OPERATIONS MANAGEMENT PRACTICES AND PERFORMANCE OF ELECTRIC UTILITY FIRMS IN KENYA

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D61/80218/2012

A RESEARCH PROJECT SUBMITTED IN PARTIAL FULFILLMENT OF THE DEGREE OF MASTER OF BUSINESS ADMINISTRATION, SCHOOL OF BUSINESS, UNIVERSITY OF NAIROBI.

OCTOBER 2016

DECLARATION

This research project is my original work and has not been submitted for examination in this university or any other institution of higher learning.

Signature…… Date…….

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D61/80218/2012

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

Signature …… Date…….

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DEDICATION

I truly dedicate this study to my Lord God and my mother Pheobe Namukhula. Without her love, support and encouragement my studies would have been an impossible task to undertake.

ACKNOWLEDGEMENT

I wish to express my sincere gratitude to God for His graces and for stable health all through my studies and for carrying me this far. I thank my supervisor and the academic staff in the School of Business of the University of Nairobi for their good advice, consistent guidance, patience and understanding. Special thanks to my family for their support in all ways and for having faith in me.

To my fellow students, thank so much for all the times we shared together. The shared information were inspiring and worthy appreciating. I cannot forget great people of the firms which that were under study, for sparing their time to acknowledge and fill the lengthy Questionnaire. God, bless you all.

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ABBREVIATIONS AND ACRONYMS

ERC	Energy Regulatory Commission
IT	Information Technology
KEBS	Kenya Bureau of Standard
KPLC	Kenya Power and Lighting Company Limited
KENGEN	Kenya Generating company
KETRACO	Kenya Transmission Company
REA	Rural Electrification Authority
LED	Light Emitting Diode
OECD	Organization for Economic Cooperation and Development

ABSTRACT

Operations Management has changed in the face of evolving businesses and the recent trends gives a very good idea about what to expect in the coming future. Operations management practices include quality management, inventory management, supply chain management, risk management and information technology. The study was aimed at establishing operations management practices in electric utility firms in Kenya. Additionally, the study established the performance of electric utility firms in Kenya and determined the relationship between operations management practices and performance of electric utility firms in Kenya.

The type of data collected was both primary and secondary data. The primary data collection instrument for this study was a designed questionnaire, as questionnaires are one of the widely-used primary data collection tools. The secondary data on performance was obtained from the electric utility firms end year financial report.

It was found that there is a chance of improving the activities of the companies by employees. The operation costs in the firms were also found to have reduced due to improved activity and work in the organization proving that they were efficient. The findings therefore point to very high levels of efficiency among Electric utility firms in Kenya. The study established that electric utility firms in Kenya are using the most effective way of calculating safety stock levels. This was used to enhance inventory management. From the study, it was found that operations management practices had a positive influence on performance.

The study recommended that they should utilize supply chain management initiatives since it will enhance transformation process of the raw materials to end-user services, continuously monitor quality in their services, always undertake proper inventory control, identify risks in all processes in the utility and encourage research and development.

CHAPTER ONE: INTRODUCTION

1.1 Background to the Study

The conventional method of measuring the performance of a firm is conducted through financial return measures on all sales, net profits, cash flows and the return on investment. Other non-financial measures have also been put into action in an attempt to find the performance of a company through operation performance (Stevenson, 2005). Operation performance can be defined as the overall computable aspect of all the processes in an organization. Operational performance normally includes the defect rates, production reliability, the cost of quality, productivity, time of delivery, scrap minimization, and the cycle of production (Davis, 1993).

As a matter of fact, most efforts that have been put in place to safeguard high productivity levels have comprised of all the mechanisms that can reduce the cost of services and products. These mechanisms in the way or another lessen the demand for the goods and services or even affect their quality. Still, other efforts have aimed at the implementation of different funding schemes either in a direct manner or via tariff structures (Hutchins, 1998).

Organizations frequently utilize operations administration to fulfill and keep up with the market demands using the limited needs. The performance of industries entirely depends on the accomplishment of good operational practices and their usage. These days, organizations need to thoroughly improve its personal assets in order to keep up a focused and competitive edge. This must be joined by the consistent change of internal procedures and schedules (Voss, Ahlstrom and Blackmon, 1997). This operations administration exercise offers great organization structures that enhance its capacity to keep up proficient systems. This idea is utilized all through the business and in the specialist world as a method for understanding and increasing organization, department, office, and workforce performance (Gomez-Lobo and Contreras, 2004). There are numerous approaches to conducting these reviews, most designed for investigating practices and information to enhance method.

1.1.1 Operations Management Practices

Operations Management attempts to sort out the outline, design, administration of items, procedures, authorities, and supply chain. It considers the obtaining, improvement, and utilization of assets that firms need to deliver the products and ventures their customers need. Operations Management ranges from vital to operational and strategic levels. Strategic representative issues incorporate the decisions made on the area and size of plant assembly, determining the structure of administration or media communications systems, and planning innovation supply chains. Strategic issues comprise of the layout of the plant, its structure, methods of project management, and the selection and replacement of equipment. Operational issues as well involve creation planning and control, inventory administration, quality control and assessment, traffic and materials taking care of, and hardware upkeep policies (Hong, 2002)

Operations management practices comprise of quality administration, inventory management and supply network administration, risk execution and information technology. Quality management guarantees legal outlining procedure is taken after. This planning method should be sponsored by proper process framework upheld by an appropriate technology, which affirms to the demands of clients. It additionally guarantees that deformities and mistakes are avoided and lastly expelled from the process. In this manner, quality administration includes; arranging, planning, designing, gap distinguishing proof and improvisation. Supply chain management is the whole procedure, all the way from the start to the end listing how a client gets your organization's items or services. This incorporates purchasing and obtainment, storage, transportation, and transmission. Inventory management can figure out what you receive when you receive it, and whether your assets and funds are settled on racks gathering dust, or thriving and working for you. Operations management regulates inventory systems, which decides how successfully your stock is overseen (Analoui, 2002).

Operations administration in a service situation would concentrate on making sure that employees are sufficiently trained, that client service areas are prepared as required and are safe for workers and general public that administrations are changed as directed by client input or rather competitive forces. Operations management practice is the center of any firm that is giving a decent and additionally an administration. At the point when

operations are overseen well, it makes the capacity of every single other division simpler, and on the other hand, when operations are monitored inadequately, all different offices endure.

1.1.2 Organizational Performance

The Baldrige criteria explain organizational performance as the product that are obtained from services and products that authorize evaluation and comparison concerning standards, previous results, goals, and different firms. Organizational Performance is shown in two different ways, either financially or in non-financial ways. Baldrige criteria explain measurements as arithmetical information that measures input, productivity, and implementation. The challenges for any organization today is to counterpart and side with the measures of performance with strategies of business and the number and type of steps to be used. The equilibrium between the advantages and the charges of presenting the actions and the way to deploy them to garner the necessary results are applied effectively (Ferdows and De Meyer, 1990).

Performance management as well includes all the activities that are aimed at ensuring all the goals are consistently met effectively and efficiently. Management information system provides progress information that aims at advancing organizational goals by reporting operational plan. Some targets are set for work teams through consultation with the staff at specific locations of work, all of them derived from this particular project. This information, however, is assumed to be indicative of the performance of some specific teams, and their composition may as well change the dates of reporting (Ariel et. Al., 2009).

The operational measure levels are taken into consideration via a rate which generates money by a sales system, and the money invented invested with the aim of operating expenses, performing purchases and as well aid in the overall production (Chase, Acquilano, Jacobs and Agarwal; 2007)

1.1.3 Operation Management Practices and Organizational performance

In the recent days, there has been an imposition of the high efficiency of standards on firms which fail to meet the requirements of the market. In some of such scenarios, a step by step

optimization of internal resources is mandatory to maintain high standards of competition in every firm. However, these processes were to be accompanied by some practices of operational management that follow continuous improvisation of internal processes and procedures. Operational management and performances are related because their systems are intended to attain some specific objectives. Therefore, performances guarantee some desired goals which can be met from the efficient and actual utilization of the available reserves in the organization (Narasimhan, swink, & kim, 2005).

Supposing all the internal factors are responsible for all the performance variation, every organization is expected to come up with changes that are grounded in the finest practices to their infrastructural and structural elements in an attempt to achieve some specific performance goals. The outcome of several empirical studies on the connections between organizational performance and quality practices are as a result of the mixed up (powell, 1995).

Currently, every prosperous firm accepts the relevant part that the operational management practices carry out as a part of the general organizational strategy to set up and uphold the global goals of leadership. The role that operational management plays in any perfect system can be considered as more organizations that are geared towards managing their work from a value chain viewpoint which implies that the whole series of the organizational activities enhance value at every step right from the handling the raw materials up to finalizing the end products.

1.1.4 Electric utility firms in Kenya

According to the Prospects of investment in Kenya (2013-2016), the sum of the electricity produced is approximately 1,664 Mw. Due to the weakness of distribution system and transmission, the concealed National Power demand is about 1,356 Mw against a national unsuppressed demand of 1,700 Mw. Therefore, there is a shortage of 536 Mw after 30% reserve margin recommended by the National Economic and Social Council (NESC). Kenya has put up 2.3 GW whereby 57% is hydroelectric power and 32% thermal and the rest involves geothermal and thermal power. Wind and solar PV perform contribute in a minor way to contribute not more than 1%. Hydropower, however, ranges between 38-

76% of the total generation. Sources of thermal energy have been used to make up for the shortfalls ranging between 16-33%.

Kenya's existing grid connected power capacity is about 1,429 MW. Power supply is dominatingly sourced from hydro and thermal sources. The energy mix of this generation contains 52.1% from hydro, 13.2% from geothermal, 32.5% from fossil fills, 13.2% from geothermal, 1.8% from biogas and 0.4% from the wind, separately. The current electrical demand is 1,600 MW and is anticipated to develop to 2,600-3600 MW by 2020. Both governments create this accessible limit possessed utility and independent power producers. The significant power maker in Kenya's KenGen. KenGen produces around 75 % of the Country's energy supply (KenGen site, 2014). Independent power producers create remains of the electric power (25%) (IPPs). These are Or Power, Tsavo Power, Rabai Power and Thika Power Company and others (ERC site, 2014)

1922 was the start of another time when the two utilities – Nairobi Electric Power and Lighting Syndicate, Mombasa Electric Power Company Limited – converged under another organization joined the East African Power Company. The union was required by the requirement for an enduring store of force that would viably serve the two towns and their surroundings. At that point, the Kenyan Government interestingly turned into a significant shareholder in the business when it somewhat claimed the Kenya Power Company set up in 1954 with the end goal of transmitting force from Uganda through the Tororo-Juja line. This foundation would empower Kenya import control from the Owen Falls Dam in Uganda. The Kenya Power Company was to be overseen by the East African Power and Lighting Company. On June 22, 2011, Kenya Power and Lighting Company (KPLC), the Kenyan power supplier, was rebranded by shortening its name to Kenya Power and presenting another corporate personality. The making of the brand is a piece of a bigger technique that incorporates expanding populace access to power and improving the organization in a wide range of ways.

The organization depends vigorously on hydropower and complements with the geo-warm power to create electrical energy. It buys vitality from KenGen Company which is in charge of just producing energy and offers the same to the general community. The spread of electric energy is done both by Kenya power and Kenya transmission company. Amid

extreme dry season conditions when water levels in the dams radically drop, it swings to Independent Power Producers that utilization fuel to create power and offer it to the Kenya Power at a cost.

1.2 Statement of the Problem

The worries for universal utility services have inspired regulators and firms to identify technological options to make it easier for clients to appreciate their services. Ariel A Casarini (2009) conducted a study on the benefits of electricity cost analysis and established that different operations and systems have been recommended. In North America, PWC (2015) conducted a report on the benchmarking electric distribution operations and resolved that the reliability of a system is the core of all the electric utility operations. The report also indicated that utilities are under continuous pressure to advance reliability performance.

In the African continent, the emphasis is to sponsor regional and inter-regional business in electricity. It is also important to find ways of innovating and improvising the implementation of electric utilities in every country. By following such a direction, many nations could restore their present constraints concerning energy. Chisangakunda (2012) also conducted a research and came up with some recommendations. First, he discovered that Africa companies have a significant setback in proper management. They should, however, develop systems of consistent contact with the customers who use their services and products. As well, managers should acquire a tendency of listening to the issues that are frequently raised by different users.

The Kenya Association of Manufactures carried out a study on the best management operation practices that can be used to lower the cost of energy in Kenya by the usefulness of firm where the Energy Efficiency technologies purchase cheaper sources of energy. Other studies include the Geothermal Energy use in Kenya 2010 and Low carbon competitiveness in Kenya 2013 (Karen et al.)., and Energy Consumption patterns in Kenya (KIPPRA, 2010). According to the investigator, no study focuses on the practices of operation management and performance in Kenya.

This study, therefore, finds to establish the effects of process management and their impacts on utility firms. The study seeks to answer the questions such as; what is the relationship between operation management and Kenyan utility companies? What are the elements of operations management practices on the overall output in the Kenya electric utility sector?

1.3 Objectives of the Study

The objectives of the study were:

i. To establish operations management practices in Electric utility firms in Kenya.
ii. To determine the relationship between operations management practices and performance in electric utility firms in Kenya.

1.4 Importance of the Study

This study will benefit the electric utility firms by providing great insight to their management on how to improve its operational and financial performance through proper operations management practices. Reduced operational cost will imply efficiency in most activities and improved profits.

The study will benefit firms that would want to pursue generation, transmission and distribution of electricity in the future. All they will need is to adopt best operations management practices to improve their organizational performance.

The study can also be points of reference for the government in future policy formulation as pertains utilities provision. Proper policy formulation will assist the government drive the economy with sufficient energy.

Scholars and researchers can positively adopt the best operational practices and add on current literature on operation management practices and company policy formulation. This area of study has not been comprehensively covered in previous studies.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

In the previous chapter, the direction of this research has been identified. Throughout the current chapter, the previous research that is closely related to the objectives of this research is put into observation.

2.2 Operations Management practices

Operations management is characterized as the plan, operation, and change of the frameworks that make and convey the firm's essential items and management. In addition, Heiser and Render (2006) characterizes operations management as the arrangement of exercises that makes esteem as merchandise and ventures by changing contributions to yields. Adendorf (1999) characterize operations management as the management of the immediate assets important to make the items and managements provided or gave by a business.

In prior decades, the term Operations Management indicated essentially to assembling creation. Be that as it may, after some time the field has extended to incorporate management frameworks too, since operations pervade each useful territory of the firm running from advertising bookkeeping, acquiring/operations, data management to designing and HR. In 1999, Pilkington and Heyes discovered five primary sub-classes of OM, which they named: Fabricating Strategy Proposers, Japanese Manufacturing, Manufacturing Strategy Developers, Performance Measures, and Best Practice. With every one of these worries, supervisors have been figuring out how to play by wide arrangement of tenets. Porter (1996), Agrees that organizations must be adaptable to react quickly to focused and showcase changes. Clearly, organizations must characterize the center skills and needs in the race to remain ahead. The creator additionally underlines that despite the fact that the subsequent operational upgrades have regularly been highlighted; numerous organizations have been disappointed by their powerlessness to make an interpretation of those increases into practical benefit.

It has now developed to be important to adjust operational effectiveness to technique and in addition, to supportable considering. Pilkington & Fitzgerald (2006) conduced the investigation and depicted the development of Operations Managements sub subjects in

IJOPM productions gathering the themes sequentially. The information sets from 1999 to 2003 recognized "Maintainable assets as one of the real points identified with OM, demonstrating the presentation of supportable issues into the Operations Management writing setting. Later, reasonable operations were depicted through the "triple main concern" idea, covering three parts of maintainability: ecological issues, social obligation and monetary management (Glavic, 2005). The triple main concern approach spearheaded by the Social Accountability department accentuates that firms control the different effects in the description of processes, traits and issues. And it must be tended to reasonable practices so as to amplify the good side of their practices and produce included financial, natural and social esteem (Elkington, 1999).

2.2.1 Quality management

The standards of merchandise and services produced or offered available for utilization locally anticipated that would be of high level accordingly to the Quality control. This will thus enhance the production, marketing and enterprises created by the firm being referred to, and accordingly procure it regard from its clients (Beckford 2002). A case is the producers of Rolex watches, the makers of Japanese autos and different merchandise and ventures, and German made apparatus and different managements. Because of the innovation utilized as a part of the generation of these merchandise and enterprises, and because of the nature of the finished results of these products, the products offered on their neighborhood. The global markets can order a major share of their nearby and worldwide markets, furthermore charge premium costs for their merchandise because of their prevalent Quality and unrivaled craftsmanship. In this manner, benefits made locally and globally by the German autos and hardware, or Japanese merchandise and enterprises, can be furrowed back to the mother organizations, making them develop and even concoct significantly more unrivaled items. This in this manner has made Japanese and German products and ventures to remain well in front of their rivals on the world market, particularly in the section of auto assembling.

These profits can be utilized as a part of putting resources into State of the craftsmanship innovation, and pay their workers better wages, making them more beneficial, and hence

making these organizations have the capacity to remain as such of their rivals. Beckford (2002), in his diagram of stages in provider advancement, expresses that, providers should be perceived by being given confirmation if execution is at or above expected quality level. Provider advancement, similar to some other part of value program, cannot be viewed as entire. Thusly, it is a progressing procedure, which goes for constantly enhancing in execution for the advantage of both sides. As a rule, consumer loyalty improves client steadfastness (Mohanty & Lakhe, 2002).

2.2.2 Supply Chain Management

Management of the supply chain idea is connected with the aspect of good practices. Receiving supply chain management practices first and the in particular requires that firms should come up with a long haul see and in addition a bigger center, on every directs that are used in the transformation process of the materials to the client. Best administration responsibility is likewise fundamental now. Organizations must improve how operations are carried out at each level in the association. Initial phase in SCM is examining every capacity a division takes into account its fundamental. By checking and coming up with a specific production network, an institution can develop and diminish framework adaptability while enhancing unwavering quality and adaptability of a process (Tummala et al., 2006).

Notwithstanding the difficulties that are made, building up a compelling and proficient inventory network can make a competent organization or even a particular problem. A firms competency is the taking part in all steps in an organization performance. Organizational capabilities are trends that are required business practices that better organizations to acquire a superior carder of business accomplishment in long time. In administration, each organizational capability focuses and observes particular traits in the organization and define procedures that will be applied in growing a piece of the firm and benefits. In addition to, an unmistakable competency is a chance that is doing well and is good. Writing has illustrated that the premise of rivalry in many businesses later on will turn around production network improvement (Narasimhan, Swink, & Kim, 2005).

2.2.3 Inventory management

Heizer& Render (2006) demonstrate that "inventory management or "inventory arranging and control" indicates to the continuous arrangement of standard things with free request, where some theoretical amount ought to dependably be available. Organizations hold these inventories for different reasons, including insurance against general deficiencies or potential issues with providers, or, in light of the fact that unit value rises might be up and coming. Regularly, the resultant inventories empower firms to play out an management financially, without the recipients enduring any untoward deferrals. A few (conceivable) working frameworks are accessible for observing inventory levels and activating new requests.

Inventory permits organizations to restore inventory rapidly and productively once the client buys the accessible supply of comparable inventory from the business floor. The cost required with an inventory is ascertained by the general space used to store unsorted things when contrasted with the possibility that extra clients will need to buy comparative inventory before another booked shipment can arrive. In the event that the general advantage from utilizing inventory room space to hold inventory is lower than the cost of upkeep for the space, utilities, support and the decrease in space to store different things, an organization may choose to diminish its inventory.

2.2.4 Risk management

As per ISO 31000:2009 (Risk management: standards and rules), risk management indicates to a planned arrangement of exercises and strategies that is utilized to coordinate an association and to control the numerous hazard that can influence its capacity to accomplish destinations. The idea of management of risk in the inventory management has grown quickly over the late decades and has turned out to be vital.

2.2.5 Innovation

Recent trends confirm that innovativeness is firmly connected to business management. And how is the advancement connected with predominant execution? Geroski (1994) proposes that there are two options. The principal option holds that the generation of new

items or procedures reinforces a company's aggressive position in connection to its adversaries. In any case, the benefits and development will be momentary and just keep going the length of the enhancing firm can shield its position against opponents. The second view contends that the procedure of development changes a firm in a general sense by improving its inside capacities, making it more adaptable and versatile to market dominated more than non -enhancing firms improve. Subsequently, development upgrades business execution in light of the fact that the result of inventive exercises makes a firm more focused and the procedure of advancement of changes.

2.3 Organizational Performance

Gupta and Marquez (2005), asserts that, for an organization to be operationally successful, it must increase its productivity and minimize its costs. For a firm to succeed, it must adopt efficient and effective production processes monitor and continuously improve those processes. Therefore, the production costs of an organization must be minimized while at the same time increasing its productivity, capacity, reliability and availability (Al - Turki2011).

As per ISO 31000:2009 (Risk administration: standards and rules), risk administration alludes to a planned arrangement of exercises and strategies that is utilized to coordinate an association and to control the numerous hazard that can influence its capacity to accomplish destinations. The idea of hazard administration in the store network has grown quickly over the late decades and has turned out to be vital, we can consider, in the event that we allude on Lavaster et al , that the paper of Jutter et al in 2005 "Production network Risk Management: laying out a plan for future research" was the main logical analyst in the Supply Chain Risk Management (SCRM). Moreover and as per Fekete (2006), risk management is a territory with unclear view, and there is a bigger need for an impression of their standards, definition, direction and Centre substance.

As indicated by Sharma and Yadava (2011), associations are currently embracing operational Management hones as a benefit creating business component. Framework are

currently working all the more proficiently, successfully and financially to manage their long haul survival. Daya and Duffaa (1995) noticed that operational practices can be seen as an esteem including action rather than a fundamental underhandedness of costs. Al - sultan and Duffuaa (1995) recommended that support controls ought to be upgraded with a specific end goal to accomplish operational improvement.

2.3 Operations Management Practices and Organizational Performance

The operations work assumes a noteworthy part in: giving an item that is suited to the organization's abilities and for which there is an adequate market. Furnishing an item with predictable quality at a level that speaks to proposed clients and serves their necessities; giving items at a cost that permits a sufficient benefit and a sensible deals value (Robb and Arthanari, 2008). Gupta and Marquez (2005), assert that, for an organization to be operationally successful, it must increase its productivity and minimize its costs. Mulwa (2000) notes that, for a firm to succeed, it must adopt 22 efficient and effective production processes monitor and continuously improve those processes. The production costs of an organization must therefore be minimized while at the same time increasing productivity, capacity, reliability and availability (Al-Turki, 2011).

The market has forced high productivity norms and firms that neglect to meet them are immediately minimized. In such a situation, a cautious enhancement of inside assets is an absolute necessity for each firm, which needs to keep up an aggressive edge. This must be joined by operation management practices by constant change of inner procedures and schedules. Operations management and accomplishments are linked because systems are designed to achieve some objectives. Thus, performance ensures that the desired goals are met with efficient and effective utilization of available resources in an organization

Assuming that inner components at firms are basically in charge of execution variety, Organizations are required to roll out improvements in view of best practices to their basic and Infrastructural components so as to accomplish chose execution objectives (Narasimhan, Swink, & Kim,2005). The aftereffects of a few of the exact studies on connection within quality practices and authoritative execution are blended.

2.4 Summary and Conceptual Framework

This section gives a summary of the literature review and discusses the conceptual framework of the study.

2.4.1 Summary of literature Review

Operational management hones presentation in an association's operation is not a smooth voyage and numerous now and again, firms neglect to see through the procedure because of absence of responsibility by the individuals from the association. Operations management system is an endless supply of execution to evaluate whether the firm is switching and surrendering over to its wanted objective. An organization needs assurance and duty from each individual from the association to consolidate the new culture that will rise because of new standards and practices to have the capacity to ceaselessly accomplish the mission and vision craved by the association. This research in this way tries to evaluate the relationship between operation management practices and execution in electric utility firms and reveal any connection that may exist between these parameters.

2.5.1 Conceptual Framework

The conceptual model shows the connection that exists among the variables of operations management practices and performance in Kenya electric utility firms as illustrated in Figure 1. Electricity supply and its service principles are old in Kenya. This study established the effect operations management practice on performance in electric utility firms. The conceptual framework explains the effect of quality control, supply and reliability and adaptability on performance in electric utility firms.

Operations management practices

- Quality management (X1)
- Efficiency (X2)
- Inventory management(X3)

Independent variable

Organizational performance

- Reduced operational costs
- Increases profitability

dependable variable

- Risk Management (X4)
- Innovation (X5)

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

The previous chapter took into account the most suitable literature that is related with this study and a discussion about theoretical framework. Within the current section a depiction of the exploration outline, the flow of the study information, and analysis techniques, data-gathering strategies, and the strategy used to dissect information is discussed.

3.2 Research Design

As indicated by Robson (2002), inquire about plan gives answers to inquiries, for example, systems used to gather information, inspecting procedures and apparatuses utilized and how time and cost limitations are managed. The examination utilized expressive study explore plan. The illustrative overview strategy gives a quantitative portrayal of states of mind, encounters and sentiments of the example populace (Creswell 2003). Facilitate, the

plan was utilized to demonstrate the cause -impact relationship. The decision of the illustrative overview outline was made in light of the fact that in this study, the scientist was keen on the situation officially existing in the field, giving further understanding into the exploration issue, by portraying the factors of intrigue. The study therefore sought to bring out adequate investigation arguments on the outcome of operations management practices on performance of Kenya electric utility firms.

3.3 Population

The researcher considered all electric utility firms in Kenya dealing with generation, transmission and distribution of electricity. The firms were identified through correspondence with National Control Center where all the transmission network and generation is managed. A total number of 12 firms were contacted in this studies.ie KPLC, KENGEN, KETRACO, REA,OR Power, Tsavopower, Aggreko, Rabaipower, IberaAfrica, Thikapower, Kipeto and ktda power

3.4 Data collection

Both secondary data and primary data are part of this study. This was because of ease of interpretation of data, the targeted research guidelines were addressed and it addresses specific research issues in this case the practice of operations management.

The primary data collection tool for this study included a well-designed closed survey as questionnaires are one of the greatest used huge data collection techniques in the analysis strategy (Saunders, Lewis, & Thornhill, 2007). The survey gathered information on the authenticity of the firms and firms view on the research's objective (Oso, & Onen, 2002). The researcher gave out structured questionnaires to the supervisors in all the 12 utility firms in Kenya. The advantage includes originality because informants are directly involved in the provision of research data and less error because the informants supply information.

The secondary data on organizational performance was obtained using a form from respective end year reports from the electric utility firms. This data included operational

cost and profits/surplus for the year 2014 and 2015 which was used to come up with the percentage decrease in operational cost and increase in profits /surplus.

3.5 Data Analysis

To achieve the first study objective, the means and standard deviations for the responses about operations management for each of the dimensions of the practice of operations on a five point Likert scale were determined. High mean values indicated high levels of the practice of operations. Low values of standard deviation show consistencies in operations management practices among the respondents.

To achieve the second objective regression analysis was performed. The mathematical expression for the multiple regression models was given as;

The regression equation assumed the following form

$Y = \beta o + \beta 1\ X1 + \beta 2\ X2 + \beta 3\ X3 + \beta 4\ X4 + \beta 5 X5 + \alpha$

Where:

Y was the dependent variable (Organizational Performance)

$\beta o, \beta 1, \beta 2, \beta 3, \beta 4, \beta 5$ were the regression Coefficient

X1, X2, X3, X4, X5 were independent variables (Quality management, inventory management, efficiency, risk Management and innovation). α was unexplained variables not explained by the model. Appropriate data analysis tools such as Ms Excel and SPSS was employed to enhance analysis.

CHAPTER FOUR: DATA ANALYSIS, FINDINGS AND DISCUSSION

4.1 Introduction

This chapter presents analysis and findings of the study as per research methodology. The results were presented on the operations management practices in Electric utility firms in Kenya. The study targeted the 12 firms with each firm having 3 supervisors as respondents. In this case, all 36 responded and returned their questionnaires contributing to 100% response rate. This response rate was excellent 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 above is good. The chapter covers the demographic information; Quality management; Efficiency, Inventory management; Risk management and Innovation.

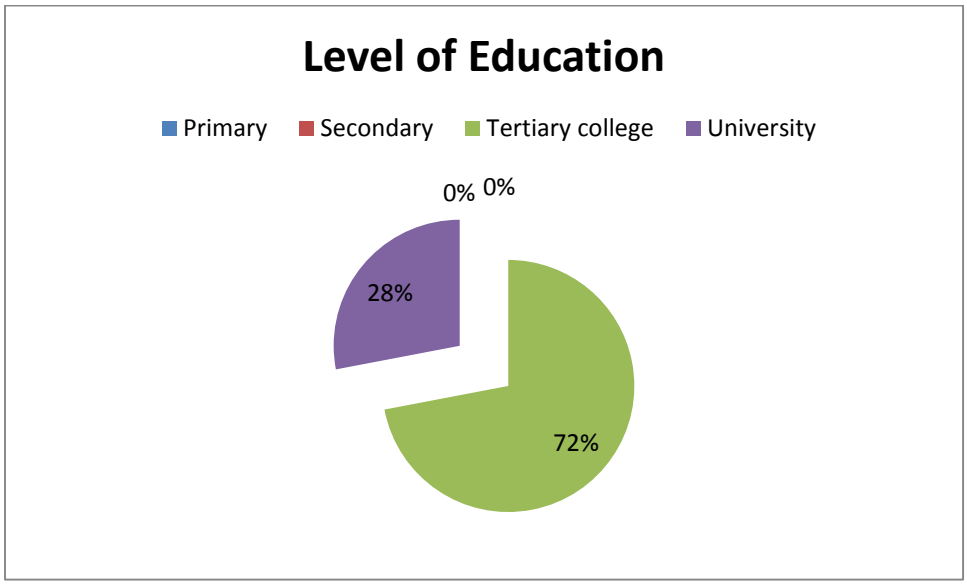
4.2 Background Information

When questioned on their background information in organization, all the subjects indicated appropriateness in replying to the questions on the operations management practices in Electric utility firms in Kenya. The study sought to ascertain the subjects involved in the study. The information points at the subjects' ability in answering the questions on the operations management practices in Electric utility firms in Kenya.

4.2.1 Educational Qualifications

The study sought to establish the respondents' level of education. From the outcomes, the study established that the bulk of those that were sampled (72%) had reached tertiary college while the remainder 28% had reached university level of education. This means that the subjects are educated and able to make judgments based on their level of knowledge in regards to the subject. The educational qualifications are as indicated in Figure 4.2.

Figure 4.1: Educational Qualifications

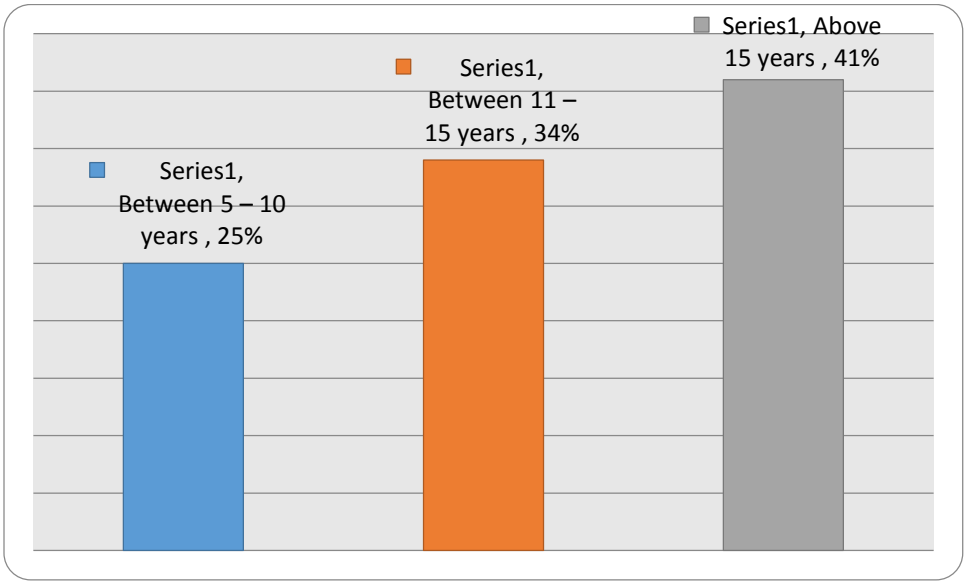


Source: Research Data

4.2.2 Work Duration in the Organization

Based on the responses, it is evident that subjects, (41 %) have worked in their organizations for over 15 years. This was followed by 34.4 % of the subjects who indicated that they have worked in their organizations for a period ranging between 11 and 15 years. Finally, the remainder 25 % indicated that they have worked in their organizations for a period ranging between 5 and 10 years. This shows that the subjects have knowledge about their organizations and the operations management practices in Electric utility firms in Kenya Based on considerably long periods of working.

Figure 4.2: Work Duration in the Organization



Source: Research Data

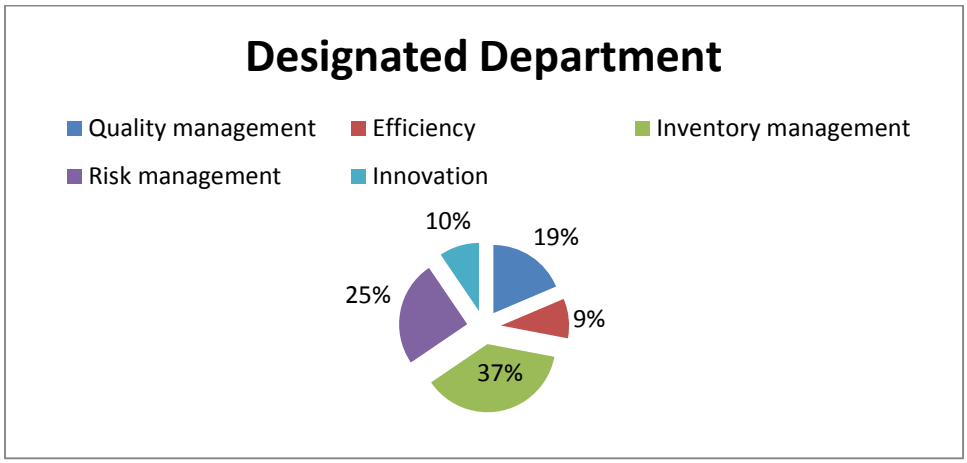
4.2.3 Position in the Organization

When questioned on their current position in the organization, all the subjects indicated that they are supervisors. In this case, it is evident that all the subjects have some knowledge in regards to the operations management practices in Electric utility firms. Therefore, their input in the questionnaire will play an essential role in the achievement of the set objectives.

4.2.4 Designated Department

The subjects were asked to state their designated departments in their organizations. Based on the responses, it is evident that a most of the subjects 37.5 % worked in Inventory management, 18.6 % worked in Quality management, 9.4 % worked in efficiency, an additional 9.5 % of the subjects worked in innovation while the remainder 25 % worked in Risk management. In this case, the subjects would play an essential role in representing the demographic information of the study to accomplish the set objectives.

Figure 3: Work Duration in the Organization



Source: Research Data

4.3 Operations Management practices

The study sought to establish operations management practices in all electric utilities firms in Kenya

4.3.1 Quality Management

The study sought to establish the subject's opinion in quality management as an indicator of operations management practice. In this case, they were to use a scale of 1 to 5 depending on their level of agreement; Where: 1 for strongly disagree, 2 depicting disagree, 3 depicting neutral, 4 depicting agree and 5 depicting strongly agree. The findings are elaborated in the below.

Table 4.1: Quality Management

Quality Management Statements	Mean	Std Dev
The organization has a quality management system in place	**4.25**	**0.257**
Does the company provide key performance indicators to evaluate awareness of quality of work at all levels of the organization	**3.64**	**0.214**
Quality levels are determined by end user bench marks and the regulatory authorities.	**3.93**	**0.412**
The organization carries out studies to evaluate end user satisfaction	**3.00**	**0.147**
Staff are continuously trained on and educated on quality programs	**3.32**	**0.149**
Averages	**3.628**	**0.2358**

According to the study findings, the subjects strongly agreed that; their organizations have a quality management system in place with a mean mark of 4.26. The subjects also agreed that their companies provide key performance indicators to evaluate awareness of quality of work at all levels of the firms by a mean mark of 3.64, and that quality levels are determined by end user benchmarks and the regulatory authorities with a mean mark of 3.93. However, they neither agreed nor disagreed that their organizations carry out studies to evaluate end user satisfaction by a mean mark of 3.00. The findings confirm the literature that, quality of goods and services manufactured or offered on the market for consumption locally or for export re expected to be of high Quality as a result if regulation due to Quality control regulations. This has led to increased performance in electric utility firms in Kenya.

4.3.2 Efficiency

In this case, the subjects were asked to express their opinion in efficiency as an indicator of operations management practice. They were to use a scale of 1 to 5 depending on their level of agreement; Where: 1 for strongly disagree, 2 depicting disagree, 3 depicting neutral, 4 depicting agree and 5 depicting strongly agree. The findings are elaborated in the below.

Table 4.2: Efficiency as an indicator of operations management practice

STATEMENT	Mean	Std Dev
Activities and work are clearly identified in work instruction manuals.	**4.31**	**0.149**
Companies have ways of measuring and monitoring efficiency	**3.96**	**0.298**
You have people with the right skills to improve activities and work in the work place	**3.32**	**0.359**
There are specific activities geared towards improving efficiency.	**3.56**	**0.264**
Averages	**3.7875**	**0.2675**

Source: Research Data

The findings illustrate that the subjects strongly agreed that; activities and work are clearly identified in work instruction manuals with a mean mark of 4.31. Additionally, they agreed that there is a chance of improving the activities of the companies by employees with a mean mark of 3.96. The subjects further agreed that; Operation costs have reduced due to improved activity and work in the organization by a mean mark of 3.56, and that they have people with the right skills to improve activities and work in the work place with a mean mark of 3.32. The findings therefore point to very high levels of efficiency among Electric utility firms in Kenya. As per the findings, the low values of standard deviation indicated a consensus on statements regarding efficiency as an indicator of operations management practice hence improved performance

4.3.3 Inventory Management

The study sought to establish the subject's opinion on supply as an indicator of operations management practice. They were to use a scale of 1 to 5 depending on their level of agreement; Where: 1 for strongly disagree, 2 depicting disagree, 3 depicting neutral, 4 depicting agree and 5 depicting strongly agree. Mean marks and standard deviation were computed for each statement and summarized. The findings are elaborated in the below.

Table 4.3: Inventory Management

Statement	Mean	Std Dev
The organization is using the most effective way of calculating safety stock levels.	**4.01**	**0.136**
The organization uses computer software to manage its inventory	**4.23**	**0.111**
Warehouses and stores are rapidly adjusted to adhere to changes in demand	**3.01**	**0.38**
Orders are placed depending on prior agreements with suppliers	**3.64**	**0.147**
The organization places orders at specific times in the year	**2.43**	**0.482**
Averages	**3.464**	**0.2512**

Source: Research Data

According to the study findings, the subjects strongly agreed that; their organizations use computer software to manage their inventory with a mean mark of 4.23 and their organizations are using the most effective way of calculating safety stock levels with a mean mark of 4.01. The subjects also agreed that orders are placed depending on prior agreements with suppliers with a mean mark of 3.64. However, they disagreed that their organizations place orders at specific times in the year with a mean of 2.43. This implies that electric utility firms in Kenya use computer software to manage their inventory, which enhance performance in the firms

4.3.4 Risk Management

The study sought to establish the subject's opinion on risk management as an indicator of operations management practice. They were to use a scale of 1 to 5 depending on their

level of agreement; Where: 1 for strongly disagree, 2 depicting disagree, 3 depicting neutral, 4 depicting agree and 5 depicting strongly agree. Mean marks and standard deviation were computed for each statement and summarized. The findings are elaborated in the below.

Table 4.4: Risk Management

STATEMENT	**Mean**	**Std Dev**
The company has established a risk objective for its processes	**3.75**	**0.251**
The organization has a process for identifying risks that threaten its operations	**3.56**	**0.267**
Past experience with risks have been taken into consideration.	**3.82**	**0.31**
Management demands information from you on key characteristics of action taken to manage the risks	**4.12**	**0.369**
There are systems of identifying and correcting the main weakness in the risk management system	**3.42**	**0.252**
Averages	**3.734**	**0.2898**

The findings illustrate that the subjects strongly agreed that; management demands information from them on key characteristics of action taken to manage the risks with a mean mark of 4.12. Additionally, they agreed that past experience with risks have been taken into consideration with a mean mark of 3.82. The subjects further agreed that; their companies have established a risk objective for its processes by a mean mark of 3.77 and that the organizations have a process for identifying risks that threaten its operations with a mean mark of 3.42. Finally, the subjects agreed that there are systems of identifying and correcting the main weakness in the risk management system with a mean mark of 3.42. This implies that management demands information from them on key characteristics of action taken to manage the risks and that past experience with risks have been taken into consideration thus improving the performance in electric utility firms in Kenya.

4.3.5 Innovation

The study sought to establish the subject's opinion on innovation as an indicator of operations management practice. They were to use a scale of 1 to 5 depending on their level of agreement; Where: 1 for strongly disagree, 2 depicting disagree, 3 depicting neutral, 4 depicting agree and 5 depicting strongly agree. Mean marks and standard deviation were computed for each statement and summarized. The findings are elaborated in the below.

Table 4.5: Innovation

STATEMENT	**Mean**	**Std Dev**
The company has a budget on research and development	**4.26**	**0.142**
Research and development is appreciated by top management of the company	**3.87**	**0.269**
There has been continuous improvement on its systems	**4.18**	**0.211**
Averages	**4.103333**	**0.207333**

With regard to innovation as an indicator of operations management practice, the company has a budget on research and development with a mean mark of 4.26 and that there has been continuous improvement on its systems with a mean mark of 4.18. Additionally, they agreed that top management of the company with a mean mark of 3.87 appreciates research and development. This implies that the electric utility firms in Kenya has a budget on research and development and that there has been continuous improvement on its systems, which have led to enhanced performance of the firms.

Innovation enhances business accomplishments since the item of innovation makes a firm more viable and the process of innovation transforms a firm's internal competences. The subject's responses confirm the previous research that the innovation process changes an organization fundamentally by promoting its inner capabilities, making it flexible and cop to market pressures than firms not innovating.

4.4 Organizational Performance

The study sought to establish the organizational performance of electric utility firms in Kenya, which was measured by both Reduction in operation cost and Increase in profitability/surplus. The study findings are as shown in table below

Table 4.6: Organizational Performance

Firm	Reduction in operation cost (%)	Increase in profitability/surplus (%)	mean
Kenya power and lighting company	2.67	5.88	4.27
Kenya Generating company	2.63	52.16	27.39
Kenya transmission company	54.1	82.56	68.33
Rural Electrification Authority	37.38	-	18.69
Tsavo power	18.34	21.34	19.84
Aggrekko africa	27.80	6.12	16.96
Rabai Power	12.85	9.69	11.27
Ibera Africa	12.85	15.21	14.03
Thika power	31.82	3.28	17.55
Kipeto	46.81	-	23.40
Ktda Power	53.66	8.78	31.22
Tsavo power	18.34	21.34	19.84

The study established that project performance was ranked as: Kenya transmission company (mean=68.33), followed by KTDA Power (mean=31.22), followed by Kenya Generating company (mean=27.39), followed by Kipeto (mean=23.40) followed by Tsavo power (mean=19.84), followed by Rural Electrification Authority (mean=18.69), followed

by Thika power (mean=17.55), followed by Aggrekko Africa (mean=16.96), followed by Ibera Africa (mean=14.03), followed by Rabai Power (mean=11.27) and finally Kenya power and lighting company (mean=4.27).

4.5 Operations Management practices and organizational performance

The researcher conducted a multiple regression analysis to determine the relationship between operations management practices and organizational performance in Electric utility firms in Kenya. Coefficient of determination explains the extent to which changes in the dependent variable can be explained by the change in the independent variables or the percentage of variation in the dependent variable (Operations management) that is explained by all the five independent variables (quality management, efficiency, inventory management, innovation, and risk management)

Table 4.7: Data used for the regression analysis

No	Firm	Y	X1	X2	X3	X4	X5

1	Kenya power and lighting company	4.27	4	3.6	3.67	3.67	3.78
2	Kenya Generating company	27.39	4.4	4.6	4.5	4.67	4.81
3	Kenya transmission company	68.33	4	4	3.83	4.17	4.3
4	Rural Electrification Authority	18.69	3	4.2	4.33	4	4.12
5	OR power	24.13	4	3.63	3.67	3.67	3.78
6	Aggrekko	16.96	4.8	5	5	5	4.8
7	Rabai Power	11.27	3.8	3.4	3.33	3.5	3.61
8	Ibera Africa	14.03	3.6	3.4	3.33	3.5	3.2
9	Thika power	17.55	3.4	3.8	4	3.67	3.78
10	Kipeto	23.4	4.2	4.6	4.67	4.33	4.46
11	Ktda Power	31.22	3.8	4.2	4.33	4	4.12
12	Tsavo power	19.84	3.6	4.2	4.33	4	4.12

Statistical package for social sciences (SPSS V 17.0) was used in coding, entering and computing the measurements of the multiple regressions for the study. The results from the package are summarized in Tables below.

As shown in Tables 4.8, the five independent variables that were studied explain 84.5% of the operational performance as represented by the R^2. This therefore means that other factors not studied in this research contribute to 15.5% of the perfomnce. Therefore, further research should be conducted to investigate the other factors (15.5%) that influence operations management practices in Electric utility firms in Kenya.

Table 4.8: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.919	0.845	0.789	0.6273

Source: Research Data

As shown in Table 4.9 the significance value is 0.0179 which is less that 0.05 thus the model is statistically significance in predicting how quality management, Supply chain management, inventory management, information technology, innovation, and risk management influence performance management in Electric utility firms in Kenya. The F critical at 5% level of significance was 3.23. Since F calculated (9.475) is greater than the F critical (value = 3.23), this shows that the overall model was significant.

Table 4.9: Analysis of variance

Model	Sum of Squares	Df	Mean Square	F	Sig.
Regression	2.534	2	1.267	9.475	.0179[a]
Residual	9.307	9	2.327		
Total	3.465	11			

Source: Research Data

Multiple regression analysis was conducted as to determine the relationship between operational performance and the five variables Per the regression equation, taking all factors (quality management, supply chain management, inventory management, information technology, innovation, and risk management) at zero, operational performance will be 1.147. The data findings analyzed also shows that taking all other independent variables at zero, a unit increase in quality management will lead to a 0.752 increase in operational performance; a unit increase in efficiency will lead to a 0.487 increase in operational performance, a unit increase in inventory management will lead to a 0.545 increase in operational performance, a unit increase in information technology will lead to a 0.412 increase in operational performance, a unit increase in innovation will lead to a 0.538 increase in operational performance and a unit increase in risk management will

lead to a 0.439 increase in operational performance. This infers that all the factors are significant to the achievement of operational performance.

Table 4.10: Significant Practices.

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
(Constant)	1.147	1.2235		1.615	.0000
quality management	0.752	0.1032	0.152	4.223	.0000
Efficiency	0.487	0.3425	0.054	3.724	.0000
inventory management	0.545	0.2178	0.116	3.936	.0000
Innovation	0.412	0.3178	0.478	3.564	.0000
Risk Management	0.538	0.4158	0.376	3.724	.0000

Source: Research Data

4.5 Discussion of Findings

The relation to each of the specific objective were compared with the literature review. It was found out the findings agreed with the works of past researchers. The findings of the study are discussed below in relation to the objective. On Application of operations management practices and organizational performance, the study found out that the two had a positive relationship. The model equation developed shown that, as the extent of application of operations management influenced performance in the 12 electric utility firms in Kenya.

According to Gupta and Marquez (2005), the main factor which affect performance is productivity. Productivity is determined by operation management practices which help to

transform inputs into outputs This study findings agrees with this observation and found out that operations management practices positively affected performance (Figure 4.8) in the absence of error, the figure indicates that the five independent variables had 84.5% influence on organizational performance.

The study findings on extent of application of operations management practices also agree with the recommendation by Daya and Duffaa (1995). The two had noted that operations management practices should be viewed as a value adding activity instead of a necessary evil of expenses. The findings of the study truly show that an increase in extent of application of operations management practices added value as it resulted to an increase in operational performance. From the finding, electric utility firms with the most extent of operations management practices had the best performance. Kenya transmission company had the highest organizational performance of 68.33% which influence by better operations management practices of a mean of 4, 4, 3.83, 4.17 and 4.3 on a scale of 1-5.

According to Wilson (2002) some business processes which should be used for optimizing performance are: minimizing costs, adopting optimal operations management practices especially efficiency. From the study, respondents agreed that there is a chance of improving the activities of the companies by employees with a mean score of 3.96. The respondents further agreed that; Operation costs have reduced due to improved activity and work in the organization by a mean score of 3.56, and that they have people with the right skills to improve activities and work in the work place with a mean score of 3.32. The findings therefore point to very high levels of efficiency among Electric utility firms in Kenya. As per the findings, the low values of standard deviation indicated a consensus on statements regarding efficiency as an indicator of operations management practice hence improved performance

CHAPTER FIVE: SUMMARY,CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter presents the summary of operations management practices and performance in Electric utility firms in Kenya. The conclusions and recommendations are drawn there to. The chapter is therefore structured into summary of findings, conclusions, recommendations and area for further research. The conclusions and recommendations drawn focus on the purpose of the study.

5.2 Summary of Findings

Study found out that the electric utility firms in Kenya have quality management systems in place and provide key performance indicators to evaluate awareness of quality of work at all levels of the organization. It was also found that the firm's quality levels are determined by end user benchmarks and the regulatory authorities as a means of enhancing quality management. The findings confirmed the literature that quality of goods and services manufactured or offered on the market for consumption locally or for export re expected to be of high Quality as a result if regulation due to Quality control regulations.

The study also found that activities and work are clearly identified in most firms work instruction manuals. It was also found that there is a chance of improving the activities of the companies by employees. The operation costs in the firms were also found to have reduced due to improved activity and work in the organization proving that they were efficient. The findings therefore point to very high levels of efficiency among Electric utility firms in Kenya.

The study established that electric utility firms in Kenya are using the most effective way of calculating safety stock levels. This was used to enhance inventory management. Additionally, it was also found that their management demands information from supervisors on key characteristics of action taken to manage the risks as a risk management measure.

Electric utility firms in Kenya also use past experience with risks as a process for identifying risks that threaten their operations. Innovation in the firms is enhanced by the company budget on research and development. Moreover, research and development is appreciated by top management of the firms.

5.3 Conclusions

It was found that the old ways of measuring organizational performance is by financial checks of net profit, return on sales return on investment and cash flow. In this case, businesses regularly use operations management to accomplish and maintain market share with limited resources. Operations Management strategy manages the plan and management of items, procedures, managements and production chain. Also, operations management strategy incorporates quality management, inventory management and supply chain management, risk management and information technology.

The study concluded that the focus Africa is to advance co-operation amongst nations and areas to energize territorial and between local exchange power, it is likewise important to discover methods for first enhancing the execution of electric utilities in individual nations. Through this process, numerous nations could change their current vitality requirements, or possibly halfway resolve some of their power issues.

Heizer& Render (2006) indicated that stock management or stock planning and control indicates the continuous arrangement of standard things with free request, where some theoretical amount ought to be dependably close. For this situation, stock permits firms to restock stock rapidly and proficiently once the client buys the accessible load of comparable stock from the business floor. It was additionally concluded that anticipating and correspondence of client necessities are the two ranges of operational work driven by data.

Quality of goods and services manufactured or offered on the market for consumption locally or for export are expected to be of high Quality as a result if regulation due to Quality control regulations. Conclusively, management of risk is the planned measures of procedures and strategies that are utilized to coordinate a firm to control the numerous

risks that can influence its capacity to accomplish goals. Organizations are now adopting operational Management practices as a profit generating business element. Additionally, the operations function plays a major role in: providing a good or a service that is suited to the firm's abilities and for which there is an adequate market. The market has imposed high productivity norms and firms that neglect to meet them are immediately marginalized.

5.4 Recommendations

The study recommended that firms should work on forecasting and communication to staff at all levels on the importance of operations management practices and their impact on performance. Each operations management practices should be measured and evaluated on their contribution to performance.

Additionally, it also recommended that they should utilize supply chain management (SCM) initiatives since it will since it will improve change procedure of the raw materials to finished items. Moreover, the study recommended that that building up a viable and effective production chain could turn into a competency center or even a specialized competency.

5.5 Limitations of the study

Getting of information was a major problem faced by the researcher because the respondents were busy. Most respondents were not willing to provide information related to their performance and internal details of the firms. Despite these challenges, the findings from the study are valid and would be of great benefit to Electric utility firms in Kenya.

Some of the respondents did not respond in time and even ignored the questionnaire. However, the researcher, minimized non response cases by following up with emails and calls. Also, having trustworthy people distributing the questionnaires.

5.6 Suggestion for Further Studies

Further studies should be done on operations management practices in Electric utility firms in Kenya to enhance the study and determine more relationships between operations management practices and organizational performance in electric firms. I the study not all practices were covered thus more can be explored.

Going by the finding and conclusion, its is clear that operations management practices have an influence on performance. This study was only done for Kenya electric utility firms. The same study can be done for the rest of the electric utility firms in Africa and other countries in the world.

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APPENDIX I

QUESTIONNAIRE

Introduction

This questionnaire is aimed at collecting data on operations management practices and performance in electric utility firms. You are kindly requested to provide answers to these questions as honestly and precisely as possible. Responses to these questions will be treated as confidential and used for academic purposes only. Please tick [√] where appropriate or fill in the required information on the spaces provided.

Part I: Background Data

1. What is your highest educational qualifications/level?

   Primary [ ] Secondary [ ]

   Tertiary college [ ] University [ ]

   Other (Specify)……

2. For how long have you worked at your organization?

   Less than 5 years [ ] Between 5 – 10 years [ ]

   Between 11 – 15 years [ ] Above 15 years [ ]

3. What is your current position in the organization?

   ……

4. Which department do you work in?

.....

Part II: Quality management

5. On a scale of 1-5, express your opinion in quality management as an indicator of operations management practice where; 1= strongly disagree, 2= Disagree, 3=Neutral, 4= Agree while 5=Strongly Agree.

   Please tick (√) in the most appropriate box.

	STATEMENT	**1**	**2**	**3**	**4**	**5**
A	The organization has a quality management system in place					
B	Does the company provide key performance indicators to evaluate awareness of quality of work at all levels of the organization					

C	Quality levels are determined by end user bench marks and the regulatory authorities.					
D	The organization carries out studies to evaluate end user satisfaction					
E	Staff are continuously trained on and educated on quality programs					

Part III: Efficiency

8.On a scale of 1-5, express your opinion in efficiency as an indicator of operations management practice where; 1= strongly disagree, 2= Disagree, 3=Neutral, 4= Agree while 5=Strongly Agree.

Please tick (√) in the most appropriate box.

	STATEMENT	**1**	**2**	**3**	**4**	**5**
A	People work and do activities exactly as identified in the work instruction manual.					
B	The company has a way of monitoring and measuring operation efficiency					
C	You have people with the right skills to improve activities and work in the work place					
D	The organization has specific activities geared towards improving efficiency.					

Part IV: Inventory management

9.On a scale of 1-5, express your opinion in supply as an indicator of operations management practice where; 1= strongly disagree, 2= Disagree, 3=Neutral, 4= Agree while 5=Strongly Agree.

Please tick (√) in the most appropriate box.

	STATEMENT	**1**	**2**	**3**	**4**	**5**
A	The organization is using the most effective way of calculating safety stock levels.					
C	The organization uses computer software to manage its inventory					
D	Warehouses and stores are rapidly adjusted to adhere to changes in demand					
E	Orders are placed depending on prior agreements with suppliers					
F	The organization places orders at specific times in the year					

Part V: Risk management

6. On a scale of 1-5, express your opinion in risk management as an indicator of operations management practice where; 1= strongly disagree, 2= Disagree, 3=Neutral, 4= Agree while 5=Strongly Agree.

   Please tick (√) in the most appropriate box.

	STATEMENT	**1**	**2**	**3**	**4**	**5**
A	The company has established a risk objective for its processes					
B	The organization has a process for identifying risks that threaten its operations					
C	Past experience with risks have been taken into consideration.					

D	Management demands information from you on key characteristics of action taken to manage the risks					
E	There are systems of identifying and correcting the main weakness in the risk management system					

Part VI: Innovation

7. On a scale of 1-5, express your opinion on innovation as an indicator of operations management practice where; 1= strongly disagree, 2= Disagree, 3=Neutral, 4= Agree while 5=Strongly Agree.

   Please tick (√) in the most appropriate box.

Please tick (√) in the most appropriate box.

	STATEMENT	**1**	**2**	**3**	**4**	**5**
A	The company has a budget on research and development					
B	Research and development is appreciated by top management of the company					
C	There has been continuous improvement on its systems					

10. In your opinion what can be done to improve operational performance in your organization?

……

……..

APPENDIX II

Organizational Performance data

The table below presents secondary data collected from electric utility firms in Kenya on performance

		operation cost in millions		profits/surplus in millions	
No	Firm	2014	2015	2014	2015
1	Kenya power and lighting company	8792	85631	6994	7431
2	Kenya Generating company	1492	1181	4157	8690
3	Kenya transmission company	281.23	127.795	63.508	370.57
4	Rural Electrification Authority	78.97	49.45	6.255	2.645
5	OR power	180.7	152	1.05	1.6
6	Aggrekko Africa	63	49.3	9.6	10.3
7	Rabai Power	171.9	152.4	15.26	16.9
8	Ibera Africa	334.9	296.3	7.12	8.4
9	Thika power	163.8	123.8	21.95	22.7
10	Kipeto	32.1	13	5.3	4.01
11	Ktda Power	21	13	31.6	46.8
12	Tsavo power	131.1	106.2	2.51	3.2

APPENDIX III

Operations Management Practices data

The table below presents primary data collected using the questionnaire on operations management practices for each electric utility firm.

No	Firm	Quality management	Efficiency	Inventory management	Risk Management	Innovation
1	Kenya power and lighting company	4	3.6	3.67	3.67	3.78
2	Kenya Generating company	4.4	4.6	4.5	4.67	4.81
3	Kenya transmission company	4	4	3.83	4.17	4.3
4	Rural Electrification Authority	3	4.2	4.33	4	4.12
5	OR power	4	3.63	3.67	3.67	3.78
6	Aggrekko	4.8	5	5	5	4.8
7	Rabai Power	3.8	3.4	3.33	3.5	3.61
8	Ibera Africa	3.6	3.4	3.33	3.5	3.2
9	Thika power	3.4	3.8	4	3.67	3.78
10	Kipeto	4.2	4.6	4.67	4.33	4.46
11	Ktda Power	3.8	4.2	4.33	4	4.12
12	Tsavo power	3.6	4.2	4.33	4	4.12