

**DETERMINANTS OF THE IMPLEMENTATION OF PROJECTS IN
KENYA; A CASE OF KWALE COUNTY**

GEORGE MWABUSA

**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

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

2

SIGNATURE DATE

NAME: GEORGE MWABUSA

REG NO: L50/ 9095/2017

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

SIGNATURE DATE

NAME: DR. JOHNBOSCO KISIMBII (PHD)

(Lecturer School Of Open and Distance Learning)

The University of Nairobi

DEDICATION

This work is dedicated to my lovely family for the support accorded and understanding the reason of my absence from the family when they needed my presence. I also dedicate the works to my employer Kenya Power and Lighting PLC for allowing me to carry out the works as I continue with my job assignments May god bless you all

ACKNOWLEDGEMENT

To my supervisor Dr. Johnbosco Kisimbii for his tireless effort in making this academic journey a success. I also thank The University of Nairobi for giving me the opportunity to pursue this Master Programme. I would like to deeply thank all my lecturers at the University of Nairobi who have seen me through this long journey. They have adequately guided and equipped me with both theoretical and practical skills. Thank you for your dedicated and inspiring work. I also thank both my friends who encouraged and contributed materially, financially and spiritually to my course.

Thank you all!

TABLE OF CONTENTS

DECLARATION	ii
DEDICATION	iii
ACKNOWLEDGEMENT	iv
TABLE OF CONTENTS	v
LIST OF TABLES	vii
LIST OF FIGURES	viii
ABBREVIATIONS AND ACRONYMS	ix
ABSTRACT	x
CHAPTER ONE	1
INTRODUCTION	1
1.1 Background of the Study.....	1
1.2 Statement of the Problem.....	4
1.3 Purpose of the Study.....	5
1.4 Objectives of the Study.....	5
1.5 Research Questions.....	6
1.6 Hypotheses of the Study.....	6
1.7 Significance of the Study.....	6
1.8 Assumptions of the Study.....	7
1.9 Limitation of the Study.....	7
1.10 Delimitation of the Study.....	8
1.11 Definition of Significant Terms.....	8
1.12 Organization of the Study.....	8
CHAPTER TWO	10
LITERATURE REVIEW	10
2.1 Introduction.....	10
2.2 Infrastructural Projects Implementation.....	10
2.2.1 Settlement Pattern and Infrastructure Projects Implementation.....	12
2.2.2 Proximity to Power Line Transformer and Infrastructure Projects Implementation.....	14
2.2.3 Extent to which Planning Influences the Implementation of Infrastructure Projects.....	16
2.2.4 Consumers' Ability and the Implementation of Infrastructure Projects.....	19
2.3 Theoretical Framework.....	22
2.3.1 Individual Agency Theory.....	22
2.3.2 Anthony Giddens' Structuration Theory.....	23

2.4 Conceptual Framework	24
2.5 Research Gaps	25
2.6 Summary of Chapter	27
CHAPTER THREE	28
RESEARCH METHODOLOGY	28
3.1 Introduction	28
3.2 Research Design.....	28
3.2 Target Population	28
3.4 Sample Size and Sampling Procedure	29
3.5 Research Instrument.....	30
3.5.1 Piloting of the Research Instrument.....	30
3.5.2 Validity of Research Instruments.....	30
3.5.3 Reliability of Research Instruments	30
3.6 Data Collection Procedure	31
3.7 Data Analysis	32
3.8 Ethical Considerations	32
3.9 Operationalization of Study Variables	32
CHAPTER FOUR.....	34
PRESENTATION OF FINDINGS, ANALYSIS AND INTERPENETRATION ...	34
4.2 Questionnaire Return Rate	34
4.3 Demographic Characteristics of the Respondents	35
4.4 Determinants of Infrastructure Projects Implementation.....	36
4.4.1 Level of Community Awareness about the Last Mile Connectivity Project	37
4.4.2 Settlement Pattern and Infrastructural Projects Implementation (LMCP).....	37
4.4.3 Proximity to Power Line Transformer and Infrastructural Projects Implementation	39
4.4.4 Poverty Levels, Consumer’s Ability to Pay Some Bills and Projects Implementation	40
4.4.5 Planning and Implementation of Infrastructural Projects	41
4.5 Multiple Regression Analysis of the Study.....	42
4.5.1 Standard Multiple Regression Analysis of the Study	43
4.5.2 Test of Hypotheses of the Study	45
CHAPTER FIVE.....	48
SUMMARY OF THE RESEARCH FINDINGS, DISCUSSIONS, CONCLUSIONS, RECOMMENDATIONS AND FUTURE STUDY AREAS	48
5.1 Introduction.....	48
5.2 Summary of the Research Findings	48
5.3 Discussion of the Research Findings	49

5.4 Conclusions	52
5.5 Recommendations	53
5.6 Areas of Future Study	53
1 REFERENCES	54
2 APPENDICES	58
APPENDIX I: Letter of transmittal	58
Appendix II: Research Questionnaire	59
Appendix III: Interview Schedule	61
3 DATA COLLECTION AUTHORIZATION LETTER	63

LIST OF TABLES

Table 2.1 research gaps	25
Table 3.1 Target Population	29
Table 3.2 Sample Size	29
Table 3.3 Reliability Statistics	31
Table 3.4 Operationalization Definition of Variables	33
Table 4.1 Questionnaire Response Rate	35
Table 4.2 Highest Level of Education	36
Table 4.3 Occupation	36
Table 4.4 Area of Residence in Matuga	37
Table 4.5 Settlement Pattern and Projects Implementation	39
Table 4.6 Proximity to Power Line Transformer and the Implementation of LMCP Project	40
Table 4.7 Poverty Levels, Consumer Ability and Projects Implementation	41
Table 4.8 Planning and Infrastructural Projects Implementation	43
Table 4.9 Model Summary of the Study	44
Table 4.10 Analysis of Variance of the study	44
Table 4.11 Regression Coefficients of the Study	45
Table 4.12 Summary of Regression Coefficient and Test of Hypothesis	46

LIST OF FIGURES

Figure 2.1: Conceptual Framework	24
--	----

ABBREVIATIONS AND ACRONYMS

LMCP:	Last Mile Connectivity Power Project
NGO:	Non-Governmental Organization
ROK:	Republic Of Kenya
SPSS:	Statistical Package for Social Sciences
UNDP:	United Nations Development Programme
USA:	United States of America
WB:	World Bank

ABSTRACT

This study was carried out with the aim of examining the determinants of the implementation of projects in Kenya; a case of Kwale county. The study was based on four specific objectives that included: to examine the extent to which settlement patterns determine the implementation of infrastructure projects ;to assess the extent to which proximity to power line transformer influence the implementation of infrastructure projects ;to establish the extent to which development planning determines the implementation of infrastructure projects ;and to find out the extent to which consumers' ability determine the implementation of infrastructure projects in Kenya. The study was guided by the individual agency theory and Anthony Giddens' Structuration theory. In this research study, a descriptive survey study was the appropriate research design used. The total target population was 1, 205 respondents. The researcher used questionnaires and interview guides as the data collection tools. Quantitative data collected was analyzed by the use of descriptive statistics using SPSS (version 25.0) and presented through percentages, means, standard deviations and frequencies. The data was split down into different aspects infrastructural projects implementation contained in the LMCP and community livelihoods. To help generalize the findings the collected data was grouped using percentages and measures of central tendency. Descriptive statistics including cross-tabulation, frequencies and percentages, mean and standard deviation were used for comparison. The hypothesis was tested by use of the regression analysis model. The results of the study indicated that settlement pattern has a significant and positive influence on the implementation of the LMCP project in Matuga Sub-County. While testing the hypothesis, the HO1 was rejected and instead the HA1 was accepted; meaning that settlement pattern has a significant influence on the implementation of infrastructural projects in Kwale County, Kenya [$\beta = 0.668$; $t = 5.091$; $p (.004) < 0.05$]. Also, it was found out that a distance of a homestead from the power line transformer influences the implementation of the LMCP. When testing the hypothesis, the HO2 was rejected and instead the HA2 was accepted; meaning that proximity to power line transformer has a significant influence on the implementation of infrastructural projects in Kwale County, Kenya [$\beta = .795$; $t = 5.331$; $p (.000) < 0.05$]. Besides, it was found out that project planning practices influences the implementation of infrastructure projects in Kenya significantly. When testing the hypothesis, the HO3 was rejected and instead the HA3 was accepted; development planning has a significant influence on the implementation of the infrastructural projects in Kwale County, Kenya [$\beta = .861$; $t = 4.951$; $p (.002) < 0.05$]. Finally, it was noted that majority of the respondents (90%) were for the idea that the ability of the residents to pay for some basic services like hiring an electrician to carry out wiring in their homes influenced the implementation of the LMCP project. When testing the hypothesis, HO4 was rejected and instead the HA4 was accepted. Therefore, consumers' ability has a significant influence on the implementation of infrastructural projects in Kwale County, Kenya [$\beta = .589$; $t = 3.992$; $p (.002) < 0.05$]. The study recommended that there needs to be concerted efforts in marketing and creating awareness about the LMCP Project in the county since the intake is very positive but little is being known about it.

Key Words: settlement patterns; proximity to power; development planning; consumers' ability; and infrastructure projects

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Mega infrastructural projects that cut across the locomotive and power supply like the nuclear energy plants or projects have been used as a measure of economic development and advancement across the world. Since the agrarian revolution times, majority of the countries and economies that controlled large projects like primitive or advanced harbors, coal plants, large steel industries and many more were considered most developed (UNDP, 2017). With the changes in times and trends in global market trends, a number of studies have indicated that countries which have heavily invested in mega power plants/energy projects have achieved relatively better development than those with limited power supply (World Bank, 2018). Basically, the IMF (2019) has indicated that countries which have increased their grid connectivity have had the cost of power reduced and increased production due to growth of manufacturing industries; normally associated with economic growth and development.

In China for example, economic development has been accelerating for the past 50 years at an equivalence of the super powers (AsDB, 2018). Among the accelerators of this development are projects like the Three Gorges Dam projects that been supplying over 103.1TWh. According to the report by the AsDB (2018), the Three Gorges Dam is a hydroelectric gravity dam that spans the Yangtze River by the town of Sandouping, in Yiling District, Yichang, Hubei province, China. The Three Gorges Dam has been the world's largest power station in terms of installed capacity (22,500 MW) since 2012. In 2014, the dam generated 98.8 terawatt-hours (TWh) and had the world record, but was surpassed by the Itaipú Dam, which set the new world record in 2016, producing 103.1TWh. This project has been experiencing tremendous output each year since 2014 (CRC, 2018) is attributed to a number of determinants that include: the Chinese culture of technology for development adoption (AsDB, 2018), the availability of financial resources from the Asian Development Bank and the Chinese national bank among other investors, availability of power transmission and erection experts, free and abundant labor from the urban and rural population, linear settlement patterns and the nucleated settlements which makes the distribution of electricity easier (OECD,2018) among others.

Africa is faced with a number of challenges that include: poverty, drought, famine, diseases, wars, political conflicts, terrorism, social mistrust and many more; majority of which come up as a result climate change and global warming (WGD, 2017; AfDB, 2017; UNDP, 2016 etc). According to AfDB (2018) for example, the uncertainties like drought and poverty have forced many Africans in sub-Saharan Africa miss power connection to the tune of 25% in developing countries like Nigeria while this rises to 68% in extremely poor countries like Lesotho and Eritrea. A report by AU (2017) indicated that majority of the countries in Africa have very scattered population as exemplified by the Fulani, Maasai communities due to their nomadic pastoralism nature; making it very difficult for harmonized distribution of power. UNDP (2016) has attributed the poor distribution of power among the homesteads across Africa to a number of challenges that include: poor funding of these projects, poor communities who cannot afford the cost of power connection, poor government policies, and poor unpredictable risks like weather changes, poor planning and risk management among others.

Across East Africa, Rwanda has been facilitating the implementation of various economic stimulus programmes; among them being the 100% power connection programme in urban areas and almost 90% connection in rural areas (World Bank, 2019). The concept has led to the birth of various infrastructural projects implemented alongside the programme. For example, 100% construction of green town settlements have been adopted in Kigali's suburb due to the 100% power connection programme and the resultant features have included very clean and organized city settlements with clean water, clean environment, better access to electricity and other social services. The implementation of such infrastructural projects however has been tied to a number of factors as noted by Ravallion and Wodon (2018). They include: well laid government plans on economic development, well distributed and managed urban and even rural settlements, well-coordinated complete development project plans, managed personnel and government support, donor sourcing and expertise exchange programs etc. Based on reduced costs of electricity connection, shared bills among closely constructed public projects like urban building/settlements implemented by national government, reduced tax for electricity production technology and many others; Rwanda has been ranked as one of the countries in Africa that has achieved a better rating of electrification infrastructure project implementation across Africa ,although other challenges still exist like population pressure and rural-urban migration (Reiche *at al.*, 2019).

Just like it has been noted across the globe, Kenya has a challenge in achieving 100% connectivity despite being the heart of development. A number of studies have indicated that electricity is the best source of energy used for both industrial and local development. According to the World Bank (2019), electricity is most versatile form of energy as it can be easily transported and has very many benefits. In major cities electricity had been used to power industries and factories which provide employment to people both directly and indirectly. Setting up of factories lead to demand for settlements near factories which brought demand for electricity for domestic use. Electricity is also used in providing lighting replacing paraffin lantern which are unhealthy due to the emissions it produces. It is also used in communication from mobile phones to television sets and the internet to enlighten the public. However, despite the importance associated with electricity projects implementation in Kenya, only 80% of the active population has been reached by the various power connections.

The African development bank (AfDB, 2019) indicated that as at 2019 March, 67.8 % of the Kenyans had access to electricity which indicates that 32.2% of the world population lacked access to electricity, translating to over 16.23 million people without access to electricity. Despite the high numbers of people who have no access to electricity, it can still be argued that there has been a positive increase in power connection. This can be attributed to a number of initiatives like the last mile connectivity project which is an initiative by the Government of Kenya through the Ministry of Energy and Petroleum and implemented by the Kenya Power and Lighting Company aiming to ensure affordable electricity connections to households and achieving over 70% connectivity by 2017 and universal access by 2020. The methodology approach in the first phase of the initiative, funded by the AfDB and GoK was to maximize the existing 5,320 earmarked distribution transformers in all the 47 counties. All customers within reach of 600m from these transformers will be connected in this phase. However, Mugambi (2019) has indicated that despite the milestones made, there are a number of factors affecting the Lastmile Connectivity Project. For example, the distance of a homestead from the transformers, the ability of the household heads to meet the hidden costs like purchase of connecting wires, planning for the power distribution, the distribution of the population, government policies, tendering procedures and many more have been adversely mentioned as influencers of this project.

1.2 Statement of the Problem

Evident from the fast developing countries like the Asian Giants (China, Singapore, Hong Kong etc), infrastructural projects with a specific emphasis on electricity related projects have the ability of transforming the lives of the poor and the rich equally; making it a very vital area of examination. For example, in China, the Three Gorges Dam project has not only led to power supply but has accelerated economic developing by enabling the local Chinese people come up with numerous manufacturing industries that use the readily available electrical power. Due to the importance attached to electricity production and supply projects implementation, international bodies like the World Bank, UNDP, OECD, IMF and many more have been funding power connection across the globe. For example, according to the World Bank study as at 2017, 88.849 % of the world population had access to electricity which indicates that 11.151% of the world population lacked access to electricity; this is approximately 800 million people. The access rate for Kenya stood at 63.8% translating to 14.48 million people without access to electricity. This has been tied to a number of limiting factors that include: poorly distributed populations, poor planning for development and risk management, poor financial resources and financing mechanisms, poor geographical locations, poverty levels and ability to consumers etc.

Electricity access in Kenya was at 67.8% as at 2019 as per World Bank report. This is lower than the expected achievement set by the government of 70%. The county has set to achieve universal access rate by the year 2022 in line with vision 2030. The last mile connectivity project is expected to cut down on the electricity connection cost where the government of Kenya will fund infrastructure development, those who will be connected under this project will only pay kshs 15,000.00 which will be recovered as they pay for electricity use after they have been full connected through the prepayment system. It has been noted that some people have settled far from others making it costly for electricity infrastructure development. Last mile schemes are more viable when the number of people being connected is high and are close to one another which lowers the cost of infrastructure development. Under the last mile project, people who live in clusters and require less than 1 kilometer of high voltage power line extension are also considered for connection. However, despite the ambitious nature of this project, it has not been implemented as expected by partner bodies like the World Bank, AfDB, Government of Kenya and many more. Such shortfalls have been attributed to a number of issues like poor settlement patterns and terrain, poor families that can afford the basics needed

for power installation, poor planning and risk management, poor proximity to power line transformers etc.

Despite the fact that the last mile connectivity project has very important role to play in economic development, little research seems to have focused its efforts in this area. For example, Karugu (2017) carried out a study on factors affecting last-mile connection projects. The study mentioned issues like planning and the ability of the consumers. However, this study has a short fall since it focused its efforts on the internet connectivity as opposed to electric power connectivity. Kweyu (2018) carried out a study on the Influence of project management processes on performance of Kenya power last mile connectivity projects in Nakuru County, Kenya. The study findings indicated that, electricity connection projects have faced diverse performance challenges across the world. Amongst the challenges were lack of increase of number of customers satisfied with the electricity services, and unsatisfactory numbers of meters that had been installed. Kenya last mile electricity connection project has continued to face diverse performance challenges. The last mile project has also been hit by procurement challenges which derail its implementation. Due to such challenges, it is worth carrying out a study in this area of focus. This study therefore was carried out with the aim of examining the determinants of infrastructural projects implementation in Kenya. The study focused its strength on the infrastructural project called the Last Mile Connectivity Project implemented by KPLC in Matuga Sub-county of Kwale County

1.3 Purpose of the Study

The purpose of this study was to examine the determinants of the implementation of infrastructure projects in Kenya.

1.4 Objectives of the Study

The study was based on four specific objectives that include:

- i. To examine the extent to which settlement patterns determine the implementation of infrastructure projects in Kenya
- ii. To assess the extent to which proximity to power line transformer influence the implementation of infrastructure projects in Kenya
- iii. To establish the extent to which development planning determines the implementation of infrastructure projects in Kenya

- iv. To find out the extent to which consumers' ability to pay some bills determines the implementation of infrastructure projects in Kenya

1.5 Research Questions

The study was guided by the following questions based on the objectives of the research:

- i. To what extent do settlement patterns determine the implementation of infrastructure projects in Kenya?
- ii. To what extent does proximity to power line transformer determine the implementation of infrastructure projects in Kenya?
- iii. To what extent does development planning determine the implementation of the infrastructural projects in Kenya?
- iv. To what extent does consumers' ability to pay some bills determines the implementation of infrastructure projects in Kenya?

1.6 Hypotheses of the Study

At 95% significance level, the study tested the following hypotheses noted at H_0 :

- i. H_0 : settlement pattern doesn't have a significant influence on the implementation of infrastructural projects in Kwale County, Kenya
- ii. H_0 : proximity to power line transformer doesn't have a significant influence on the implementation of infrastructural projects in Kwale County, Kenya
- iii. H_0 : development planning doesn't have a significant influence on the implementation of the infrastructural projects in Kwale County, Kenya
- iv. H_0 : consumers' ability to pay some bills doesn't have a significant influence on the implementation of infrastructural projects in Kwale County, Kenya

1.7 Significance of the Study

Since the concept of infrastructural development projects implementation is very crucial in economic development, this study has been carried out and its specific focus has been on the last mile connectivity projects. This project is very crucial and it is associated with rural, peri-urban and urban development. However, since the project is not very old as compared to other studies, a lot of scholarly works (if any) haven't been carried out in this field. Therefore, this study shall avail timely, relevant and accurate literature that can be used by other scholars or researchers as a point of reference.

This study shall be very useful to the government of Kenya, the various development partners like the African Development Fund agency, the various government Parastatals in charge of economic development and even county government. This is due to the fact that the study shall give a detailed report and status on the implementation of infrastructural development projects in Kwale County with a specific emphasis on the Last Mile Project. Therefore, these mentioned stakeholders shall be able to understand the underlying factors and challenges that are hindering the implementation of the project and what needs to be done for better performance.

Finally, this study is expected to benefit the locals of Kwale County. Specifically, the residents of Matuga Sub County shall get relevant information in relation to the implementation of the Last Mile Connection Project. The locals will be able to understand what this infrastructural project entails, how the project impacts on their lives, what challenges need to be addressed for the project to be of beneficial to these locals. The locals here cut across the domestic settles and the businesspeople living and operating within each one kilometer periphery from the transformers.

1.8 Assumptions of the Study

The study was carried out with the assumption that all the outlined objectives, questions and hypotheses could be relevant and useful in the study. Also, it assumed that all the residents of Matuga Sub-County who live next to the transformers had sufficient information in regard to Last Mile Connectivity Projects initiative (LMCP) and could participate in the study without bias and partiality. Finally, the study was carried out with the assumption that the respondents could be comfortable in responding to the questions asked in the data collection instruments while observing the current regulations that were aimed at reducing the risk of spreading the Covid-19. All the assumptions held during the study.

1.9 Limitation of the Study

The study faced two challenges. The first challenge was the limited working budgets and drastic fluctuations of operation costs due to inflation. However, the researcher ensured that some form of financing from the employer and other relevant bodies was done. Also the researcher took a special loan from the KPA study kitty to be repaid later. The second limitation was that of time availability. Time available for undertaking the research, time for work and time for reaching the supervisors and respondents was limited. The researcher therefore used the holidays, weekends and sought for the services of the research assistants for data collection.

1.10 Delimitation of the Study

The study delimited itself by taking Matuga Sub-county as the locale of the study so as to represent the whole case study of Kwale. This was due to the fact that Matuga has a relatively high consumption of the funds allocated for the LMCP and has had better intake of the infrastructure project over the past five years. The study also delimited itself by only considering the Last mile Connectivity Project as the core infrastructure project under study. Further the study considered the employees of KPLC (Ukunda) and the household heads of Matuga Sub-County with the relevant information in relation to LMCP.

1.11 Definition of Significant Terms

Customer's ability: is power retained in the pockets of the people who desire to have the electricity connection to foot some basic bills.

Development planning: this is a general life betterment plan laid down by either experts in the energy sector or the national government via the KPLC.

Distribution transformer: is a transformer that provides the final voltage transformation in the electric power distribution system, stepping down the voltage used in the distribution lines to the level used by the customer.

Household Connectivity: This refers to the actual number of homesteads using grid electricity.

Implementation: This means to construct the power line, install and energize the transformer.

Proximity to power line: the safest distance from a service or distribution transformer that normally is considered safe after 60 m within a high-voltage power line of 500 kV.

Settlement pattern: is basically the arrangement of the living design in a given place. There are generally three types of settlements: compact, semi-compact, and dispersed. Each is based on its population density. Compact settlements have the highest density of population.

1.12 Organization of the Study

The study is organized into four sections comprising of chapter one, chapter two and chapter three. Chapter one presents a preamble to the study thereby giving a general overview of the study. This section encompasses the background of this study, the statement of the problem, the objectives of the study and the research questions, study hypothesis, significance, limitations, delimitation, assumption and definition of terms as used. Chapter two presents an

expose of empirical literature review. Chapter three presents the study methodology employed to acquire data and analyse. This include but not limited to the research design, sampling techniques, data sources and type, data collection techniques, and material analysis and presentation. Chapter four is data analysis, interpretation and presentation. Chapter five is the summary of the findings, the explanations, recommendations, conclusions and areas of future study.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This section outlines the collected works reviewed. It has the concepts of infrastructural projects implementation, the various determinants of LMCP, the theoretical framework, the conceptual framework, knowledge gaps and summary of literature review.

2.2 Infrastructural Projects Implementation

A number of studies in the 21st century (UNDP, 2018; UNEP, 2019; World Bank, 2019) have indicated that economic development is measured by the number of projects that have been implemented and the ability of these projects to deliver the required services. Projects that are mostly used to measure the advancement of a given country are the infrastructural projects. According to World Bank (2014), infrastructure is the term for the basic physical systems of a business or nation—transportation, communication, sewage, water, and electric systems are all examples of infrastructure. These systems tend to be high-cost investments and are vital to a country's economic development and prosperity.

Similarly, projects related to infrastructure improvements may be funded publicly, privately, or through public-private partnerships. In economic terms infrastructure often involves the production of public goods or production processes that support natural monopolies (FAO, 2019). The implementation of electricity projects infrastructure for example has been associated with economic development in both the rural and urban places since electricity generation is associated with the implementation of others projects like heavy and light industries.

Infrastructural projects can be either mega, medium or small projects. Mega projects normally required massive capital, massive human expertise and resources, high time and normally are very political in nature. The medium ones are those that are associated with the immediate needs of a given population and can be conformably funded by the government or other partner body without using high financial resources. The small projects however can be taken by an individual, regional government or some bodies in charge of either investment for profit or not for profit investment (AsDB, 2018). From this observation, it is evident therefore that all the projects consume resources that cut across financial resources, human labor/capital, time and

other resources like land. Besides, these projects consume economic planning and policies when it comes to partnerships, financing, implementation and handing over.

According to studies discussing the need of implementing the power supply infrastructural projects in the African continent, it is noted that in Sub-Saharan Africa nearly 600 million people—or 70% of the population—live without electricity (IEA, 2018). This region contains nearly half of the unelectrified households in the world and decisions about how to increase energy access will have major implications for poverty alleviation and global climate change. However, there is limited evidence on even the most basic patterns of energy demand and the socio-economic impacts of electrification in Africa. Policy makers, non-governmental organizations, and donors often assume that the majority of the unelectrified are “off grid,” or too far away to realistically connect to a national electricity network.

The International Energy Agency constructs its World Energy Outlook forecasts using an assumption that mini-grids and small, stand-alone off-grid solutions will be required for 70% of all rural areas in developing countries (IEA, 2017). As a result, there is growing support for off-grid, distributed energy approaches, most of which are best suited for regions without access to grid power. At the same time, the cost-benefit calculations driving large-scale energy infrastructure investments tend to be based on the assumption that “if you build it, they will come.” In this view, expanding high voltage distribution networks and building out greater generation capabilities should translate into increased connectivity for rural households and businesses (AfDB, 2019).

Indeed the approach of off-power grid has been integration of various development programs and visions in Kenya like the Vision 2030. According to Kweyu (2018), Energy is one of the infrastructural enablers of the three “pillars” of Vision 2030. However, there are a number of challenges facing the power sub-sector that include: a weak power transmission and distribution infrastructure; high cost of power; low per capita power consumption and low countrywide electricity access. This has given birth to other more practical approaches to energy production, supply/transmission and coverage in Kenya like the LMCP approach.

2.2.1 Settlement Pattern and Infrastructure Projects Implementation

Tongam (2017) observed that the implementation of mega infrastructural projects in Indonesia is affected by a number of factors, among them being the concept of the type of settlement. In the study, an analysis was done on the various factors affecting the electricity supply projects in the country. The study used secondary data available in the PT PLN between the periods 2009-2017. It was noted that, the supply of electricity has not been able to meet the demand of electricity by PT PLN. The electricity supply can be affected by amount of generation units, installed capacity, power capacity, investment, energy produced, fuel consumption, unit price of fuel, energy losses, the length of transmission and distribution network, interruption of distribution network, unplanned settlement and growth of slums, rural-urban migration and captive power.

In their study in Nigeria, Ubi et al (2019) found that the most important determinants affecting the implementation of electricity supply projects effectively are electricity losses, government investment, terrain/landscape, settlement patterns and level of technology. When focusing on operation costs and implementation of electricity supply projects, the supply of electricity has been said to be influenced by the characteristics of generating units, transmission and distribution to various settlement areas, electricity price and cost of production, investment, and use of technology. Further, in generating the electricity energy through the various projects, the important variable is the input of energy, such as fuel, coal and rainfall.

World Bank (2016) did a report about Africa's state of power infrastructural projects implementation. Quoting Uganda for example, a number of challenges have faced the totality of implementing the rural electrification programme to the Karamojong people in its northern part. Inclusive is the issue of poor settlement patterns which make the cost of electricity supply high and consumption low. For example, the migratory nature of this northern part of Uganda settlers has from time to time limited the implementation of mother enabling projects like roads infrastructure, water infrastructure, school infrastructure, health infrastructure and many other infrastructure which will enable people to settle in an enclosed areas for economical supply of electricity.

According to Kweyu (2018) to operate activities of generating, transmitting and distributing electricity, the investment is needed to support the operational costs. Therefore, factors like selling price of electricity, input price, electricity losses, transmission networks, geographical

distribution, weather (rainfall), government planning and policies, and distribution interruption among other factors have an influence on electricity supply. This is supported by FAO (2018) report which indicated that rural electrification projects implementation in Kenya are faced by a number of challenges; some being very basic like poor settlement patterns and planning. According to this study, compact/nuclear settlement if well planned makes it easier to supply electricity since homesteads/households can share the power lines as opposed to scattered or dispersed settlement.

In a study carried out by Wambugu (2018) there are a number of factors influencing the performance of electrification infrastructural projects in Kenya. In this study whose title focused on the determinant of successful completion of rural electrification projects in Kenya, it was noted that among other factors, settlement patterns have a significant influence on projects implementation. The study identified two patterns that are relatively friendly to the implementation of electricity infrastructural projects. They include planned nuclear settlement and planned linear settlement. According to the study, nuclear settlement when well-planned is very important since it allows the businessmen or residents of a place have shared connection costs when it comes to the transmission line from the transformer or common connection within the houses. When it comes to well-planned linear settlement, connections can relatively be cheap and cost effective to a given limit (normally <600m) from the transformer. This is shared with other arguments posted by scholars like Mugambi (2019) and others who found out that well planned settlement in cities is associated with cheap installation of electricity infrastructure; influencing the uptake of government projects like the last mile connectivity project.

In a summary a conclusive study carried out by Wolfram, Shelef and Gertler (2019) in Kenya's marginalized lands have indicated that settlement patterns and types influence the implementation of infrastructural projects. The study that focused on how energy demand will develop in the developing world found out that when there is planned settlement, compact settlement, nucleated nature of settlement, well organized linear settlement along a given natural or man-made resource; there is better implementation of the power supply projects. Lee *et al.* (2016) did a study on Electrification for "Under Grid" households in Rural Kenya and found out that linear settlement, scattered/dispersed settlement, clustered settlement, homogeneous settlement, planned settlement etc influence the implementation of rural electrification under grid project.

2.2.2 Proximity to Power Line Transformer and Infrastructure Projects Implementation

USAID (2018) did a study in India and found out that families that live in over 1 km from either high voltage transmission transformers or middle voltage transformers are poor and can't easily afford to install electricity in their homes. This study was carried out in the famous cottage industrial towns including: Handloom; Malnmal: Meerut, Mathura, Madurai, Varanasi, Ambala; Chhint: Machhilipattanam; Durri: Agra, Jhansi, Aligarh, Ambala; and Khadi: Amroha, Calicut, and Pune. The study was purely a cross-sectional and interviewed a total of 2400 household heads. Basically the study found out that the people who were less than 50m from the transformer and ran a given business or cottage industry were much likely to install electricity in their homes as compared to those who operated within 100m radius and more. Further, the study indicated that the poor or settlers without businesses/cottage industry who operated in less than 50m radius were less likely to implement electricity as compared to those who ran a business of cottage industry.

Basically, there is an association between the distance a family lives from the transformer and the ability of this family to install electricity or make some advancement towards consuming reasonable electricity (AsDB, 2019). In a study conducted in Indonesia by the Asian Development Bank, it was observed that families that lived in an average radius of 150m from the high voltage or middle voltage transformers were connected to electricity up to the tune of 67.5% while this reduced as one moved away from the 150m radius mark. In a regression analysis carried out, this study indicated that there is a correlation between low energy intake and the distance a family or business person lives from the transmission transformer. Further, there is a significant relation between proximity to power line transformer, poverty and ability to install electricity.

According to AfDB (2019), development banks and agencies, the private sector, and governments have invested heavily in power generation and the implementation of various power infrastructural projects for the past 2 decades. Some countries now have surplus supply. Others, however, still have critical power shortages. Over 40 percent of businesses cite the lack of a reliable power supply as the biggest constraint to their operations; and some have indeed closed or relocated. With over 600million Africans without electricity, much needs to be done. A study in Nigeria by AU (2018) established in Ghana, the government has implemented a number of power supply projects since 2005; although some challenges have been cited. For

example, the poor and uncontrolled rural-urban migration has made it difficult for urban planner. The resultant product has been poor implementation of basic infrastructural projects like water, health and electricity. This is due to the fact that when people live in long distances from a common infrastructure like the power line transmission transformer, the cost effectiveness of such a service is compromised. This is supported by findings by World Bank (2013) carried out in Nigeria where it was discovered people who live in just 50m from a transformer are likely to have electricity connected with those who live between 50-200m and are economically stable being connected too. However anyone living in a distance above 200m-whether wealth or in business or poor experiences reduced power connection.

According to UNDP (2018), there is a very crucial reason as to why east African countries just like any other country have to invest in the production and supply of electricity. According to the report, over the last decade, many governments and major bilateral donors have focused their support of sub-Saharan Africa's energy sector on advancing country-based approaches to power generation and transmission. However, the ability for electricity trade to flow from areas of surplus to areas of demand is severely constrained, within and across borders. This trend highlights the urgent imperative to move power from its generation sources to where it is needed, thus providing cost-efficient supply and enhancing energy security. In line with this imperative, a number of organizations like AfDB, World Bank, UNDP Power Africa and many more have committed to increase access to electricity in sub-Saharan Africa by increasing focus on transmission. However, such wonderful efforts of installing transmission projects across countries like Burundi, Uganda, Tanzania, Zanzibar and Kenya have been hindered by number factors-among them being the distance of settlement from the power line transformers.

According to the Government of Kenya Report of 2018, the government has been heavily investing in a number of infrastructural projects with the aim of achieving Vision 2030. Among these projects is the Last Mile Project. This is a Government of Kenya programme that is aimed at facilitating the objective of affordably connecting Kenyan households to the national network grid. This is geared towards achieving a national connectivity rate of 70% by 2017 as part of the government's goal of universal access to electricity by 2020 (GoK, 2018). According to KLPC (2019), the project has various stages spread out over the next 3 years. The first phase is the maximization phase which involves connecting those households lying within 600 metres of the earmarked transformers to the national grid. During this particular phase of the project, the low-voltage network and service cables will be extended to reach these

households. This phase will cover 314,200 households or 1.5 million Kenyans. However, there have been cited challenges of the project implementation more specifically in the marginalized counties like Kwale. These counties suffer a number of issues that range from poverty, lack of relevant information, poor settlement patterns due to scattered population, poor planning for sensitization etc.

Kirubi, Jacobson, Kammen and Mills (2018) did a study in three counties in Kiambu County and asserted that the distance of a business or a household from the low-voltage transmission transformers influences their ability to be connected to power. In this study, 340 households from 3 sub counties were considered and stratified into business people and residential households. A strong relationship was established between the distance of stay from the transformers, the poverty status of the consumer and the level of knowledge. In a study conducted by Barnes (2018) on Electric Power for Rural Growth: How Electricity Affects Rural Life in Developing Countries confirmed that those people who are less than 100m from the transformers are more likely to connect their houses to electricity as compared to those in distances above 300m for the poor and 500 for the wealthy. Further, Kenya Power (2018) has noted that the first phase of the electricity connection could only be extended to those living up to 600m and the other consideration in the second phase could be seen as a potential hindrance to the implementation of the project since the procedures of application, the cost and the terms are different. Karugu (2017) concludes that the distance of families or buildings from the transformer influences the implementation of the electrification infrastructure. Those closer to the transformer (less than 150m) are most likely to connect their houses to electricity as compared to those over 200m.

2.2.3 Extent to which Planning Influences the Implementation of Infrastructure Projects

In the USA, one of the enablers of infrastructural projects implementation is effective, accurate, reliable and well-coordinated projects planning. In this country, projects implementation has effective planning starting from the conceptualization level of projects, feasibility and baseline survey level, resources planning, perceived benefits, risks planning etc (Estache and Fay, 2017). In the same note, IEA (International Energy Agency) (2018) did a report on Energy Poverty: How to Make Modern Energy Access Universal in Paris and found out that the implementation of the electricity energy projects in Paris is compliant to the UN status. This has been credited to proper planning for both the resources and the projects. Planning for the financial resources, human labor, time resources, planning for risks management, planning for

supportive laws and regulations, planning for stakeholders and end user of projects have been associated with these projects performance.

According to FAO (2018), there are a number of factors that influence the implementation of energy infrastructural projects in Africa. In this report that was documented and presented in the AU summit, among the factors that have hindered the implementation of development projects in the energy sector include planning. In the report, planning cuts across planning for these projects initiation, planning for projects objectives and goals, determining resources requirements, planning for baseline surveys, planning for stakeholders' identification and involvement, proper workload planning, action plan designs, risk management planning among others.

Davidson and Mwakasonda (2017) did a study on electricity access for the poor: A study of South Africa and Zimbabwe. In this study, 322 staff members from the two countries were considered for the study and a cross sectional analysis of a number of factors for the supply of electricity documented. In the research, there was a strong relationship between planning for the implementation of the infrastructural projects and electricity access for the poor. Planning for electricity providence take a long cycle but the most common and predictable procedure is to plan for project resources (human, time and financial resources), planning for projects risks and mitigations, planning for projects goals and objectives, planning for effective monitoring and evaluation among others (Sokona, 2018).

IPA (2018) did a study on the Rural Electric Power: Evaluation of Household Electricity Connections in Kenya. The study took its projection from the projects implementation level by cross examining the determinants and other perceived benefits. In the study, researchers randomly selected 150 transformer communities—groups of households located within 600 meters of a transformer—in Busia and Siaya, two rural counties in western Kenya. To limit construction costs, REA requested that researchers restricted the final selection of households to the 85 percent within 400 meters of a transformer. From that group, researchers randomly selected 2,289 “under-grid” households to participate in the evaluation, with roughly 15 households in each community. Researchers then randomly assigned half of the communities to receive three different levels of subsidies for electric connections and half to serve as a comparison group. The outcomes showed that the under-grid households who were close to the transformers were highly connected to electricity as compared to those above 400m. Further

the wealthy and business households consumed for electricity as compared to the poor and non-business members. The concept of planning also scored high in enabling connection to the electricity power. For example, planning for sensitization through Barazas, planning and implementing effective communication, planning for financing (credit through stima-loan), planning for group benefit and many more influences the implementation of the electricity project.

According to Eshna (2018), there are three components of planning that have been significant in the implementation of the power supply projects in the villages. The major part of planning is planning for project baselines, scope baselines planning, schedule baselines planning, and cost performance baselines planning. IEG (2018) did a report on the impact of rural electrification project in North Eastern part of Kenya. The study involved 2340 households that were connected to electricity by June 2018. The study found out that electricity transmission projects have positive impact on the lives of the locals. However, poor planning for the project has left out several households without power supply. In their conclusion, they advocated for effective projects planning since the planning phase helps to: Establish business/project requirements; Establish cost, schedule, list of deliverables, and delivery dates; Establish resources plans; Obtain management approval and proceed to the next phase.

According to Ravallion (2018) in the study that focused on evaluating anti-poverty programs in Kenya realized that planning has been a basic hindrance of anti-poverty programs implementation. The study outlined a number of planning processes that influence the implementation of projects. The basic processes of project planning are: Scope planning – specifying the in-scope requirements for the project to facilitate creating the work breakdown structure; Preparation of the work breakdown structure – spelling out the breakdown of the project into tasks and sub-tasks; Project schedule development – listing the entire schedule of the activities and detailing their sequence of implementation; Resource planning – indicating who will do what work, at which time, and if any special skills are needed to accomplish the project tasks; Budget planning – specifying the budgeted cost to be incurred at the completion of the project; Procurement planning – focusing on vendors outside your company and subcontracting; Risk management – planning for possible risks and considering optional contingency plans and mitigation strategies; Quality planning – assessing quality criteria to be

used for the project; and Communication planning – designing the communication strategy with all project stakeholders.

In another similar study carried out by Sawe (2019) whose title was ‘Brief on Energy Sector in Tanzania and Kenya,’ indeed confirmed planning phase is very crucial in the performance of energy infrastructural projects. According to the findings, the planning phase refines the project’s objectives, which were gathered during the initiation phase. It includes planning the steps necessary to meet those objectives by further identifying the specific activities and resources required to complete the project.

2.2.4 Consumers’ Ability and the Implementation of Infrastructure Projects

Singh and Ali (2017) did a study in New Delhi. The study focused on the determinants of rural development projects implementation. Among the projects that were given a lot of weight included the energy infrastructural projects implemented in the rural homes and among the people running the cottage industries. The study was a cross section in nature and the interviewed population was 200 respondents. Results indicated that the ability of the consumers influenced the extent of implementing the projects. Ability in this study included: consumers’ capacity to pay for the connection fee, the consumers’ capacity to purchase the relevant electrical equipment and the consumers’ capacity to foot the out of pocket fee for the wiring personnel.

According to Zomers (2017) the implementation, utilization and performance of rural electrification projects in Netherlands is tied to the ability of the consumers. The study’s topic was, Rural Electrification: Utilities’ Chafe or Challenge? The study was carried out between 2016 December and 2017 June. It involved 128 respondents and 40 energy experts. In an analysis carried out, there was a positive and significant relationship between ability of consumers to pay the connection fee, the ability of the consumer to buy quality electrical connection equipment, ability of the consumer to hire qualified electrician, the ability of the consumer to foot other bills and the performance of energy projects.

According to World Bank (2016) one of the major issues facing power supply and electrification projects implementation in Africa is the poverty status of majority of the Africans. The study was conducted in Nigeria’s Niger delta between 2010 and 2016 January.

In the report, it was observed that in 10 houses in the Niger delta, 6 are extremely poor and cannot afford the basic cost of installing electricity. Despite the fact that electricity infrastructure could boost the development of these poor Nigerians, the initial cost of acquiring power is total challenge due to extreme poverty. These sentiments are echoed by findings of the AU (2017) in a study done between 2016/2017 that observed the residents of Kano plains in Nigeria to be extremely poor and this affects their ability to have electricity connection projects implemented negatively.

Oxfam (2017) conducted a study on the development projects implementation in the Ethiopian highlands. In the study, the regional electrification projects were considered and a total number of 45 projects were examined. From each project, 10 respondents were picked totaling to 450 experts who answered a rated question. A number of questions in the research touched on the role of consumer/customer/locals' abilities and the implementation of the electrification projects. From the results, majority of the respondents who scored a mean on 4.389 supported the idea that consumers' ability influences the projects implementation

In another study carried out by FAO (2019) in Tanzania's Kigoma area, it was noted that consumers' ability influences the implementation of the rural electricity connectivity project. Among the components of the consumer ability that were highly ranked include: the ability of the consumer/customer to pay for the initial installation costs, the ability of the customer to pay for the electricity bills, the ability of the consumer to use correct and original connecting wires and sockets, the ability of the consumer to hire trained experts to do the home wiring, the ability of the walls to hold the connection wires etc.

According to World Bank (2016), there are a number of issues surrounding the implementation of the power supply projects in Kenya's peri-urban. In a study that was carried out in Mathare slums, Kibera slums, Mukuru kwa Njenga and Mukuru kwa Reuben slums in Nairobi, Kiandutu slums in Kiambu county and Githurai 44, it was noted that the consumers' ability or poverty levels influence their ability to be connected to electric power; determining the implementation of the KPLC connection infrastructure. In this study that was focused on the extremely poor who lived on less than 2\$ a day, it was noted that the type of house someone lived (scrape iron sheets house, polythene/pvc built house, improved iron sheets house, mud houses, permanent brick houses, temporary houses), the income levels (casual laborers vs

permanent employees), the level of knowledge on the quality of connection materials and the power to pay the connection fee influences the implementation of the KPLC energy supply projects.

Mugambi (2019) has indicated that despite the milestones made in Last Mile Projects implementations in Kenya, there are a number of factors affecting the Lastmile Connectivity Project. For example, the distance of a homestead from the transformers, the ability of the household heads to meet the hidden costs like purchase of connecting wires, planning for the power distribution, the distribution of the population, government policies, tendering procedures and many more have been adversely mentioned as influencers of the implementation of this project.

Similar studies in other areas on project implementation have identified the ability of the consumer/customer/last user as a key factor in the implementation of projects. For example, Karugu (2017) carried out a study on factors affecting last-mile connection projects. The study mentioned issues like planning and the ability of the consumers. However, this study has a short fall since it focused its efforts on the internet connectivity as opposed to electric power connectivity; a reason as to why an exploration needs to be carried out in the electricity sector. Kweyu (2018) carried out a study on the Influence of project management processes on performance of Kenya power last mile connectivity projects in Nakuru County, Kenya. The study findings indicated that, electricity connection projects have faced diverse performance challenges across the world. Amongst the challenges were lack of increase of number of customers satisfied with the electricity services, and unsatisfactory numbers of meters that had been installed. Further the study indicates that inability of the consumers who are less than 600m away from the transformers has an adverse effect on the implementation of the project.

World Bank (2017) conclude that, in marginalized Kenya, besides poor settlement patterns, the poverty levels of the residents influence their ability to be connected to electricity; influencing the performance of various government projects like the rural electrification concept. Abdullah and Markandyab (2018) have outlined a number of issues that surrounds the ability of the consumer and the implementation of the last mile projects in North Eastern Kenya. They include: Ability to buy required quality materials (connecting wires); Ability to hire power experts; Ability to foot out of pocket cost; Ability to have required identification documents

(tittle deeds); Ability to sustainably pay for power to be consumed; and house walls quality among others.

2.3 Theoretical Framework

The study was guided by the individual agency theory and Anthony Giddens' Structuration theory.

2.3.1 Individual Agency Theory

Layder (2010) in his book implied that the capability of producing an effect, is the ability to make a difference in and on the social world, of transforming the circumstances in which one finds himself, that is perhaps the essential feature of human action. Furthermore Armatya reiterates the importance and pivotal role of human action. He asserts that individual agency is ultimately, central to addressing these challenges of mankind (Sen, 1999). Availability of electricity in rural areas can increase number of households that get connected and use the electricity to uplift their standards of living. However, this can only happen if the rural population unearths the opportunities that rural electrification brings forth.

Wright (1990) in his book uses what has come to be widely quoted analogy to explain this theory perhaps by default. He gives a hypothetical society of a given population, say 100, and then goes ahead to mention that in the entire population, only two people are unemployed. The reason for the unemployment, as he surmise, becomes the temperaments of the individuals in question (Mills, 1959). Temperaments here mean the skills, capabilities or mental dispositions etc. the said individuals possess. The gist of the matter being is that their lack of employment has nothing to do with the society but them. He goes ahead to question that if perhaps given the said population, 90 people are unemployed, where then is the problem? Perhaps as he surmises again the problem this time round is in the societal structures. What opportunities are available and to whom these opportunities are intended.

To derive Wright (1990) assertions within the context of this paper is to ask whether in the presence of rural electrification through the last mile connectivity in Kwale yields the same effect/impact with similar population in terms of household connectivity. To explain this further is by comparing how people in Kwale, in this case the households connect to electricity so as to utilize the Lastmile electrification opportunity in comparison with other areas with the

same opportunity. That notwithstanding, household connectivity in Kwale county can still not have desired effects among everyone. Not everyone harnesses the opportunities available.

2.3.2 Anthony Giddens' Structuration Theory

Giddens in his book outlines the Structuration theory. The gist of the theory is an affirmation of both the roles of structures of society and individual agency in bringing about change. He contends, and rightly so, in the opinion of this paper, that structures alone are not sufficient to bring about the desired change (Giddens, 1976). He sees desired change as a product of the duality of structures and actions i.e. both contribute to the desired change. In the context of this paper, household connectivity offers an opportunity correlation to Last mile electrification program in Kwale County and are only positively realized if the people of Kwale make a willful decision to harness such an opportunity. Willful decision to harness an opportunity cannot exist without the presence of the opportunity that the structures present.

2.4 Conceptual Framework

The conceptual framework outlines the dependent, independent and intervening variables as shown below:

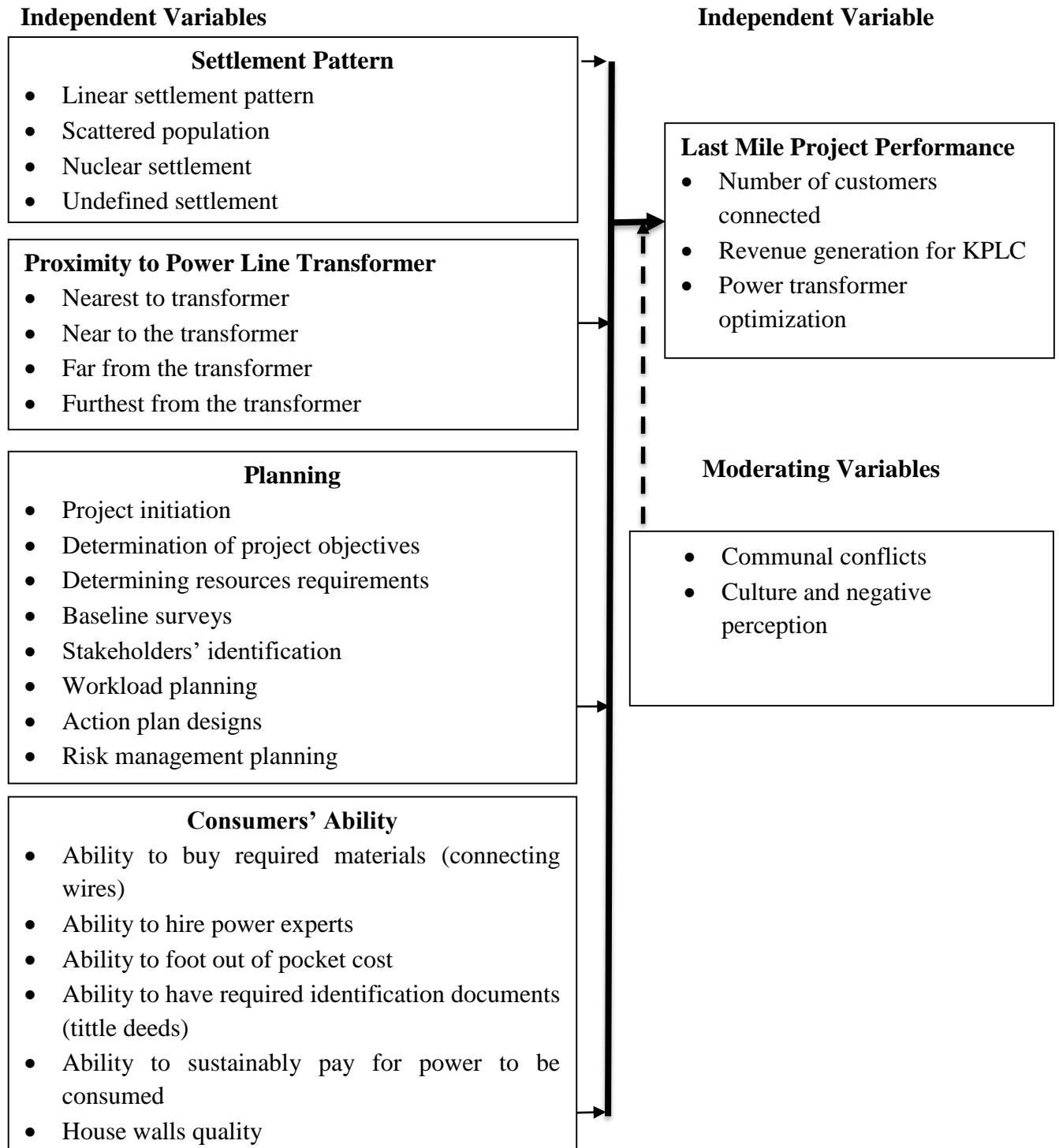


Figure 1: Conceptual Framework

Figure 1 above is the conceptual framework which has explained the interaction between the independent variables, the dependent variable, and the moderating variable together with their indicators. Settlement pattern is the first independent variable with indicators including: linear settlement pattern; scattered population; nuclear settlement; and undefined settlement. Proximity to power line transformer forms the second independent variable with nearest to transformer, near to the transformer, far from the transformer, and furthest from the transformer being the indicators of the variable. The third independent variable is planning with indicators including: project initiation; determination of project objectives; determining resources requirements; baseline surveys; stakeholders' identification; workload planning; action plan designs; and risk management planning. Finally, Consumers' ability is a variable with indicators including: ability to buy required materials (connecting wires); ability to hire power experts; ability to foot out of pocket cost; ability to have required identification documents (title deeds); ability to sustainably pay for power to be consumed; and house walls quality. On the other hand, the dependent variable is Last Mile Project performance that shall be observed by examining indicators like number of customers connected, revenue generation for KPLC, and power transformer optimization. Finally the moderating variables in the study are communal conflicts and culture and negative perception.

2.5 Research Gaps

Table 2.1 research gaps

Author	Independent Variable	Study Findings	Research gaps	How to Address the Research gaps
Wambugu (2018)	Settlement Pattern	Among the various factors, settlement patterns have a significant influence on rural electrification projects implementation in Kenya.	This study has failed to address the extent to which the various settlement pattern components influence the implementation of projects. Plus, the study has examined the rural	The current study examined all the components that link settlement patterns to LMCP. The study in a detailed analysis carried out a regression analysis on all the indicators of settlement pattern and linked them to LMCP. The study

			electrification projects whose implementation regulation differ greatly from the LMCP	shall also focused in one sub county i.e. Matuga
Kirubi, Jacobson, Kammen and Mills (2018)	Proximity to Power Line Transformer	The distance of a business or a household from the low-voltage transmission transformers influences their ability to be connected to power.	The study hasn't defined the exact specification of the distance from the low transformer as outlined by other Power Transmission Projects like the LMCP project	The current study examined all the parameters of measure of proximity to the power line transformer. Further the study engaged all the households within a given power line proximity.
Sawe (2019)	Planning	Planning phase is very crucial in the performance of energy infrastructural projects.	The study has only focused on energy infrastructural projects and is basically a desktop research that has used online data that is at times manipulated to please the donors.	This study examined the extent to which the various components relating to planning influences the performance of the Last Mile Connectivity Power Projects. The study further examined the influence of planning on the performance of electricity projects in Kenya.
Mugambi (2019)	Consumers' Ability	There are a number of factors affecting The Last Mile Connectivity Project. For example, the distance of a homestead from	The study has just mentioned consumers'	The current study examined the extent to which

		the transformers, the ability of the household heads to meet the hidden costs like purchase of connecting wires, planning for the power distribution, the distribution of the population, government policies, tendering procedures and many more have been adversely mentioned as influencers of the implementation of this project.	ability and hasn't indicated the extent to which these variable influences the performance of LMCP.	the various indicators of consumers' ability influences the performance of the LastMile Connectivity Projects
--	--	---	---	---

2.6 Summary of Chapter

The study has outlined that projects implementation is very crucial across all the sectors of the economy with the power sector being crucial. A number of studies have indicated that infrastructural projects are very crucial in development the LMCP is one of the projects that are changing the look of marginalized regions. The study has outlined the concept of infrastructural projects, the various variables, and the theories of infrastructural projects, the conceptual framework and finally the literature gap.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

Chapter three presents the methodology used in gathering primary information from the field. It includes the research design, target population, sample size and sampling procedure, research instrument, pilot testing, validity and reliability of the research instrument, data collection procedure, ethical considerations and the analysis of the data.

3.2 Research Design

A research design is considered as a scheme for research, dealing with at least four problems that are in relation to the study case, that is, which questions to study, what data to collect, which data is relevant and how to analyze the results. The best design normally depends on the research questions and also the orientation of the researcher (Crocker and Algina, 2011). In this research study, a descriptive survey study was the appropriate research design that was used. This design was preferred for the study since it considered the events in one part of Kwale County (Matuga Sub County) and compared them to the events in the entire 47 counties.

3.2 Target Population

Target population refers to the entire group of individuals or objects to which researchers are interested in generalizing the conclusions. The target population usually has varying characteristics and it is also known as the theoretical population (Mugenda and Mugenda, 2008). The target population for this study included all the households that were affected by the LMCP in Matuga Sub County. In total, there are 1,191 households in the sub county that either directly affected or indirectly affected by the LMCP since its inception (phase one of the project). From each household, one household head was considered. Further, 14 employees of Kenya Power from Ukunda Branch who were familiar with the LMCP were approached for interview. Therefore, the total target population was 1,205 respondents as shown in table 3.1

Table 3.1 Target Population

Population Nature	Frequency	Percentage (%)
Household Heads	1,191	99.0%
KPLC Technicians	04	0.3%
KPLC Engineers	05	0.4%
KPLC Contractors	03	0.2%
Finance Manager	02	0.1%
Total	1205	100.00%

Source (KPLC Ukunda, 2018)

3.4 Sample Size and Sampling Procedure

The sample size was calculated by use of Cooper and Schindler (2010)'s analogy that postulates, if the target population in a research (business or social research) is less than 10, 000, a sample size of 10% can be obtained to represent the whole population. Further, if the population of the study is less than 30, a population census can be applied if the population's geographical location is not very much dispersed. Therefore, 10% threshold was used to sample the household heads while a population census was carried out among the employees of KPLC Ukunda branch who were familiar with the LMCP implemented in Matuga sub-county as shown in table 3.2

Table 3.2 Sample Size

Population nature	Frequency	Sample size
Household heads	1,191	119
KPLC employees	14	14
Total	1205	133

After sample was calculated, two categories of sampling were applied. First, stratified sampling was applied where the households was separated from the KPLC employees. Then the KPLC employees were brought on board as a whole. Later a simple random sampling was applied in selecting the 119 household heads from the Matuga sub county.

3.5 Research Instrument

The researcher used questionnaires and interview guides as the data collection tools. A questionnaire is a research tool that gathers data over a large sample (Kothari, 2008). The questionnaire was the most appropriate research tool as it allowed the researcher to collect information from a large sample with diverse background; the findings remained confidential, saved time and since they were presented in paper format there wasn't any opportunity for biasness. Questionnaires were used to collect data from the household heads. Further an interview guide was carried out among the 14 respondents from the Kenya Power Company in Ukunda branch.

3.5.1 Piloting of the Research Instrument

In order to establish the reliability of the research instrument, a pilot study was carried out in the neighboring Mombasa County's Likoni area. As the rule of law requires, 1%, 2.5%, 5%, 7.5% and a maximum of 10% of the sample size can be used as a factor of considering people to participate in the pilot study. Therefore, 12 household heads from the Likoni area were considered for a questionnaire and the same activity repeated after one week. Further an interview was carried among 2 employees of KPLC Mombasa center. The results were entered into the SPSS version 25.0 so as to compute the Cronbach (2010) Coefficient alpha and the internal structure of tests as recommended by Cronbach L J (2010).

3.5.2 Validity of Research Instruments

The study applied two types of validity test. The first one was the content validity whereby the research instruments were subjected to experts who ascertained their relevance in the study. Therefore, the research instruments were brought forward to the university supervisor and other two researchers conversant with the rural electrification or last mile projects implemented in the country. Further the results from the pilot study were entered into the SPSS and the Cronbach's alpha was computed.

3.5.3 Reliability of Research Instruments

Internal consistency was used to test the ability of the research instruments to give similar and dependable results over time. The test adopted Cronbach (2010)'s Coefficient alpha and the internal structure of tests. In these tests, the results from the pilot study were entered into the SPSS computer programs and coefficient alpha computed. As it is recommended by Cronbach (2010), a value of 0.8 was considered as the lowest good reference point of consideration.

Basically, prior to exploring and describing the relationship between settlement patterns, proximity to power line transformer, planning, consumers' ability, and infrastructural projects implementation, the measures were examined and assessed to gauge reliability and validity. Cronbach's alpha was used to determine the internal reliability of the questionnaire used in this study. According to the rule of law, values range between 0 and 1.0; while 1.0 indicates perfect reliability, the value 0.70 is deemed to be the lower level of acceptability (Hair et al. 2006). The reliability statistics for each of the identified factors is presented in table 3.3

Table 3.3 Reliability Statistics

Variables	Cronbach's Alpha	Comments
Settlement pattern	0.8	Accepted
Proximity to power line transformer	0.9	Accepted
Planning	0.8	Accepted
Consumer's ability	0.8	Accepted

From the results in table 3.3 above, it is apparent that Cronbach's alpha for each of the identified variable is well above the lower limit of acceptability of 0.70. The findings indicated that settlement pattern variable has a score of 0.8, proximity to power line transformer has a score of 0.9, and planning has a score of 0.8 while consumer's ability has a score of 0.8. The results indicate that the research instrument used in this study had a high level of reliability as recommended by Creswell (2015).

3.6 Data Collection Procedure

To implement the general objectives of a research study, methods of data collection must always be used as noted by Nachmias and Nachmias (2006). Kerlinger, 1978 further says that problems dictate methods to a considerable extent, but methods, their availability, feasibility and relevance influence problems. McMillan and Schumacher (1993) argues that in order to begin the research, the researcher should formally acquire an introduction letter from the university identifying who he/she is, stating the intent of the student to conduct a research, the purpose and within what period. This enables the student secure researches permit from the relevant ministry, upon which the student provides the same to the local authorities during data collection. The letter was obtained from the university and assisted in getting the required data.

The researcher administered the questionnaires to the respondents. Research assistants were trained and engaged to assist the researcher in administering the questionnaires. Interviews were conducted by the researcher on pre-arranged dates.

3.7 Data Analysis

Analysis of data involves examining, categorizing, tabulating or otherwise combining the evidence to address the initial propositions of a study (Yin, 2003). The completed research instruments were first edited for completeness and consistency. Quantitative data collected was analyzed by the use of descriptive statistics using SPSS (version 25.0) and presented through percentages, means, standard deviations and frequencies. The data was split down into different aspects of infrastructural projects implementation contained in the LMCP and community livelihoods. This offered systematic, quantitative and qualitative answers to the study objectives. To help generalize the findings, the collected data was grouped using percentages and measures of central tendency. Descriptive statistics including cross-tabulation, frequencies and percentages, mean and standard deviation were used for comparison. The hypothesis was tested by use of the regression analysis model.

3.8 Ethical Considerations

The participants were guaranteed the information couldn't be made available to anyone who couldn't be involved in the study and it could remain confidential for the purpose was intended for. The researcher sought permission to carry out the research from the project supervisor, Kwale County. The prospective research participants were fully informed about the procedures involved in such a study. The participants remained anonymous throughout the study and even to the researcher himself to guarantee privacy.

3.9 Operationalization of Study Variables

This section gives the complete summary of the direction the study took. It outlines the various objectives, the independent variables measured, and the indicators of these variables, the scales of measure and data analysis method.

Table 3.4 Operationalization Definition of Variables

Objective	Independent Variable	Indicators	Scale of measure	Analysis
To examine the extent to which settlement patterns determine the implementation of infrastructure projects in Kenya	Settlement Pattern	<ul style="list-style-type: none"> • Linear settlement pattern • Scattered population • Nuclear settlement • Undefined settlement 	Ordinal Scale	Descriptive Statistics (frequency, mean and standard deviation)
To assess the extent to which proximity to power line transformer influence the implementation of infrastructure projects in Kenya	Proximity to Power Line Transformer	<ul style="list-style-type: none"> • Nearest to transformer (less 50m) • Near to the transformer (100-200m) • Far from the transformer (300-400) • Furthest from the transformer (400m and above) 	Ordinal Scale	Descriptive Statistics (frequency, mean and standard deviation)
To establish the extent to which development planning determines the implementation of infrastructure projects in Kenya	Planning	<ul style="list-style-type: none"> • Project initiation • Determination of project objectives • Determining resources requirements • Baseline surveys • Stakeholders' identification • Workload planning • Action plan designs • Risk management planning 	Ordinal Scale	Descriptive Statistics (frequency, mean and standard deviation)
To find out the extent to which consumers' ability determine the implementation of infrastructure projects in Kenya	Consumers' Ability	<ul style="list-style-type: none"> • Ability to buy required materials (connecting wires) • Ability to hire power experts • Ability to foot out of pocket cost • Ability to have required identification documents (title deeds) • Ability to sustainably pay for power to be consumed • House walls quality 	Ordinal scale	Descriptive Statistics (frequency, mean and standard deviation)

CHAPTER FOUR

PRESENTATION OF FINDINGS, ANALYSIS AND INTERPENETRATION

4.1 Introduction

This chapter basically outlines the data that was collected from the field and analysed. Raw data from the questionnaires and interview guides was analyzed and interpreted in this chapter by use of SPSS version 25.0 and presented by use means, STD Deviation, percentage etc..In order to establish the relationship between the various variables, level of significance, reliability and random distribution of data, a number of tests were conducted. To be specific, Cronbach's alpha test was used, descriptive statistic test, multiple regression analysis (standard and stepwise). The independent variables in the study included settlement patterns, proximity to power line transformer, planning, consumers' ability, while the dependent variable that is influenced by these variables is the infrastructural projects implementation.

4.2 Questionnaire Return Rate

A total of 119 questionnaires were distributed to various categories of household heads in Matuga sub-county and 14 interview guides were purposed. In this study, out of the allocated 119 questionnaires, 100 were filled and returned translating to 84.0% return rate. This return rate was considered excellent and could be used to make conclusions in this study. Also, 10 interviews were conducted among the various employees in the sub-county offices at Ukunda translating to 71.43%; a response still considered to be very good. According to Mugenda and Mugenda (2003), a 50% response rate is adequate, 60% is good, 70% rated very good with anything above 70 being considered excellent. The high return rate can be attributed to a number of factors that include: the respect the researcher has among the fellow colleague employees at Ukunda offices and the rapport created with the customers in Matuga Sub-County.

Table 4.1 Questionnaire Response Rate

Research Instrument	Returned	Percentage %
Questionnaire	100	84.0%
Interview Guides	10	71.43%
Total	110	

4.3 Demographic Characteristics of the Respondents

This section outlines the background information of the respondents.

Table 4.2 Highest Level of Education

Age	Frequency	Percentage
Primary School	05	05%
Secondary School	25	25%
Certificate college	40	40%
Diploma	18	18%
Degree and above	12	12%
Total	100	100%

A higher percentage of the household heads had a certificate college education level (40%) while those with secondary education followed (25%). The respondents with diploma level of education made up 18% of the respondents while degree and above made 12% with those with primary school education being 5%. During the interview with the employees of the KPLC, majority of the respondents (60%) had a degree level of education while 20% in each category had diploma and higher diploma respectively.

Table 4.3 Occupation

Education level	Frequency	Percentage
Permanent employment	45	45%
Casual/contractual employment	15	15%
Unemployed	07	07%
Owning a business	25	25%
Unemployed and not running a business	08	08%
Total	100	100%

Majority of the respondents in the study had a permanent job (45%), 25% own businesses, 15 are in temporary or casual employment, 8% them had neither employment or business while the remaining 7% had no employment but engaged themselves in other activities like farming. On the other hand, majority of the respondents who were interviewed had served at KPLC for

10 more than years as represented by 70%. Those who had served for less than 10 years made 30%.

Table 4.4 Area of Residence in Matuga

Work experience	Frequency	Percentage
Tiribe	06	6%
Mwaluphamba	10	10%
Burani	04	04%
Vyongwani	06	06%
Kilulu	05	5%
Kichaka Simba	08	8%
Kidongo	06	6%
Shimba Hills	10	10%
Lukore	07	7%
Ngombani	15	15%
Nzora	10	10%
Tiwi	13	13%
Total	100	100%

The study covered the Matuga Sub County and majority of the respondents came from Ngombani (15%), Nzora (10%), Tiwi (13%), Shimba Hills (10%), Mwaluphamba (10%) etc.

During the interview, it was noted that majority of the respondents has served in KPLC for over 20 years (50%) while those who had served between 15-19 years followed at 20%. Those who have served for 110-14 years made 10% with the remaining 20% having served for less than 10 years. Further, majority of the respondents (40%) had a diploma level of education followed by those with a degree at 30%. This was followed by certificate level of education at 20% while the other education achievements made up the remaining 10%.

4.4 Determinants of Infrastructure Projects Implementation

The following presents the findings on the various study variables.

4.4.1 Level of Community Awareness about the Last Mile Connectivity Project

In the study, majority of the household heads 95% were aware of the Last Mile Connectivity Project. Equally, 90% of the respondents were connected to electricity as per the time the study was being undertaken. In an interview carried out, 80% of the respondents strongly supported the idea that the Last Mile Connectivity Project has achieved its initial objectives. The 8 respondents who made up 80% of the respondents argued that the project has achieved its objectives since majority of the citizens who are nearer to the transformers having had their houses connected. However, 2 respondents who translated to 20% felt that the objectives haven't been achieved due to the fact that other underlying issues like connecting materials limit the ability of the citizens from connecting their homes.

In another question whereby the KPLC employees were asked to name at least four factors influencing the implementation of infrastructural projects with the LMCP project being a case study, it was noted that majority of the respondents (90%) felt that factors like the settlement patterns, project planning, ability of the consumers or households to take care of the bills, the distance from the transformer were among the factors. However, one respondent who made 10% of the respondents felt that government policies, financial resources/funding and politics played major roles.

4.4.2 Settlement Pattern and Infrastructural Projects Implementation (LMCP)

On a likert scale of 1-5 where 1= strongly disagree, 2= disagree, 3=neutral, 4=agree, 5=strongly agree, the study sought to examine the extent to which settlement pattern influences the implementation of infrastructural projects in Matuga with the case study of Last Mile Connectivity Project.

Table 4.5 Settlement Pattern and Projects Implementation

Statement	1	2	3	4	5	Mean	SD
Linear settlement pattern or living in along a line has an influence on the implementation of the LMCP in this location	02	01	07	47	43	4.28	0.984
Scattered population or dispersed settlement around the power transformers hinders the implementation of the electrification project	03	10	17	13	57	4.11	0.689
Nuclear settlement or compact settlement around the power transformer has a significant influence on the implementation of the LMCP	00	03	07	30	60	4.47	0.651
Undefined or unplanned settlement hinders the implementation of the LMCP in this sub county	03	03	14	30	50	4.21	0.941

On average, the trend indicates that settlement patterns have a significant influence on the implementation of the LMCP project in the Matuga area. For example, majority of the respondents (M=4.28; SD=0.984) agreed with the idea that linear settlement pattern or living in along a line has an influence on the implementation of the LMCP. In the same trend, majority of the respondents agreed that: Scattered population or dispersed settlement around the power transformers hinders the implementation of the electrification project (M=4.11; SD=0.689); Nuclear settlement or compact settlement around the power transformer has a significant influence on the implementation of the LMCP (M=4.47; SD=0.651); Undefined or unplanned settlement hinders the implementation of the LMCP in this Sub County (M=4.21; SD=0.941) etc.

In an interview that was conducted, all the 10 respondents argued that the nature of settlement, the type of people's houses distribution and the way the government or resources have defined people to settle influences the implementation of the LMCP project in Matuga Sub-County. 100% of the respondents felt that scattered settlement makes it difficult for electricity connectivity as compared to linear or nucleated settlement types. Further, the cost of projects

implementation increased as one moved from the nucleated settlement type, to linear settlement, to unplanned settlement and scattered settlement.

4.4.3 Proximity to Power Line Transformer and Infrastructural Projects Implementation

In a nominal rated question, respondents were asked whether they supported the idea that a distance of a homestead from the power line transformer influences the implementation of the LMCP. In the responses, majority of the respondents who translated to 95% supported the idea that a distance of a homestead from the power line transformer influences the implementation of the LMCP.

In another question that used a likert scale where of 1-5 whereby, 1= very little extent, 2=little extent, 3=fair extent, 4=great extent, 5=very great extent, respondents were asked to indicate the extent to which they agreed or disagreed with the idea that people are connected to electricity based on their distance from the power line transformer. The results were as discussed in table 4.6

Table 4.6 Proximity to Power Line Transformer and the Implementation of LMCP

Project

Statement	1	2	3	4	5	Mean	SD
Nearest to the transformer (less than 50m)	01	00	5	22	72	4.64	0.591
Near to the transformer (50-200m)	04	06	10	25	55	4.21	0.836
Far from the transformer (200-400m)	11	09	21	29	30	3.58	0.701
Furthest from the transformer (400-600m)	02	08	20	49	21	3.79	0.907
Unrecognized distance from the transformer	10	15	35	24	16	3.21	0.489

From the study, it is observed that unrecognized distance from the transformer did not have any significant influence on the implementation of the power project (M=3.21; SD=0.489). On the hand, a higher number of respondents seem to support the idea that distances below 600m have a positive and significant influence on the implementation of the LMCP project. For example, majority of the respondents strongly agreed that distances nearest to the transformer which is less that 50m has a significant and positive influence on the implementation of the power project (M=4.64; SD=0.591). Further, majority of the respondents agreed that distances: near to the transformer i.e 50-200m (M=4.21; SD=0.836); far from the transformer i.e 200-

400m (M=3.58; SD=0.701); furthest from the transformer i.e 400-600m (M=3.79; SD=0.907) etc.

Majority of the interviewed respondents (90%) strongly supported the idea that the distance of a homestead from the power transformer is a major determining factor of connectivity. This is tied to the fact that the LMCP project is aimed at making sure that residents from a power supply transformer not exceeding 600 metres get free connection. Further, the nearer the homestead is to the transformer, the more economical it becomes. Those outside the marked distances are either required to apply for the normal power connection plan or any other special plan.

4.4.4 Poverty Levels, Consumer’s Ability to Pay Some Bills and Projects Implementation

On a likert scale of 1-5 whereby 1=strongly disagree and 5 =strongly agree, respondents were asked to show the extent to which they supported the influence of various indicators of poverty levels and consumers’ ability to pay some bills. The responses indicated that:

Table 4.7 Poverty Levels, Consumer Ability and Projects Implementation

Statement	1	2	3	4	5	Mean	SD
Ability to buy required materials like connecting wires influences one’s uptake of electricity in this area	00	00	10	36	54	4.44	0.772
Ability to hire power experts to carry out house wiring influence one’s uptake of electricity	07	08	10	40	35	3.48	0.491
Ability to foot out of pocket cost influences one’s ability to install electricity	00	04	21	42	33	4.04	0.703
Ability to have required identification documents (tittle deeds) influences one’s ability to request for electricity connection	18	39	16	12	15	2.67	0.407
Ability to sustainably pay for power to be consumed influences long-term power intake among residents	02	08	30	32	28	3.76	0.589
House walls quality i.e timber, permanent, semi-permanent, mud etc influence the connection of electricity in the sub-county	14	20	27	17	22	3.13	0.444

Majority of the respondents supported the ideas that: Ability to buy required materials like connecting wires influences one’s uptake of electricity (M=4.44; SD=0.772); Ability to foot

out of pocket cost influences one's ability to install electricity (M=4.04; SD=0.703); and Ability to sustainably pay for power to be consumed influences long-term power intake among residents (M=3.76; SD=0.589). However, majority of the respondents indicated that ability to hire power experts to carry out house wiring has a weak influence on one's uptake of electricity (M=3.48; SD=0.491). Ability to have required identification documents (title deeds) has no significant positive influence on one's ability to request for electricity connection (M=2.67; SD=0.407); and House walls quality i.e. timber, permanent, semi-permanent, mud etc has a very weak positive influence on the connection of electricity in the sub-county (M=3.13; SD=0.444).

In an interview conducted, it was noted that majority of the respondents (90%) were for the idea that the ability of the residents to pay for some basic services like hiring an electrician to carry out wiring in their homes influenced the implementation of the LMCP project. Further, the respondents interviewed added that the ability to own land title deeds or the quality of building walls did not have any meaningful positive influence on the implementation the power project as supported by 80% of the respondents. Further, the respondents who made the majority argued that the major condition tied to the LMCP project is purely tied to sustainability of the project and distance of stay from the transformer.

4.4.5 Planning and Implementation of Infrastructural Projects

In a nominal rated question, majority of the interviewed respondents (80%) argued that planning phase for the project implementation is very crucial in determining its success. Some of the crucial planning components that scored highly include: planning for both financial and human resource, planning for work designs and the stakeholders' involvement, planning for the timelines and the objectives to be achieved in milestone among others influences the implementation of these projects.

During the interview, the employees of KPLC at the Ukunda office were also asked to rate on a scale of 1-5 the extent to which the following indicators of planning influence the implementation of the LMCP project in the Matuga Sub-County. In the scale of measure, 1=very little extent, 2=little extent, 3=undecided, 4=great extent, 5=very great extent

Table 4.8 Planning and Infrastructural Projects Implementation

Statement	1	2	3	4	5	Mean	SD
Project initiation	00	00	00	3	7	4.7	0.662
Determination of project objectives	00	00	01	03	06	4.5	0.691
Determining resources requirements	00	00	00	02	08	4.8	0.911
Baseline surveys	01	00	01	01	07	4.2	0.77
Stakeholders' identification	00	00	03	01	06	3.7	0.689
Workload planning	00	00	02	00	08	4.6	0.844
Action plan designs	00	00	01	07	02	4.1	0.801
Risk management planning	00	01	00	06	03	4.1	0.799

From the responses majority of the respondents agreed that planning for project initiation influences the implementation of infrastructure projects significantly a indicated by (M=4.7; SD=0.662); planning for determination of project objectives influences the implementation of infrastructure projects significantly a indicated by (M=4.5; SD=0.691); determining resources requirements influences the implementation of infrastructure projects significantly a indicated by (M=4.8; SD=0.911); baseline surveys influence the implementation of infrastructure projects significantly a indicated by (M=4.2; SD=0.77); stakeholders' identification influences the implementation of infrastructure projects significantly a indicated by (M=3.7; SD=0.689); workload planning influences the implementation of infrastructure projects significantly a indicated by (M=4.6; SD=0.844); action plan designs influences the implementation of infrastructure projects significantly a indicated by (M=4.1; SD=0.810); and risk management planning influences the implementation of infrastructure projects significantly a indicated by (M=4.1; SD=0.799).

4.5 Multiple Regression Analysis of the Study

Multiple regression analysis was executed to evaluate the correlation between the dependent variable (project implementation) and the independent variables (settlement pattern, proximity to power line transformer, planning, and consumers' ability) and to test the research hypotheses on the various determinants of project implementation. As recommendation by Berg (2015), a standard multiple regression analysis shall be carried out as follows:

4.5.1 Standard Multiple Regression Analysis of the Study

In order to test the research hypotheses, a standard multiple regression analysis was conducted using LMCP project implementation/performance as the dependent variable, and the four project implementation determinants including settlement pattern, proximity to power line transformer, planning, and consumers' ability as the predicting variables. Tables 4.9, 4.10 and 4.11 present the regression results.

Table 4.9 Model Summary of the Study

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error
1	0.961 ^a	0.950	.901	1.7091

a. Predictors: (Constant), Settlement Pattern; Proximity to Power Line Transformer; Planning; Consumers' Ability

From the model summary in table 4.9 above, it is clear that the R^2 was 0.95 indicating that a combination of settlement pattern, proximity to power line transformer, planning, and consumers' ability explained 95.0% of the variation in infrastructural projects implementation with LMCP project being a case study.

Table 4.10 Analysis of Variance of the study

ANOVA ^a						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	801.091	4	5.091	2.499	0.000 ^b
	Residual	160.034	16	3.321		
	Total	961.125	20			

a. Dependent Variable: Project Implementation (LMCP project)

b. Predictors: (Constant), Settlement Pattern; Proximity to Power Line Transformer; Planning; Consumers' Ability

From the table 4.10 above that has given the calculated ANOVA values, it is evident that the overall standard multiple regression model (the model that involves constant, Settlement Pattern; Proximity to Power Line Transformer; Planning; and Consumers' Ability) is

significant in predicting how settlement pattern; proximity to power line transformer; planning; consumers' ability determine the implementation of infrastructural projects with the LMCP project being the case study. The regression model achieves a high degree of fit as reflected by an adjusted R² of .901 (F = 2.499; P = 0.000 < 0.05).

Table 4.11 Regression Coefficients of the Study

Model	Unstandardized coefficients		Standardized coefficients	T	sig
	B	Std. error	Beta		
(constant)	0.961	0.0652		18.091	0.004
Settlement pattern	0.671	0.0091	0.668	5.091	0.001
Proximity	0.801	0.0099	0.795	5.331	0.000
Planning	0.872	0.0801	0.861	4.951	0.002
Consumers' ability	0.592	0.0899	0.589	3.992	0.002

a. Dependent Variable : Project Implementation/performance

Table 4.11 presents the regression results on how settlement pattern; proximity to power line transformer; planning; and consumers' ability influences the implementation of infrastructural projects in Matuga with the last mile connectivity power project being a singled example. The multiple regression equation used can be expressed as: $Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \epsilon$ and

The multiple regression equation became:

$$Y = 0.961 + 0.671X_1 + 0.801X_2 + 0.872X_3 + 0.592X_4.$$

As depicted in table 4.12, there was positive and significant influence of settlement pattern on projects implementation [$\beta = 0.668$; $t = 5.091$; $p (0.001) < 0.05$]. There was positive and significant influence of proximity to power line transformer on projects implementation [$\beta = 0.795$; $t = 5.331$; $p (0.000) < 0.05$]. Additionally, there was positive and significant influence of planning on the implementation of projects [$\beta = 0.861$; $t = 4.951$; $p (0.002) < 0.05$]. Finally,

there was positive and significant influence of organizational structure on strategy implementation [$\beta = 0.589$; $t = 3.992$; $p (0.002) < 0.05$].

4.5.2 Test of Hypotheses of the Study

As stated earlier, the study tested the hypothesis by use of the stepwise multiple regression analysis using settlement pattern; proximity to power line transformer; planning; and consumers' ability influence on the implementation of infrastructural projects in Matuga with the last mile connectivity power project being a singled example. The beta and t- test values were used to deduce on the type of hypothesis to be considered for the study as outlined in table 4.12

Table 4.12 Summary of Regression Coefficient and Test of Hypothesis

Model	Standardized coefficients	T	sig
	Beta		
(constant)		18.091	0.004
Settlement pattern	0.668	5.091	0.001
Proximity	0.795	5.331	0.000
Planning	0.861	4.951	0.002
Consumers' ability	0.589	3.992	0.002
<i>a. Dependent Variable : Project Implementation/performance</i>			

Testing the first hypothesis:

H₀ settlement pattern has no significant influence on the implementation of infrastructural projects in Kwale County, Kenya.

H₁ settlement pattern has a significant influence on the implementation of infrastructural projects in Kwale County, Kenya.

H₀ postulates that settlement pattern has no significant influence on the implementation of infrastructural projects in Kwale County, while H₁ settlement pattern has a significant influence on the implementation of infrastructural projects in Kwale County, Kenya. The results in table 4.12 failed to provide support for H₀ hence the H₀ was rejected and instead the H₁ was accepted.

Therefore, settlement pattern has a significant influence on the implementation of infrastructural projects in Kwale County, Kenya [$\beta = 0.668$; $t = 5.091$; $p (0.001) < 0.05$].

Testing the second hypothesis

H₀ proximity to power line transformer has no significant influence on the implementation of infrastructural projects in Kwale County, Kenya.

H₁ proximity to power line transformer has a significant influence on the implementation of infrastructural projects in Kwale County, Kenya.

H₀ postulates that proximity to power line transformer has no significant influence on the implementation of infrastructural projects in Kwale County, while H₁ postulates that proximity to power line transformer has a significant influence on the implementation of infrastructural projects in Kwale County, Kenya. The results in table 4.12 failed to provide support for H₀ hence the H₀ was rejected and instead the H₁ was accepted. Therefore, proximity to power line transformer has a significant influence on the implementation of infrastructural projects in Kwale County, Kenya [$\beta = .795$; $t = 5.331$; $p (.000) < 0.05$].

Testing the third hypothesis

H₀ development planning has no significant influence on the implementation of the infrastructural projects in Kwale County, Kenya.

H₁ development planning has a significant influence on the implementation of the infrastructural projects in Kwale County, Kenya.

H₀ postulates that development planning has no significant influence on the implementation of the infrastructural projects in Kwale County, while H₁ postulates that development planning has a significant influence on the implementation of the infrastructural projects in Kwale County, Kenya. The results in table 4.12 failed to provide support for H₀ hence the H₀ was rejected and instead the H₁ was accepted. Therefore, development planning has a significant influence on the implementation of the infrastructural projects in Kwale County, Kenya [$\beta = 0.861$; $t = 4.951$; $p (0.002) < 0.05$].

Testing the fourth hypothesis

H₀ consumers' ability has no significant influence on the implementation of infrastructural projects in Kwale County, Kenya.

H₁ consumers' ability has a significant influence on the implementation of infrastructural projects in Kwale County, Kenya.

H₀ postulates that consumers' ability has no significant influence on the implementation of infrastructural projects in Kwale County, while H₁ postulates that organizational structure has a significant influence on strategy implementation in state corporations in Kenya. The results in table 4.12 failed to provide support for H₀ hence the H₀ was rejected and instead the H₁ was accepted. Therefore, consumers' ability has a significant influence on the implementation of infrastructural projects in Kwale County, Kenya [$\beta = 0.589$; $t = 3.992$; $p (0.002) < 0.05$].

CHAPTER FIVE

SUMMARY OF THE RESEARCH FINDINGS, DISCUSSIONS, CONCLUSIONS, RECOMMENDATIONS AND FUTURE STUDY AREAS

5.1 Introduction

This section outlines the detailed findings of the study by outlining the summary of what the results were in chapter four. The findings are based on the results that were collected from the field as outlined by the four objectives touching on settlement patterns, proximity to the power line transformer, consumers' ability to pay and planning. It has further given the link between the findings and the literature reviewed. Further, it has given the conclusion and recommendations.

5.2 Summary of the Research Findings

The first objective in the study examined the extent to which settlement patterns determine the implementation of infrastructure projects in Kenya with the case study being taken from the LMCP project implemented in Matuga Sub-County. In an interview that was conducted, all the 10 respondents argued that the nature of settlement, the type of people's houses distribution and the way the government or resources have defined people to settle influences the implementation of the LMCP project in Matuga Sub-County. 100% of the respondents felt that scattered settlement makes it difficult for electricity connectivity as compared to linear or nucleated settlement types. In relation to various indicators of the settlement pattern in relation to LMCP project implementation, majority of the respondents ($M=4.28$; $SD=0.984$) agreed that linear settlement pattern has an influence on the implementation of the LMCP. While testing the hypothesis, the H_0 was rejected and instead the H_1 was accepted; meaning that settlement pattern has a significant influence on the implementation of infrastructural projects in Kwale County, Kenya [$\beta = 0.668$; $t = 5.091$; $p (0.001) < 0.05$].

The other objective in the study ought to assess the extent to which proximity to power line transformer influence the implementation of infrastructure projects in Kenya. Majority of the respondents (95%) supported the idea that a distance of a homestead from the power line transformer influences the implementation of the LMCP. Specifically, it was observed that unrecognized distance from the transformer did not have any significant influence on the implementation of the power project ($M=3.21$; $SD=0.489$). On the hand, majority of the respondents supported the idea that distances below 600m have a positive and significant

influence on the implementation of the LMCP project. When testing the hypothesis, the H_0 was rejected and instead the H_1 was accepted; meaning that proximity to power line transformer has a significant influence on the implementation of infrastructural projects in Kwale County, Kenya [$\beta = 0.795$; $t = 5.331$; $p (0.000) < 0.05$].

Equally, another objective sought to establish the extent to which development planning determines the implementation of infrastructure projects in Kenya. Majority of the interviewed respondents (80%) argued that planning phase for the project implementation is very crucial in determining its success. Further, majority of the respondents agreed that: project initiation (M=4.7; SD=0.662); determination of project objectives (M=4.5; SD=0.691); determining resources requirements (M=4.8; SD=0.911); baseline surveys (M=4.2; SD=0.77); stakeholders' identification (M=3.7; SD=0.689); workload planning (M=4.6; SD=0.844); action plan designs (M=4.1; SD=0.810); and risk management planning (M=4.1; SD=0.799) have a significant and positive influence on the implementation LMCP project. When testing the hypothesis, the H_0 was rejected and instead the H_1 was accepted; development planning has a significant influence on the implementation of the infrastructural projects in Kwale County, Kenya [$\beta = 0.861$; $t = 4.951$; $p (0.002) < 0.05$].

Finally, the study examined the extent to which consumers' ability determines the implementation of infrastructure projects in Kenya. It was noted that majority of the respondents (90%) were for the idea that the ability of the residents to pay for some basic services like hiring an electrician to carry out wiring in their homes influenced the implementation of the LMCP project. Also, majority of the respondents supported the ideas that: Ability to buy required materials like connecting wires influences one's uptake of electricity (M=4.44; SD=0.772); Ability to foot out of pocket cost influences one's ability to install electricity (M=4.04; SD=0.703); and Ability to sustainably pay for power to be consumed influences long-term power intake among residents (M=3.76; SD=0.589). When testing the hypothesis, H_0 was rejected and instead the H_1 was accepted. Therefore, consumers' ability has a significant influence on the implementation of infrastructural projects in Kwale County, Kenya [$\beta = .589$; $t = 3.992$; $p (0.002) < 0.05$].

5.3 Discussion of the Research Findings

In relation to settlement pattern, it was realized to have a significant influence on the implementation of infrastructure projects. For example, 100% of the respondents felt that

scattered settlement makes it difficult for electricity connectivity as compared to linear or nucleated settlement types. In agreement to such findings is Tongam (2017) who observed that the implementation of mega infrastructural projects in Indonesia is affected by a number of factors, among them being the concept of the type of settlement. This is supported by FAO (2018) report which indicated that rural electrification projects implementation in Kenya are faced by a number of challenges; some being very basic like poor settlement patterns and planning. According to this study, compact/nuclear settlement if well planned makes it easier to supply electricity since homesteads/households can share the power lines as opposed to scattered or dispersed settlement. Further, the study results indicated that in relation to various indicators of the settlement pattern in relation to LMCP project implementation, majority of the respondents ($M=4.28$; $SD=0.984$) agreed that linear settlement pattern has an influence on the implementation of the LMCP as in the case with nucleated, scattered and non-planned settlements. In agreement to these findings are Wolfram, Shelef and Gertler (2019) who indicated that in Kenya's marginalized lands, that settlement patterns and types influence the implementation of infrastructural projects. The study that focused on how energy demand will develop in the developing world found out that when there is planned settlement, compact settlement, nucleated nature of settlement, well organized linear settlement along a given natural or man-made resource; there is better implementation of the power supply projects.

Majority of the respondents (95%) supported the idea that a distance of a homestead from the power line transformer influences the implementation of the LMCP. Specifically, it was observed that unrecognized distance from the transformer did not have any significant influence on the implementation of the power project ($M=3.21$; $SD=0.489$). On the hand, majority of the respondents supported the idea that distances below 600m have a positive and significant influence on the implementation of the LMCP project. When testing the hypothesis, it was found out that proximity to power line transformer has a significant influence on the implementation of infrastructural projects in Kwale County as indicated by $\beta = 0.795$; $t= 5.331$; $p (.000) < 0.05$. In agreement to the findings are Kirubi, Jacobson, Kammen and Mills (2018) who did a study in three counties in Kiambu County and asserted that the distance of a business or a household from the low-voltage transmission transformers influences their ability to be connected to power. Further, Kenya Power (2018) has noted that the first phase of the electricity connection could only be extended to those living up to 600m and the other

consideration in the second phase could be seen as a potential hindrance to the implementation of the project since the procedures of application, the cost and the terms are different.

Equally, another objective sought to establish the extent to which development planning determines the implementation of infrastructure projects in Kenya. Majority of the interviewed respondents (80%) argued that planning phase for the project implementation is very crucial in determining its success. Further, majority of the respondents agreed that: project initiation (M=4.7; SD=0.662); determination of project objectives (M=4.5; SD=0.691); determining resources requirements (M=4.8; SD=0.911); baseline surveys (M=4.2; SD=0.77); stakeholders' identification (M=3.7; SD=0.689); workload planning (M=4.6; SD=0.844); action plan designs (M=4.1; SD=0.810); and risk management planning (M=4.1; SD=0.799) have a significant and positive influence on the implementation. In agreement to these findings are Davidson and Mwakasonda (2017) did a study on electricity access for the poor: a study of South Africa and Zimbabwe. In the research, there was a strong relationship between planning for the implementation of the infrastructural projects and electricity access for the poor. According to Sokona (2018) confirms that planning for electricity providence take a long cycle but the most common and predictable procedure is to plan for project resources (human, time and financial resources), planning for projects risks and mitigations, planning for projects goals and objectives, planning for effective monitoring and evaluation among others.

Finally, the study examined the extent to which consumers' ability determines the implementation of infrastructure projects in Kenya. It was noted that majority of the respondents (90%) were for the idea that the ability of the residents to pay for some basic services like hiring an electrician to carry out wiring in their homes influenced the implementation of the LMCP project. In agreement to such findings is Mugambi (2019) who has indicated that despite the milestones made in Last Mile Projects implementations in Kenya, there are a number of factors affecting the Lastmile Connectivity Project. For example, the distance of a homestead from the transformers, the ability of the household heads to meet the hidden costs like purchase of connecting wires, planning for the power distribution, the distribution of the population, government policies, tendering procedures and many more have been adversely mentioned as influencers of the implementation of this project. Also, majority of the respondents supported the ideas that: Ability to buy required materials like connecting wires influences one's uptake of electricity (M=4.44; SD=0.772); Ability to foot out of pocket cost influences one's ability to install electricity (M=4.04; SD=0.703); and Ability to

sustainably pay for power to be consumed influences long-term power intake among residents ($M=3.76$; $SD=0.589$). In agreement to such findings are Singh and Ali (2017) did a study in New Delhi. The study focused on the determinants of rural development projects implementation. Among the projects that were given a lot of weight included the energy infrastructural projects implemented in the rural homes and among the people running the cottage industries. Results indicated that the ability of the consumers influenced the extent of implementing the projects. Ability in this study included: consumers' capacity to pay for the connection fee, the consumers' capacity to purchase the relevant electrical equipment and the consumers' capacity to foot the out of pocket fee for the wiring personnel.

5.4 Conclusions

Based on the research findings, the study concludes that there is a significant evidence of the implementation of the LMCP project in Matuga County since it was initiated. The research concludes that settlement patterns are very crucial among other factors when implementing the Last Mile Connectivity Power project. Some of the most crucial components of settlement pattern that have a positive and significant influence are linear settlement pattern and nucleated settlement pattern while unplanned, undefined and scattered settlement patterns are more restrictive to the implementation of the project.

Further, the researcher concludes that proximity to power line transformer is another crucial determinant of LMCP project implementation in Kwale County. Basically, residents below 600m periphery from any given LMCP transformer have a higher ability and probability of being connected to the power grid/line. Therefore, the nearer one homestead is to the power transformer the higher the probability of connection; thus better implementation of the LMCP project in Matuga Sub-county, Kwale County.

It is also concluded that planning by the project implementers or the agency (KPLC) has a very positive and significant role in the implementation of the power project. Initial planning from the start point of the project, planning for the goals and objectives, planning for the resources and even the stakeholders has a significant influence on the implementation of such essential infrastructural projects.

Finally, the research concludes that consumers' ability has an influence on the implementation of the LMCP project. However, the ability to buy required materials like connecting wires, ability to hire power experts, ability to foot out of pocket cost etc are more significant as

compared quality of the house and the ability to have required identification documents like the title deeds.

5.5 Recommendations

- i. The study recommends that there needs to be concerted efforts in marketing and creating awareness about the LMCP Project in the county since the intake is very positive but little is being known about it.
- ii. Further, the study recommends that the government should come up with a well-defined settlement plan in Kwale County which shall make it easy for essential services projects implementation at a cost effective and sustainable manner.
- iii. The study further recommends that the community members should be sensitized on living next to the low voltage or any other form of transformers that are fronted by the LMCP project since they will have free power connection.
- iv. Equally, all aspects of project planning should be embraced by all the stakeholders of the LMCP project in Matuga and elsewhere in the county.
- v. All the principles of project management must be observed, maintained and adhered to for effective and efficient implementation of the power projects.
- vi. Further, continuous monitoring and evaluation of the project planning process must be maintained plus the implementation for best implementation.
- vii. Finally, consumers' ability and customers' ability to either care for the bills of the power supplied or some other basic bills like hiring expertise for power connection or power supply connecting materials influences the implementation of the power project.

5.6 Areas of Future Study

The study is one area that has attracted a lot of funding in the past five plus years but no one documented study has examined its performance throughout the years in Kwale County. There needs to be a study that shall examine the extent to which financial resources utilization influences the implementation of the infrastructure projects in Kwale County with a case study being the Last Mile Connectivity Power Project. Further, study shall be carried out to examine the influence of continuous improvement strategy on the implementation of power supply projects in Kenya with the LMCP project being taken as a case study. Also a study can be carried out in the same area but in other counties in Kenya.

1 REFERENCES

- Abdullah, S and Markandyab, A. (2018). *Rural Electrification Programmes in Kenya: Policy Conclusions from a Valuation Study*. Energy for Sustainable Development, 16(1), 103– 110.
- AfDB. (2018). *Evaluation in the Practice of Development*. Policy Research Working Paper No.4547.
- AU. (2017). Hidden impact? Household saving in response to a poor-area development project. *Bulletin of Public Economics*, 89, p. 2183-2204.
- AsDB. (2018). *Economics of “Last Mile” Electrification*. Presentation for the World Bank by Ken Lee, Edward Miguel, and Catherine Wolfram: University of California, Berkeley
- Barnes, F. (2018). *Electric Power for Rural Growth: How Electricity Affects Rural Life in Developing Countries*. Boulder, CO: West view Press.
- Cooper, D. R., and Schindler, P. S (2010). *Business Research Methods (9th Edition)*. McGrawHill Publications. New York, United States.
- Crocker L, Algina J (2011). *Introduction to classical and modern test theory*. Orlando, FL: Harcourt Brace Jovanovich; 1986:1-527.
- Cronbach LJ (2010). *Coefficient alpha and the internal structure of tests*. Psychometrika.1951; 16:297-334.
- Davidson, O., & Mwakasonda, S. (2017). *Electricity access for the poor: A study of South Africa and Zimbabwe*. Energy Sustain Development, 8(4), 26–40.
- Estache, A., Fay, M. (2017). *Current debates on infrastructure policy*. Policy Research Working Paper 4410. Washington DC: World Bank.
- Eshna N. (2018). Role of Planning in Successful Project Management Framework. <https://www.simplilearn.com/role-of-planning-in-project-management-framework-rar226-article>.
- FAO. (2018). FAOSTAT database. www.fao.org/faostat. Accessed 6 June 2019.

- FAO (2019). AQUASTAT database. www.fao.org/nr/water/aquastat/main/index.stm. Accessed 17 Nov 2019.
- IEA (International Energy Agency). (2018). *Energy Poverty: How to Make Modern Energy Access Universal: Special Early Excerpt of the World Energy Outlook 2010*. Paris.
- IEG (Independent Evaluation Group). (2018). *The Welfare Impact of Rural Electrification: A Reassessment of the Costs and Benefits*. Impact Evaluation Report, World Bank, Washington, DC.
- Kenya Power (2018). <http://www.kplc.co.ke/content/item/567/Electricity-customers-to-hit-3-million-in-a-month,says-Dr.-Chumo#sthash.6qQoHeiQ.dpuf>
- Kirubi, C., Jacobson, A., Kammen, D., & Mills, A. (2018). *Community-based electric microgrids can contribute to rural development: Evidence from Kenya*. *World Development*, 37(7), 1208–1221.
- Kothari, C.R (2008). *Research Methodology: Methods and Techniques*. New Delhi: New Age International (p) ltd publishers
- KPLC (2017) *Kenya power and lighting company annual report and accounts 2016–2017*; Nairobi.
- Karugu (2017) *factors affecting last-mile connection projects*. Uon thesis
- Kweyu (2018) *Influence of project management processes on performance of Kenya power last mile connectivity projects in Nakuru County, Kenya*. Uon thesis
- Leet al. (2016) Electrification for “Under Grid” households in Rural Kenya. *Development Engineering journal homepage: www.elsevier.com/locate/deveng*
- Mugambi F. (2019). *National electricity planning in settings with low pre-existing grid coverage: development of a spatial model and case study of Kenya*. *Energy Policy* 37, 2395–2410.
- Mugenda O. M. & Mugenda A. G. (2008), *Research methods: Quantitative & Qualitative approaches*. Nairobi: African Centre for Technology Studies press.

- Nachmias, C.V. and Nachmias D. (2006). *Research Methods in Social Sciences. 5th Edition*. London: Arnold Publishers:
- OECD. (2018). Rural electrification: Accelerating impacts with complementary services. *Energy Sustain Development, 13*, 38–42.
- Ravallion, M. (2018). *Evaluating Anti-Poverty Programs. In: Handbook of Development Economics Volume 4*. Amsterdam, Netherlands.
- Ravallion, M. and Q. Wodon (2018) *Evaluating a Targeted Social Program When Placement is Decentralized*, World Bank Policy Research Paper No. 1945.
- Reiche et al (2019), *Expanding Electricity Access to Remote Areas: Off-Grid Rural Electrification in developing countries*‘ http://w.martinot.info/Reiche_et_al_WP2000.pdf:
- Sawe E.N, (2019). Brief on Energy Sector in Tanzania and Kenya Renewable Energy and Environmental News, (TaTEDO), ISSN 0856-6704.
- Singh, K. K and Ali, S. (2017). *Rural Development Strategies in Developing Countries*. New Delhi: Sarup and Sons.
- Sokona, Y. (2018). *A new sustainable energy path for African development: think bigger, act faster*. Cape Town: Energy and Development Research Centre, University of Cape Town.
- Sybil L., (2017). *Electrification for —under grid household households in rural Kenya: five questions for ken lee*
- Tongam S. (2017). *Analysis of Factors Affecting the Electricity Supply in Indonesia*. USAEE Working Paper No. 17-312
- Ubi, P. S., Effiom, L., Okon, E., Oduneka, A. E. (2019). An Econometric Analysis of the Determinants of Electricity Supply in Nigeria. *International Journal of Business Administration . 3 (4)*, p 72.

- UNDP (2017). Urban and Rural Development Projects in Africa. United Nations Development Programme One United Nations Plaza New York, NY 10017
www.undp.org
- UNDP (2018). Human Development Indices and Indicators. Annual Report; 2018 Fiji
http://hdr.undp.org/sites/default/files/2018_human_development_statistical_update.pdf
- UNDP (2019). Keeping People Out Of Poverty. 31 Million At A Time.
<https://annualreport.undp.org>
- Wambugu, D. M. (2018), Determinant of successful completion of rural electrification projects in Kenya: A case study of Rural Electrification Authority, *International Journal of Social Sciences and Entrepreneurship*. Vol.1, Issue 2, 2013, 1 (2), 549-560
- Wolfram, C., Shelef, O., Gertler, P., (2019) *How Will Energy Demand Develop in the Developing World?* J. Econ. Perspect. 26 1, 119–138.
- World Bank, (2017). International Development Association on a Country Assistance Strategy of the World Bank for the Republic of Malawi.http://www.wds.worldbank.org/external/default/WDSContentServer/WDSP/IB/2007/01/25/000090341_2_00701_25110159/Rendered/PDF/38326.pdf
- World Bank. (2016).*The World Bank Annual Report 2003: Year in Review*. Washington, D C: World Bank.
- World Bank. (2017). *The Welfare Impact of Rural Electrification: A Reassessment of the Costs and Benefits*. IEG Impact Evaluation. Washington, D.C: World Bank
- World Bank. (2018). *World Development Report 2018*.
- World Bank (2019). *African Development Fund. Project: Last Mile Connectivity Project*. Nairobi, Kenya
- Zomers, Adriaan N. (2017). *Rural Electrification: Utilities' Chafe or Challenge?* Enschede, The Netherlands: Twente University Press.

2 APPENDICES

APPENDIX I: Letter of transmittal

GEORGE MWABUSA

Private bag

Ukunda KPLC

Dear participant,

My name is George Mwabusa and I am a student undertaking a Master of Art Degree in Project planning and management at the University of Nairobi, Mombasa campus. To fulfill the completion of this course, I am carrying out a study on the determinants of the implementation of projects in Kenya; a case of Kwale county. Since the matter affects the whole community of which you and I prosper in, I am inviting you to participate in this research study by completing the attached questionnaire and answer the questions sincerely.

If you choose to participate in this research, please answer all questions as honestly as possible. Participation is strictly voluntary and you may decline to participate at any time. In order to ensure that all the information will remain confidential, you do not have to include your name. The data collected will be for academic purposes only.

Thank you.

Yours faithfully

.....

George Mwabusa

Appendix II: Research Questionnaire

This questionnaire is for the purpose of research only and the information you give will be treated confidentially. Your cooperation will be highly appreciated. Do not write your name on this questionnaire. Thank you.

Section one: Background Information

Instruction: please tick in the spaces provided or provide information where necessary.

1. What is your highest level of education?

Did not attend school [....], Primary School [....] Secondary School [....]

Certificate college [.....], Diploma [...], Degree and above [...]

2. Indicate your category of occupation

Permanent employment [....], Casual/contractual employment [....], unemployed [.....]

Owning a business [.....], unemployed and not running a business [.....]

3. Indicate the location you live in Matuga.....

4. Are you aware of the lastmile connectivity project implemented by KPLC?

Yes [.....] No [.....]

5. Are you connected to electricity up to date?

Yes [.....] No [.....]

Section Two: Questions Guided by the Research Objectives

Settlement Pattern and Projects Implementation

Indicate the extent to which you agree or disagree with the following statements (utafsiri ufanyike kwa asiyelewa vizuri maelezo). Use a scale of 1-5 where 1= strongly disagree, 2= disagree, 3=neutral, 4=agree, 5=strongly agree

Statement	1	2	3	4	5
<ul style="list-style-type: none"> Linear settlement pattern or living in along a line has an influence on the implementation of the LMCP in this location 					
<ul style="list-style-type: none"> Scattered population or dispersed settlement around the power transformers hinders the implementation of the electrification project 					
<ul style="list-style-type: none"> Nuclear settlement or compact settlement around the power transformer has a significant influence on the implementation of the LMCP 					
<ul style="list-style-type: none"> Undefined or unplanned settlement hinders the implementation of the LMCP in this subcounty 					

Proximity to Power Line Transformer

In your own opinion, do you think that a distance of a homestead from the power line transformer influences the implementation of the LMCP?

Yes [.....], No [.....]

If yes in the question above, indicate the extent to which people are connected to electricity based on their distance from the power line transformer. Use a scale of 1-5 where 1= very little extent, 2=little extent, 3=fair extent, 4=great extent, 5=very great extent

Statement	1	2	3	4	5
<ul style="list-style-type: none"> Nearest to the transformer (less than 50m) 					
<ul style="list-style-type: none"> Near to the transformer (50-200m) 					
<ul style="list-style-type: none"> Far from the transformer (200-400m) 					

• Furthest from the transformer (400-600m)					
• Unrecognized distance from the transformer					

Poverty Levels, Consumer Ability and Projects Implementation

On a rating scale on 1-5 where 1=strongly disagree, 2=disagree, 3=neutral, 4=agree and 5=strongly agree; indicate the extent to which you agree or disagree with these statements

Statement	1	2	3	4	5
• Ability to buy required materials like connecting wires influences one's uptake of electricity in this area					
• Ability to hire power experts to carry out house wiring influence one's uptake of electricity					
• Ability to foot out of pocket cost influences one's ability to install Electricity					
• Ability to have required identification documents (tittle deeds) influences one's ability to request for electricity connection					
• Ability to sustainably pay for power to be consumed influences long-term power intake among residents					
• House walls quality i.e timber, permanent, semi-permanent, mud etc influence the connection of electricity in the sub-county					

Appendix III: Interview Schedule

(KPLC employees only)

This is an interview schedule which I am requesting you to participate in. You have been chosen to participate in this interview due to the fact that you have a past vast knowledge on the LMCP implemented in the Matuga sub county. Participation is voluntarily and the information shall be treated with utmost confidentiality. The study is for academic purposes only and no form of information that can expose your identity should be disclosed. The

interview takes only 10min of your time since the data shall be captured in recording for transcription in later stage to avoid time wasting. Thank you.

Basic Information

1. For how long have you served in KPLC?
2. What is your highest level of education?
3. Do you think that the last mile connectivity project has achieved its initial objectives?
Explain your answer.
4. Name any four common factors that you think are common in implementing the LMCP in Matuga Subcounty
5. In your own opinion explain the extent to which the following predetermined factors influence the implementation of the LMCP in Matuga subcounty
 - a. Settlement pattern/or the way people have chosen to distribute their buildings around the transformers. Give support for your answer
 - b. The proximity of the residents to the power line transformer. Give support for your answer
 - c. Project planning. Give support for your answer
 - d. Consumers' ability. Give support for your answer
6. In a degree of your own rating starting with 1 as very little extent and 5 as the highest extent, indicate the extent to which the following planning concepts influence the implementation of the LMCP in Matuga subcounty.
 - a. Project initiation
 - b. Determination of project objectives
 - c. Determining resources requirements
 - d. Baseline surveys
 - e. Stakeholders' identification
 - f. Workload planning
 - g. Action plan designs
 - h. Risk management planning

3 DATA COLLECTION AUTHORIZATION LETTER



UNIVERSITY OF NAIROBI
OPEN DISTANCE AND E-LEARNING CAMPUS
SCHOOL OF OPEN AND DISTANCE LEARNING
DEPARTMENT OF OPEN LEARNING

Your Ref: UON/ODEL/SODL/MLC/1/2

Your Ref:

Telephone: Mombasa 0204916814

Off-Moi Avenue
Uni Plaza Building
Mombasa Campus
P.O. Box 83732-80100
MOMBASA, KENYA

26th June, 2020.

TO WHOM IT MAY CONCERN

RE: PERMISSION TO PROCEED TO THE FIELD AND COLLECT DATA

This is to introduce **GEORGE SAMUEL MWABUSA**, who is a bonifide student of the University of Nairobi. His Registration Number **L50/9095/2017** and he is in his second year of study pursuing a **MASTER OF ARTS DEGREE IN PROJECT PLANNING AND MANAGEMENT**.

All Post-graduate students are required to prepare and present a research project as part of their course. George has successfully defend his proposal based on **DETERMINANTS OF THE IMPLEMENTATION OF PROJECTS IN KENYA; A CASE OF KWALE COUNTY**, and has been allowed to proceed to the field and collect data. He therefore requires to collect data in order to complete his research project. The information he requires is meant purely for academic purposes and will be not be used for any other purpose.

Hence, on behalf of the university, I am kindly requesting you to extend to him any assistance that may enable to collect the information he requires.

Yours faithfully,

DR. JOHN BOSCO M. KISIMBII
CO-ORDINATOR – SODL, MOMBASA CAMPUS
EXAMINATION OFFICER - ODEL