

**PERCEIVED FACTORS INFLUENCING SUSTAINABILITY OF LAST MILE  
CONNECTIVITY PROJECT AT KENYA POWER: A CASE OF NAIROBI  
REGION, KENYA**

**KENNEDY NGALA OUMA**

**A Research Project Submitted in Partial Fulfillment of the Requirements for the Award  
of Degree of Master of Arts in Project Planning and Management of the University of  
Nairobi**

**2020**

## DECLARATION

I hereby declare that the work contained in this research project report is my original work and has not been presented in any other university for a degree.

Signature:



Date: 13-11-2020

**KENNEDY NGALA OUMA**

**L50/6074/2017**

This research project report is presented for examination with my approval as university supervisor.

Signature:



Date: 26.11.2020

**Prof. Christopher Gakuu**

School of Open and Distance Learning

University of Nairobi.

## **DEDICATION**

This study is dedicated to my dear wife Fiona Wasonga, my mum Sella, my dad Philip, and my sisters Emma, Acha and Mary for their continued encouragement and support while I was undertaking my study.

## **ACKNOWLEDGEMENT**

I wish to express my gratitude to the University of Nairobi for giving me the opportunity to undertake this course. To my Supervisor, Professor Christopher Gakuu who has always dedicated his humble time for me to finish this work. To the course lecturers, staff in the department of Extra Mural Studies, your invaluable support enabled me to finish this work. To the course lecturers, staff in the department of Extra Mural Studies, your invaluable support enabled me to successfully go through this course. I wish to thank my colleagues who were a source of encouragement thus enabling me to go through this course.

My sincere gratitude goes to my wonderful classmates at University of Nairobi, project planning and management class 2016 for the invaluable support and assistance that I have always gotten when in need. God bless you abundantly.

## TABLE OF CONTENTS

<b>DECLARATION</b> .....	<b>ii</b>
<b>DEDICATION</b> .....	<b>iii</b>
<b>ACKNOWLEDGEMENT</b> .....	<b>iv</b>
<b>TABLE OF CONTENTS</b> .....	<b>v</b>
<b>LIST OF TABLES</b> .....	<b>viii</b>
<b>LIST OF FIGURES</b> .....	<b>ix</b>
<b>LIST OF ABBREVIATIONS AND ACRONYMS</b> .....	<b>x</b>
<b>ABSTRACT</b> .....	<b>xi</b>
<b>CHAPTER ONE</b> .....	<b>1</b>
<b>INTRODUCTION</b> .....	<b>1</b>
1.1 Background to the Study .....	1
1.1.1 Electricity Distribution Sector .....	2
1.1.2 Sustainability of the Last Mile Connectivity Project.....	3
1.2 Statement of the Problem .....	4
1.3 Purpose of the Study .....	4
1.3.1 Objectives of the Study.....	4
1.4 Research Questions .....	5
1.5 Significance of the Study .....	5
1.6 Limitations of the Study .....	5
1.7 Delimitations of the Study.....	5
1.8 Basic Assumptions of the Study .....	6
1.9 Definition of Significant Terms as Used in the Study .....	6
1.10 Organization of the Study .....	6
<b>CHAPTER TWO</b> .....	<b>7</b>
<b>LITERATURE REVIEW</b> .....	<b>7</b>
2.1 Introduction .....	7
2.2 Sustainability of Last Mile Connectivity Project .....	7
2.3 Customer Base and Sustainability of LMCP at Kenya Power .....	9

2.4 Customer Satisfaction and Sustainability of LMCP at Kenya Power .....	10
2.5 Cost of Operations and Sustainability of LMCP at Kenya Power .....	11
2.6 Theoretical Framework .....	11
2.6.1 Resource Based View Theory .....	11
2.6.2 Organizational Theory .....	12
2.6.3 Sustainability Theory .....	13
2.7 Conceptual Framework .....	14
2.8 Summary of Literature Review .....	16
<b>CHAPTER THREE .....</b>	<b>17</b>
<b>RESEARCH METHODOLOGY .....</b>	<b>17</b>
3.1 Introduction .....	17
3.2 Research Design .....	17
3.3 Target Population .....	17
3.4 Sample Size and Sampling Procedure .....	18
3.5 Pilot Testing .....	19
3.5.1 Validity of Research Instruments .....	19
3.5.2 Reliability of Research Instruments .....	20
3.6 Data Collection Procedure .....	20
3.7 Data Analysis Techniques .....	20
3.8 Ethical Considerations .....	21
3.9 Operationalization of Variables .....	22
<b>CHAPTER FOUR .....</b>	<b>23</b>
<b>DATA ANALYSIS, PRESENTATION AND INTERPRETATION .....</b>	<b>23</b>
4.1 Introduction .....	23
4.2 Questionnaire Return Rate .....	23
4.3 Reliability Analysis .....	23
4.4 General Information .....	24
4.4.1 Position of Respondents .....	24
4.4.2 Period in the Project .....	25
4.5 Influence of Customer Satisfaction on the Sustainability of the LMCP .....	25
4.6 Influence of Customer Base on the Sustainability of the LMCP .....	27
4.7 Influence of Cost of Operation on the Sustainability of the LMCP .....	29

4.8 Inferential Statistics.....	31
4.8.1 Correlation Analysis .....	31
4.8.2 Regression Analysis .....	31
<b>CHAPTER FIVE .....</b>	<b>35</b>
<b>SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATIONS .....</b>	<b>35</b>
5.1 Introduction .....	35
5.2 Summary of the Findings .....	35
5.2.1 Influence of Customer Base on Sustainability of the LMCP .....	35
5.2.2 Customer Satisfaction on Sustainability of the LMCP.....	35
5.2.3 Cost of Operation on Sustainability of the LMCP .....	35
5.3 Discussion of Findings .....	36
5.3.1 Customer Base on Sustainability of the LMCP.....	36
5.3.2 Customer Satisfaction on Sustainability of the LMCP.....	36
5.3.3 Cost of Operations on Sustainability of the LMCP.....	36
5.4 Conclusions .....	37
5.4.1 Customer Base on Sustainability of the LMCP.....	37
5.4.2 Customer Satisfaction on Sustainability of the LMCP.....	37
5.4.3 Cost of Operations on Sustainability of the LMCP.....	37
5.5 Recommendations .....	38
5.6 Suggestions for Further Research .....	38
<b>REFERENCES.....</b>	<b>39</b>
<b>APPENDICES .....</b>	<b>43</b>
Appendix I: Questionnaire .....	43
Appendix II: Data Collection Letter.....	46
Appendix III: NACOSTI Letter .....	47
Appendix IV: Plagiarism Report.....	48

## LIST OF TABLES

Table 2.1: Knowledge Gap Matrix .....	15
Table 3.1: Target Population.....	18
Table 3.2: Operationalization of Variables .....	22
Table 4 1: Questionnaire Return Rate.....	23
Table 4.2: Reliability Analysis .....	24
Table 4 3: Respondents Position.....	24
Table 4.4: Respondents Position.....	25
Table 4.5: Agreement with the various Statements on Customer Satisfaction.....	26
Table 4.6: Agreement with the various Statements on Customer Base.....	28
Table 4.7: Agreement with the various Statements on Cost of Operation.....	30
Table 4.8: Correlation Matrix .....	31
Table 4.9: Model Fitness.....	32
Table 4.10: Analysis of Variance.....	32
Table 4.11: Regression of Coefficients.....	33



## LIST OF FIGURES

Figure 2.1: Conceptual Framework .....	14
--	----

## **LIST OF ABBREVIATIONS AND ACRONYMS**

<b>AfDB</b>	:	African Development Bank
<b>G.O. K</b>	:	Government of Kenya
<b>KMS</b>	:	Kilometers
<b>KPLC</b>	:	Kenya Power and Lighting Company
<b>LMCP</b>	:	Last Mile Connectivity Project
<b>MV</b>	:	Medium Voltage
<b>NPI</b>	:	New Product Introduction
<b>RA</b>	:	Research Assistant
<b>USD</b>	:	United States Dollars
<b>ROA</b>	:	Return on Assets
<b>WB</b>	:	World Bank
<b>NPD</b>	:	New Product Development
<b>R&amp;D</b>	:	Research and Development

## ABSTRACT

The sustainability of power utility projects has attracted the attention of policy and academia. Identification of perceived factors that influence the sustainability of projects in the power utility sector is therefore overdue. This study sought to address this gap by examining the perceived factors influencing the sustainability of the last mile connectivity project with a bias to Nairobi region. The study was guided by three objectives; the first objective was to examine the influence of customer base on the sustainability of LMCP, the second objective sought to establish the influence of customer satisfaction on the sustainability of LMCP and the last objective sought to determine the influence of cost of operations on the sustainability of LMCP. The study was guided by three theories, resource-based theory, Organizational Theory and the Sustainability Theory. A descriptive survey design was adopted. The target population was the 436 Kenya Power employees under LMCP project based in Nairobi region. The Kenya Power employees specifically under the LMCP were used as they are directly involved in the project and thus were suitable to respond to the questionnaire. A sample size of 208 employees was used. The study employed simple random sampling to sample the employees of Kenya Power based in the Nairobi region office. Primary data was obtained from the respondents using structured questionnaires and analyzed using SPSS. Correlation and regression analysis were the main inferential statistics techniques employed in this study to test the hypotheses. The results show that customer satisfaction and sustainability of LMCP is positively and significantly related ( $\beta=0.096$ ,  $p=0.010$ ). Customer base and sustainability of LMCP are positively and significantly related ( $\beta =0.093$ ,  $p=0.016$ ). Cost of operations and sustainability of LMCP were positively and significantly related ( $\beta =0.097$ ,  $p=0.015$ ). The study concluded that customer base, Customer satisfaction and Cost of operations significantly influences the performance of the LMCP in the Nairobi region. The study recommends that Kenya Power should invest in ventures that are likely to help them reach more client base. The increase in clients' base would thus guarantee project sustainability. Kenya Power should invest in enhancing customer satisfaction to reduce instances of disconnections as this negatively affects the sustainability of the project. Lastly, the study further recommends that in identifying potential contractors, the company must ensure that it identifies partners with whom they share vision so as to enable optimum efficiency and effectiveness.

# CHAPTER ONE

## INTRODUCTION

### 1.1 Background to the Study

The electricity sector is a critical sector of economies around the world and its contribution is significant. Nearly all sectors of an economy require an element of electricity for the well-being of the populace. As a result, the sector attracts a lot of regulation in nearly all countries, and remains highly controlled by the state (Mogwambo, 2019). According to the Global Energy and CO2 Status Report (2018), the demand for electricity is on a growing demand of over 4% (900 TWh), nearly twice as fast as overall energy demand, and at its fastest pace since 2010 (IEA, 2018).

In the present day, the role of the power sector in economic transformation process is crucial, particularly, to the development and overall improvement of humanity's wellbeing. The global energy consumption was on a high in 2018 as a result of the sustained economic growth and rising demand in China, who is the world's largest consumer (GESY, 2019). The power sector is thus a major contributor to the global GDP. In light of these, economies need effective energy generation and distribution to thrive. Despite this need, Kenya has had a challenge in the energy generation, transmission and distribution sector (Tiwari, Schaub & Sultana, 2019). To satisfy the growing demand for electricity, the electricity distribution companies must endeavor to develop new products that are responsive to the needs of their consumers. One such products is the Last Mile Connectivity Project (LMCP) whose goal was to develop distribution and electricity access in Kenya by connecting all consumers within 600 meters of an existing transformer to the national grid at a subsidized connection price (Moner-Girona, Bódis, 2019).

The development of products is aimed at transforming the market opportunities (like demand for electricity) together with a bunch of assumptions about product technology into a product available for sale to customers (Krishnan & Ulrich, 2017). The overall goal of new product development is cultivation, maintenance and raising a firm's market share by satisfying customers' demand. The need for the development of a new distribution product by Kenya Power was informed by the fact that Kenya stands as the largest purchaser of standby electricity generating plants in East Africa. Kenya has thus appreciated the essence of electricity to its economic growth considering that all spheres of the nation depend on electricity. As a result, Kenya Power sought to address the growing demand of the initiation of the last mile connectivity project (LMCP). The introduction of the LMCP though unintended has the

potential of securing revenue growth for Kenya Power because of its potential for expanding the company's customer base and thereby earning the company significant returns, and in the process gain a long-term competitive advantage (Zantout & Chaganti, 2016). At the time of conducting this study, there is no known study that has examined the contribution LMCP has had on Kenya Power's sustainability. The current study aimed to fill the gap by examining the impact of the introduction of the LMCP on the sustainability of Kenya Power.

### **1.1.1 Electricity Distribution Sector**

Developing countries have a growing demand for electricity, as such there is an increasing need for channeling investment in distribution systems that are efficient and with great capacity. The distribution of electricity thus requires reforms to orient itself to the market in order for the creation of distribution capacity and electricity as a product (Buruchara, Rubyogo, 2018). To achieve this, unbundling of distribution and transmission capacities from generation capacities. Governance structures in the electricity distribution sector as currently constituted do not promise this capability. Consequently, there is a need for the exploration of new governance structures. These new structures must move from the government owned electricity utility systems to systems that accommodate the partnership between the private and public sectors.

The rationale for the proposed study is premised on the contribution of the increase in households connected to the grid as a result of LMCP have on the sustainability of Kenya Power. As it is the distribution of electricity ends at the consumption point with individual consumers connected to the grid (Moksnes, Korkovelos, Mentis & Howells, 2017). The companies mandated with the distribution of electricity are thus a significant link between the supplier and the electricity consumer. The distribution and management of electricity differ from country to country, with some being undertaken by the state, others by private entities or even the local government (Brown, 2018). In some countries in Africa, the distribution of electricity is a multi-agency sector with more than one distributor. South Africa is one such country with over three hundred distributors of electricity while the management is by Eskom (a private entity) and local governments (Eskom, 2016).

In Kenya, power distribution is left for one state owned company (Kenya Power) and as such the management for effectiveness is not as complex as it is in countries with many distributing companies like South Africa (Eskom, 2016). While it is assumed that the management of a single distributor is simple, the reality may not always be true, for instance, Kenya just with one electricity distributor still faces a myriad of challenges. The system for the management of

the distribution of electricity is the Distribution Management System (DMS), which is a conglomeration of the applications used for monitoring and controlling the distribution network efficiently (Bercegol & Monstadt, 2018). This system is a decision support system assisting with the control room and field operations. With the system in place, the reliability and service quality are enhanced because of its ability to reduce power outages and maintain an acceptable level of frequency and voltage. Countries have thus to have an effective DMS for their electricity distribution to be effective.

Majority of the DMS use information technology products like the Outage Management System (OMS) to achieve effectiveness. The employment of an OMS allows for a combination of complementary systems with the ability of giving feedback on the level of consumer satisfaction (Krishnan & Ulrich, 2017). These include a Customer Information Systems (CIS), Geographical Information System (GIS—which provides information about customer geographical location) and Interactive Voice Response System (IVRS). Majority of electricity distribution companies' use the Schneider Electric's Advanced Distribution Management System (ADMS) because of its ability to provide a comprehensive solution for network management, this system has the capability of monitoring, analyzing, controlling, optimizing, planning and training for the functioning of the entire distribution system. The merging of the management and electricity distribution functions maximizes the potential benefits from a growing foundation of intelligent grid devices, distributed renewable energy, advanced metering, and all things smart grid (Moner-Girona, Bódis, 2019).

### **1.1.2 Sustainability of the Last Mile Connectivity Project**

The Last Mile Connectivity Project (LMCP) is a Kenya Power initiative that aimed at the realization of a near-universal electricity access. The LMCP project was meant to develop distribution and electricity access in Kenya by connecting all consumers within 600 meters of an existing transformer with a subsidized connection price. As such, Kenya's households would be connected to the national network grid at an affordable cost (Mogwambo, 2019).

The LMCP was designed to be operationalized in four phases with funding from majorly external donors like the World Bank (WB) and the African Development Bank (AfDB). The first phase of the project was meant to cover all the 47 counties in Kenya targeting a connection to an approximately 314,200 households providing electricity access to an additional 1.5 million Kenyans through maximization of 5,320 existing distribution transformers. The second phase also covers all the 47 Counties targeting Peri-Urban areas with selected 3,200

transformers. In this phase, 312,500 customers were to be connected. The third phase targeted approximately 5,320 distribution transformers and to connect approximately 385,700 new customers. The fourth and last phase targeted 36 counties and aims at maximizing of 3,830 distribution transformers and an additional 480 new ones added together with the associated 1-2 kms of MV lines. A total of 397,000 households are to be connected under this component (KPLC, 2020).

## **1.2 Statement of the Problem**

The last mile connectivity project was undertaken to ensure near universal access to electricity. By the end of 2018, 73.4% of people in Kenya had access to electricity, up from 56% in 2016 (World Bank, 2019). Despite the significant progress on LMCP, the project has continuously suffered sustainability shortcomings, which leads to delayed connectivity (World Bank, 2019). Cooper (2016) posits that electricity utility firms have a duty for not only embracing a more business-oriented model that promises to advance the electricity product development but for the embedment of such a culture and value in their operations. In addition, literature indicates a positive association between electricity consumption and sustainability (Lustgarten, 2015; Klein, Crawford and Alchian, 2018; Zeithaml, 2016; Anderson, 2016). However, the introduction of the last mile connectivity project while promising an increase in consumer base, would potentially increase the operation cost as well. An increase in the cost of operation may affect the efficacy of the LMCP rollout and potentially injure customer satisfaction. With the first phase of the LMCP complete, it would be interesting to how these factors affect its sustainability. The present study aimed at filling the gap by examining the factors influencing the sustainability of the Last Mile Connectivity Project.

## **1.3 Purpose of the Study**

The purpose of the study was to examine the perceived factors influencing the sustainability of the Last Mile Connectivity Project at Kenya Power, Nairobi region.

### **1.3.1 Objectives of the Study**

The study was be guided by the following specific objectives:

- i. To examine the influence of customer base on the sustainability of LMCP at Kenya Power, Nairobi region
- ii. To establish the influence of customer satisfaction on the sustainability of LMCP at Kenya Power, Nairobi region

- iii. To determine the influence of cost of operations on the sustainability of LMCP at Kenya Power, Nairobi region

#### **1.4 Research Questions**

- i. What is the influence of customer base on the sustainability of LMCP at Kenya Power, Nairobi region?
- ii. How does customer satisfaction affect the sustainability of LMCP at Kenya Power, Nairobi region?
- iii. What is the influence of cost of operations on the sustainability of LMCP at Kenya Power, Nairobi region?

#### **1.5 Significance of the Study**

The proposed study is of great significance to the energy sector in Kenya in revealing how the perceived factors affects the sustainability of a public power utility company such as Kenya Power. As such, the findings are of significance in energy policy formulation of sustainability components of electricity supply. The study is also of significance to the electricity utility industry as the findings provide knowledge on the contributions of an increase in customer base, customer satisfaction and the cost of operations has on the sustainability of connectivity projects. As such, the industry would be in a position to predict the impact of future product introductions.

#### **1.6 Limitations of the Study**

The study anticipated to encounter some limitations that might hinder access to information that the study sought. The respondents targeted in this study might be reluctant in giving information since government parastatals consider such related information as confidential. The researcher mitigated this by assuring the respondents of the confidentiality of their identity and make it clear to them that the information from them was strictly for academic purpose. Some respondents given questionnaires may not adhere to the dates for handing over of questionnaires, while some might give inaccurate data, which might undermine the outcome of the research. The researcher gave the respondents ample time to fill the questionnaire.

#### **1.7 Delimitations of the Study**

The proposed study was delimited to LMCP in Nairobi Region. Nairobi Region was selected as it is the headquarters of Kenya power and thus had centralized data and information on LMCP.



## 1.8 Basic Assumptions of the Study

This study assumed that all new connections are due to LMCP.

## 1.9 Definition of Significant Terms as Used in the Study

This section presents the definition of key terms as used in the study.

- Customer base:** A group of people who purchase electricity from Kenya Power
- Cost of Operations:** The expenses accrued resulting from the day to day running of a company. They are the sum of overheads, operating expenses and cost of sales.
- Customer Satisfaction:** The fulfillment a consumer derives from consuming the products of a firm.
- Sustainability:** The ability of the LMCP to continue its mission far into the future

## 1.10 Organization of the Study

The project is presented in five chapters, the first chapter covers the introduction to the study. It presents the background to the study, statement of the problem, purpose of the study, the objectives of the study, research questions, significance of the study, limitations and delimitations of the study, basic assumptions and the definition of significant terms as used in the study. The second chapter contains the literature review; it delves into the power distribution sector. The chapter highlights empirical review of literature of related studies touching on distribution of electricity and the general performance of the electricity distribution industry. A summary of gained insights and the existing gaps are noted. The third chapter outlines the research design to be used, the target population, sampling size and sampling procedure, research instruments to be used, data analysis techniques to be used and data collection procedures. The chapter also includes the ethical considerations of the study and the operationalization of the variables. The fourth chapter covers the findings of the study. The fifth and final chapter, highlights the conclusion of the findings and recommends any further investigations that may be needed in the near future.

## **CHAPTER TWO**

### **LITERATURE REVIEW**

#### **2.1 Introduction**

This chapter reviews literature in relation to the impact of the introduction of a new product to organizational financial performance. The chapter is subdivided into two sections; the first section covers the theoretical framework and the second section is a presentation of empirical review of literature.

#### **2.2 Sustainability of Last Mile Connectivity Project**

Sustainability development are those developments with the ability of meeting the needs of today without compromising tomorrow's generations to meet their needs. Evaluation of the sustainability of a power utility project should not only be premised on its economic value but on its environment and social value (Moner-Girona, Bódis, 2019). There is therefore a complex relationship between economic, social and environmental concerns in the sustainability discourse (Khalili & Duecker, 2013). Mass connectivity to the grid is a concern of many governments across the globe (Carrera & Mack, 2010). The provision of a sustainable energy access is not only crucial but challenging as well (UN 2012). In the process of universal modern energy access by 2030 as aimed by Sustainable Energy for All initiatives, there is a need for appropriate assessment of energy technology for providing sustainable energy access (supply side perspective). Monitoring of the achievement of various countries towards this endeavor is equally crucial.

Energy development index developed by IEA (2012) and energy sustainability index developed by WEC (2012) helps in following the progress made towards providing modern energy access however, these indices are developed with data based on national average and thus do not capture rural energy sustainability in particular. There is typically a significant imbalance in socio-economic development between rural and urban areas in developing countries. Therefore, sustainability index developed with such national average data may not provide sufficient insight into rural energy sustainability.

The proposed study seeks to examine the factors influencing the sustainability of the last mile connectivity project by assessing how customer base, customer satisfaction and cost of operation influence sustainability of a power utility project like the LMCP. Technological assessment is an important factor for choosing the most appropriate option among the various

options at hand from a sustainability perspective (OECD, 2018). According to the 2018 OECD report selection of appropriate sets of sustainability indicators for the assessment of the performance of technologies is a challenging job.

Annual energy availability per kW of installed capacity, energy conversion efficiency (from the primary energy source to electricity), and system reliability (measuring constancy of services) are some of the technical dimensions that have positive correlation with the energy system sustainability. On the other hand, the upfront cost of the technology, its O&M cost (i.e. operation, maintenance and component replacement cost) and the fuel cost are some key economic indicators with a negative correlation with sustainability. Greenhouse gas (GHG) emissions and land uses are some of the environment concerns that need to be looked at and these indicators are negatively correlated with sustainability. Social indicators such as number of jobs that the technology can help generate and the type of end uses that can be satisfied (to meet societal needs), are important factors in assessing sustainability and both are positively correlated with sustainability (OECD, 2018). Furthermore, the last mile connectivity project shall be managed by Kenya Power and as such factors that influences the sustainability of the LMCP should be crucially established to enable the company run the project beyond the donor funding provisions, sustainability is thus an essential element.

The life cycle cost has been considered while evaluating the operational maintenance cost and the fuel cost of the technical system. Therefore, technological life span has not been considered as a separate indicator. Acceptance of the technology by the society is another social dimension that could be covered in the sustainability analysis, but this is survey intense work and will not be captured in this study. In addition, the maturity of the technology could be one important criterion to be considered when assessing the technological performance (Cavallaro & Ciraolo, 2015; Wang, 2018). Technologies are at different stages of maturity: some may be at the laboratory testing phase, others at the pilot phase.

A study by Enekwe, Agu and Eziedo (2014) examining the effect of financial leverage on the sustainability of a power utility project revealed that debt ratio and debt equity ratio had a negative effect on profitability when measured in terms of ROA. Their findings further revealed a positive effect of interest coverage on the sustainability of firms in Nigeria. They thus concluded that debt to equity ratio, debt ratio and interest coverage ratio do not significantly affect the sustainability of firms.

A study by Abeywardhana (2015) in the UK, focusing on non-financial services in the UK. From his research he noted a negative relation between company's loans and owners' equity decisions on the financial health of the company; in this study other determinants such as size of the enterprise were found to hold more weight. The ratio between loans with repayment terms that spun for more than a year to firm's size had a negative association with firm's health. In conclusion firms' have a higher preference for use of debt financing than equity.

Arimi (2010) undertook a research on the industrial and allied firms in the NSE. He used a study period of 4 years; this study reviewed the debt equity decisions and effect of on the financial health of the companies under the industrial and allied section in the NSE. He notes that an adverse association exists between the ratio of a company's indebtedness and owners' equity and return on owners' equity any rational firm would not find it attractive to look for debt financing when ROE is on the upsurge. The sustainability of the LMCP will thus depend on the financial health of Kenya Power.

### **2.3 Customer Base and Sustainability of LMCP at Kenya Power**

The essence of a firm is to win as many customers as possible. To win a customer is thus a significant event to a firm's life. A win of customers has the potential for increasing the revenue of a firm. While winning customers has advantages to the efficiency of a firm, economists are of a different opinion, they warn that having a particular focus on a particular customer is detrimental to the performance of a firm (Galbraith, 2012). The findings of Lustgarten (2015) support the views of Galbraith (2012) in his findings that large customers can potentially threaten the sustainability of a firm. He further explains that a focus on major customers denies the firm the benefits that accrue from margin improvements or other economies of scale.

On the same vein, Klein, Crawford and Alchian (2018) opine that the reason major customers would negatively affect the sustainability of a firm is that they are cognizant of their bargaining position and can engage in ex-post renegotiation over the contract terms. Gaining more customers does have a higher chance of increasing the sustainability of a firm than does concentrating efforts on some major customers of a firm (Balakrishnan, Linsmeier & Venkatachalan, 2016). The findings of Lustgarten (2015) confirm that the concentration on major customers by a firm reduces the sustainability of a firm.

Contrary findings were revealed in Patatoukas (2012) study where he used SFAS 14 and SEC Reg S-K mandated disaggregated revenue disclosures available from Compustat. His findings revealed a positive association between customer concentration and accounting rates of return.

He opines that the challenge with the conventional position castigating the concentration on major customers for their failure to consider the effect of such concentration on other key metrics of valuation such as return on assets. While using a sample of firms with a positive operating performance, Patatoukas (2012) examined the relationship between customer concentration and sustainability and found a positive association.

#### **2.4 Customer Satisfaction and Sustainability of LMCP at Kenya Power**

Traditionally, marketers have believed that in the long terms a positive association between customer satisfaction and business performance exists. The belief is premised on the fact that if a firm provides quality, it will lead to greater satisfaction and customer loyalty and hence a sustained performance and thus increased sustainability (Oliver, 2017). The relationship between customer satisfaction and firm sustainability has attracted much scholarly work. Most of these studies have shown a positive association between customer satisfaction and the sustainability of a firm (Reichheld & Sasser, 2015; Fornell, 2012; Anderson and Sullivan, 2013; Taylor and Baker, 2014). They indicate that the result of the loyalty of customer considering that servicing old customers costs less than it would with new customers (Reichheld, 2013) and that has an effect on the sustainability of a firm.

While the link between customer satisfaction and financial performance is well established, it is important to note that customer satisfaction does not always guarantee good financial performance. The findings of the association are mixed with others revealing that even satisfied customers are price sensitive and would switch at a slightest change/increase in commodity prices (Zeithaml, 2016), however, some would be less price-sensitive (Anderson, 2016).

The benefits of customer satisfaction to a firm would be more beneficial if they lead to attraction of new customers to a firm. If the satisfied customers market a firm by word of mouth and are able to bring new customers, then the firm would save on marketing costs and hence the sustainability of the firm will not be eaten by the marketing costs (Singh & Pandya, 2018). While the nature of the relationship between customer satisfaction and the sustainability of firm may vary across industries (Mittal & Lasser, 2017), their existence is a pointer to a greater presumption that an increase in customer satisfaction has a potential of positively influencing the sustainability of a firm.

As such, while there is no literature evidence with respect to a direct link between customer satisfaction and sustainability in the electricity utility industry, evidence from the other industries puts a strong case for the expectations of similar relationship in the electricity

industry as well. Evaluation for such a relationship in the electricity industry and particularly the Kenya's sole electricity distributor company would be of significance in contributing knowledge in the customer satisfaction-sustainability literature.

## **2.5 Cost of Operations and Sustainability of LMCP at Kenya Power**

A series of studies have been carried out globally to establish the relationship between cost of operation and sustainability. Empirical evidence has shown that indeed there exist a significant relationship between cost of operation and sustainability. Researchers have approached the management of cost of operation in numerous ways. While some studied the impact of proper or optimal inventory management, others studied the management of accounts receivables trying to postulate an optimal way policy that leads to sustainability.

The approach a firm adopts in the management of its cost of operations can significantly affect its sustainability (Deloof, 2013). In which case, suffice is to say that there exists a level of working capital that may help a firm maximize its returns, (Gill, Biger & Mathur, 2010). Firms must therefore establish their optimal level of working capital that can potentially maximize their value. Some of the ways a firm may maximize their value is to have favorable policies that may result in higher volumes of sales and reduce operation costs, in turn the sustainability of a firm will be affected with the adopted policy.

Accounts payable which is a component of cost of operation may also have an impact on the profitability of a firm. If a firm delays the payment of its debtors, it can enjoy the quality of bought products while using the money for the products in other profitable ventures (Raheman & Nasr, 2017). However, delaying accounts payable must not always result in improved profitability of a firm especially in situations where discounts are offered for earlier payment, (Gill, 2010). A firm that takes advantage of the discount would still have some impacts on its sustainability from the savings made out of the less payment.

## **2.6 Theoretical Framework**

The study was guided by three theories, resource-based theory, Organizational Theory and the Sustainability Theory.

### **2.6.1 Resource Based View Theory**

Wernerfelt and Rumelt proposed the Resource Based View Theory in 1984. RBV focuses attention on an organization's internal resources as a means of organizing processes and obtaining a competitive advantage. Resource based view theory is a management framework

used for the determination of the strategic resources at the disposal of a firm that can be exploited to enable a firm achieve strategic advantage. Some of the resources at the disposal of a firm include assets, skills and capabilities (McIvor, 2014). The resources are thus firm specific and thus it is upon the management of a firm to effectively use resources at the disposal of a firm to optimize the return on the firm's investments. A firm must thus be in a position to establish the most suitable combination of the use of resources to enable the firm to be sustainable in the long run (Collis & Montgomery, 2016). A well-developed combination of these resources is in turn the firm competitive advantage that it can exploit for its sustainability. Optimization of these resources will result in lower operation costs and in the end sustainability. The Resource Based View Theory was in examining how Kenya Power has used a combination of its resources in its daily operations and how that has affected its sustainability. The theory was also used in examining performance of the last mile connectivity project systematically as may be measured in terms of the key performance indicators (customer base, customer satisfaction, cost of operations).

### **2.6.2 Organizational Theory**

This theory by Murphy, Trailer and Hill (2006), argues that business performance in an organization can be evaluated by the goal that it sets for itself. However, organizations have varied and sometimes-contradictory goals, making cross-firm comparison difficult. The system approach partially compensates for the weakness of the goal-based approach by considering the simultaneous achievement of multiple, generic performance aspects. Project managers use organizational theories to manage people.

The organizational theory emphasizes on obtaining optimal equipment and personnel and establishing universal management principles to enhance project implementation. Neoclassical organization theory emphasizes the need for project team members to be happy when undertaking their activities (Birken, Bunger & Chatham, 2017). This allows creativity, individual growth and motivation which increases productivity and profits. Thus, both goal-based and system approaches fail to adequately account for differences between stakeholders' groups perspectives on performance. The multiple constituency approach factors on these differences in perspectives and examines the extent to which the agenda of various stakeholders' groups are satisfied.

This theory is relevant to the current study in that, it guides the study understand how perceived factors in the project can influence the implementation and performance of the Kenya power project team and the consequences it has on the sustainability of the project.

### **2.6.3 Sustainability Theory**

The Sustainability Theory was founded on economic theory known as theory of environmental limit whose proponent was Thomas Malthus (1766-1834). The argument in the theory is that resource in the environment that we live are finite. The concept sustainability is about people being able to maintain and sustain the project or programme outcome by their own assets or resources while not compromising the needs of future generation (Romero-Lankao, P., Gnatz, Wilhelmi & Hayden, 2016).

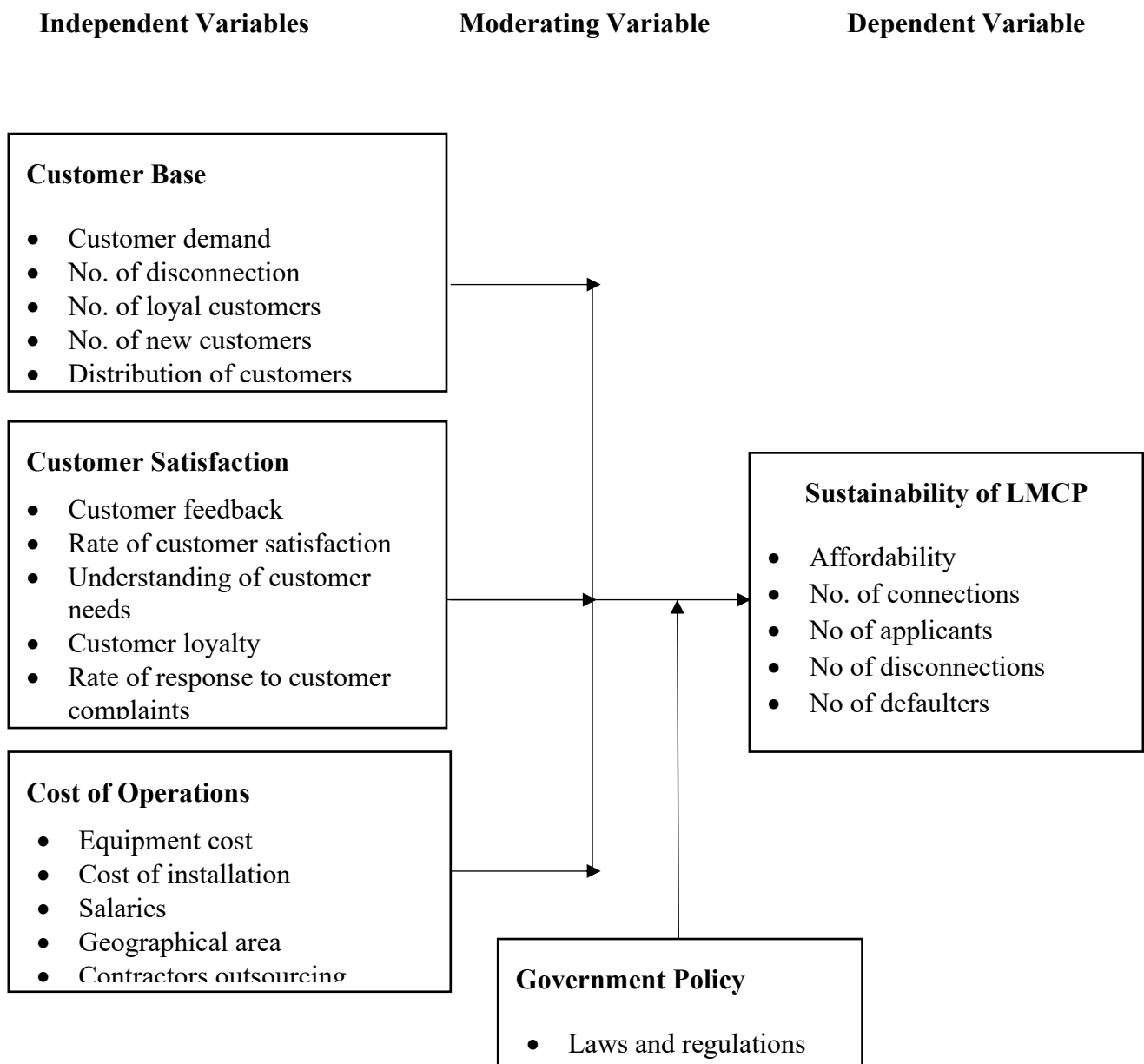
The theory of sustainable development indicates that the concern of Sustainable development is management of the process of change, not on setting an end goal with fixed outcomes. It recognizes that uncertainties exist, necessitating flexible and ongoing processes. It also supports diversity and differences within the local setting. Inherent in this concept is consideration of the social, political, economic, and cultural relationships fundamental to development agenda. In this theory, sustainable development requires a broad picture view global thinking and local action of communities, while constantly thinking critically about and fine-tuning the small intricacies of the relationships that ultimately shape these communities. Management of projects requires three key competencies namely; contextual, behavioral and technical skills. In regard to sustainability approach to community development project leaders and team require contextual competence to a larger extent and not excluding behavioral and technical competence (Beata, 2014).

The study borrows from sustainable development emphasis that capacity assessment is crucial foundation for community participation in development projects as is the case for the LMCP. Following this argument, sustainability of project outcome, maintenance of project deliverables processes, resource mobilization capacity and human capacity establishment have been selected as key indicators for sustainability of the LMCP project.



## 2.7 Conceptual Framework

This section presents the conceptual framework of the study. It depicts the possible associations of the study variables. The conceptual framework examines the interrelationship between the independent variables and the last mile connectivity project performance aspects which is the dependent variable. The independent variables were Customer Base, Customer Satisfaction and Cost of Operations while the moderating variable was government policy. The independent variable was Sustainability of LMCP.



**Figure 2.1: Conceptual Framework**

**Table 2.1: Knowledge Gap Matrix**

<b>Objectives of the Study</b>	<b>Author</b>	<b>Variables used</b>	<b>Findings</b>	<b>Knowledge gap</b>
Why do customers switch? The dynamics of satisfaction versus loyalty.	Mittal, B. and Lasser, W. M. (2017)	Customer satisfaction and customer loyalty	The paper reveals that customer loyalty is a significant customer satisfaction indicator in the health sector	The paper while a good indicator of the significance of customer loyalty, emphasizes its' relevance to the health industry and not the electricity/energy sector. The proposed study highlighted the same importance in the energy sector.
Customer-base Concentration: Implications for Firm Performance and Capital Markets	Patatoukas, P. (2012).	Customer-base concentration and asset utilization	This study reveals that customer-base concentration affects supplier firm fundamentals and stock market valuation.	The paper focused on the supply side of business while examining the impact of customer base. The proposed study sought to examine the demand side in examining the impact of customer base on the sustainability of LMCP.
Exploring the effects of complaint behaviors.	Singh, J.E. and Pandya, S. (2018).	Customer satisfaction, timeliness and efficiency	The article reveals that customer dissatisfaction has a negative effect on feedback	The paper analyses a large sample over a long period. The findings may not be reflective in a situation in which only one company is under study. The proposed study only focused on one public utility company.
The Impact of Financial Factors on Profitability of Manufacturing Firms Listed on the Nairobi Securities Exchange.	Misore, E. (2017)	Cost of production, Financial capacity and human capacity	The study found that financial factors affects sustainability of manufacturing firms	The study was based on secondary data, while such analyses are better done with primary data. The proposed study employed secondary data in examining the impact of cost of operations on the sustainability of LMCP.
Determinants of Profitability: An Analysis of Large Australian Firms.	Andreas, S. (2010).	Total Factor Productivity, no. of employees and profit rate	The paper documented the determinants of firm sustainability and quantifies of their relative importance.	The present study would establish similar factors but in the power utility industry and not in many firms but one.

## **2.8 Summary of Literature Review**

From the literature review it is clear that there is no known relationship between new product development and the sustainability of energy utility companies. In addition, the studies relating the existence of such a relationship are not recent findings. There is therefore a gap in reference to the aforementioned that the proposed study seeks to address, the proposed study thus aims at making a contribution into the liquidation of this gap.

## **CHAPTER THREE**

### **RESEARCH METHODOLOGY**

#### **3.1 Introduction**

In this chapter, the methodology for the proposed study was presented. The design for the study, the population the study targets, the size sampled, the instruments for collection of data and the procedures followed in analyzing the collected data are presented.

#### **3.2 Research Design**

A research design is the strategy for a study and the plan by which the strategy was to be carried out (Cooper & Schindler, 2001). It specifies the methods and procedures for the collection, measurement, and analysis of data. Gupta (2008) avers that a research design is the basic plan that indicates an overview of the activities that are necessary to execute the research project. Kothari (2004) defines a research design as a detailed plan on how the research is conducted. The research design that was employed in this study was descriptive survey design. This design was found suitable for the present study because it allows for use of questionnaires and/or statistical surveys in gathering data about phenomenon's thoughts and behaviors. Cooper and Schindler (2008) demonstrate that the essential features of descriptive lie in the objectives. If the research is concerned with finding out who, what, where, when, or how much, then the study is descriptive. Descriptive studies are those to describe phenomena associated with a subject population or to estimate proportions of the population that have certain characteristics.

#### **3.3 Target Population**

According to Kombo and Tromp (2006), a population is a well-defined set of people, services, elements, and events, group of things or households that are being investigated to generalize the results. This definition assumed that the population is not homogeneous. Lumley (2014) defines population as a larger collection of all subjects from where a sample is drawn. It refers to an entire group of individuals, events or objects having common observable characteristics. The target population was the Kenya Power and lighting Company LMCP employees based in Nairobi region, which totals to 436 (KPLC, 2020). The Kenya Power employees specifically under the LMCP were used as they are directly involved in the project and thus were suitable to respond to the questionnaire. Table 3.1 presents the target population.

**Table 3.1: Target Population**

Category	Population
Site Engineers	34
Project Managers	7
Electricians	78
Technicians	105
Administration staff	212
<b>Total</b>	<b>436</b>

### 3.4 Sample Size and Sampling Procedure

A sample is a subset of population (Hyndman, 2008). Marczak (2005) defined a sample as a subset of the population to be studied. It is a true representative of the entire population to be studied (Leary, 2001). A sample is a subset of a population (Desu, 2012). The study adopted Yamane (1967) simplified formula to calculate the sample size which provided the number of responses that need to be obtained using the equation;

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

Where:  $n$  = sample size  
 $N$  = population size  
 $e$  = the level of precision  
1 = Constant

The formula assumes a degree of variability (i.e. proportion) of 0.05, the level of precision of 5% and a confidence level of 95%.

$$n = 436 / [1 + 436(0.05)^2]$$

$$= 208 \approx 208 \text{ respondents}$$

$$n = 208 \text{ respondents.}$$

Therefore, the 208 Kenya Power employees under LMCP were used as the sample size. The study employed simple random sampling to sample the employees of KPLC based in the Nairobi region office. A list of all the staff was obtained from the human resource office, each name was assigned numbers on a piece of paper, the papers were then folded and put in a basket, the papers were then mixed and picked randomly from the bucket until the required sample is obtained.

### **3.5 Research Instruments**

The study used primary data that was quantitative and descriptive in nature. Primary data refers to information that a researcher gathers from the field. According to Bell, Bryman and Harley (2018), primary data is information that a researcher gathers from the field while secondary data is data gathered from other sources such as literature review and recorded. Primary data was obtained from the respondents using structured questionnaires. A questionnaire is a research instrument consisting of a series of questions for the purpose of gathering information from respondents. Questionnaires are a practical way to gather data. They can be targeted to groups of your choosing and managed in various ways. They offer a way to gather vast amounts of data on any subject.

### **3.5 Pilot Testing**

The purpose of the pilot test was to refine the questionnaire so that respondents have no problems in answering the questions and thus eliminate problems in recording the data. In addition, it enables obtain some assessment of the question's validity and the likely reliability of the data that was collected. Preliminary analysis using the pilot test data can be undertaken to ensure that the data collected enables the investigative questions to be answered (Saunders, Lewis & Thornhill 2012).

Pilot test was carried out in order to determine reliability and validity of research instrument. The test involved 10% of the total sample which Mugenda and Mugenda (2003) argue is enough for the pilot. Therefore, this project piloted 20 respondents in Nairobi North region and the respondents who participated in the pilot test were not involved in the actual study.

#### **3.5.1 Validity of Research Instruments**

This is the extent to which the tools of gathering data are accurate in establishing the factors they intend to measure (Upagade & Shende, 2012). Only instruments with the ability to measure the intended factors are deemed valid and suitable in conducting a study (Kombo & Tromp, 2009). The present study employed Content Validity Index that was based on the

responses from the study participants. The study also sought expert opinions in evaluation of the questionnaire.

### **3.5.2 Reliability of Research Instruments**

Reliability of an instrument is the ability of the instrument to give consistent results (Gall, Gall, & Borg, 2007). The present study employed Cronbach's Alpha in testing the level of reliability of the research instruments with the help of pilot study data. Cronbach's Alpha coefficient of at least 0.7 is recommended by Mugenda and Mugenda (2003). The higher the value of Cronbach's Alpha coefficient, the more reliable the instrument is.

### **3.6 Data Collection Procedure**

Primary data was gathered from the respondent from the LMCP with an aid of a closed-ended questionnaires. A structured questionnaire is a research tool that provides a list of all possible alternative responses to questions therein (Kothari, 2004). This type of data collection tool was used because it enables collection of data in a quicker way and enables a researcher to collect quantitative data in a more efficient way. With structured questionnaire, the researcher does not need to be necessarily present during the data collection exercise (Mugenda, 2003). The questionnaires were self-administered through the use of emails, drop and pick methods.

### **3.7 Data Analysis Techniques**

Upon completion of data collection, the questionnaire was scored and data edited, coded and entered into the computer for analysis. A code sheet was used to synthesise the data. Data analysis was done in two stages: descriptive statistics is a mathematical technique for organising, summarising and displaying a set of numerical data. Central tendency and variability measures was used to describe the values in distributions. In this study, means and standard deviation measures were applied. A statistical package for social science program – SPSS was used for the entire analysis. Correlation and regression analysis were the main inferential statistics techniques employed in this study to test the hypotheses.

Multiple regression analysis has been used to model the relationship between three independent variables, moderating variable and the dependent variable. Therefore, the estimated linear regression model for this study was:

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

Where:

Y = Sustainability of LMCP (dependent variable)

$\beta_0$  = constant or intercept which is the value of dependent variable when all the independent variables are zero

$\beta_1 - \beta_3$  = Regression coefficient for each independent variable

$X_1$  = Customer Base

$X_2$  = Customer Satisfaction

$X_3$  = Cost of Operation

### **3.8 Ethical Considerations**

Collecting data through any method applied during the study involved some ethical issues in relation to the participants and the researcher. The researcher endeavored to ensure that informed consent is obtained from the respondents before they are involved in the data collection. Consent was obtained voluntarily and without pressure of any kind after the objectives of the study are explained. Confidentiality of the information collected was preserved and only used for research purposes. The response given by the respondents did not affect their continued participation.



### 3.9 Operationalization of Variables

The study's operationalization of variables is presented in Table 3.2.

**Table 3.2: Operationalization of Variables**

<b>Objectives of the Study</b>	<b>Variables</b>	<b>Indicators</b>	<b>Measurement Scales</b>	<b>Type of Analysis</b>	<b>Tools of Analysis</b>
To examine the influence of customer base on the sustainability of LMCP	Customer base	Customer demand No. of disconnection No. of loyal customers No. of new customers Distribution of customers	Non-applicable	Likert Scale 1-5	Frequencies Mean S.D Correlation Regression
To establish the influence of customer satisfaction on the sustainability of LMCP	Customer satisfaction	Customer feedback Rate of customer satisfaction Understanding of customer needs Customer loyalty Rate of response to customer complaints	Non-applicable	Likert Scale 1-5	Frequencies Mean S.D Correlation Regression
To determine the influence of cost of operations on the sustainability of LMCP	Cost of operation	Equipment cost Cost of installation Salaries Geographical area Contractors outsourcing	Non-applicable	Likert Scale 1-5	Frequencies Mean S.D Correlation Regression

## CHAPTER FOUR

### DATA ANALYSIS, PRESENTATION AND INTERPRETATION

#### 4.1 Introduction

In this chapter the researcher presented data on variables of the study, being customer base, customer satisfaction and cost of operation. The relationship between these variables with sustainability of Last Mile Connectivity Project was assessed. The variables were categorized in terms of the respondents' level of agreement with selected variable indicators in this study. The level of agreement was ranked on a scale of 1- 5 where 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, and 5 = Strongly Agree. Data was gathered from 191 respondents who fully filled the questionnaires. Data in this chapter are presented in four sections in accordance with the study objectives. The first section presents general information, the second section presents findings on the influence of customer base on the sustainability of LMCP, and the third section highlights findings on the influence of customer satisfaction on the sustainability of LMCP while the last section is a presentation of findings on the influence of cost of operation on the sustainability of LMCP.

#### 4.2 Questionnaire Return Rate

The questionnaires that the researcher administered were 208 out of which 191 fully filled questionnaires were returned. This gave a response rate of 91.8% which was within what Baruch and Holtom (2008) who opine that a minimal value of 50% response rate is good enough for statistical analysis. The findings for the response rate was as shown in Table 4.1.

**Table 4 1: Questionnaire Return Rate**

		<b>Response Rate</b>
Response	191	91.8%
Non-response	17	8.2%
<b>Total</b>	<b>208</b>	<b>100</b>

#### 4.3 Reliability Analysis

Reliability analysis was subsequently done using Cronbach's Alpha which measures the internal consistency by establishing if certain items within a scale measure the same construct. A threshold of Alpha value of 0.7 is considered reliable (Malhotra, 2015). From the scores, the data collection tools were reliable.

**Table 4.2: Reliability Analysis**

	<b>Alpha value</b>	<b>Comments</b>
Customer base	0.829	Reliable
Customer satisfaction	0.781	Reliable
Cost of operations	0.810	Reliable
Sustainability	0.802	Reliable
<b>Average</b>	<b>0.8055</b>	

The Cronbach Alpha was established for every objective which formed a scale. The findings in Table 4.2 illustrates that all the three variables were reliable as their reliability values exceeded the prescribed threshold of 0.7, Malhotra (2015). This, therefore, depicts that the research instrument was reliable and suitable for collection of accurate data.

#### **4.4 General Information**

A total of 191 questionnaires were fully filled and are part of the findings. Ten questionnaires were partially filled while seven were not filled at all. The spoilt and unfilled questionnaires have thus not been considered in this finding. The following section highlights the general information about the participants.

##### **4.4.1 Position of Respondents**

The study sought to establish the position held by the respondents. The study established the majority of the respondents were technicians, followed by artisan, and electricians

**Table 4 3: Respondents Position**

	<b>Frequency</b>	<b>Percent</b>
Site Engineers	15	8
Project Managers	3	1
Electricians	34	18
Technicians	46	24
Administration staff	93	49
<b>Total</b>	<b>191</b>	<b>100</b>

Form the findings, majority (49%) of the respondents were administrative staff who deal with the daily operations of the project followed by artisans at 24%, electricians 18%, site engineers

8% and project managers 1%. Based on the distribution, the researcher was satisfied that the information received would satisfactorily considering that these categories of staff have a deep understanding of the project operations.

#### 4.4.2 Period in the Project

The study sought to establish the period the respondents had been part of the project. The findings are presented in table 4.4 below

**Table 4.4: Respondents Position**

	Frequency	Percent
Below 6 months	19	10
Between 6-12 months.	23	12
Between 12 – 18 months	47	25
24 months and above	102	53
<b>Total</b>	<b>191</b>	<b>100</b>

The study revealed that most (53) of the respondents had lasted in the LMCP for at least 2 years, this was followed by respondents who had been in the project for between 12 to 18 months at 25%, between 6 to 12 months at 12% and lastly below six months at 10%. From the findings it is clear that majority of the respondents had been in the project long enough to have a good understanding of the various dynamics that may influence the performance and sustainability of the project.

#### 4.5 Influence of Customer Satisfaction on the Sustainability of the LMCP

The study sought to establish whether customer satisfaction influenced the sustainability of the Last Mile Connectivity Project in the Nairobi region. The findings are presented in Table 4.5.

**Table 4.5: Agreement with the various Statements on Customer Satisfaction**

	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>Mean</b>	<b>Std. Dev.</b>
Our customers are loyal and would not opt out to any other alternative	5.6	22.2	38.9	27.8	5.6	3.171	0.567
We have a great understanding of the needs of our customers	5.6	5.6	16.7	55.6	16.7	3.987	0.540
The feedback we get from our customers is very positive	7.7	50	22.2	20.2		2.570	0.651
Our customers are satisfied with our charges	55.6	44.4				1.118	0.710
We have a timely response to customer complaints			22.2	77.8		4.012	0.145
<b>Average</b>						<b>2.97</b>	<b>0.52</b>

To gauge the influence of customer satisfaction on the sustainability of the LMCP, respondents were asked to give their levels of agreement to selected customer satisfaction determinants. The ratings were scored on a scale of 1-5 with 1 being strongly disagree and 5 = strongly agree. The findings reveal that majority of the respondents strongly believed that Kenya Power had a timely response to customer complaints represented by a mean score of 4.012, timely response to customers complaints enhances customer satisfaction. While this is the position of the employees, it remains unknown what external customers would say in reference to the response of Kenya Power to their complaints. Satisfied customers tend to be loyal to companies and also act as company marketers as they spread the good news about the corporation, in turn more customers are likely to sign up at no marketing fee. The overall effect of this would be company retaining funds that would otherwise be spent on marketing and this affects the financial health of the firm positively. The findings are corroborated by previous findings (Reichheld & Sasser, 2016; Fornell, 2012; Anderson & Sullivan, 2013; Taylor & Baker, 2014) that showed a positive relationship between customer satisfaction and firm sustainability.

The findings also revealed that the LMCP staff had a great understanding of the needs of our customers represented by a mean score of 3.987. Having a keen understanding of the needs of customers is associated with firm effectiveness (Elkington, 2017). An effective firm will tend to retain its customers and this would subsequently give reason for the existence of the firm hence sustainability.

The study further revealed that the customers of Kenya Power are loyal and would not opt for an alternative supplier represented with a mean score of 3.171. While the findings show that the customers would not opt for an alternative supplier, it is imperative to note that this may have been influenced by the fact that in Kenya there is only one electricity distribution company and hence the thought of looking for an alternative is not available to the customers.

The study further tested whether the feedback received from the clients was always positive. The findings revealed the feedback was partially good and partially negative represented by a mean score of 2.570. The study also revealed that Kenya Power customers are not satisfied with the company's charges represented by a mean of 1.118. The findings are supported by the findings Zeithaml and colleagues (2016) who tested the relationship of customers' price sensitivity and found that even satisfied customers are price sensitive and would switch at a slightest change/increase in commodity prices. Overall, the findings imply that customer satisfaction lead to attraction of new customers to a firm. While the nature of the relationship between customer satisfaction and the sustainability of firm may vary across industries (Mittal & Lasser, 2017), their existence is a pointer to a greater presumption that an increase in customer satisfaction has a potential of positively influencing the sustainability of a firm.

#### **4.6 Influence of Customer Base on the Sustainability of the LMCP**

The study sought to establish the influence of customer base on the sustainability of Last Mile Connectivity Project. The findings are presented in Table 4.6.

**Table 4.5: Agreement with the various Statements on Customer Base**

	1	2	3	4	5	Mean	Std. Dev.
The sustainability of the LMCP is affected by the number of households connected to the grid	5	12	6	56	21	3.981	0.775
The sustainability of the LMCP is affected by the number of loyal customers	9	23	48	12	8	3.797	0.561
Disconnections affect the sustainability of LMCP	5	17	9	57	12	3.970	0.653
The sustainability of the project is affected by the number of new customers	8	28	42	15	7	3.316	0.501
The sustainability of the project is affected by the distribution of customers	4	14	5	49	28	4.118	0.135
<b>Average</b>						<b>3.84</b>	<b>0.53</b>

The existence of a firm is premised on its ability to serve its customers satisfactorily. Customer base is thus an essential determinant of the sustainability of a firm. It was thus imperative to establish the interplay between customer base and the sustainability of LMCP. A number of elements were measured to test the influence of customer base. The findings revealed that the sustainability of LMCP is influenced by the distribution of customers represented by a mean of 4.118. The more the customers are distributed the higher the project spends in connecting them to the national grid and this eats into the financial reserves of the project hence affecting the sustainability of the project. At the same time, the study revealed that customer disconnections affect the sustainability of the project as represented by a mean of 3.970. Essentially, disconnections mean that the project loses revenue from the potential clients and that would have a negative impact on the sustainability of the project. High disconnection also implies less customer loyalty which the study revealed affects the projects' sustainability

represented by a mean of 3.797. If customers are not loyal, the project loses revenue and at the same time its existence is in question. The study further revealed that the number of new customers influence project sustainability as represented by a mean of 3.316. New customers imply that the existing customers are satisfied and spread good news about the project. It may also mean that the project is reinvesting more funds in reaching out to new customers.

The findings of this study are supported by the findings of Balakrishnan, Linsmeier and Venkatachalan (2016) that revealed that gaining more customers does have a higher chance of increasing the sustainability of a firm than does concentrating efforts on some major customers of a firm. On the same vein, Klein, Crawford and Alchian (2018) suggests that sustainability would be influenced positively with an increase in customer base.

#### **4.7 Influence of Cost of Operation on the Sustainability of the LMCP**

The study sought to establish the influence of cost of operation on the sustainability of Last Mile Connectivity Project. The findings are presented in Table 4.7.



**Table 4.6: Agreement with the various Statements on Cost of Operation**

	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>Mean</b>	<b>Std. Dev.</b>
Cost of labor directly affects the sustainability of LMCP	9	12	7	54	18	3.981	0.775
Cost of equipment affect the sustainability of LMCP	7	15	64	2	12	3.799	0.561
Outsourcing of contractors affects the sustainability of LMCP	1	7	42	38	12	3.970	0.653
Cost of distribution affects the sustainability of LMCP	6	29	39	21	5	3.316	0.501
Cost of installation affects the sustainability of LMCP	7	17	1	56	19	4.118	0.135
<b>Average</b>						<b>3.83</b>	<b>0.52</b>

The nexus between the cost of operation and firm sustainability is not disputed. However, available empirical literature has not explored the relationship of cost of operation and project sustainability. The findings of this study have revealed that the cost of labor directly affects the sustainability of LMCP shown by a mean of 3.981, the study also revealed that the cost of equipment affect the sustainability of LMCP as shown by a mean of 3.799. Further, the findings reveal that outsourcing of contractors affects the sustainability of LMCP represented by a mean score of 3.970, the study also revealed that the cost of distribution affects the sustainability of LMCP represented by a mean of 3.316.

Finally, the study established that the cost of installation affects the sustainability of LMCP represented by a mean of 4.118. The findings support previous studies that there exists a significant relationship between cost of operation and sustainability. These studies have demonstrated that the approach a firm adopts in the management of its cost of operations can significantly affect its sustainability (Deloof, 2013).

## 4.8 Inferential Statistics

Inferential analysis was conducted to generate correlation results, model of fitness, and analysis of the variance and regression coefficients.

### 4.8.1 Correlation Analysis

Correlation analysis was conducted to establish the relationship between the independent and dependent variables. The results are indicated in Table 4.8.

**Table 4.8: Correlation Matrix**

Variables		Sustaina bility	Customer Satisfaction	Customer Base	Cost of Operations
Sustainability	Pearson Correlation	1.000			
	Sig. (2- tailed)				
Customer Satisfaction	Pearson Correlation	.603**	1.000		
	Sig. (2- tailed)	0.000			
Customer Base	Pearson Correlation	.604**	.545**	1.000	
	Sig. (2- tailed)	0.000	0.000		
Cost of Operations	Pearson Correlation	.629**	.568**	.636**	1.000
	Sig. (2- tailed)	0.000	0.000	0.000	

The results in Table 4.8 revealed that customer satisfaction and sustainability of LMCP is positively and significantly related ( $r= 0.603$ ,  $p=0.000$ ). The results further indicated that customer base and sustainability of LMCP are positively and significantly related ( $r=0.604$ ,  $p=0.000$ ). Lastly, cost of operations and sustainability of LMCP were positively and significantly related ( $r=0.629$ ,  $p=0.000$ ). This implies that an increase in customer satisfaction, customer base and cost of operations leads to an increase in sustainability of LMCP.

### 4.8.2 Regression Analysis

The study sought to carry out regression analysis to establish the statistical significance relationship between the independent's variables notably customer satisfaction, customer base and cost of operations on the dependent variable that was sustainability of LMCP. The results

presented in Table 4.9 present the fitness of model used of the regression model in explaining the study phenomena.

**Table 4.9: Model Fitness**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.748a	0.65	0.546	0.4025

Customer satisfaction, customer base and cost of operations were found to be satisfactory variables in explaining sustainability of LMCP. This is supported by coefficient of determination also known as the R square of 0.65%. This means that Customer satisfaction, customer base and cost of operations explain 65% of the variations in the dependent variable, sustainability of LMCP. This results further means that the model applied to link the relationship of the variables was satisfactory in explaining sustainability of LMCP.

The Analysis of Variance (ANOVA) results are shown in Table 4.10.

**Table 4.10: Analysis of Variance**

	Sum of Squares	df	Mean Square	F	Sig.
Regression	26.335	3	6.584	40.646	.000b
Residual	20.734	188	0.162		
Total	47.069	191			

The findings further confirm that the regression model is significant and supported by  $F=40.646$ ,  $p<0.000$ ) since p-values was 0.000 which is less than 0.05.

The study conducted a regression of coefficient analysis to establish the statistical significance relationship between the independent variables customer satisfaction, customer base and cost of operations on the dependent variable sustainability of LMCP. The regression of coefficient results are as shown in Table 4.11.

**Table 4.11: Regression of Coefficients**

	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
(Constant)	2.316	0.101		22.905	0.000
Customer Satisfaction	0.096	0.037	0.206	2.619	0.010
Customer Base	0.093	0.038	0.198	2.439	0.016
Cost of Operations	0.097	0.040	0.209	2.456	0.015

The multiple regression model was laid as below.

$$Y = 2.316 + 0.096X_1 + 0.093X_2 + 0.097X_3$$

Where:

Y = Sustainability of LMCP

X<sub>1</sub> = Customer Satisfaction

X<sub>2</sub> = Customer Base

X<sub>3</sub> = Cost of Operations

The regression of coefficients results shows that customer satisfaction and sustainability of LMCP is positively and significantly related ( $\beta=0.096$ ,  $p=0.010$ ). The results show that for a unit change in customer satisfaction leads to an increase in sustainability by 0.096 units. This means that customer base leads to the sustainability of the LMCP. The results imply that a focus in increasing customer satisfaction by different projects can potentially enhance the sustainability of power utility projects like the LMCP. This corroborates with findings (Reichheld & Sasser, 2016; Fornell, 2012) that showed gaining more customers, satisfaction has a higher chance of increasing the sustainability of a firm than does concentrating efforts on some major customers of a firm.

The results further indicated that customer base and sustainability of LMCP are positively and significantly related ( $\beta =0.093$ ,  $p=0.016$ ). From the findings, it was established that a unit increase in customer base results in an increase in sustainability by 0.093 units. Customer base has thus been found to influence the sustainability of LMCP. While the nature of the

relationship between customer base and the sustainability of firm may vary across industries (Zeithaml, 2016; Mittal & Lasser, 2017), the findings of this study revealed that customer base positively influence the sustainability of LMCP.

Lastly, cost of operations and sustainability of LMCP were positively and significantly related ( $\beta = 0.097$ ,  $p = 0.015$ ). The study also reveals that there exists a relationship between cost of operations and sustainability of LMCP. The findings showed that an increase in one unit of cost of operation results to an increase in LMCP sustainability by 0.097 units. The management of cost of operations can significantly affect its sustainability (Deloof, 2013). From the results in Table 4.11, it was revealed that the strongest predictor of the sustainability of LMCP was customer satisfaction followed by cost of operation (0.097), Customer Satisfaction (0.096) and Customer Base (0.093)

## CHAPTER FIVE

### SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATIONS

#### 5.1 Introduction

This chapter presents summary of the data findings, discussion of the data findings and conclusion drawn from the findings and recommendations made. The conclusions and recommendations drawn are focused on addressing the objective of the study.

#### 5.2 Summary of the Findings

The section presents the summary of the findings based on the research objectives of the study.

##### 5.2.1 Influence of Customer Base on Sustainability of the LMCP

The first objective of the study sought to explore the influence of customer base on the sustainability of Last Mile Connectivity Project. In testing this, a number of customer base variables were tested. The findings of the study revealed that customer base influences the sustainability of LMCP with a regression coefficient of 0.093. Customer base was further revealed to affect the cost of operation and as such influencing sustainability negatively, on the other hand it was also found to give life to the project and thereby influencing sustainability positively.

##### 5.2.2 Customer Satisfaction on Sustainability of the LMCP

The second objective of the study sought to examine the influence of customer satisfaction on the sustainability of Last Mile Connectivity Project. The findings revealed that customer satisfaction significantly influence the sustainability of LMCP. The findings established that a unit increase in customer satisfaction results in an increase by 0.096 units in LMCP sustainability. Customer satisfaction was found to influence the increase in customer base and thus influencing sustainability positively.

##### 5.2.3 Cost of Operation on Sustainability of the LMCP

The third objective of the study was to establish the influence of cost of operation on the sustainability of Last Mile Connectivity Project. The study found that the sustainability of LMCP is influenced by the cost of operations. The study showed that an increase in one unit of cost of operation results to an increase in LMCP sustainability by 0.097 units. The link between cost of operation and sustainability was found to results from factors such as customer

satisfaction. With increase in cost of operation, the study established that there would be customer satisfaction and subsequent sustainability of the project.

### **5.3 Discussion of Findings**

This section presents a discussion of the findings by relating them with literature.

#### **5.3.1 Customer Base on Sustainability of the LMCP**

From the findings, customer base significantly influences the sustainability of the Last Mile Connectivity Project. The findings are corroborated by previous studies that have shown existence of influence of customer base on the sustainability of projects. The influence of customer base was noted to either negatively or positively influence sustainability of firm projects. A focus on main customers was found to negatively influence sustainability of firm projects. Galbraith (2012) in his findings revealed that large customers can potentially threaten the sustainability of a firm and that a focus on major customers denies the firm the benefits that accrue from margin improvements or other economies of scale (Galbraith, 2012). Similar findings were recorded by Klein, Crawford and Alchian (2018) revealed that the reason major customers would negatively affect the sustainability of a firm is that they are cognizant of their bargaining position and can engage in ex-post renegotiation over the contract terms. On the positive end, findings from Balakrishnan, Linsmeier and Venkatachalan (2016) revealed that an increase in customer base has a higher chance of increasing the sustainability of a firm than does concentrating efforts on some major customers.

#### **5.3.2 Customer Satisfaction on Sustainability of the LMCP**

The study established that customer satisfaction influences the sustainability of Last Mile Connectivity Project. These findings are corroborated by other findings that established a link between customer satisfaction and the sustainability of firm projects. However, other findings have revealed that customer satisfaction does not always guarantee good project performance. Satisfied customers are price sensitive and would switch at a slightest change/increase in commodity prices (Zeithaml, 2016), however, some would be less price-sensitive (Anderson, 2016).

#### **5.3.3 Cost of Operations on Sustainability of the LMCP**

The study has established that the cost of operation influences the sustainability of the project. These findings are in line with existing empirical evidence that have revealed existence of a significant relationship between cost of operation and sustainability. In examining this

existence, Gill, Biger and Mathur (2010) looked at ways through which firms can maximize funds as a way of maximize firm value. They found that when the value of a firm is maximized, the sustainability of these firms would be positively influenced. On the same vein, studies by Raheman and Nasr (2017) revealed that accounts payable also have an impact on the profitability of a firm, they explained that if a firm delays the payment of its debtors, it can enjoy the quality of bought products while using the money for the products in other profitable ventures.

## **5.4 Conclusions**

### **5.4.1 Customer Base on Sustainability of the LMCP**

From the findings, the study concludes that customer base significantly influences the performance of the Last Mile Connectivity Project in the Nairobi region. From the findings, it is deduced that the sustainability of LMCP is influenced by the distribution of customers and that the more the customers are distributed the higher the project spends in connecting them to the national grid and this eats into the financial reserves of the project hence affecting the sustainability of the project. It is also concluded that when customers are disconnected, the sustainability of the project is at risk since disconnections means that the project loses revenue from the potential clients and that would have a negative impact on the sustainability of the project. It was also found that if a project gets new clients then the sustainability of the project would be influenced positively. The study concludes that attraction of new customers has a positive impact on the sustainability of LMCP.

### **5.4.2 Customer Satisfaction on Sustainability of the LMCP**

The study also concludes that customer satisfaction influences the sustainability of Last Mile Connectivity Project. The study concludes that satisfied customers tend to be loyal to companies and also act as company marketers as they spread the good news about the corporation, in turn more customers are likely to sign up at no marketing fee and this would have a positive impact on the overall sustainability of the project. The study also concludes that when the project team has a good understanding of the customers' needs then that would have a positive impact on the sustainability of the project.

### **5.4.3 Cost of Operations on Sustainability of the LMCP**

The study further concludes that the cost of operations significantly affects the sustainability of a project. The study concludes that the cost of labor directly affects the sustainability of



projects. It is also concluded that outsourcing of contractors affects the sustainability of projects. If the outsourced contractors do not have the same vision as the outsourcing firm then the efficiency and effectiveness of output may be at risk. However, in the event that visions are shared, similarity in the approaches adopted will enable the project to be efficient and that has an overall impact on the sustainability of the project.

### **5.5 Recommendations**

Based on the findings, the study makes the following recommendations:

- i. The study recommends that Kenya Power should invest in ventures that are likely to help them reach more client base. The increase in clients' base would thus guarantee project sustainability.
- ii. The study also recommends that Kenya Power should invest in enhancing customer satisfaction to reduce instances of disconnections as this negatively affects the sustainability of the project.
- iii. The study further recommends that in identifying potential contractors, the company must ensure that it identifies partners with whom they share vision so as to enable optimum efficiency and effectiveness.

### **5.6 Suggestions for Further Research**

- i. The study recommends that there is need for future studies to examine models that can be put in place to ensure that energy distribution cost is placed at a minimum.
- ii. The study also recommends a need for examination of costs and benefits over an array of possible relationship life-cycles so that the real contribution of the customers to the project sustainability can be established.

## REFERENCES

- Aaker, D.A. & Jacobson, R. (2014). The financial information content of perceived quality. *Journal of Marketing Research* 31, 191-201.
- Abeywardhana, D. K. Y (2015). Capital structure and profitability, an empirical analysis of SMEs in the UK, *Journal of Emerging Economics, Finance and banking* 2015, 4 (2).
- Adamson, C. (2014) How to waste money measuring customer satisfaction. *Managing Service Quality* 4(5), 9-12.
- Anderson, E.W. and Sullivan, M.W. (2013). The antecedents and consequences of customer satisfaction for firms. *Marketing Science* 12, 125-43.
- Andreas, S. (2010). Determinants of profitability: An analysis of large Australian firms. *Intellectual Property Research Institute of Australian working paper. no. 3, Electronic Journal, 1*.
- Arimi, J. K (2010). The relationship between capital structures and financial performance. A study of the firms listed under Industrial and Allied sectors at the NSE, A management research paper, school of business: University of Nairobi
- Balakrishnan, R., T. Linsmeier and M. Venkatachalan (2016). Financial benefits from JIT adoption: Effects of customer concentration and cost structure, *The Accounting Review*, 71 (2), 183-205.
- Baruch, Y. and Holtom, B. C. (2018). Survey response rate levels and trends in organizational research. *Human relations*, 61, 8, pp. 1139-1160.
- Bercegol, R., & Monstadt, J. (2018). The Kenya slum electrification program. Local politics of electricity networks in Kibera. *Energy Research & Social Science*, 41, 249-258.
- Buruchara, R. A., Rubyogo, J. C., (2018). Reaching the Last Mile: PABRA's Experience.
- Deloof, M. (2013). Does Working Capital Management Affect Profitability of Belgian Firms? *Journal of Business Finance & Accounting*, 30 (3&4), 573-587.
- Enekwe, C. I., Agu, C. I. & Eziedo, K. N. (2014). The effect of financial leverage on financial performance: Evidence of quoted pharmaceutical companies in Nigeria. *IOSR Journal of Economics and Finance*, 5(3), 17-25.
- Ennew, C.T. and Binks, M.R. (2016) Service quality, customer satisfaction and customer retention. *British Journal of Management* 7, 219-30.

- Fairfield P., and T. Yohn, (2011). Using asset turnover and profit margin to forecast changes in profitability, *Review of Accounting Studies*, 6 (4), 371-385.
- Fornell, C. (2012). A national customer satisfaction barometer: the Swedish experience. *Journal of Marketing* 56, 1-21.
- Galbraith, K., (2012). *American capitalism: The concept of countervailing power*, Houghton Mifflin, Boston, MA.
- Gill, A., Biger, N., & Mathur, N. (2010). The Relationship between Working Capital management and profitability: Evidence from the United States. *Business and Economics Journal*, 4(2), 1- 9.
- Klein, B., R. Crawford and A. Alchian, (2018). Vertical integration, appropriable rents and the competitive contracting process, *Journal of Law and Economics*, 21, 297-326.
- Lustgarten, S., (2015). The impact of buyer concentration in manufacturing industries, *Review of Economics and Statistics*, 57 (2), 125-132
- Mahajan, V, Sharma, S. and Netemeyer, R.G. (2012) Should we expect the Baldrige Award to predict a company's financial success? *Technological Forecasting and Social Change* 42, 325±34.
- Misore, E. O. (2017). *The Impact of Financial Factors on Profitability of Manufacturing Firms Listed on the Nairobi Securities Exchange* (Masters Dissertation, United States International University-Africa).
- Mittal, B. and Lasser, W.M. (2017) Why do customers switch? the dynamics of satisfaction versus loyalty. *Journal of Services Marketing* 12(3), 177-94.
- Mogwambo, N. D. (2019). *An Investigation on the Effectiveness of Occupational Health and Safety Programme on The Kenya Power and Lighting Company Last Mile Connectivity Project Perceived Performance a Case Study of Nakuru County, Kenya* (Masters Dissertation, University of Nairobi).
- Mohohlo, N. R. (2013). *Capital structure and its impact on firm value of JSE Securities Exchange listed companies* (Masters Research project). University of the Witwatersrand, Johannesburg.

- Moksnes, N., Korkovelos, A., Mentis, D., & Howells, M. (2017). Electrification pathways for Kenya—linking spatial electrification analysis and medium to long term energy planning. *Environmental Research Letters*, 12(9), 095008.
- Moner-Girona, M., Bódis, K., (2019). Decentralized rural electrification in Kenya: Speeding up universal energy access. *Energy for Sustainable Development*, 52, 128-146.
- Mwangi, M. & Birundu, E. (2015). The effects of capital structure on the financial performance of small and medium sized enterprises in Thika Sub County Kenya. *International Journal of Humanities and Social sciences*, 2015:1(1):151-156
- Oliver, R.L. (2017) Satisfaction: A Behavioral Perspective of the Consumer. New York: McGraw Hill.
- Patatoukas, P., (2012). Customer-base Concentration: Implications for firm performance and Capital Markets, *The Accounting Review*, 87 (2), 363-392.
- Peters, T. and Waterman, R.H. (2012). *In Search of Excellence: Lessons from America's Best Run Companies*. New York: Harper Row.
- Raheman, A., & Nasr, M. (2017). Working Capital Management and profitability – case of Pakistan Firm. *International Review Research Papers* 3(1), 279-300.
- Reichheld, F.F. and Sasser, W.E. (2010) Zero defections: quality comes to services. *Harvard Business Review* 68, 105-11.
- Romero-Lankao, P., Gnatz, D. M., Wilhelmi, O., & Hayden, M. (2016). Urban sustainability and resilience: From theory to practice. *Sustainability*, 8(12), 1224.
- Singh, J.E. and Pandya, S. (2018) Exploring the effects of complaint behaviors. *European Journal of Marketing* 25(9), 7-21.
- The World Bank Database (2019). Electrification rate in Kenya.
- Tiwari, J., Schaub, E., & Sultana, N. (2019). Barriers to “last mile” financial inclusion: cases from northern Kenya. *Development in Practice*, 29(8), 988-1000.
- Williamson, O., (2019). Transaction-cost economics: The governance of contractual relations, *Journal of Law and Economics*, 22, 233-261.
- Xue F & Shuai M. (2013). The relationship between capital structure and corporate Performance under the recent financial crisis. An empirical study of listed Swedish firms, Jonkoping International Business School research paper.

Zimmerman, J.L. (2013). Taxes and firm size. *Journal of Accounting and Economics* 8, 119-149.

## APPENDICES

### Appendix I: Questionnaire

What is your position in this project?

- a) Site Engineer
- b) Technician
- c) Artisan
- d) Electrician
- e) Project Manager
- f) Other \_\_\_\_\_

How long have you been working in the project? (Please tick appropriately)

- a) Less than 1 yrs.
- b) Between 1yr – 2 yrs.
- c) Between 2yrs - 3yrs
- d) 3yrs and above

On a scale of 1 to 5 where 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, and 5 = Strongly Agree. State the extent to which you agree to the following statements

#### Customer Satisfaction

	Statement	1	2	3	4	5
1	Our customers are loyal and would not opt out to any other alternative					
2	We have a great understanding of the needs of our customers					
3	Our customers are satisfied with our charges					
4	The feedback we get from our customers is very positive					
5	We have a timely response to customer complaints					

## Customer base

	Statement	1	2	3	4	5
1	The sustainability of the LMCP is affected by the number of households connected to the grid					
2	The sustainability of the LMCP is affected by the number of loyal customers					
3	Disconnections affect the sustainability of LMCP					
4	The sustainability of the project is affected by the number of new customers					
5	The sustainability of the project is affected by the distribution of customers					

## Cost of operations

	Statement	1	2	3	4	5
1	Cost of labor directly affects the sustainability of LMCP					
2	Cost of equipment affect the sustainability of LMCP					
3	Outsourcing of contractors affects the sustainability of LMCP					
4	Cost of distribution affects the profitability of a firm					
5	Cost of installation affects the sustainability of LMCP					

## Sustainability

The sustainability of the LMCP is affected by the following factors

	Statement	1	2	3	4	5
1	No. of connections					
2	No. of new applicants					
3	No. of disconnections					
4	No of defaulters					
5	The no. waiting for connection					



## Appendix II: Data Collection Letter



**UNIVERSITY OF NAIROBI**  
OPEN, DISTANCE AND e-LEARNING CAMPUS  
SCHOOL OF OPEN AND DISTANCE LEARNING  
DEPARTMENT OF OPEN LEARNING  
NAIROBI LEARNING CENTRE

Your Ref:

Main Campus  
Gandhi Wing, Ground Floor  
P.O. Box 30197  
NAIROBI

Our Ref:

Telephone: 318262 Ext. 120

REF: UON/ODeL/NLC/31/285

20<sup>th</sup> November, 2019

### TO WHOM IT MAY CONCERN

RE: KENNEDY NGALA OUMA - REG.NO. L 50/6074/2017

The above named is a student at the University of Nairobi, Open Distance and e-Learning Campus, School of Open and Distance Learning, Department of Open Learning pursuing a Masters course in Project Planning and Management.


He is proceeding for research entitled "*Factors influencing sustainability of the last mile connectivity project at Kenya power: A case of Nairobi Region.*"

Any assistance accorded to him will be appreciated.

  
**CAREN AWILLY**  
CENTRE ORGANIZER  
NAIROBI LEARNING CENTRE




**Appendix III: NACOSTI Letter**

  
**NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY & INNOVATION**


**Ref No: 211428** **Date of Issue: 22/November/2019**


**RESEARCH LICENSE**



**This is to Certify that Mr.. Kennedy Ouma of University of Nairobi, has been licensed to conduct research in Nairobi on the topic: Factors Influencing Sustainability of Last Mile Connectivity Project at Kenya Power: A Case of Nairobi Region for the period ending : 22/November/2020.**

**License No: NACOSTI/R/19/2960**

  
**Director General**  
**NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY & INNOVATION**

**Verification QR Code**  


**NOTE: This is a computer generated License. To verify the authenticity of this document, Scan the QR Code using QR scanner application.**

**Applicant Identification Number**

**211428**

## Appendix IV: Plagiarism Report

### PERCEIVED FACTORS INFLUENCING SUSTAINABILITY OF LAST MILE CONNECTIVITY PROJECT AT KENYA POWER: A CASE OF NAIROBI REGION, KENYA

#### ORIGINALITY REPORT

<b>14%</b>	<b>11%</b>	<b>4%</b>	<b>9%</b>
SIMILARITY INDEX	INTERNET SOURCES	PUBLICATIONS	STUDENT PAPERS

#### PRIMARY SOURCES

<b>1</b>	<b>Submitted to University of Nairobi</b> Student Paper	<b>3%</b>
<b>2</b>	<b>www.diva-portal.org</b> Internet Source	<b>3%</b>
<b>3</b>	<b>Submitted to KCA University</b> Student Paper	<b>2%</b>
<b>4</b>	<b>Submitted to Mount Kenya University</b> Student Paper	<b>1%</b>
<b>5</b>	<b>repository.mua.ac.ke</b> Internet Source	<b>1%</b>
<b>6</b>	<b>Submitted to Kenyatta University</b> Student Paper	<b>1%</b>
<b>7</b>	<b>Submitted to Mesa State College</b> Student Paper	<b>1%</b>
<b>8</b>	<b>kplc.co.ke</b> Internet Source	<b>1%</b>