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Determinants of the Implementation of Projects in Kenya: A Case of Kwale County

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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 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 [$\beta = 0.668$; $t = 5.091$; $p (.004) < 0.05$]. 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 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 [$\beta = .795$; $t = 5.331$; $p (.000) < 0.05$]. Besides, it was found out that project planning practices influences the implementation of infrastructure projects in Kenya significantly. When testing the hypothesis, the 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 [$\beta = .861$; $t = 4.951$; $p (.002) < 0.05$]. 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, 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 [$\beta = .589$; $t = 3.992$; $p (.002) < 0.05$].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.***

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

1. Introduction

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.

1.1 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

1.2 Objectives of the Study

The study was based on four specific objectives that include:

- To examine the extent to which settlement patterns determine the implementation of infrastructure projects in Kenya
- To assess the extent to which proximity to power line transformer influence the implementation of infrastructure projects in Kenya
- To establish the extent to which development planning determines the implementation of infrastructure projects in Kenya
- To find out the extent to which consumers' ability to pay some bills determines the implementation of infrastructure projects in Kenya

1.3 Hypotheses of the Study

At 95% significance level, the study tested the following hypotheses noted at $H_{0:}$

- $H_{0:}$ settlement pattern doesn't have a significant influence on the implementation of infrastructural projects in Kwale County, Kenya
- $H_{0:}$ proximity to power line transformer doesn't have a significant influence on the implementation of infrastructural projects in Kwale County, Kenya
- $H_{0:}$ development planning doesn't have a significant influence on the implementation of the infrastructural projects in Kwale County, Kenya
- $H_{0:}$ consumers' ability to pay some bills doesn't have a significant influence on the implementation of infrastructural projects in Kwale County, Kenya

2. Literature Review

2.1 Theoretical Review

2.1.1 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.

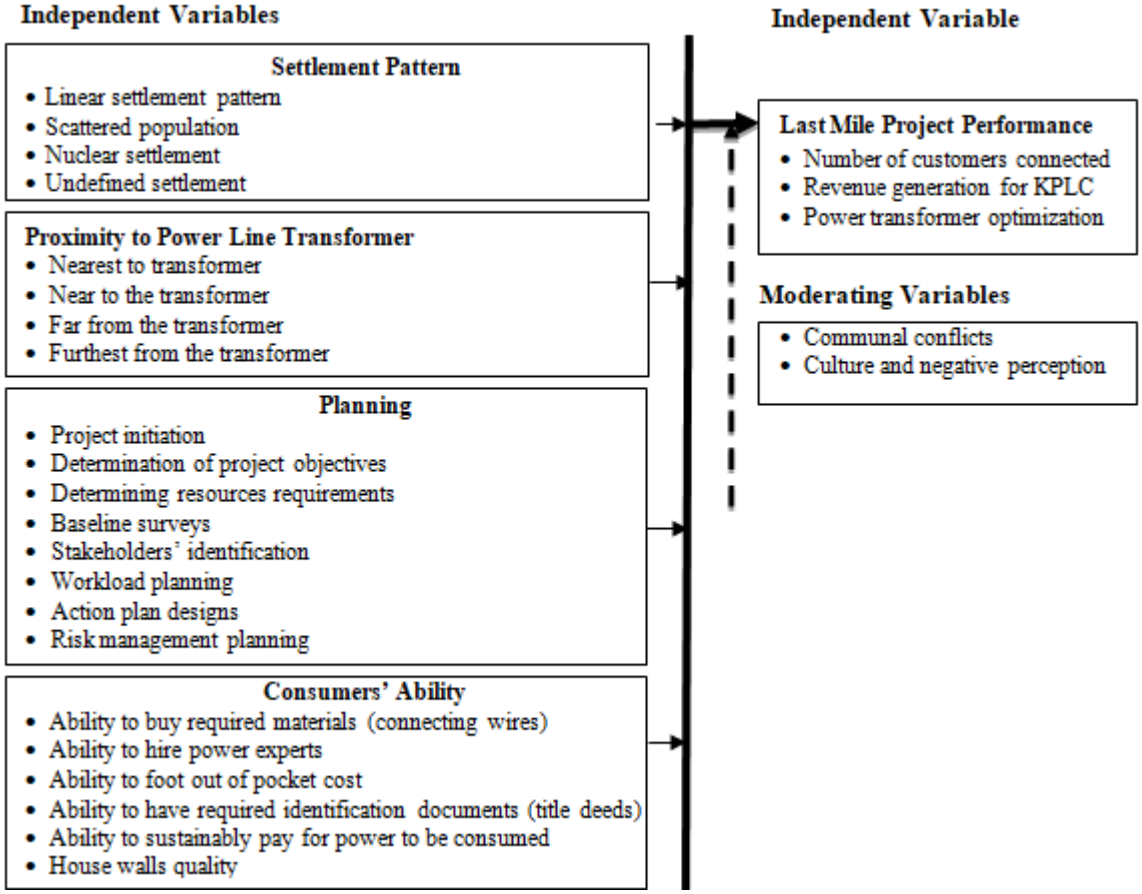
To derive Wright (1990) assertions within the context of this paper is to ask whether in the presence of rural electrification through the last mile connectivity in Kwale yields the same effect/impact with similar population in terms of household connectivity. To explain this further is by comparing 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.

2.1.2 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.

2.2 Conceptual Framework

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



2.2.1 Settlement Pattern and Infrastructure Projects Implementation

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

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

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 tittle 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

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.

3. Research Methodology

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. The total target population was 1,205 respondents. 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. 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.

The researcher used questionnaires and interview guides as the data collection tools. 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. 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.

4. Results and Discussions

4.1 Multiple Regression Analysisof 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:

4.1.1 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 1, 2 and 3 present the regression results.

Table 1: Model Summary of the Study

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error
1	.961[a]	.950	.901	1.7091

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

From the model summary in table 1 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 2: 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	.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 2 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 R^2 of .901 (F = 2.499; P = 0.000 < 0.05).

Table 3: 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
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 3 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: $Y= \beta_0+\beta_1X_1+\beta_2X_2+ \beta_3X_3 + \beta_4X_4 + \varepsilon$ 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 3, there was positive and significant influence of settlement pattern on projects implementation [β = 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 [β = 0.795; t = 5.331; p (0.000) < 0.05]. Additionally, there was positive and significant influence of planning on the implementation of projects [β = 0.861; t = 4.951; p (0.002) < 0.05]. Finally, there was positive and significant influence of organizational structure on strategy implementation [β = 0.589; t = 3.992; p (0.002) < 0.05].

4.1.2 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

Table 4: 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

a. Dependent Variable: Project Implementation/performance

Testing the first hypothesis:

H_0 *settlement pattern has no significant influence on the implementation of infrastructural projects in Kwale County, Kenya.* ***H_1*** *settlement pattern has a significant influence on the implementation of infrastructural projects in Kwale County, Kenya.*

H_{O1} postulates that settlement pattern has no significant influence on the implementation of infrastructural projects in Kwale County, while H_1 settlement pattern has a significant influence on the implementation of infrastructural projects in Kwale County, Kenya. The results in table 4 failed to provide support for H_0 hence the H_0 was rejected and instead the H_{A1} was accepted. Therefore, settlement pattern has a significant influence on the implementation of infrastructural projects in Kwale County, Kenya [β = 0.668; t = 5.091; p (0.001) < 0.05].

Testing the second hypothesis

H_0 *proximity to power line transformer has no significant influence on the implementation of infrastructural projects in Kwale County, Kenya.* ***H_1*** *proximity to power line transformer has a significant influence on the implementation of infrastructural projects in Kwale County, Kenya.*

H_{O2} postulates that proximity to power line transformer has no significant influence on the implementation of infrastructural projects in Kwale County, while H_1 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 failed to provide support for H_0 hence the H_0 was rejected and instead the H_1 was accepted. Therefore, proximity to power line transformer has a significant influence on the implementation of infrastructural projects in Kwale County, Kenya [β = .795; t = 5.331; p (.000) < 0.05].

Testing the third hypothesis

H_0 *development planning has no significant influence on the implementation of the infrastructural projects in Kwale County, Kenya.* ***H_1*** *development planning has a significant influence on the implementation of the infrastructural projects in Kwale County, Kenya.*

H_{O3} postulates that development planning has no significant influence on the implementation of the infrastructural projects in Kwale County, while H_1 postulates that development planning has a significant influence on the implementation of the infrastructural projects in Kwale County, Kenya. The results in table 4 failed to provide support for H_0 hence the H_0 was rejected and instead the H_1 was accepted. Therefore, development planning has a significant influence on the implementation of the infrastructural projects in Kwale County, Kenya [β = 0.861; t = 4.951; p (0.002) < 0.05].

Testing the fourth hypothesis

H_0 *consumers' ability has no significant influence on the implementation of infrastructural projects in Kwale County, Kenya.*

H_1 *consumers' ability has a significant influence on the implementation of infrastructural projects in Kwale County, Kenya.*

H_{O4} postulates that consumers' ability has no significant influence on the implementation of infrastructural projects in Kwale County, while H_1 postulates that organizational structure has a significant influence on strategy implementation in state corporations in Kenya. The results in table 4 failed to provide support for H_0hence the 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 [$\beta = 0.589$; $t = 3.992$; $p\ (0.002) < 0.05$].

5. 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 tittle deeds.

6. Recommendations

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. 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. 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. Equally, all aspects of project planning should be embraced by all the stakeholders of the LMCP project in Matuga and elsewhere in the county. All the principles of project management must be observed, maintained and adhered to for effective and efficient implementation of the power projects. Further, continuous monitoring and evaluation of the project planning process must be maintained plus the implementation for best implementation. 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.

References

[1] 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.
[2] AfDB. (2018). *Evaluation in the Practice of Development.* Policy Research Working Paper No.4547.
[3] AU. (2017). Hidden impact? Household saving in response to a poor-area development project. Bulletin of Public Economics, *89, p. 2183-2204.*
[4] AsDB. (2018). *Economics of "Last Mile" Electrification.* Presentation for the World Bank by Ken Lee, Edward Miguel, and Catherine Wolfram: University of California, Berkeley
[5] Barnes, F. (2018). *Electric Power for Rural Growth: How Electricity Affects Rural Life in Developing Countries*. Boulder, CO: West view Press.
[6] Cooper, D. R., and Schindler, P. S (2010).*Business Research Methods (9th Edition).*McGrawHill Publications. New York, United States.
[7] Crocker L, Algina J (2011). *Introduction to classical and modern test theory*. Orlando, FL: Harcourt Brace Jovanovich; 1986:1-527.
[8] Cronbach LJ (2010). *Coefficient alpha and the internal structure of tests'.* Psychometrika.1951; 16:297-334.
[9] Davidson, O., & Mwakasonda, S. (2017). *Electricity access for the poor: A study of South Africa and Zimbabwe.* Energy Sustain Development, 8(4), 26–40.
[10] Estache, A., Fay, M. (2017). *Current debates on infrastructure policy. Policy Research Working Paper 4410*. Washington DC: World Bank.
[11] Eshna N. (2018). Role of Planning in Successful Project Management Framework. https://www.simplilearn.com/role-of-planning-in-project-management-framework- rar226-article.
[12] FAO. (2018). FAOSTAT database. *www.fao.org/faostat.*Accessed 6 June 2019.
[13] FAO (2019). AQUASTAT database. *www.fao.org/nr/water/aquastat/main/index.stm.* Accessed 17 Nov 2019.

[14] IEA (International Energy Agency). (2018). *Energy Poverty: How to Make Modern Energy Access Universal:* Special Early Excerpt of the World Energy Outlook 2010. Paris.
[15] 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.
[16] 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*
[17] 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.
[18] Kothari, C.R (2008). *Research Methodology: Methods and Techniques.* New Delhi: New Age International (p) ltd publishers
[19] KPLC (2017) *Kenya power and lighting company annual report and accounts 2016–2017*; Nairobi.
[20] Karugu (2017) *factors affecting last-mile connection projects.* Uon thesis
[21] Kweyu (2018) *Influence of project management processes on performance of Kenya power last mile connectivity projects in Nakuru County,* Kenya. Uon thesis
[22] Leeet al. (2016) Electrification for "Under Grid" households in Rural Kenya. Development Engineering *journal homepage: www.elsevier.com/locate/deveng*
[23] 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.
[24] Mugenda O. M. & Mugenda A. G. (2008), *Research methods: Quantitative & Qualitative approaches. Nairobi:* African Centre for Technology Studies press.
[25] Nachmias, C.V. and Nachmias D. (2006).*Research Methods in Social Sciences. 5th Edition.* London: Arnold Publishers:
[26] OECD. (2018). Rural electrification: Accelerating impacts with complementary services. *Energy Sustain Development, 13, 38–42.*
[27] Ravallion, M. (2018). *Evaluating Anti-Poverty Programs. In: Handbook of Development Economics Volume 4.* Amsterdam, Netherlands.
[28] Ravallion, M. and Q. Wodon (2018) *Evaluating a Targeted Social Program When Placement is Decentralized,* World Bank Policy Research Paper No. 1945.
[29] Reiche at al (2019), *Expanding Electricity Access to Remote Areas: Off-Grid Rural Electrification in developing countries*' http://w.martinot.info/Reiche_et_al WP2000.pdf:
[30] Sawe E.N, (2019). Brief on Energy Sector in Tanzania and Kenya Renewable Energy and Environmental News, (TaTEDO), *ISSN 0856-6704.*
[31] Singh, K. K and Ali, S. (2017). *Rural Development Strategies in Developing Countries*. New Delhi: Sarup and Sons.
[32] 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.
[33] Sybil L., (2017).*Electrification for ―under grid‖ households in rural Kenya:* five questions for ken lee
[34] Tongam S. (2017). *Analysis of Factors Affecting the Electricity Supply in Indonesia.* USAEE Working Paper No. 17-312
[35] 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.*
[36] UNDP (2017). Urban and Rural Development Projects in Africa. United Nations Development Programme One United Nations Plaza New York, *NY 10017 www.undp.o*
[37] UNDP (2018). Human Development Indices and Indicators. Annual Report; 2018 Fiji *http://hdr.undp.org/sites/default/files/2018_human_development_statistical_update.p df*
[38] UNDP (2019). Keeping People Out Of Poverty. 31 Million At A Time. *https://annualreport.undp.org*
[39] 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*
[40] Wolfram, C., Shelef, O., Gertler, P., (2019) *How Will Energy Demand Develop in the Developing World?* J. Econ. Perspect. 26 1, 119–138.
[41] World Bank, (2017). International Development Association on a Country Assistance Strategy of the World Bank for the Republic of Malawi.http://wwwwds. *worldbank.org/external/default/WDSContentServer/WDSP/IB/2007/01/25/000090341 _2 00701 25110159/Rendered/PDF/38326.pdf*
[42] World Bank. (2016).*The World Bank Annual Report 2003: Year in Review.* Washington, D C: World Bank.
[43] World Bank. (2017). *The Welfare Impact of Rural Electrification: A Reassessment of the Costs and Benefits.* IEG Impact Evaluation. Washington, D.C: World Bank
[44] World Bank. (2018). *World Development Report 2018.*
[45] World Bank (2019). *African Development Fund. Project: Last Mile Connectivity Project.* Nairobi, Kenya
[46] Zomers, Adriaan N. (2017). *Rural Electrification: Utilities' Chafe or Challenge?* Enschede, The Netherlands: Twente University Press.