisfaction, I would like to collect your views on the performance of KPLC systems, as well as your views on general customer service.

To facilitate this research, kindly fill the following questions.

SECTION 1

1. Gender (tick appropriately) Male Female

2. Level of education

Primary level Secondary level diploma degree

3. Please tick age bracket in which you fall

18-29 30-49 50 -69 70 and above

4. How much is your monthly average bill?

200-1999 2000-4999ksh 5000-9999 ksh over 10,000 ksh

5. What is your average monthly income?

Kshs. 10,000-19999 kshs 20000-29999[kshs. 30000-39999[above kshs. 40,000[

SECTION 2

The following are the service innovations systems available in KPLC. Please tick and rate your level of familiarity with the technology below.

Number	Service	Familiar	Not familiar
1	Receiving SMS alerts		
2	E-Billing		
3	Prepaid meters		
4	Mobile payments		
5	Incident reporting		
6	95551 query		
7	Automated call services		
8	Easy pay services		

5 Are you satisfied with the level of technological innovation provided by KPLC?

Very satisfied [] Satisfied [] neutral [] Dissatisfied [] Very dissatisfied []

6. How would you rate the overall technological innovation in Kenya power compared to other government offices you have attended?

Very Poor [] Poor [] Good [] Very good [] Excellent []

7. How would you rate overall technological innovation in Kenya power to other private service providers?

Very Poor [] Poor [] Good [] Very good [] Excellent []

SECTION 3

What extent do you agree with the following statements as they relate to the service innovations systems available in KPLC? On a scale of 1-5 where 5 is strongly agree, 4 agree 3 neutral, 2 disagree and 1 strongly disagree. Please answer appropriately.

		Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
1	I find it easier to pay my bills through M-pesa					
2	I am able to understand how to use 95551 query services					
3	The prepaid meters do not faulty frequently					
4	Easy pay Services are very convenient to use					
5	The e- billing systems are available throughout.					
6	The company informs me in advance of any interruptions using sms alerts.					
7	Integrated incidence reporting helps Problems to be solved on time					
8	Automated call services helps Staff respond quickly every time there is a technological problem					