INFLUENCE OF ADOPTION OF TECHNOLOGY ON PERFORMANCE OF KENYA POWER AND LIGHTING COMPANY; A CASE OF KENYA POWER EMBU OFFICE.

BY

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A RESEARCH PROJECT REPORT SUBMITTED IN PARTIAL FULFILMENT OF THE REQUIREMENT FOR THE AWARD OF A MASTER OF ARTS DEGREE IN PROJECT PLANNING AND MANAGEMENT OF THE UNIVERSITY OF NAIROBI

2018

DECLARATION

I declare that this research project is my original work and has not been submitted for examination in any other university or college.

Signatureé é é é é é é é é é é . Date é é é é é é é é é é .

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

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DEDICATION

This research project report is dedicated to: my children Brian Mochiemo,Chellion Nyamweya, Ruth Kerubo and Sheila Bosibori.

ACKNOWLEDGEMENT

I want to thank my supervisor Dr. Stephen Wanyonyi Luketero who has given me guidance in assessing and correcting my work. Much appreciation to the University of Nairobi staff and lecturers of the School of Open and Distance Learning for the assistance they have offered me. I also wish to thank the management of KPLC Embu branch for giving me an opportunity to carry out the research project and the staff of KPLC Embu office for their cooperation in receiving and filling the questionnaires would also thank KPLC customers who utilize smart meters for accepting to fill and return the questionnaires and the team members who assisted in data collection and analysis. Finally, I wish to thank all my family members for their support and encouragement.

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ABSTRACT

The purpose of this study was to determine the influence of adoption of technology on performance of Kenya power in Kenya; a case of Kenya power Embu office. The study was guided by the following objectives; to determine the influence of adoption of smart meter technology on performance of Kenya power; to establish the influence of adoption of billing technology on performance of Kenya power; to determine the influence of adoption of electronic payment on performance of Kenya Power in Kenya; to examine the influence of adoption of Management information systems Technology on performance of Kenya Power. The study used Cross-sectional descriptive survey research design, this type of research design is a research tool used to capture information based on data gathered for a specific point in time. The study targeted a population of 86 employees working in Kenya Power Company Embu branch and 600 customers within the town who have high usage of power. Total sample size of 253 respondents. Data was collected using structured questionnaires and interviews .Quantitative data was analyzed using descriptive statistics. The data was coded, tabulated and analyzed using Statistical Package for Social Sciences based on study objectives. The outcome showed that adoption of Smart Meter Technology and performance of Kenya power positively and significantly enhanced performance. The analyzed data further indicated that Adoption of Billing technology and performance of Kenya power are positively and significantly related . It was further established that, adoption of Electronic payment and performance of Kenya power were positively and significantly related as they made it easier for customers to have a variety of payment modes. Similarly, results showed that MIS application and performance of Kenya power were positively and significantly related.The study concluded that the pre-pay billing system has helped eliminate customer congestion during payment of bills hence improving customer service, pre-pay billings system has resulted in a decrease in metering, billing and disconnection inconveniences hence improving customer service, the billing system is more beneficial to the consumer since they only consume what they pay. The study recommended KPL should review its technical and operational standards to facilitate adoption and implementation of Smart technologies in the entire grid management to include generation, transmission and distribution system.

LIST OF ABBREVIATIONS AND ACRONYMS

AMI -Advanced Metering Infrastructure

AMR -Automatic Meter Reading

CVV - Card Value Verification Code

ERP -Enterprise Resource Planning

MIS - Management Information System

KMS - Knowledge Management Systems

KP - Kenya Power

IPPs - Independent Power Producers

PBS -Power Billing System

USA -United States of America-

SCADA- Supervisory Control and Data Acquisition

CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

Adoption of technology has brought a dramatic change in many organizations. It is important because it is the vehicle that allows most people to participate in a rapidly changing world where technology has become central to our lives. Individuals and organizations who won't or can't adopt will increasingly limit their ability to participate fully in the financial and convenience benefits associated with technology. The decision on whether to put into place a new technology is dependent on what benefits will be gained by putting into place new technical, functional or esthetic solutions, so as to attain the company's competitive positioning; this decision also depends on the risk and costs involved. Businesses lack the resources may it be human, financial or structural to innovate or adapt new technologies, (Cummings, 2001).

Worldwide the development, integration and advancement of technology are changing our general public and economy. The appropriation of new innovation has altered the way associations speak with clients and providers and how they get data. For instance in United States of America(USA) smart metering has come up strongly as an enabler of smart grids, electric utilities are sending savvy meters(Technically named Advanced Metering Infrastructure or AMI) to their residential customers as the fundamental building block of the Smart Grid. In a couple of zones of the US states, such as California and Texas, smart meters are almost fully deployed,(Asewe2010).In June 2010, approximately 20million smart meters had been deployed in the U.S.A and it is likely that the number will rise to approximately 65million meters by the end of the year 2015.This would represent approximately 50 percent of all U.S. household. The smart meters may be deployed to almost all U.S. households, (Institution of Electrical Engineers, 2010).

Larger part of the power utilities keep on suffering from genuine difficulties of income and system administration in most Africa nations. This state of affairs coupled within adequate network facilities to match the client request and needs, resulting with consequential system overloads and under-voltages manifesting in higher control framework misfortunes, affect adversely on their primary concern and the consumer loyalty. With these difficulties picking up a considerable extent with time, utilities are progressively falling back on misfortune diminishment and income administration programs in their multi-feature minimum cost way to deal with beat these overwhelming difficulties. Subsequently, researches have been done and technology has been developed that would assist utilities out of these troubles. Some of these innovations include: System robotization, Prepayment Systems, Automatic Meter Reading (AMR) systems, Advanced Metering Infrastructure (AMI) and Billing Systems (Ndenderu, 2012). Non-specialized misfortunes meter disappointment, meter altering or extortion, un-metered or illicit associations or information altering in charging speaks to around 20-30% of income misfortunes for utilities across the continent, and in some cases this achieves half. Also, control utilities' wasteful charging frameworks are one of the primary purposes for non-technical loses. They often rely on out dated and manual mode of billing and payment accumulation (post and in-person office installments), and face a culture of non-installment cultivated by social and political obstructions to detaching administrations (ADB report, 2013). Performance of association include the real yield or consequences of an organization as measured against its intended yields or goals and objectives. According to Stacey (2003) hierarchical execution envelops three particular ranges of firm results in particular money related execution i.e. benefits, return on resources, rate of return, item advertise execution that is deals, piece of the overall industry and investor return, total shareholder return and economic value added (Mroczkowski and Hanaoka, 1997).

Electronic payment is a type of an e-commerce system where you pay electronically whether buying or selling goods that are in the internet. Due to the development of technology systems and processes range to transact electronically continues to increase while the cash and check transactions percentage continues to decrease, (Baddeley; 2004). For example in the United States there was a decrease in the usage of checks from

85% of non-cash payments in 1979 to 59% in 2002 and the electronic payment system have grown up to 41%. The most active trade intermediary system within a very short time has been the internet. Electronic payment may revolutionize retailing by allowing the customers to purchase and sell goods at the comfort of their home and offices. A lot of customers are still wary of conducting extensive business and transactions electronically even though it is secure. The customer needs to fill the credit or debit card details such as card number, card expiry date, CVV (Card Value Verification Code) in the payment gateway during the payment. Some of this customer details are misused by the employees of the companies which they are transacting with. Phishing and identifying theft are the most common attacks on E-payment system, (Bildey, 2013).

In the world of Management Information System (MIS) most organizations provides numerous examples of successful information systems implementation providing benefits for both organizations and the employees working for them. These benefits include improved profitability; improved organizational performance as well as efficient and effective business processes,(Kohli,2003). There are numerous examples of management information systems implementation failures which lead to negative consequences for the organizations in terms of financial losses and other risk, (Nelson 2007).An example of management information system technology implementation failures are Hewlett-Packardôs (HP) failure in 2004 that had a financial impact of $ 160 million another example is Nikeôs failure in 2000 that cost $100 million in sales and resulted in a 20% drop in stock price (Koch 2004).

Generation, transmission, metering, customer queries and payments are some of the implementation that have been adopted in Kenya as smart technology in the energy sector. In electricity generation there is a system that controls and monitor power flow between Kenya Power (KP), Kenya Electricity Generation company (Kengen) and the Independent Power Producers (IPPs) it is known as the Supervisory Control and Data Acquisition (SCADA). The power output in terms of Megawatts, voltage levels, frequency and status are monitored by the KPs national control Centre. Decisions additional or reduction of generation are made remotely through the SCADA system which is part of smart technology. The technology is also used in monitoring and

operation of all primary substation such as 220KV/66KV, 132/33KV substations and transmission lines,(Fichtner,2006).

In metering, Automatic Meter Reading (AMR) technology was implemented in 2008 for Large and Industrial customers. This took place after a study on the loss reduction of the power by the International Consultant from Manitoba is was the suggested that since the Kenya Power had already changed the meter types to from convectional meter types to know take another step and convert them to large consumers meter from AMR (Mutua, 2007).This was set to improve billing systems by improving data accuracy and reliability. The technology was also aimed at combating losses in the Large Industrial and Commercial Customers by communicating exceptional occurrences in the supply through alarms through e-mails and SMS. Improvement in billing accuracy, elimination of estimated meter reading and reduction in labor costs was the major resultant of this undertaking**.**

In April 2016, almost 80% of large power consumers have been connected to outdoor meters as Kenya Power has adopted the use of technology to increase efficiency in their services. The installation of smart meters was a result of the outdoor metering which would ease the work of the Kenya Power officers when reading the meters and also during inspection this also would reduce the disturbing of the customers as the activities were taking place. The project targeted all existing large power consumers with about 5,600 outdoor meters to be installed near customer premises at cost of Sh.3.2 billion. The study will focus on adoption of technology already in use in Kenya Power and therefore to determine influence of adoption of technology on performance of Kenya power in Kenya; a case of Embu County based on the following variables smart meter technology, billing technology, electronic payment and Management information system technology.

1.2 Statement of the Problem

Adoption of new technology is the key to competitiveness and economic growth of organizations in the increasingly dynamic business world. A numerous number of factors affect business in various ways and hence influence their competitiveness and survival in the dynamic business world. These factors are not very certain for organizations in their pursuit for survival and success. Therefore most organizations have come up with technological strategies which aim at ensuring continuous survival and competitive

advantage sustained efforts are being made in the development, acquisition and integration of information technology by organizations. Technology has revolutionized communication and system operations.

Several studies have been done locally and internationally in relation to new technology adopted by firms to achieve organizational performance. David & Ketchen (2004), investigated on the effect of technology on organizational performance study discovered that the manner in which the organization adopted and implemented new technology highly contributed to its performance. Today in Kenya, the energy sector has faced a number of challenges making it difficult for the sector to run its activities efficiently. Low investment in the power sector by private investors, limited capacity during peak demand, high cost of rural electrification, limited distribution capacity, grid-system losses and weaknesses, limited reach in rural areas, vandalism, over-reliance on hydro power which constitutes about 70-80% of the total electrical power, forcing the company to do power rationing in times of drought, and also switching to alternative power generation which is very expensive were some of the challenges that were being faced (ERC, 2013).

In Kenya power Company adoption of new technology has been touted to help the company to have better system management by protecting the revenue by reducing power theft, it has also guaranteed the quality supply by timely restoration of supply, load management and reducing the cost. The technology has the ability to control generation and transmission of power cable and control generation that can be used for operation and restoration of supply to collect the readings .Limited Studies have been done on adoption of new technology on performance of Kenya power based on the following variables; smart meter, billing, E-payment and MIS. This study therefore, is about establishing the influence of adoption of technology on performance of organization at the Kenya power office in Embu.

1.3 Purpose of the Study

The purpose of this study was to establish the influence of adoption of technology on performance of Kenya power in Kenya; a case of Kenya power Embu office.

1.4 Objective of the Study

The study was guided by the following objectives

i. To determine the influence of adoption of smart meter technology on performance of Kenya power.
ii. To establish the influence of adoption of billing technology on performance of Kenya power.
iii. To determine the influence of adoption of electronic payment on performance of Kenya Power in Kenya.
iv. To examine the influence of adoption of Management Information systems Technology on performance of Kenya Power.

1.5 Research Questions

The study was guided by the following research questions

i. What is the influence of smart meter technology on performance of Kenya power in Kenya?
ii. How does billing technology influence performance of Kenya Power in Kenya?
iii. What is the influence of electronic payment on performance of Kenya Power in Kenya?
iv. How does adoption of Management Information systems Technology influence performance of Kenya Power in Kenya?

1.6 Significance of the Study

This study is of importance to Kenya Power and practitioners since it will provide insights on the importance of adoption of new technology and use of smart meters, E-payment, billing, Management information systems technologies and how they influence performance of the organization as well as improved customer satisfaction. Policy makers will use the findings of the empirical findings creating an enabling environment for implementation of new technology. The study may contribute to the existing knowledge on adoption of technologies as a strategy for achieving the organizationôs competitive advantage**.**

1.7 Assumptions of the Study

The study assumed that the respondents would cooperate, be honest and trustworthy in their response to the research instruments and would be available to respond to the research instruments in time. The study further assumed that there were no serious changes in the number of the target population that would affect the sample size.

1.8 Delimitation of the Study

The study covered influence of adoption of technology on performance of Kenya power in Kenya; a case of Embu region offices. The study interviewed management staff hence the findings of this study cannot be generalized to other counties. Questionnaires were used as the main source of data instrument and distributed to the sampled respondents**.**

1.9 Limitations of the Study

The researcher encountered various challenges especially access to information that the study was seeking to get and use during data analysis and during issuance of research instruments to the respondents. The researcher solved that problem by going with an introduction letter from the University and assured the respondents that the response they gave would-be treated confidentially and used purely for academic purposes.

1.10 Definition of Significant Terms Used in the Study

Accurate Reading ï Error free record of a customersô electricity consumption as indicated in the meter

Billing ï Refers to the process of sending the consumer information about their electricity consumption and the expected payment

Disconnection ï Refers to the termination of electricity supply to a premises

Electricity Transmission ï The movement of electric power from the power generation site to the customersô households

Grid ï The network of power lines for delivering electricity to the customersô households

Operational Efficiency ï Capability to deliver services to consumers at effectively and at the required time.

Smart Meters ï Digital electricity meters that Kenya Power are rolling out that send meter readings digitally without the need for meter readers

1.10 Organization of the Study

The study consists of five chapters. Chapter One covers the background of the study, statement of the problem and purpose of the study. This is followed by the research objectives, research questions, justification of the study, limitations of the study, delimitations of the study, significance of the study, definition of significant terms and concludes with the organization of the study.

Chapter Two covers the literature review from various sources to establish work done by other researchers, their findings, conclusions and identification of knowledge gaps which forms the basis of setting objectives and research questions of the study. The theoretical and conceptual frameworks are also explained.

Chapter Three covers the research design, target population of the study, sample size and sampling procedures. This will be followed by data collection procedures, data collection instruments, validity of the instruments, reliability of instruments, data analysis techniques, ethical considerations and concludes with operational definition of variables.

Chapter four covers the findings from data analysis, presentation of findings and interpretation of findings. It will be concluded with the summary of the chapter.

Chapter five covers the summary of findings, discussions, conclusions and recommendations of the study. It will be concluded with suggested areas for further research and contribution to the body of knowledge.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter covers significant literature on the influence of adoption of technology on performance in organizations. The chapter also offers theoretical review, empirical review and conceptual frameworks on which the study is based**.**

2.2 Adoption of Technology on Performance of Kenya Power

Kenya Power owns and operates most of the electricity transmission and distribution systems in Kenya. It sells electricity to over 2.6 Million consumers countrywide (KPLC Report, 2004). The key mandate of the company is to organize themselves for enough electricity generation and transmission. The modern day business environment has been characterized by the evolution of process operations, with cloud, analytics and mobile technologies making unprecedented strides into the operations of large enterprises (Abubakar, 2009). The adoption of these robust and collaborative technologies has catalyzed the organizationsô operations**.**

Economic crises and the dynamism of the modern day business environment brought about by globalization had forced an unprecedented rationalization in operations thus allowing for technological adoption at increased speed (Derby, 2010). Non innovators are being squeezed out the market environment, with focus and organization core strategies being on large scale innovations aimed at generating increased revenues, smooth operations and increased customer satisfaction (Goel, 2012).

Organizations such as Kenya Power are putting in large amounts of money in executing information systems. The pros of these systems however depend upon how the technologies are integrated into the existing operations (Gupta, 1988). The top management and the heads of the system departments are the architects of the technology policies and are responsible for design and rollout, the author added. Adoption of technology has impacted on performance with the advantages most appreciated by the end users and managers (Hess, 2012). There is increased availability of information, which has resulted in the opportunity to meet deadlines more effectively, more rapid

access to information and more abundant and accurate data for analyzing files (Adebayo, 2007).

Acceptance of technology has been widespread and technology has become an essential part of the working environment (Newman, 2001). Business process operations have entered a new phase of accelerated transformation as a result of powerful technologies. Cloud-based and mobile applications, advanced analytics and powerful collaboration tools multiply the effect of well understood operating models such as shared services, outsourcing and process reengineering as stated by Whitten (2004).

2.3 Smart Meter Technology and Performance of Kenya Power

Smart meters are a form of smart grid technology that is being implemented by the Kenya Power Company to replace analog meters used to record electricity usage (Business Daily report, 2016). Smart meters transmit consumption information back to the power provider, effectively doing away with the need for meter readers to transmit information (Jasso, 2016). Smart meter technology is a technological approach by Kenya Power aimed at improving services to customers. The new Kenya Power systems which are the Automatic Metering Reading System (AMR) and smart meters have ensured that there are accurate bills by ensuring real time monitoring of consumption. The adoption of smart meters has been necessitated by the need to shorten response time in order to serve customers better, the report emphasized.

Smart metering technology has enabled Kenya Power to have real time monitoring of energy consumption hence detecting any oddities in supply. Smart meters support two way communications between the company and the meters. The first phase of smart metering by Kenya Power began with commercial consumers. A report by The Business Daily (April 29, 2016) state that nearly 80 per cent of large power consumers have been connected to outdoor meters as Kenya Power moves to enhance efficiency by increasing the use of technology. Smart meters are installed on the top of the electricity poles thus reducing disturbances to customers during reading and inspection of meters (Okoth, 2009). The report further stated that the project has targeted all existing large power consumers. About 5,600 outdoor meters will be installed near customer premises at a cost of Sh3.2 billion. 55 percent of Kenya Powerôs revenue comes from large power

consumers (KPLC, 2016). According to Engineer Rosemary Oduor (2003), the Acting Manager for Customer Service, outdoor metering is expected consequently enhance revenue collection and also the operations from electricity sales. She further added that the technology was critical especially at a time when the company was targeting to increase the rate of electrification in the country to achieve universal access by 2020.

Smart metering technology has boosted performance by allowing communication between Kenya Power and the meters thus enabling real-time monitoring of energy (KPLC Report, 2016). Efficiency in operations has been boosted by the ability to read meters remotely, disconnect and reconnect remotely in the event of non-payment, reducing the need for sending technicians to site (Kostyk, 2012). Oduor (2016) also added that the introduction of smart metering technology solutions had improved customer satisfaction and also revenue protection. Furthermore generating automatic surveillance alerts, the smart metering has enabled the remote meter reading disconnections and reconnections time of use tariff functionality and supply to customers Upon the rollout of the smart meter technology, there was a report by the Kenya Power that there had been an increase in electricity sales for the half-year period that ended in the December 2015.. Distribution losses were reported to have also decreased by 0.5 per cent thus implying a significant impact in the company operations.

Smart meter technology has heightened operational efficiency as the smart meters project is expected to decrease complaints from customers on bill estimation when the meter reading personnelôs are not able to access the meters in homes or premises, stated Oduor (2016). This is at a time when the Kenyan government passed a bill, which directed compensation on customer who would have a prolonged ñblackoutò without any forewarning. According to Ogutu (2016) a member of the project team overseeing the smart meter project, in an interview with the Business Daily (2016) off-site monitoring has enabled Kenya Power receive real time notifications in cases of meter tampering and they will disconnect meters with overdue bills. He added that customer satisfaction was improved since the technology allowed customers to track their consumption in real time, enabling them to have better management of usage if need be (Hess, 2012). The smart

meters came with interactive displays which one can view the history thus that information can be used to settle the disputes in case of overbilling. (Jasso 2006)

According to Kenya Powersô projections, rollout of smart meter in the Nairobi project alone will help it save close to Sh700 million over the next four years alone. The introduction of the smart meter technology has come where the unpaid bills have risen to sh9.1 billion as of June 2013 compared to Sh 8.02 billion the previous year. In the United Kingdom, a similar smart meter technology roll out plan was delayed by plans to have the cost of gadget installation footed by the consumers (Darby, 2010). Kenya Power aims to absorb the full cost of the installation in both the pilot and national rollout plans.

Technological innovations by the company include the Live Line Power Maintenance program 2016, that enables the maintenance of distribution lines without switching off the supply. This is aimed at reducing downtime for industries and cut losses resulting from loss of production time (Goel, 2012). Such technological advancements are very crucial especially at the moment where the country through the Kenya Power is targeting to increase the electrification of the country to achieve universal access by 2020.

In an initial study published in Intergenerational Democracy, Rethinking Sustainable Development by (Davies, 2012), Smart Metering provided feedback to the customer that empowered them to understand their energy use behavior and modify it if they felt there was a monetary or environmental benefit. In addition, Stern (1999) believed the most effective energy information is that which captures the attention of the audience, gains involvement and is credible and useful in the user's situation. This is supported by Challis (2004) who found that Sheldon (2003) found that people who identified with environmental goals performed considerably better than those who complied out of a sense of guilt.

2.4 Billing Technology and Performance of Kenya Power

Energy consumption has been on an upward trajectory globally in recent years (McDaniel, 2009). The escalating energy costs have made customers more engaged and for financial reasons, consumers are keener in cutting back on power costs. As a result, there is an accelerating need for proper billing systems by power providers (Mckenna,

2012). Engagements between consumers and the power supply companies have necessitated the power companies to shift modes of operations and take various measures to help households reduce their consumption and costs, by giving customers information about their usage and tips on how to save energy on their bills (Potter, 2009). Adverts by water and power companies on saving tips are commonplace, on television, social media and via websites.

The growing consumer power had led to consumers demanding more from their energy suppliers (Advalorem, 2009). Consumers expect to be able to engage with their suppliers in any convenient ways, ranging from using social media to the traditional call-centre based service (Abubakar, 2009). It is common in Kenya for consumers to get bills that are based on estimated meter readings than the actual readings. This has caused dissatisfaction, which costs the power companiesô operational costs. Technology has enabled Kenya Power to give their customers regular accurate bills, without any need for estimation.

Availing a variety of payment types and options to customers has enabled Kenya Power to offer their consumers the freedom to choose when, where and how to pay their bills (KPLC, 2016). Offering convenience in payment and billing alerts improves customer relations. With smart devices, emails and posted mail, accurate bills have been delivered to consumers. The opening up of call centers has addressed the billing issue hence enhancing customer relations.

In Nigeria, there has been a rollout of the Power Billing System which determines the power consumed per unit time and performs its computation based on the sale rate of power per unite time and other parameters. The importance of the power billing system is that its calculation is equivalent to the energy consumption. It provides an environment to maintain the consumer details starting from getting new connection, receiving bill and payments. Shifting demands in competitive market has impacted on energy supply with a growing awareness among consumers of their energy usage and changing expectations of the relationship they have with their suppliers. New demands are being placed on the billing and customer care. IEEE (2008)

Kenya Power on its part has embraced multiple platforms to send out billing information to clients including: Email reminders to avoid late payments on or near the due date of a payment (KPLC, 2016). Emails are available communication tools, and in 2010, 1.9 billion email users sent 107 trillion emails, according to Gmail reports. Emails are innovative, simple and secure electronic billing systems. They enable users to managing their bills from the inbox and getting real-time status updates on the payment process (Camner, 2009).

Mobile billing enquiries where the customers send a billing query on a dedicated SMS platform and receives a real-time bill and finally social media based enquiry platform where a customer service agent provides the billing information upon a consumersô request (Fabunmi, 2003). According to Ogutu (2014), a number of customers have been served with inappropriately high bills or have been disconnected wrongly. A statement by Kenya Power read in part that ñAffected customers are advised to visit the nearest Kenya Power offices to negotiate the option of staggering their payment of accumulated bills.ò

The Consumer Federation of Kenya (Cofek) accused Kenya Power serving several customers with high bills, furthermore the power utility is said to be guilty of delaying meter readings (Skyrius, 2001). Kenya Power reported that these delays are the result of inaccessibility of some premises, which has left the utility to rely on estimates as a basis for billing. As a result, there have been calls to provide multiple billing platforms where customers could provide their meter readings and receive their up to date bills in return. Ajzen (1991) postulates that with increases in positive attitude, support from the community via social norms and belief in the capacity of the individual, the stronger the intention to engage in the behavior becomes, and the more likely the actual behavior will occur. Smart Metering provides real time consumption information to householders, raising their awareness of their patterns of usage.

2.5 Electronic Payment Systems and Performance of Kenya Power

Electronic Payment (E-payment) systems are a way of making transactions or paying for goods and services through electronic media and without the use of cash (McKenna, 2012). Kenya Power, alongside other companies in Kenya, has adopted E- Payment

systems in a bid to cater for the increasingly enlightened consumers eager to embrace technological innovations. Mobile banking is the most popular E-Payment platform in Kenya. According to Calestous Juma, a director of science, technology and globalization at Harvard University, the mobile banking ideas was developed in Kenya he further said that Africans did not invent mobile phones yet they came up with a way of using mobile phones that is for money transfer.

E-Payment systems require technology that enables the service provider to: Maintain customer information; allow customer enquiries; present bills online; offer online payment platforms and send notifications to customers. Payment platforms include payment by phone, online payments via credit cards, direct debits from bank accounts and token payments (Juma, 2009). A small-value electronic payment and store-of-value system in Kenya accessible from ordinary mobile phones is known as the M-PESA. It has seen exceptional growth since its introduction in March 2007 (Kimenyi, 2009).

M-PESA is a small-value electronic payment system in Kenya accessible from ordinary mobile phones (Okoth, 2009). It has seen exceptional growth since its introduction in March 2007. Half of all mobile money transactions in the world take place in Kenya, where annual transfers have reached $10 billion. Kenya Power has adopted Mobile Money payment systems and capitalized on the rapid adoption was spurred by the invention of M-Pesa (Okuttah, 2009). In conclusion, Electronic payment systems enable a customer to pay for the goods and services online by using integrated hardware and software systems. The main objectives of these systems are to increase efficiency, improve security, and enhance customer convenience and ease of use; which are part of organizational strategic plans (Safaricom, 2009).

2.6 MIS Applications and Performance of Kenya Power

Management Information Systems (MIS) is the key factor to facilitate and attain efficient decision making in an organization (Newman, 2001). Adoption of information systems is a business strategy that aligns organizational operations and supports information sharing. People, processes and systems must be aligned to meet both business goals and customers desires (Benbasat, 1983).

Adoption of information systems boosts the speed in industries where the pace of change has greatly accelerated, service providers must be able to immediately react to the rapidly changing market conditions and demands (Yves-Chantal, 1993).Developing new businesses or bringing new products to market quickly and cost-effectively is critical and is often a key differentiator between large and small organizations. Agile organizations change direction in the face of the increasingly dynamic world (Potter, 2009).

In the modern day business environment, organizations have been forced to be more customers oriented (Whitten, 2004). Today, the consumers have less patience on slow or frustrating customer experiences. Whereas they have more authority and less patience, customers demand that their experience be simple and, optimally, create value for them. (Kimenyi, 2009). Therefore, service providers must put the customer at the center of their business. Customer centricity should be a focal point in organizational operations and means making the business easier for customers to do business with companies are adopting new management information systems targeting at advancing their level of aggressiveness by improving their decision making process to be more efficient to meet successive market fluctuations (Pierre, 1990). Management Information Systems are used to facilitate the provision of services; and that the speed of the adoption is expected to grow further as the technology expands (Adeoti-Adekeye, 1997).

Hardly any creators have investigated that the basic data required by midlevel and key level administration is effectively given by MIS. A little measure of research has thought that the restrictions and insufficiencies during the time spent administration data framework execution are the primary purpose behind reducing the proficiency of basic leadership handle in the association (Fabunmi, 2003). Handzic (2001) likewise focuses on the effect of data accessibility on individuals' capacity to process and utilize data in short and long arranging and in basic leadership assignments. He uncovered that the better the accessibility of data, the better the effect on both productivity and precision of business choices.

Liu and Young (2007) discuss key data models and their connections in business choice help in three unique situations. The creators demonstrated that worldwide organizations are ahead of time because of the Enterprise Applications System given by present day IT instruments, for example, Enterprise Resource Planning (ERP), Knowledge Management Systems (KMS) and Customer Relations Management (CRM) to upgrade the proficiency and adequacy of the Decision Making process.

All the more as of late, Adebayo (2007) clarified that the presence of MIS is expected to enhance and upgrade basic leadership on the issues influencing human and material assets. Taking everything into account, the significance of MIS is giving leaders certainties, which thusly support and improve the whole basic leadership handle; to help the governing body and administration levels to make an exact and on time key choices.

2.7 Theoretical Framework

The study was based on the following three theories.

2.7.1 Resource-based theory

The advocate of this hypothesis was Barney (1991). In this hypothesis, the upper hand and prevalent execution of an association is clarified by the peculiarity of its abilities (Johnson et al, 2008). Conventional wellsprings of upper hand for example, money related and common assets, innovation and economies of scale can be utilized to make esteem. Nonetheless, the asset based argument is that these sources are progressively open and simple to copy (Pfeffer, 1994)Critics of this theory are of the opinion that the core position of this theory which sees resources as strategically valuable, rare, inimitable and organizationally embedded as sources of competitive advantage is not scientifically proven (Raps, 2005).

Barneyôs (1991) resource based view reflects the fact that rival organizations may not perform at a level that could be recognized as impressive rivalry for the associations that have been settled in the market since they don't have the expected assets to perform at a level that makes a danger and rivalry. An association should abuse existing business openings utilizing the present assets while creating and building up another arrangement

of assets to support its aggressiveness later on showcase conditions; henceforth, an association ought to be occupied with asset administration. There is always high uncertainty in the environment and for organizations to survive and stay ahead of competition, new resources become highly necessary. (Crook et al, 2008). Adopting up to date technology has enabled Kenya Power in its strategic planning process thus giving the organization the needed opportunity to analyze the environment effectively and be able to prepare for any eventuality that may affect the plans therefore negatively affecting the performance of the organization.

2.7.2 Porter's Theory of competitive advantage

The study is guided by Porter's hypothesis of upper hand (1980), which distinguishes five focused powers in particular: Potential contestants, Buyers, Substitutes, Suppliers and Industry contenders that characterize the tenets of rivalry in an industry. He noticed that, the objective of aggressive technique for a specialty unit in an industry is to discover a position in the business where the organization can best protect itself against these focused strengths or can impact them to support its. Consequently, the pith of detailing aggressive procedure is to relate an organization to its condition. Information of these basic wellsprings of rivalry weight highlights the basic qualities and shortcomings of the organization, vitalizes its situating in its industry, clears up the zones where key changes yield the best result and highlights the zones where industry patterns guarantee to hold the best hugeness as either open doors or dangers. All the five powers together decide the power of industry rivalry and gainfulness, and the most grounded drive wind up noticeably vital from the purpose of system definition. Rivalry moves by one firm effectively affect its rivals and consequently may actuate striking back or endeavors to counter the move. Contention among existing contenders takes a type of moving for position utilizing strategies like cost rivalry, publicizing fights, item presentations and expanded client benefit.

Rivalry in an industry, along these lines, is established in its basic financial structure and goes past the conduct of current contenders yet he takes note of that a firm is not a detainee of industry structure and it can impact the five strengths through their own

particular systems by fundamentally examining and recognizing key driving elements that characterize the business. For intensity and practical preferred standpoint, associations should attempt to make an incentive for clients which are just conceivable by reacting with speedier responses to the always showing signs of change business condition driven significantly by innovative changes. Doorman in any case, does exclude innovation and government as powers that may impact rivalry in an industry which can be comprehended in disconnection of the five powers. This hypothesis will direct Kenya Power as they receive shrewd innovation and enhance further to remain ahead as market pioneers and to enhance client mindfulness

2.7.3 Competitive on the Edge- Theory

Einsenhardt and Brown's (1998) hypothesis of focused on the edge as referred to by (Whalley 2010) adjusts to this study since it recommends that techniques in light of adaptability, experimentation and nonstop change and learning can be more critical than thorough investigation and arranging. It additionally contends that, organizations build up a 'semi-reasonable key bearing' which expects them to make and keep up adjust amongst request and mayhem. By contending at the 'edge of confusion', a firm makes an association that can change and create a persistent stream of upper hands that structure a 'semi-rational' course. Firms ought not simply well respond to change, but rather should likewise make a decent showing with regards to of reckoning and driving change. This hypothesis is useful for this examination as a result of the dynamic idea of the business condition occasioned by changes in innovative headways and globalization. In any case, the hypothesis has not considered in innovation and globalization but rather contends that, in fruitful organizations, change is time-paced, or activated by the progression of time as opposed to occasions**.**

2.8 Conceptual Framework

A theoretical structure is a concise clarification of the connections between the factors organized for think about in the announcement of the issue, targets and research questions. In this exploration, the reasonable structure will be the brief portrayal of the marvel under investigation joined by visual delineation of the factors under examination (Mugenda and Mugenda 2008). The figure is the diagrammatic portrayal of the connection between the dependent and the independent variables. The arrows indicate the

direction of influence and thus showing the independent variables influence the dependent variable

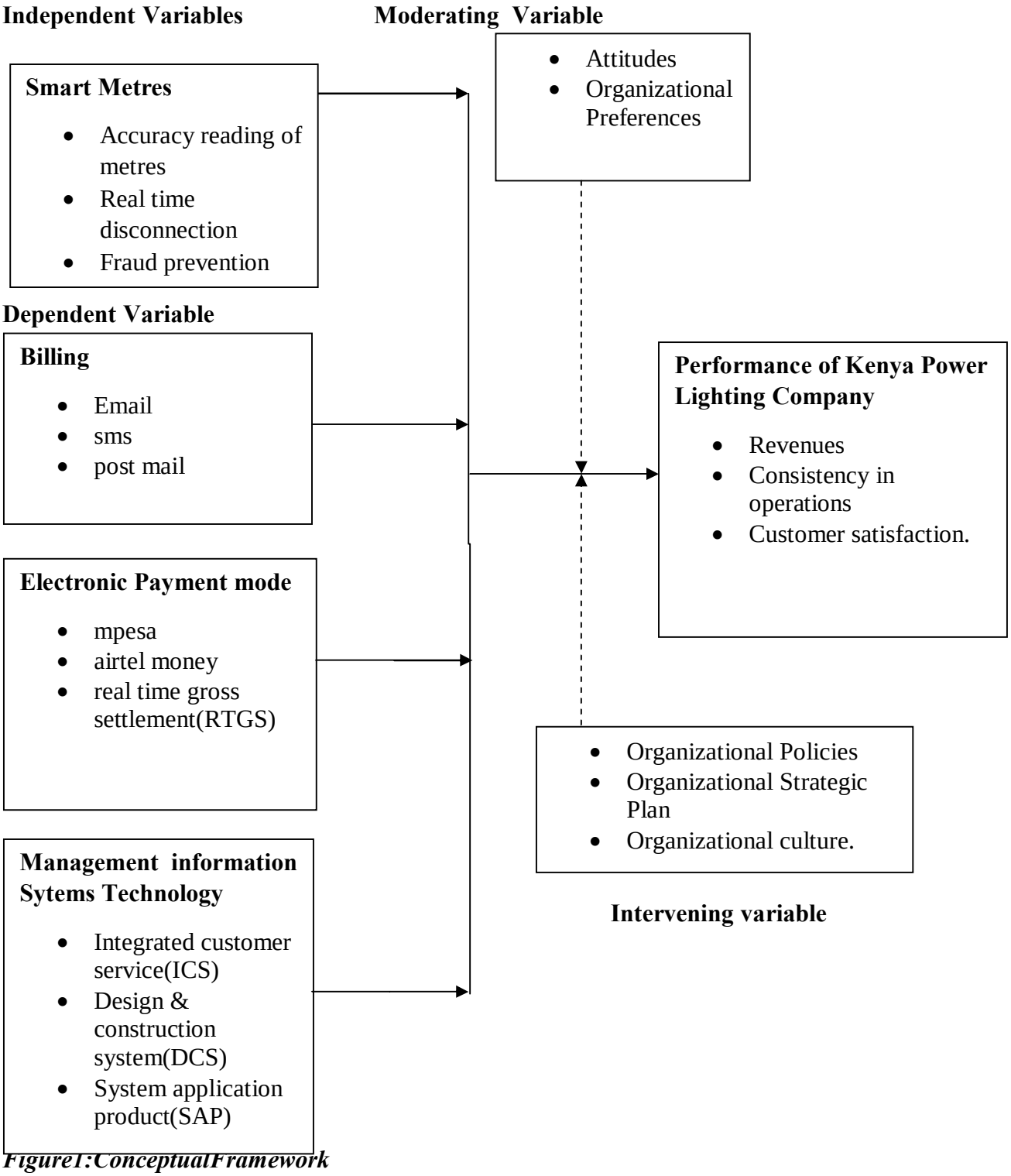

Figure1:ConceptualFramework

2.9 Research Gap

Variable	Indicators	Author (Year)	Title of Study	Findings	Knowledge Gaps
Smart Meter Technology	• Accurate Reading of Meters • Real Time Disconnection • Fraud prevention	Davies (2014)	Water-saving impacts of Smart Meter technology: An empirical 5 year, whole-of-community study in Sydney, Australia	The reduced consumption of the participant group was maintained over time, demonstrating the long-term value of the Smart Metering technology in assisting occupants of all ages to reduce household water consumption.	The author acknowledged the effectiveness of smart meter technology on consumption behavior. However, the author did not acknowledge that the adoption of smart meters has influenced the efficacy of operations at the service provider. This study seeks to highlight the influence that adoption of smart meters has on the performance of the service providers.
Billings	• Email • SMS • Postmail	Adegboye (2013)	Design and Implementation of an Enhanced Power Billing System for Electricity Consumers in Nigeria	The use of billing technologies has enabled the carrying out of the intended tasks effectively using real data.	The author identified that billing technologies have enabled power providers to generate monthly reports He however, failed to acknowledge that even in light of their usage, there is the need for training and that there is need for a general willingness to change and to adopt the new systems to ensure that performance is impacted.

Electronic Payment Systems	• M Pesa • Airtel Money • RTGS	Mohammad Auwal Kabir (2015)	Adoption of e-Payment Systems: A Review of Literature	It concluded that in e-payment technology, there is the issue of a lack of proper knowledge and awareness.	The author acknowledged that e-payment systems are continuously being adopted by large organizations as a reliable source of revenue collection. The study seeks to bring to light the influence of the adoption of these e-payment systems has on the performance of these power companies.
MIS Applications	• Integrated customer service(ICS) • Design & construction system(DCS) • System application product(SAP)	Rob Law, Giri Jogaratnam, (2005)	A study of information technology applications", International Journal of Contemporary Hospitality	Showed that IT was used not merely to replace the existing paper system but also to improve customer services and to enhance operational effectiveness.	From the study, it was clear that as much as MIS applications have been adopted by organizations, most have not realized the importance of IT for the purpose of developing business strategies and, therefore, IT was generally not used for high level decision making. This study aims to highlight the impact that adoption of MIS applications has on business performance.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1. Introduction

This chapter covers an overview of the research methodology used in the study. The discussion in the chapter is structured around the research design, target population, sampling techniques, sample size determination, data collection data, data analysis and ethical considerations to be -undertaken during the entire process of conducting the research.

3.2. Research Design

The study used Cross-sectional descriptive survey research design. This type of research design is a research instrument used to capture information based on data gathered for a specific point in time. This design is appropriate since the researcher aims at collecting data on conditions that already existed or ongoing. This involves collecting opinions held by different respondents on influence of adoption of technology on performance of Kenya power in Kenya; a case of Kenya Power Embu office. This type of research design is to obtain pertinent and precise information concerning the current status of a phenomenon and wherever possible to draw a valid general conclusion from the facts discovered (Kombo, 2006).

3.3 Target Population

Target population is the total number of the subjects of interests to the researcher Osen, (2005). The study targeted a population of 86 employees working in Kenya Power Company Embu branch and 600 customers within the town who have high usage of power. According to Kenya Power Annual Report, (2012) Embu branch is estimated to be having a population of 86 employees and 600 customers who use high voltage power. Therefore, the study targeted a total of 686 respondents

Table 3.1 Target Population of the study

Category	Target Population
Employees	**86**
Customers	**600**
Total	**686**

3.4 Sample Size and Sampling Procedures.

This section discusses the number of respondents sampled and the procedure which was used in picking the sample

3.4.1 Sample Size

A sample is a smaller group or sub-group obtained from the accessible population, the sample is selected in such a way as to ensure that certain sub-groups in the population are represented in the sample proportion, (Mugenda, 2008).To determine the sample size the study employed Yamane (1967) formula for calculating sample sizes at 95% confidence level and e = 0.05.Where n is the sample size, N is the population size, and e is the level of precision. The sample size will be determined as follows;

$$n = \frac{N}{1 + N(e)^2} \quad n = \frac{600}{1 + 600(0.05)^2} = 253$$

$$\frac{86}{686} X\ (253) = 32 \text{ Employees} \qquad \frac{600}{686} X\ (253) = 221 \text{ Customers}$$

The total sample size for this study was 253 respondents.

Table 3.2 Sampling method and sample size

Categories	Target Population	Sampling Method	Sample size
Employees	86	$n = \frac{N}{1 + N(e)^2}$	32
Customers	600	$n = \frac{N}{1 + N(e)^2}$	221
Total	**686**		**253**

3.4.2 Sampling Procedure

Sampling is a procedure, process or technique of choosing a sub-group from a population to participate in the study (Kothari 2004). It is the process of selecting a number of individuals or objects from a population such that the selected group contains elements

representative of characteristics found in the entire group, (Kombo, 2002).The study at the time of data collection adopted simple random sampling method. This type of sampling method was used since the sample size was not so large, and it is homogenous. This type of sampling is also known as probability sampling where each member/item in the population stands an equal chance of being selected. In addition, the sampling method has the advantage of giving relative advantage of time and money.

3.5 Data Collection Instruments

Data was collected using structured questionnaires and interview schedules. The structured questionnaires were given employees while interview schedule were given customers structured questionnaires refer to questions which are accompanied by a list of all possible alternatives from which the respondents select the answer that best describe their situation, (Mugenda & Mugenda, 2013). Structured questions are easier to analyze since they are in the immediate usable form, (Orodho and Kombo, 2002) Questionnaires were administered to the respondent to complete the questions themselves. The questionnaires were administered to the respondents physically and any challenges in answering the questions were addressed immediately.

3.5.1 Pilot Testing of the Instruments

The pilot testing was conducted using the questionnaires and the group was selected through random sampling. The piloted respondents were required to answer the questions after which they were analysed by the researcher to check whether the respondents had challenges in answering the questions. The respondents answered and filled the questionnaires correctly and this enabled the researcher to apply the same instruments in the research.

3.5.2 Validity of the Instruments

Validity means the research instrument should measure what it is intended to measure. It is the degree to which the test items measure a particular quality for which the test was designed (Kothari, 2004). Validity is the accuracy, soundness or a group of experts in the field of the study reviewed effectiveness with which an instrument measures what it is intended to measure (Kumar, 2005).

The questionnaire. The idea of having experts was to assist in identifying the internal validity and the extent, which it could be used as an instrument in order to realize the aims and goals of this research. was requested to identify the internal validity and to what extent it is suitable to be used as an instrument to realize the goals and aims of this research. The panel ensured that the items adequately represent concepts that cover all relevant issues under investigation.

3.5.3 Reliability of the instruments

Mugenda and Mugenda (2003) define reliability as a measure of degree to which research results yield consistent results with repeated trials. Reliability thus refers to the degree of consistency between two or more instruments in addressing a research problem.In this study a construct composite reliability co-efficient (Cronbach alpha) of 0.7 was this considered adequate for this study. Gasser, (2012) affirms that the acceptable reliability coefficient should be 0.6 and above.

3.7 Data Analysis Techniques

Data analysis is the process of editing, coding, classification and tabulation of the collected data with the purpose of summarizing data and organizing it in a manner that they answer the research questions as per the objectives of the study (Kothari, 2004). Quantitative data was analyzed using descriptive statistics and inferential statistics. The data was then coded, tabulated and analyzed using Statistical Package for Social Sciences based on study objectives.

3.8 Ethical Considerations

The study took into account all possible and potential ethical issues. The measures were taken to ensure compliance with ethical issues included keeping the identity of respondents confidential. According to Wimmer and Dominick (2001) identify the principle of confidentiality and respect as the most important ethical issues requiring compliance on the part of the researcher. The basic ethical requirements demand that the researcher respects the rights, values and decisions of respondents. In this study, the view of respondents will be given due respect.

Objective	Variable	Indicator(s)	Scale	Data collecting method	Data Analysis
To determine the influence of adoption of smart meter technology on performance of Kenya power; a case of Kenya power Embu office.	Independent variable: Smart meter technology	• Accuracy reading of metres • Real time disconnection • Fraud prevention	Ordinal	Questionnaire	Descriptive statistics
To establish the influence of adoption of billing technology on performance of Kenya power; a case of Kenya power Embu office	Independent variable: Billing technology	• Email • sms • post mail	Ordinal	Questionnaire	Descriptive
To determine the influence of adoption of electronic payment on performance of Kenya Power in Kenya; a case of Kenya power Embu office.	Independent variable: Electronic payment	• mpesa • airtel money • real time gross settlement(RTGS	Interval	Questionnaire	Descriptive
To examine the influence of adoption of Management information systems Technology on performance of Kenya Power; a case of Kenya power Embu office	Independent variable: Management Information systems	• Integrated customer service(ICS) • Design & construction system(DCS) System application product(SAP	Ordinal	Questionnaire	Descriptive
Performance of Kenya Power Lighting Company	Dependent variable: Performance	• Revenues • Profitability • Consistency in operations • Customer satisfaction.	Interval ;	Questionnaire	Descriptive

3.9 Operational of variables

CHAPTER FOUR

DATA ANALYSIS, PRESENTATION AND INTERPRETATION

4.1 Introduction

This chapter contains data analysis, presentation and interpretation of findings. The study intended to investigate the influence of adoption of technology on performance of Kenya power in Kenya; a case of Kenya power Embu office. These findings were reported as a record of all the data collected using questionnaires. The results based on the study findings, analysis, presentation, interpretation of results based on the following thematic and sub-thematic areas; general information of the respondents, smart technology and performance of Kenya power, Billing Technology and Performance of Kenya Power, Electronic Payment Systems and Performance of Kenya Power and MIS Applications and Performance of Kenya Power.

4.2 Questionnaire Return Rate

The study targeted a total sample size of 253 respondents (32 employees and 221 customers), from that sample size 239 respondents (30 employees and 209 customers) filled in and submitted the questionnaires making a response rate of 94%. The results are presented in Table 4.3

Table 4.3 Questionnaire Return Rate

Categories	Sample size	Returned	Not returned	Percentage Return Rate
Employees	32	30	2	94
Customers	221	209	12	95
Total	**253**	**239**	**15**	**94**

The finding in Table 4.3 indicate 239 (94%) response rate was good and representative and conforms to Mugenda and Mugenda (1999) stipulation that a response rate of 50% is adequate for analysis and reporting; a rate of 60% is good and a response rate of 70% and over is excellent. This implies that majority of the respondents filled the questionnaires and the return rate was appropriate for data analysis

4.3 Demographic characteristics of the respondents

The study sought to establish demographic characteristics of all the respondents based on gender, age, education level.

4.3.1 Study responses by gender.

The respondents were asked to indicate their gender and the results are indicated in table 4.4

Table 4.4 Gender of the Respondents

Gender	Frequency	Percentage
Male	121	51
Female	118	49
Total	**239**	**100**

The study findings indicate that majority of the respondents were male at 51% while 49% were female. This shows that there was gender balance in the study.

4.3.2 Age of the Respondents

The respondents were asked to indicate their ages from among choices of age classes given by the researcher and the results are presented in Table 4.5

Table 4.5 Age of the Respondents

Age	Frequency	Percentage
18-25	12	5
26-30	56	23
31-40	68	28
41-49	70	29
Above 50	47	30
Total	**239**	**100**

The findings show that 138 respondents (57%) were aged between 31-49 years of age while 68 respondents(28%)were between the age of 18-30 years and 47 respondents(20%) were 50 years

and above. This shows that majority of respondents who use technology are between 31-49 years.

4.3.3 Education Level of the Respondents

The respondents were asked to indicate their education level. Table 4.6 shows the distribution of the respondents by education level

Table 4.6 Education Level of the Respondents.

Education Level of the Respondents	Frequency	Percentage
Primary	19	8
Secondary	83	35
Tertiary	135	56
Total	**239**	**100**

The findings indicate that 8% of respondents had a primary level education, 35% had a secondary level of education, and 56% had a Tertiary level education which implied that majority of participants had enough knowledge and skills to enable them fill the questionnaire and answer the questions correctly.

4.4 Influence of Adoption of Technology on Performance of Kenya Power in Kenya; A case of Kenya Power Embu Office.

The study sought to determine the Influence of Adoption of Technology on Performance of Kenya Power in Kenya;A case of Kenya Power Embu Office. Table 4.7 shows the distribution of the respondents by performance of Kenya Power and Lighting company

Table 4.7 Performance of Kenya Power Lighting Company.

Response	Frequency	Percentage
Technological adoption has influenced revenues in Kenya Power	30	100
Technological adoption has influenced profitability in Kenya Power	30	100
Technological adoption has influenced	30	100

the consistency in operations at Kenya Power		
Technological adoption has influenced customer satisfaction Kenya Power	30	100

The findings show that 30 respondents(100%) of the employees in KPLC agreed that Technological adoption had influenced revenues in Kenya Power,30 respondents(100%) agreed that Technological adoption had influenced profitability in Kenya Power,30 respondents(100%) of the employees agreed that Technological adoption had influenced the consistency in operations at Kenya Power and 30 respondents(100%) of the employees agreed that Technological adoption had influenced customer satisfaction Kenya Power. This implies there was a positive performance in Kenya Power Lighting Company.

4.5Influence of Smart Meter Technology on Performance of KPLC

The first objective of the study was to determine the influence of adoption of smart meter technology on performance of Kenya power; A Case of Kenya Power Embu office which was to address the issue of reading accuracy, real time disconnection and fraud prevention.

4.5.1Influence of Smart Meters Projects In Embu County

The respondents were requested to indicate the influence of adoption of smart meter technology on performance of Kenya power. This is shown in Table 4.8

Table 4.8 Influence of Smart Meters Projects In Embu County.

	Agree		**Disagree**		**Total**	
Frequency (F) and Percentage (%)	F	%	F	%	F	%
Smart Meter Technology has improved service delivery	28	93	2	7	30	100
Smart meters have helped enhance customer satisfaction	29	94	1	4	30	100
Kenya Power leadership has set the right tone in embracing new technology	30	100	0	0	30	100

The findings indicate that 28 (98%) of employees agree that smart Meter Technology has improved service delivery while 2 (7%) disagreed. This implies that introduction of smart meters Technology by Kenya Power in Embu county has really improved service delivery hence increasing performance of Kenya in terms of accurate reading of meters. On the issue whether smart meter has helped enhance customer satisfaction 29 (94%) employees agreed that the adoption of smart meters technology has really helped customers satisfaction while 1 (4%) disagreed which implies that the smart meters have helped enhance customer satisfaction. To measure the satisfaction the employees affirmed that they received positive feedback from customers since the introduction of smart meters. On the question of whether Kenya Power leadership had set the right environment in embracing new technology 30 (100%) participants agreed which implies that Kenya power was focused in embracing the new technology in the energy sector.

4.5.2 Extent to which the use of smart meters influenced performance in Kenya Power

The study established how the use of smart meters has influenced performance in Kenya Power. The findings are presented on table 4.9

Table 4.9 Extent to which the use of smart meters influenced performance in Kenya Power.

Response	Frequency	%
To a very great extent	13	43
To a large extent	12	40
To a moderate extent	5	3
To a minimum extent	0	0
To a very low extent	0	0
Total	**30**	**100**

From the findings presented on Table 4.9, the study found out that the majority 43%(13) employees felt that the smart meters influenced performance in Kenya power to a very great extent, 40%(12) felt the smart meters influenced performance in Kenya Power to a large extent and 3% (5) to a minimum extent. Based on the findings this implies that Smart meters have influenced at very great extent positively on the performance of Kenya Power; meter reading disconnections and reconnections time of use tariff functionality and supply to customer.

4.6Billing and Performance of Kenya Power

The second objective of the study was establishing the influence of adoption of billing technology on performance of Kenya power. To achieve this objective, the study focused on billing technologies adopted by KPLC that are being utilized by consumers and various indicators on billing. These are indicated in the following sub thematic areas.

4.6.1 Billing Technologies adopted by KPLC

The study sought from the respondents the billing technologies available from KPLC and how frequently they use it and whether it was easy to use. The results are presented in table 4.10

Table 4.10 Billing technologies adopted by KPLC

Billing Technology	Frequency	%
Use of email alerts	10	33
Use of Post Mail	3	10
Use of SMS alerts	17	57
Total	**30**	**100**

The findings in Table 4.8show that33%(10) of the employees affirmed that use of email alerts was embraced the most by customers, 10%(3) affirmed use of post Mail was embraced the most by customers and finally majority 57%(17) of the employees affirmed use of SMS as billing technology was the most embraced by customers. This implies that use of SMS as billing technology is very convenient for paying bills by customers since everyone has a phone

4.6.2 Various indicators of billing and Performance of KPLC

The respondents were requested to answer on how billing technology has influenced performance of KPLC. The findings are show in Table 4.11

Table 4.11 various indicators on billing influence Performance of KPLC.

	Strongly Agree		Agree		Neutral		Disagree		Strongly Disagree	
Frequency (F) and Percentage (%)	F	%	F	%	F	%	F	%	F	%
The use of technology has helped address the billing issues	28	93	2	7	0	0	0		0	0
The power billing system in place is efficient	21	70	7	23	1	3	1	3	0	0
There is a greater engagement with customers due to technology	29	97	1	3	0	0	0	0	0	0

Based on the finding on Table 4.11 on whether the use of technology has helped address the billing Issues, 93%(23) strongly agreed, and 7%(2) Agreed. This implies that the use of technology especially the billing technology has really helped to solve the billing issues in KPLC. On the issues whether the power billing system in place is efficient 70%(21) employees strongly agreed.23%(7) agreed and the rest 6%(21) of the employees felt that the billing systems had some small technicalities problems. Based on the findings on the issues whether there was a greater engagement with customers due to technology 97%(29) employees strongly agreed since the adoption of billing technology there was greater engagement with customers,3%(1) agreed this implies that customers there paying their bills on time since the introduction of billing technology and this has really improved the performance of KPL

4.7Electronic Payment Systems and Performance of KPL

The third objective of the study sought to determine the influence of adoption of electronic payment on performance of Kenya Power.

4.7.1 Extent to which Electronic payment systems influence Performance of KPL

The respondents were asked to indicate the extent to which Electronic payment systems influence Performance of KPLC. The results are presented on table 4.12

Table 4.12 Extent to which Electronic payment systems influence Performance of KPL.

Responses	Frequency	%
Very great extent	22	73
Great extent	8	7
Moderate extent	0	0
Very low extent	0	0
Low extent	0	0
Total	**30**	**100**

The findings indicated that out of the 30 employees, 22 (73%) of the employees agreed that Electronic payment systems influenced Performance of KPLC to Very great extent and 8(7%) influenced at great extent. These findings indicate that electronic payment systems influence performance of KPLC to a very great extent. The result clearly indicate that KPLC should enhance use of electronic payment system.

4.7.2Most efficient payment platforms

The findings sought to determine the most efficient payment platform and the results from the respondents is presented in Table 4.13

Table 4.13Most efficient payment platforms.

Payment Platforms	Frequency	%
M-Pesa	24	80
Over the Counter	3	10
Credit Cards	1	3
Direct Debits	2	7
Total	**30**	**100**

Based on the findings in Table 4.10 above majority of the employees 80%(24) affirmed the most efficient payment platforms was M-Pesa,10%(3) affirmed most efficient payment platforms was over the counter and the rest 3%(1) and 7%(2) respectively affirmed credit card and direct debits were the most efficient payment platforms. This implies that majority of respondents use Mpesa for payments of bills as it is available and easy to use and payments are reflected in the system in real time.

4.7.3Various indicators of Electronic Payment and Performance of KPL

The respondents were requested to indicate whether electronic payment system enhanced the performance of KPLC. The findings are shown on Table 4.12

Table 4.14 Various indicators of Electronic Payment and Performance of KPL.

	Strongly Agree		**Agree**		**Neutral**		**Disagree**		**Strongly Disagree**	
Frequency (F) and Percentage (%)	F	%	F	%	F	%	F	%	F	%
Electronic payment systems are set to increase efficiency	21	70	9	30	0	0	0		0	0
Electronic payment systems have improved security and reduced fraud	14	47	6	20	7	23	1	3	2	7
Electronic payment systems have enhanced customer convenience and reduced complaints	19	63	8	26	3	10	0	0	0	0

Based on the findings Table 4.14, on whether Electronic payment systems are set to increase efficiency70 %(23) strongly agreed, while 30%(9) Agreed. On the issue whether electronic payment systems have improved security and reduced fraud 47%(14) strongly agreed,20%(6) agreed,23%(7) were neutral while 3%(1) and 7%(3) disagreed respectively. On whether Electronic payment systems have enhanced customer convenience and reduced complaints 63%(19) strongly agreed,26%(8) Agreed,10%(3) were neutral the statement electronic payment systems have enhanced customer convenience and reduced complaints. Based on the analysis this implies that Kenya Power has adopted E- Payment systems in a bid to cater for the

increasingly enlightened consumers eager to embrace technological innovations Mobile banking is the most popular E-Payment platform.

4.8MIS Application and Performance of KPL

The fourth objective of the study was to examine the influence of adoption of Management Information Systems Technology on performance of Kenya Power.

4.8.1 Extent to which communication platform in place helps to capture user feedback

The respondents were asked to indicate to what extent does communication platform in place help to capture user feedback. The responses are shown on table 4.15

Table 4.15Extent to which communication platform in place helps to capture user feedback.

Responses	Frequency	%
Very great extent	27	90
Great extent	3	10
Moderate extent	0	0
Very low extent	0	0
Low extent	0	0
Total	**30**	**100**

The findings in Table 4.15 show that out of the 30 employees, 90%(27) of the employees indicated that communication platform in place helps to capture user feedback to Very great extent and 10%(3) helps to capture user feedback at great extent based on those findings this is clear indication that communication platform in place helps to capture user feedback this implies that Management Information Systems (MIS) is the key factor to facilitate and attain efficient decision making in an organization.

4.8.2 Various indicators of MIS Application and performance of Kenya Power

The respondents were asked to indicate the indicators, which show use of MIS systems in KPLC. The findings, are shown on Table 4.16

Table 4.16 Various indicators of MIS Application and performance of Kenya Power.

	Strongly Agree		Agree		Neutral		Disagree		Strongly Disagree	
Frequency (F) and Percentage (%)	F	%	F	%	F	%	F	%	F	%
The systems in place have aligned organizational operations	28	93	2	7	0	0	0		0	0
The systems in place support information sharing	29	96	1	3	0	0	0	0	0	0
The systems in place have improved decision making	30	100	0	0	0	0	0	0	0	0

Based on the analysis Table 4.16, on whether The systems in place have aligned organizational operations 93%(28) employees strongly agreed while 7% agreed . On the issue whether The systems in place support information sharing 96%(29) strongly agreed while 3%(1) agreed . On whether The systems in place have improved decision making 100%(30) employees strongly agreed. Based on the analysis this implies that Adoption of information systems boosts the speed in energy industry where the pace of change has greatly accelerated this goes in line with

4.8 Customers response on influence of adoption of technology on performance of KP

This section will analyze the data based on the responses from the customers in regard to influence of adoption of technology on performance of KPC.The number of customers who participated in the study were 209 customers.

4.8.1 Smart technology and performance

The study sought to determine the influence of smart technology and performance of Kenya Power based on the responses from the customer. The findings are presented on Table 4.17.

Table 4.17 Smart technology and performance.

	Strongly Agree		Agree		Neutral		Disagree		Strongly Disagree	
Frequency (F) and Percentage (%)	F	%	F	%	F	%	F	%	F	%
Smart Technology has improved service delivery	199	95	10	5	0	0	0	0	0	0
Smart meters enhance customer satisfaction	204	98	5	2	0	0	0	0	0	0

It was revealed that 98%(199) of the customers strongly agreed Smart Technology has improved service delivery also 2(5%) agreed. On the issue whether smart meters have enhanced customerôs satisfaction 98%(204) strongly agreed while 2%(5) agreed. This implies customer satisfaction has been achieved since KPL adopted smart meter technology.

4.8.2 Billing technologies embraced the most by the customers

The study sought to determine various billing technologies adopted by KPLC and are embraced by most customers. The findings are presented in Table 4.18

Table 4.18 Billing technologies embraced the most by the customers.

Billing Technology	Frequency	%
Use of email alerts	70	33
Use of Post Mail	9	3.3
Use of SMS alerts	130	62.2
Total	**209**	**100**

According to the study 33%(70) customers affirmed they embrace use of emails alert,3.3% embrace use of post mail and majority of the customers 62.2%(130) revealed that they embrace use of SMS alert. This implies Mobile-billing enquiries where the customers send a billing query

on a dedicated SMS platform and receives a real-time bill and finally social media based enquiry platform where a customer service agent provides the billing information upon a consumersô request (Fabunmi, 2003).

4.8.3Most efficient payment platforms used by Customers

The respondents were asked to indicate the most efficient payment platforms. The results are presented on table 4.19

Table 4.19Most efficient payment platforms used by Customers

Payment Platforms	Frequency	%
M-Pesa	200	96
Over the Counter	3	1.4
Credit Cards	5	2.3
Direct Debits	1	0.4
Total	**209**	**100**

From the findings, it was observed that majority of the customers96% (200) affirmed Mpesa was efficient payment platforms used by Customers,1.4%(3) affirmed paying over the counter,2.3%(5) credit cards and 0.4%(1) direct debits. This implies that most KPLC customers pay their bills through Mpesa .

4.9 Inferential Analysis of Correlation

The analysis of inferences was employed to get correlation results which are illustrated in the subsequent subsection.

4.9.1 Correlation Analysis

The results in Table 4.20 show the Pearson coefficient of determination using Pearson correlation to get the relationship between dependent variable and independent variables as well as coefficient of determination of relationship among the independent variables.

Table 4.20 Correlation Analysis

		Performance of Kenya Power	Smart Meter Technology	Billing Technology	Electronic payment	MIS application
Performance of Kenya Power	Pearson Correlation	1				
	Sig. (2-tailed)	0.000				
Smart Meter Technology	Pearson Correlation	0.548	1			
	Sig. (2-tailed)	0.000	0.000			
Billing Technology	Pearson Correlation	0.521	0.475	1		
	Sig. (2-tailed)	0.000	0.000	0.000		
Electronic payment	Pearson Correlation	0.534	0.363	0.226	1	
	Sig. (2-tailed)	0.000	0.002	0.071	.	
MIS application	Pearson Correlation	0.541	0.333	0.337	0.324	1
	Sig. (2-tailed)	0.000	0.005	0.015	0.003	-

The outcome showed that adoption of Smart Meter Technology and performance of Kenya power correlated positively and significantly (r=0.548, p=0.000). Table 4.20 further indicated that Adoption Billing technology and performance of Kenya power are positively and significantly related (r=0.521, p=0.000). It was further established that, adoption of Electronic payment and performance of Kenya power were positively and significantly related (r=0.534, p=0.000). Similarly, results showed that MIS application and performance of Kenya power were positively and significantly related (r=0.541, p=0.000). This implies that, Smart Meter Technology, Billing Technology, Electronic payment and MIS application influence performance of Kenya Power positively

CHAPTER FIVE

SUMMARY OF FINDINGS, DISCUSSION, CONCLUSION AND RECOMMENDATION

5.1 Introduction

This chapter gives a summary of the study findings and a discussion of the findings presented and analyzed in chapter four based on the objectives of the study and the literature reviewed. The conclusion and after which the conclusions and recommendations are drawn from the findings highlighted.

5.2 Summary of the Findings

This section gives a summary of the findings generated in chapter four based on the objectives of the study.

5.2.1 Smart meter Technology

The first objective of the study was to determine the influence of adoption of smart meter technology on performance of Kenya power. Based on the findings on whether smart Meter Technology has improved service delivery 98%(28) employees agreed smart Meter Technology has improved service delivery while 7%(2) disagreed. This implies that introduction of smart meters Technology by Kenya Power in Embu county has really improved service delivery hence increasing performance of Kenya in terms of accurate reading of meters. On the issue whether smart meters have helped enhance customer satisfaction 94%(29) employees agreed that the adoption of smart meters technology has really helped customers satisfaction while 4%(1) disagreed this implies that the smart meters have helped enhance customer satisfaction. To measure the satisfaction the employed affirmed that they received positive feedback from customers since the introduction of smart meters. On the issue whether Kenya Power leadership had set the right tone in embracing new technology 100%(30) participants agreed this implies that Kenya power has focused in embracing the new technology in the energy sector.

The findings show that smart meter technology has enhanced the performance of KPLC in terms of service delivery, accuracy of meter readings, customer satisfaction and fraud detection.

5.2.2 Billing Technology

The second objective of the study was establishing the influence of adoption of billing technology on performance of Kenya power The finding showed that out of the 30 employees, 33%(10) of the employees affirmed that use of email alerts was embraced the most by customers, 10%(3) affirmed use of post Mail was embraced the most by customers and finally majority of the employees affirmed use of SMS as billing technology was the most embraced by customers. This implies that use of SMS as billing technology is very convenient for paying bills by customers since everyone has a phone this goes in line with Potter, (2009) who affirmed that Engagements between consumers and the power supply companies have necessitated the power companies to shift modes of operations and take various measures to help households reduce their consumption and costs, by giving customers information about their usage and tips on how to save energy on their bills (Adverts by water and power companies on saving tips are commonplace, on television, social media and via websites Response based on customers 33%(70) customers affirmed they embrace use of emails alert,3.3% embrace use of post mail and majority of the customers 62.2%(130) revealed that they embrace use of SMS alert. The findings show that billing technology has enabled customers to receive bills via their phones in real time which has influenced the performance of KPLC.

5.2.3 Electronic Payment Systems

The third objective of the study sought to determine the influence of adoption of electronic payment on performance of Kenya Power. The findings showed that out of the 30 employees, 22 (73%) of the employees indicated that Electronic payment systems influenced Performance of KPLC to Very great extent and 8(7%) influenced at great extent based on those findings this is clear indication that electronic payment systems influence performance of KPLC to a very great extent. This finding are in agreement with Safaricom, (2009) who stated that Electronic payment systems enable a customer to pay for the goods and services online by using integrated hardware and software systems. The main objectives of these systems are to increase efficiency, improve security, and enhance customer convenience and ease of use; which are part of organizational strategic plans to increase performance.

It was observed that majority of the customers96% (200) affirmed Mpesa was efficient payment platforms used by Customers,1.4%(3) affirmed paying over the counter,2.3%(5) credit cards and

0.4%(1) direct debits.Okuttah, 2009 affirmed Half of all mobile money transactions in the world take place in Kenya, where annual transfers have reached $10 billion. Kenya Power has adopted Mobile Money payment systems and capitalized on the rapid adoption was spurred by the invention of M-Pesa. In conclusion, Electronic payment systems enable a customer to pay for the goods and services online by using integrated hardware and software systems.

The study show that electronic payment system was the most convenient form of payment through mobile money services which are easily accessible easy to use. This has influenced performance of KPLC in form of real time revenue collection and reflection of payments in their systems

5.2.4 MIS application

The findings revealed that out of the 30 employees, 90%(27) of the employees indicated that communication platform in place helps to capture user feedback to Very great extent and 10%(3) helps to capture user feedback at great extent based on those findings this is clear indication that communication platform in place helps to capture user feedback this implies that Management Information Systems (MIS) is the key factor to facilitate and attain efficient decision making in an organization this goes in line with Benbasat, 1983 who affirmed Adoption of information systems is a business strategy that aligns organizational operations and supports information sharing. People, processes and systems must be aligned to meet both business goals and customers desires. The study findings show that MIS systems helped in real time customer engagement with management and that enabled management to make decisions, which influenced performance of KPLC.

5.3 Discussion of the Findings

Under this section, the findings summarized in the section of summary of the findings are linked to the literature in chapter two

5.3.1 Smart Meter Technology and performance of Kenya power

The study sought to find out how the smart meter technology has influenced the performance of KPLC. Based on the findings this implies that Smart meters have influenced to very great extent positively on the performance of Kenya Power. This goes in line with KPLC Report, (2016) which affirmed the smart metering technology has boosted performance by allowing communication between Kenya Power and the meters thus enabling real-time monitoring of energy). Efficiency in operations has been boosted by the ability to read meters remotely,

disconnect and reconnect remotely in the event of non-payment, reducing the need for sending technicians to site (Kostyk, 2012). Oduor (2016) also added that the introduction of smart metering technology solutions had improved customer satisfaction and revenue protection. Furthermore, generating automatic surveillance alerts, the smart metering has enabled the remote meter reading disconnections and reconnections time of use tariff functionality and supply to customers.

5.3.2 Billing Technology and performance of Kenya power

The study sought to find out the influence of adoption of billing technology on performance of KPLC. Based on the findings on the issues whether there was a greater engagement with customers due to technology 97%(29) employees strongly agreed; since the adoption of billing technology there was greater engagement with customers,3%(1) agreed this implies that customers there paying their bills on time since the introduction of billing technology and this has really improved the performance of KPL. This goes in line with Kpl,2016 report which showed that Availing a variety of payment types and options to customers enabled Kenya Power to offer their consumers the freedom to choose when, where and how to pay their bills. Offering convenience in payment and billing alerts improves customer relations. With smart devices, emails and posted mail, accurate bills have been delivered to consumers. According to Daily (2014), many customers have been served with inappropriately high bills or have disconnected wrongly. This goes in line with Potter, (2009) who affirmed that Engagements between consumers and the power supply companies have necessitated the power companies to shift modes of operations and take various measures to help households reduce their consumption and costs, by giving customers information about their usage and tips on how to save energy on their bills (Adverts by water and power companies on saving tips are commonplace, on television, social media and via websites

5.3.3 Electronic Payment Systems and Performance of KPL

The study sought to determine the influence of adoption of electronic payment on the performance of Kenya power. This is a clear indication that electronic payment systems influence performance of KPLto a great extent. This finding are in agreement with Safaricom, (2009) who stated that Electronic payment systems enable a customer to pay for the goods and services online by using integrated hardware and software systems. The main objectives of these systems are to increase efficiency, improve security, and enhance customer convenience and ease of use; which are part of organizational strategic plans to increase performance. Majority of the

employees. 80%(24) affirmed the most efficient payment platforms was M-Pesa,10%(3) affirmed most efficient payment platforms was over the counter and the rest 3%(1) and 7%(2) respectively affirmed credit card and direct debits were the most efficient payment platforms. This implies majority M-pesa is the most efficient payment platforms used by customers for paying bills. This goes in line with Okuttah, (2009) who stated that Mobile banking is the most popular E-Payment platform in Kenya. Half of all mobile money transactions in the world take place in Kenya, where annual transfers have reached $10 billion. Kenya Power has adopted Mobile Money payment systems and capitalized on the rapid adoption was spurred by the invention of M-Pesa.).It was further established that, adoption of Electronic payment and performance of Kenya power were positively and significantly related (r=0.534, p=0.000).

5.3.4 MIS application and performance of Kenya Power

The study sought to examine the influence of MIS technology on performance of Kenya power.Based on the analysis this implies that Adoption of information systems boosts the speed in energy industry where the pace of change has greatly accelerated this goes in line with Adeoti-Adekeye, (1997) who asserted that Management Information Systems are used to facilitate the provision of services; and that the speed of the adoption is expected to grow further as the technology expands. When employees were asked to list the information system in KPLC, the listed Enterprise Resource Planning (ERP), Knowledge Management Systems (KMS) and Customer Relations Management (CRM) to upgrade the proficiency and adequacy of the Decision-Making process. It was confirmed that MIS application influenced .Adebayo (2007) clarified that the presence of MIS is expected to enhance and upgrade basic leadership on the issues influencing human and material assets. Taking everything into account, the significance of MIS is giving leaders certainties, which thusly support and improve the whole basic leadership handle; to help the governing body and administration levels to make an exact and on time key choices.

5.4 Conclusion

Having set out to influence of adoption of technology on performance of Kenya power, the researcher made the following conclusion in line with the objectives of the study. It was clear from most of the respondents that the four-independent variable Smart Meter Technology, Billing technology, Electronic payment technology and MIS application technology had a

positive effect in the Performance of Kenya Power .The study also concluded that there is a significant relationship between the objectives of the study and performance of Kenya power.

5.5 Recommendation

Smart meter technology having a key role in the Performance of the Kenya power its full adoption and implementation is a necessity for improvement of the Performance of the Energy Sector. Based on this critical importance of smart technology, the researcher therefore proposed the following recommendations; The KPLC should review its technical and operational standards to facilitate adoption and implementation of Smart technologies in the entire grid management to include generation, transmission and distribution system; The KPLC should invest in the most efficient and effective metering solution since metering is the interface between the customer and the utility and plays a critical role in the determination of sales volumes, losses through under billing and operational cost and lastly KPLC should include Mobile Technology in its processes because the mobile has become part and parcel of people lives. Mobile technology services should be expanded to include service requests like application of power supply, accounts closure and account opening to enable customer to get these service without having to visit the utilities banking hall. Kplc should come up with a policy document which will outline how technology will be utilized to influence its performance.

5.6 Suggestions for further studies

Based on the outcome of the study it was evident that not all the technologies that influence the performance of the energy sector were explained by the four variables. The researcher proposes therefore that a further research incorporating other technologies and other factors like organization structure or even cost of implementation of a smart technology among others so as to clearly shed more light on the matter. The researcher further recommends that similar or related studies should be conducted in other sectors including water sector or even petroleum sector. The researcher recommends that more research should be done on the security and privacy of customers so far as smart metering is concern because of the information relayed from the customerôs premises.

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APPENDICES

APPENDIX I: LETTER OF INTRODUCTION

University of Nairobi,

P.O Box 30197,

Nairobi Kenya

Dear respondent,

RE: REQUEST FOR PERMISSION TO CARRY OUT RESEARCH STUDY.

I am a post graduate student of university of Nairobi pursuing a programme leading to Master of Arts degree in project planning and management. As part of the course I am expected to conduct a research on influence of adoption of technology on performance of Kenya Power in Kenya; a case of Kenya Power Embu office. This is to request you to participate in the exercise as a respondent. The information provided for this research will be purely for academic purposes and the recommendation made will be important to your project and the country as a whole. The information provided will be treated with utmost confidentiality.

Yours faithfully;

Signature----------

JAMES ONUKO ORINA

APPENDIX II: QUESTIONNAIRES FOR EMPLOYEES

The researcher seeks to study the influence of adoption of technology on performance in organizations. To achieve this, relevant questions have been provided to gather data for analysis. Kindly spare some time to provide the information as accurately as possible. Any information supplied will be strictly confidential and will be used for academic purposes only.

Demographic Information

1. Please indicate your Gender: Male ( ) Female ( )
2. Please indicate your Age Group: 18 ï 25 ( ) 26 ï 30 ( ) 31 ï 40 ( ) 41 ï 49 ( ) 50 and above ( )
3. What is your highest Level of Education: High School ( ) College ( ) University ( )

Smart Meter Technology

4. Has the Embu Regional Office rolled out the smart meter project in the Embu region? Yes ( ) No ( )
5. On a scale of 1 ï 5, indicate your level of agreement on the following statements
   1 ï Strongly agree, 2 ï agree, 3 ï neutral, 4 ï disagree, 5 ï strongly disagree

Statements		1	2	3	4	5
a	Smart Meter Technology will improve service delivery					
b	Smart meters will help enhance customer satisfaction					
c	Kenya Power leadership has set the right tone in embracing new technology					
d	All stakeholders were engaged before rolling out the new smart meter technology					

6. According to you, to what extent has the use of smart meters influenced performance in Kenya Power
   To very large extent ( ) to a large extent ( ) to a moderate extent ( ) to a minimal extent ( ) to a very low extent ( )

Billing

7. Which of the following billing technologies adopted by KPLC has been embraced the most by consumers?
   Use of email alerts ( ) Use of Post Mail ( ) Use of SMS alerts ( )

8. On a scale of 1 ï 5, indicate your level of agreement on the following statements
   1 ï Strongly agree, 2 ï agree, 3 ï neutral, 4 ï disagree, 5 ï strongly disagree

Statements		1	2	3	4	5
a	The use of technology has helped address the billing issues					

b	The power billing system in place is efficient					
c	There is a greater engagement with customers due to technology					

Electronic Payment Systems

9. Are the payment systems at Kenya Power fully functional?
   To very large extent ( ) To a large extent ( ) To a moderate extent ( ) To a minimal extent ( ) To a very low extent ( )

10. Which of the following are the most efficient payment platforms?
    M-Pesa ( ) Over the counter ( ) Credit Cards ( ) Direct Debits ( )
11. On a scale of 1 ï 5, indicate your level of agreement on the following statements
    1 ï Strongly agree, 2 ï agree, 3 ï neutral, 4 ï disagree, 5 ï strongly disagree

	Statements	**1**	**2**	**3**	**4**	**5**
a	Electronic payment systems are set to increase efficiency					
b	Electronic payment systems have improved security and reduced fraud					
c	Electronic payment systems have enhanced customer convenience and reduced complaints					

MIS Applications

12. The communication platform in place helps to capture user feedback
    To very large extent ( ) To a large extent ( ) To a moderate extent ( ) To a minimal extent ( ) To a very low extent ( )

13. On a scale of 1 ï 5, indicate your level of agreement on the following statements
    1 ï Strongly agree, 2 ï agree, 3 ï neutral, 4 ï disagree, 5 ï strongly disagree

	Statements	**1**	**2**	**3**	**4**	**5**
a	The systems in place have aligned organizational operations					
b	The systems in place support information sharing					
c	The systems in place have improved decision making					

14. What are the information systems in use at KPLC currently?
    _____
    _____

Performance of Kenya Power Lighting Company

15. Are the policies for new technology usage well communicated? Yes ( ) No ( )
16. Kindly state the level of impact of technology adoption on the following aspects as regards Kenya Power Company

To very large extent ( ) to a large extent ( ) to a moderate extent ( ) to a minimal extent ( ) to a very low extent ( )

		1	2	3	4	5
a	Technological adoption has influenced revenues in Kenya Power					
b	Technological adoption has influenced profitability in Kenya Power					
c	Technological adoption has influenced the consistency in operations at Kenya Power					
d	Technological adoption has influenced customer satisfaction Kenya Power					

17. Kindly state the level of influence that the adoption of smart meter technology has had on the following factors

To very large extent ( ) to a large extent ( ) to a moderate extent ( ) to a minimal extent ( ) to a very low extent ( )

		1	2	3	4	5
a	Accurate reading of meters					
b	Real time disconnection of unpaid bills					
c	Fraud prevention by Kenya Power employees					
d	Meter tampering					

18. Is the Kenya Power staffs appropriately trained to handle new technologies?
    Yes ( ) No ( )
19. In your opinion which of the following is the most convenient way for customers to engage and have their billing queries addressed?
    Social Media ( ) Telephone ( ) Email ( ) Customer Care Desk ( )
20. In what ways have Electronic Payment Systems revolutionalized payments?
    _____
    _____
    _____
    _____
21. Which of the following electronic payment modes adopted have had the greatest value in terms of revenue collection:
    Mpesa ( ) Airtel Money ( ) Real Time Gross Settlement ( )
22. What are the information systems in use at KPLC currently?
    _____
    _____
    _____
    _____
23. In your opinion, do you agree that the staff at Kenya Power have been adequately trained on the new MIS technologies?
    Strongly agree ( ) agree ( ) neutral ( ) disagree ( ) strongly disagree ( )

APPENDIX III INTERVIEW SCHEDULES FOR CUSTOMERS

I propose that this should be a questionnaire for customers and should cover all the variables in the study.

1. Name of the Ward----------
2. What is your age----------
3. What is highest level of Education----------
4. On a scale of 1 ï 5, indicate your level of agreement on the following statements

1 – Strongly agree, 2 – agree, 3 – neutral, 4 – disagree, 5 – strongly disagree

Statements		1	2	3	4	5
a	Smart Meter Technology has improve service delivery					
b	Smart meters will help enhance customer satisfaction					
c	Kenya Power leadership has set the right tone in embracing new technology					
d	All stakeholders were engaged before rolling out the new smart meter technology					

5. Which of the following billing technologies adopted by KPLC have you embraced the most as a customer? Use of email alerts ( ) Use of Post Mail ( ) Use of SMS alerts ( )
6. Are the payment systems at Kenya Power fully functional? To very large extent ( ) To a large extent ( ) To a moderate extent ( ) To a minimal extent ( ) To a very low extent ( )
7. Which of the following are the most efficient payment platforms? M-Pesa ( ) Over the counter ( ) Credit Cards ( ) Direct Debits ( )

8. On a scale of 1 ï 5, indicate your level of agreement on the following statements

1 – Strongly agree, 2 – agree, 3 – neutral, 4 – disagree, 5 – strongly disagree

	Statements	**1**	**2**	**3**	**4**	**5**
a	Electronic payment systems are set to increase efficiency					
b	Electronic payment systems have improved security and reduced fraud					
c	Electronic payment systems have enhanced customer convenience and reduced complaints					

9. Are the payment systems at Kenya Power fully functional? ---------- Which of the following are the most efficient payment platforms?M-Pesa ( ) Over the counter ( ) Credit Cards ( ) Direct Debits ( )