

**INFLUENCE OF THE KENYA POWER SLUM ELECTRIFICATION
PROGRAMME ON ELECTRICITY USE IN SLUMS IN KENYA;
THE CASE OF MUNYAKA INFORMAL SETTLEMENT,
UASIN GISHU COUNTY**

BY

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DECLARATION

I hereby declare that this research project is my own work and to the best of my knowledge it contains no materials previously published or written by another person.

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DEDICATION

This research project is dedicated to my wife Eunice Wangari and my son Samuel Njoroge for the passion they showed towards the completion of this project.

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ABBREVIATIONS AND ACRONYMS

GPOBA	Global Partnership on Output Based Aid
OBA	Output Based Aid
IAP	Indoor Air Pollution
GoK	Government of Kenya
DFID	Department for International Development
IFC	International Finance Corporation
DGIS	Dutch Directorate General for International Cooperation
DFAT	Australian Department for Foreign Affairs and Trade
Sida	Swedish International Development Agency
KPLC	Kenya Power and Lighting Company
ICS	Integrated Customer Service System.

ABSTRACT

Limited emphasis has been given towards understanding the different uses to which electricity is used for in slums in Kenya. Despite the enormous populations of many slums, the per-capita demand in informal settlement is quite small compared to that in regular settlements. Reaching slum residences requires a substantial investment in the expansion of the electricity distribution network, but the potential payoff is small. This therefore means that electricity utility companies such as Kenya Power have little incentive to expand their distribution networks to slums. As such the energy needs and uses to which the urban poor employ energy for have greatly been overlooked and thus no clear understanding of the uses of electricity in urban slums. This study has investigated the influence of the Kenya Power Slum Electrification programmes has had on the people of Munyaka informal settlement in Eldoret, Uasin Gishu County. The study employed an exploratory research design utilising the mixed method of quantitative and qualitative approaches. A sample of 311 respondents was selected for the study with Systematic sampling procedures being used to select the sample. The study used questionnaires, interviews and document analysis to collect data. The findings revealed that subsidized connection fee was positively and significantly correlated with electricity usage a Pearson's correlation coefficient of $r=0.818$. The electricity marketing strategy and the programme customer training utilised by the Kenya Power marketing team were also positively and significantly correlated with electricity usage characterised by the correlation coefficient of 0.638 and 0.548 respectively. However, programme construction standard showed a negative and significant relationship with electricity usage at correlation coefficient of -0.146. Recommendations for further research have also been indicated.

CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

Slums exist in almost every country and have become a global phenomenon. A slum is an area that is characterized by poor structural quality of housing, overcrowding, insecure residential status, inadequate access to safe water and inadequate access to sanitation and other infrastructure (UN Habitat 2002). The housing is normally of a temporary nature and varies from the simplest shack to permanent and sometimes surprisingly well-maintained structures, but the most distinctive features of slum are lack of clean water, electricity, narrowness or faulty arrangement of streets, lack of ventilation, light, sanitation facilities and other basic services. These factors make living in slums detrimental to safety, health and morals. Around 33% of the urban population in the developing world in 2012, or about 863 million people, lived in slums. The proportion of urban population living in slum settlement was highest in Sub-Saharan Africa (61.7%) (UN-HABITAT 2003).

Rapid rural-urban migration has been observed to be among the key drivers of proliferation of slums across the world. Rural people migrate to urban centers in search for better jobs, better schools for their child and for diverse income opportunities. The immigrant urban poor have largely moved from the countryside to the cities voluntarily, in order to exploit actual or perceived economic opportunities. Since 1950, the proportion of people working in developing country agriculture has declined by 20 to 30 per cent (UN-HABITAT 2007). In many cities the informal sector accounts for as much as 60 per cent of employment of the urban population and may well serve the needs of an equally high proportion of citizens through the provision of goods and services. However most of the time rural migrants are unable to get immediate job, which leads to

their financial economic distress. On the other hand many cities do not provide low-cost-house to the large number of rural migrants and ultimately settle down in affordable slums.

Urbanization is the physical growth of urban areas as a result of rural urban migration. The United Nations projected that half of the world's population would live in urban areas at the end of 2020 (UN-HABITAT 2004). Over 90 percent of urban growth is occurring in the developing world, adding an estimated 70 million new residents to urban areas each year. Rapid and unplanned urbanization in developing countries has led to an increase in the mushrooming of informal settlements. Urbanization breeds urban poverty which is also another major factor for the development of Slums. With migration of rural poor people, poverty is also migrating to urban area. Some of those who migrate will benefit from the opportunities in urban areas, while others, often those with low skill levels, may be left behind and find themselves struggling with the day to day challenges of city life. For them slums become the only settlement option.

Energy is essential for poverty eradication, the improvement of human health, women empowerment and education. It is an essential pre-condition for economic development. With access to reliable energy services, local entrepreneurs and companies of any size can generate local jobs, income and thereby promote local development.

Rapid growth of the country's urban population has led to rapidly growing demand for energy services, in particular, electricity, refined petroleum products and biomass. This often results in acute shortages and steep increase in prices. Initially uptake of electricity in urban slums was very low due to the high upfront cost. Slums exclusion from the energy access planning process is often rationalized by the claim that they cannot afford to pay because they are poor. It means a lack of access to clean energy technology, such as modern electricity and cooking fuels. The result is that people turn to basic fossil fuels for their energy needs, such as wood and kerosene. Use of such fuels has direct adverse influence relating to a person's health, safety and general well-being. It

also impacts on other aspects of their everyday life, such as diverting time away from earning income and impairing a child's ability to study.

The Global Partnership on Output Based Aid (GPOBA) is a partnership of donors working together to support Output-Based Aid (OBA) approaches. GPOBA was established in 2003 by the United Kingdom's Department for International Development (DFID) as a multi-donor trust fund administered by the World Bank. Since 2003, four additional donors have joined the partnership: the International Finance Corporation (IFC), the Dutch Directorate General for International Cooperation (DGIS), the Australian Department for Foreign Affairs and Trade (DFAT), the Swedish International Development Agency (Sida). GPOBA's mandate is to fund, design, demonstrate, and document OBA approaches to improve the delivery of basic services to the poor in developing countries (Washington, DC: World Bank 2000).

Output Based Aid is a results based financing mechanism under which service provision is contracted to a third party, usually a private sector operator, and subsidies (either one-off, transitional or continuing) are paid to the provider after the delivery of specific outputs. Output-based aid is an innovative approach to increasing access to basic services such as infrastructure, health care, and education for the poor in developing countries. OBA issued in cases where poor people are being excluded from basics services because they cannot afford to pay the full cost of user fees such as connection fees. OBA is also known as performance-based aid or results-based aid.

In Kenya, the local electricity utility company, Kenya Power and Lighting Company (KPLC) would like to increase electricity connection in slum areas in order to meet internal management targets for new connections, reduce theft and vandalism, and raise quality of life in the slums. Kenya Power has had to grapple with illegal electricity vendors in informal settlements. Illegally connected supplies characterized by low-hanging cables without protective insulation are common sights in slums across Kenya. Unemployed youths vandalize transformers to provide illegal

electricity connections in the slums. These illegal connections have been the cause of electrocutions and slum fires, which have been on the increase in the recent past.

It is on this backdrop that Kenya Power and Lightning Company in conjunction with the World Bank through GPOBA have embarked on a plan to connect 150,000 people living in slums across the country with electricity. GPOBA will pay subsidies to cover part of the cost of connection to the electricity grid for target households. The partnership programme will allow qualifying residents to pay a minimal charge of Kshs. 1,160 per connection. The World Bank through GPOBA will contribute Kshs 19,350, while Kenya Power will contribute KShs.11,970 per connection making up the standard capital contribution of Kshs.32,480 per connection. The Government and the Kenya Power and Lighting Company have introduced a reduced connection fee for slum residents amounting to KSh 1,160 to encourage them to switch their energy needs service to Kenya Power and reduce the use of fossil fuels.

1.2 Statement of the problem

While it has been identified that at least 70% of urban population lives in the slums, Data on the government expenditure provides some evidence that a larger proportion of government financing, subsidies and international development aid is aimed at developing modern energy infrastructure (mainly electricity) that largely serves the needs of the urban-based formal sector, commercial and industrial sectors and medium and high-income urban and peri-urban households (GoK,2006; 2007). Energy services for the poor in urban and peri-urban areas are not a high priority on the development agenda. As such the energy needs and uses to which the urban poor use electricity have greatly been overlooked.

The lack of clean energy access for the urban poor in developing countries is emerging as one of the most serious yet overlooked developmental concerns of the 21st century (David S, 2006). There has been a lack of adequate strategies focusing on improving energy access for the urban

poor populace. As a result, there are limited success stories on electricity access and uses for urban poor.

This study has illustrated how the slum electrification programme that is being carried out by Kenya Power has allowed for innovative ways in assisting the urban poor meet their energy demands by providing access to clean and sustainable electricity for them and in the process this research will seek to highlight the energy needs and uses to which electricity is applied for in the slums.

1.3 Purpose of The Study

The study intends to investigate the influence that the subsidised electricity connection has had on people living in Munyaka informal settlement in Eldoret Uasin Gishu County. The study will concentrate on the influence brought about by the electricity connection on their well-being and on influence on economic opportunities for the poor. The scheme to connect these households has already been done and still on-going as more and more customers apply by paying the required fees. The connected customers will form the target population from which a sample will be taken for the study.

1.4 Objectives of The Study

- 1) To establish the extent to which the Kenya Power Slum Electrification Programme subsidised connection fee has influenced electricity use in Munyaka informal settlement.
- 2) To determine how the Kenya Power Slum Electrification Programme construction standard have influenced electricity use in Munyaka informal settlement.
- 3) To assess the extent to which customer training on electricity under the Kenya Power Slum Electrification Programme has influenced electricity use in Munyaka informal settlement.
- 4) To establish whether the electricity marketing strategy employed under the Kenya Power Slum Electrification Programme has influenced electricity use in Munyaka settlement.

1.5 Research Questions

- How has the subsidised electricity connection fee under the Kenya Power slum electrification programme influenced electricity use in Munyaka informal settlement?
- How has the construction standard under the Kenya Power slum electrification programme influenced electricity use in Munyaka informal settlement?
- How has the customer training on electricity under the Kenya Power slum electrification programme influenced electricity use in Munyaka informal settlement?
- How has the electricity marketing strategy employed in the Kenya Power slum electrification programme influenced electricity use in Munyaka informal settlement?

1.6 Justification of The Study

The donor community and the Kenya government are acutely aware of the need to find more effective ways to improve basic living conditions for people living in the slum areas. Several initiatives pioneered by the government or even the donor community meant to address slum electrification have unsuccessfully failed to address electricity theft and also illegal vending. The illegal vending and rampant theft of electricity in the slums makes it impossible or difficult to apply the electricity continuously and sustainably for legitimate domestic and commercial uses. Kenya Power inspectors sometimes accompanied by the police regularly perform raids to disconnect these illegal supplies and even make arrest of the illegal electricity vendors. This research study is important because it looks at how the Kenya Power slum electrification programme is able to address these challenges resulting to successful uptake of electricity across slums in Kenya and therefore in the process dismantling the ad hoc “companies” that sell electricity in informal settlement.

1.7 Significance of The Study

This study will be a significant endeavour in highlighting the productive uses of electricity in the slums and provide an insight into the challenges confronting the slum dwellers in their access to safe and clean electricity. This research will also be beneficial to Kenya Power in product development to take care of the needs of such people and bring them to the national grid and thus increase the overall national electricity coverage. Moreover, this research will provide recommendations on how to discover new markets for electricity by roping in the small and medium scale entrepreneurs in the slums. The research will also be helpful to the government as it will highlight the electricity uptake in slum areas as the government endeavours to realise its pledge of electrifying every home in Kenya. The research will also be significant to the donor community on how the concept of output based aid is indeed impacting on people's lives in the provision of clean and safe electricity for domestic and commercial use.

1.8 Delimitations of the study

In a report on electricity for the world's poor, the World Bank (2000) outlines series of different kinds of benefits that electricity brings to the impoverished. The report divides the benefits of electricity for the poor into direct influence on well-being, direct influence on health, direct influence on education, direct influence on economic opportunities for the poor, Trickle-down influence of increased productivity, and Fiscal space (coupled with pro-poor policies). The scope of the study will be limited to the direct influence on the well-being and the direct influence on economic opportunities for the poor.

1.9 Assumptions of the study

The sampled population will represent the entire population. The respondents will be objective and truthful in answering the research questionnaire. That after the electricity connection the customer started to use the electricity and has been doing so consistently.

1.10 Limitations of the study

The study population is in Munyaka settlement in Eldoret Uasin Gishu County. The literacy levels of the slum dwellers will also be a major limitation of the study as most of them have little or no formal education background. This will be mitigated by an explanation of the research project by the research assistant. Munyaka was chosen since the scheme was identified for design and construction in 2011 and thus construction and commissioning done though the network is still being extended to bring more residents as they continue to apply. The fact that the area has enjoyed electricity for a while means that the influence of the enhanced connectivity can now be investigated. Since the connection scheme is still on going as more people continue to apply only those customers connected before 28th February 2015 will be considered in the research.

1.11 Definition of significant terms

Tariff: A tariff is the pricing structure a retailer charges a customer for energy consumption. It's divided into two parts the 'fixed charge' for supply of energy to your premises, the 'variable charge' for the amount of energy you use. The variable charge relates directly to how much you consume.

Geothermal Energy: thermal energy generated and stored in the Earth. Thermal energy is the energy that determines the temperature of matter. The geothermal energy of the Earth's crust originates from the original formation of the planet and from radioactive decay of materials.

Biomass: Renewable organic materials, such as wood, agricultural crops or wastes, and municipal wastes, especially when used as a source of fuel or energy.

Non-technical losses: (NTL) in electricity distribution include mainly electricity theft, but also losses due to poor equipment maintenance, calculation errors and accounting mistakes.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter presents an analysis of existing literature on the topic of study. It includes the findings of related studies undertaken by other researchers. The literature review is organized based on themes and variables under study: energy needs in urban slums and the factors affecting electricity use in Kenyan slums; the Kenya Power Slum Electrification subsidised connection fee, its construction standards, the electricity marketing strategy employed, and customer training. The chapter further provides a theoretical and a conceptual framework.

2.2 Energy needs in Urban Slums in Kenya

The key available energy supply options in Kenya include biomass (wood fuel and charcoal), petroleum, electricity (hydropower, wind, geothermal) and to a small extent, coal. Like in most sub-Saharan African countries, biomass dominates the country's energy supply. Over 70 percent of energy needs in most of the sub-Saharan African countries are met by biomass fuels, mainly for the household. Biomass fuels are at the low end of the energy ladder in terms of combustion efficiency and cleanliness. Biomass combustion produces a large number of health-damaging air pollutants including carbon monoxide (CO), nitrogen oxides, formaldehyde, benzene, and many other toxic organic compounds (Esther L, Luis T 2012).

The efficiency of fuel wood used for cooking in developing countries is quite low, leading to energy requirements that are several times higher than in developed countries. Developing countries are significantly affected by the problem due to their increased use of polluting energy sources for their energy demands. World Health Organization (WHO) estimates on burden of

diseases for the year 2002, Indoor Air Pollution (IAP) from biomass use accounted for 3.7% of the burden of disease in developing countries (World Health Organization, 2006).

In most urban areas in Kenya, biomass energy is mostly used in the form of charcoal. Urban households prefer charcoal because it does not produce a lot of smoke and its calorific value is twice that of wood and it therefore lasts longer, especially when used with improved cook-stoves. Charcoal is considered to be relatively affordable, economical and convenient. Kerosene is the most common fuel among poor urban households, who use it for cooking, lighting, and water heating. It is also used in the formal sectors of the economy for industrial and commercial purposes. Kerosene is popular among the urban poor because they consider it quick and easy to use. Today kerosene has been rightly displaced by modern energy services, which provide far superior heating and lighting. However, hundreds of millions of people still rely on kerosene as their primary source of light. Burning kerosene for light, particularly in the poorly ventilated confines of a tent home, contributes to indoor air pollution. This pollution causes respiratory illness, which is the second largest cause of premature death in women and young children. When kerosene is burnt, it releases particulate matter, carbon monoxide, sulphur dioxide and various nitrogen oxides. Exposure to these pollutants has a multitude of detrimental influence on a person's health.

2.3 Electricity use in slums

Slum Electrification programmes are often not mainstreamed into national policies and programmes and supported in the same way that say, rural electrification programmes are supported. For these programmes to be successful, they need to be underpinned by a national policy strategy and implemented through a national programme that is well resourced. Related to the above is the challenge of political ambivalence to slum/informal settlements. There is a lingering fear that providing infrastructural investments in slum areas is a step towards

legitimizing their existence. (Raakel S, 2008). Reluctance to accept the reality of slum settlements means that these areas are not considered sustainable platforms for long term investments.

There is limited policy development in respect to providing affordable tariffs to vulnerable and fuel poor customers. This is one of the key challenges confronting utilities and governments, especially in view of the investment profile risks associated with slum electrification programmes. Related to the above point, is whether slum electrification programmes should be designed as long term investments or transitional measures pending resolution of the long - term statuses of informal settlements.

Generally data on rates of connectivity both legal and illegal in slum areas is very unreliable. There is need to work on establishing reasonable data bases for policy development and programme design purposes. Although there is some level of unreliable evidence that the poor spend more on energy than high income earners (USAID 2005), it is not clear how this fact is factored as part of normative policy. There is need for rigorous monitoring and evaluation of slum electrification programmes, and documentation of lessons learnt.

The urban poor are often unable to afford the cost of infrastructure like meters, wires or even pay their bills in a consistent manner, as required by Kenya Power. Hence, the availability of funds is critical to addressing the issue of energy access. Lack of tenure-ship is a major impediment for the urban poor to obtain energy access. Due to the illegal nature of their habitats, they are unable to provide documents like proof of residence which is a prerequisite for securing such services. Slum residents have no recognized legal status. This can make dealing with them exceedingly difficult for utility companies. If for instance the company wanted to pursue judicial action on a slum dweller for lack of payment of electricity bills, it is difficult to ascertain if courts can be able to sustain such action. Lack of education and awareness is another reason for energy poverty. Often the urban poor are unaware of the health benefits of clean energy and continue to use biomass, sometimes even plastic and rubber which have grave health consequences.

There are also a number of sociological problems inherent in the task of extending traditional electricity service to the slums. In some cases, there may be a “culture of non-payment,” which can mean either that the slum-residents are not accustomed to paying for electricity, and can resist being asked to pay, or that they are accustomed to paying for electricity when and as they are able, more as one might purchase a good in the marketplace, and not as a regularly recurring, formal bill.

Even if the previous barriers were not sufficient, utility companies have scant incentive to expand to slums. Despite the enormous populations of many slums, the per-capita demand in informal settlement is quite small compared to that in regular settlements. The same economic dilemma that faces utility companies with regard to rural settlements also applies to slums. Reaching slum residences requires a substantial investment in the expansion of their distribution network, but the potential payoff is small, even if they succeed in collecting payment. Despite that utility companies can lose as much as 3-5% of their total revenue to “non-technical losses,” it is not economically feasible for them to electrify the slums (USAID 2005).

2.4 The Kenya Power Slum Electrification programme subsidized fee

Kenya is one of the fastest urbanizing countries in Sub-Saharan Africa. Most of the urban poor live in informal settlements with inadequate access to basic services such as water, sanitation, and electricity. Slum dwellers spend up to 33 percent of their income on energy-related expenditures, either to informal providers, whose services are expensive and of poor quality, or for kerosene, batteries, or cooking fuels.

The Government and the Kenya Power and Lighting Company have introduced a reduced connection fee for slum dwellers amounting to KSh1,160 to encourage them to switch service to Kenya Power. This has spurred demand for new connections in the informal settlements. The project will provide an output-based aid (OBA) subsidy to fill this gap. In accordance with the

OBA approach, Kenya Power will receive the subsidy payments only after independent verification of the household connections and of six months operation.

The Global Partnership on Output Based Aid is a partnership of donors working together to support Output-Based Aid approaches. GPOBA was established in 2003 by the United Kingdom's Department for International Development as a multi-donor trust fund administered by the World Bank. Since 2003, four additional donors have joined the partnership: the International Finance Corporation, the Dutch Directorate General for International Cooperation, the Australian Department for Foreign Affairs and Trade, the Swedish International Development Agency. GPOBA's mandate is to fund, design, demonstrate, and document OBA approaches to improve the delivery of basic services to the poor in developing countries.

The partnership programme will allow qualifying residents to pay a minimal charge of Kshs. 1,160 per connection. The World Bank through GPOBA will contribute Kshs 19,350, while Kenya Power will contribute KShs.11,970 per connection making up the standard capital contribution of Kshs.32,480 per connection. The Government and the Kenya Power and Lighting Company have introduced a reduced connection fee for slum residents amounting to Kshs 1,160 to encourage them to switch their energy needs service to Kenya Power and reduce the use of fossil fuels.

Output Based Aid is a results based financing mechanism under which service provision is contracted to a third party, usually a private sector operator, and subsidies (either one-off, transitional or continuing) are paid to the provider after the delivery of specific outputs. Output-based aid is an innovative approach to increasing access to basic services such as infrastructure, healthcare, and education for the poor in developing countries. OBA is used in cases where poor people are being excluded from basic services because they cannot afford to pay the full cost of user fees such as connection fees. OBA is also known as performance-based aid or results-based aid.

2.5 Programme Construction standards

The Government and the Kenya Power and Lighting Company have introduced a reduced connection fee for slum dwellers to encourage them to switch service to Kenya Power. This has spurred demand for new connections. The project will provide an output-based aid subsidy. In accordance with the OBA approach, Kenya Power will receive the subsidy payments only after independent verification of the household connections and of six months operation.

The innovative project design includes: switching to concrete poles, which cannot be climbed as easily; using a medium voltage line that is difficult to access illegally as the main feeder line across the communities, and using small transformers on each pole to step down the voltage to distribution levels for a small number of households; using split pre-paid meters so most of the equipment is on the pole instead of in the household; and limiting the need for house wiring through the use of ready-boards. Stakeholder communication and involvement of local organizations.

The fact that electricity is often ‘tapped off’ illegally in urban poor areas is a testament to the desire of the poor to have access to the benefits that electricity provides, such as illumination, radio and television news and entertainment, and the ability to use machines and appliances that create jobs and incomes. In many cases, the fees recovered by informal sector middlemen who charge for these services outside of the utility structure testifies to poor families’ willingness to pay for electricity, even at a high cost (UN MDG 2004). USAID’s report on access to electricity in informal settlement states that electricity is nearly universally available, due to the effect of ad hoc “companies” that systematically steal electricity by tapping into overhead lines and selling to slum-dwellers (USAID 2005).

2.6 Customer training under the slum electrification programme

The Kenya Power marketing field staffs were supposed to among other duties provide training to consumers to enable them to better understand their energy consumption and take control of their energy use. Customers were trained on how to typically analyze their meter data to find and

quantify routine energy waste, and also investigate the energy savings that they could make by replacing equipment (e.g. lighting). Energy conservation and efficiency refers to measures aimed at reducing energy consumption without sacrificing productivity or increasing costs. From the consumer's point of view, energy conservation and efficiency measures yield direct savings on the energy bill. From the national stand point, widespread adoption of such measures can significantly reduce the foreign exchange costs of oil imports and of deferred additional investment in Power generation capacity. In addition the KPLC marketers were required to provide the necessary electricity application documents and assist the customers in the process of electricity application. These documents included the Enquiry of Supply and Kenya Power Contract Document. Once these documents were filled, submission to the field staff required the customers to attach copies of their identity cards and provide a wiring certificate.

Safety training centered on the idea that a lot of fires and electrocutions that occur in the informal settlements are as a result of unsafe wiring performed by the customers or the illegal electricity vendors in the slums. Customers were sensitized on the fact that unless one is a qualified electrician, they should avoid performing any electrical wiring tasks. They should instead employ the services of a professional who can do the job safely and correctly. Being safe when using electrical appliances, extension cords light bulbs and other equipment and to also keep all electrical appliances away from water was also featured on the training. The customers were also to ensure that plug sockets are not overloaded or damaged. Place lamps on level surfaces, away from things that can burn and use bulbs that match the lamp's recommended wattage. Check that visible cables and leads are in good condition, ensure that the light fittings are not visibly damaged, ensure that that you are not storing combustible materials around the fuse box, electricity meter or electrical intake. And to always switch off the electrical items when they are not in use.

2.7 Electricity Marketing Strategy

The Kenya Power field marketing team were also supposed to influence the customers to shift their energy demands from the use of fossil fuels such as kerosene, charcoal and firewood to electricity. Electricity is beneficial because it is clean, cheap, safe and a convenient source of energy. The negative aspects associated with the use of traditional fuels such as charcoal and firewood include health impacts of indoor pollution, e.g. conjunctivitis, respiratory illness environmental degradation injuries & hazards from collecting & carrying heavy loads of fuel-wood. Burning them creates unwanted by-products that can create air and water pollution and can damage the environment during their collection and transport, but even more importantly, fossil fuel combustion produces environmental toxins such as huge volumes of carbon dioxide, which is a gas that influences the global climate.

Electricity is considered clean because it does not have any by-products and because it doesn't cause any kind of pollution and also it is much cheaper than other forms of energy. The team was also required to assess the customer uses of electricity after connection and propose more innovative and new ways to use electricity and thus in the process enhance the general well-being of the customers as well as creating demand for the electricity for the benefit of the company. According to the (Emmanuel M, Raymond M 2011) the cost of electricity is found to be 1.2 times the cost of using LPG and 16 times the cost of using kerosene. Data on household expenditure pattern shows that charcoal is the single most important source of energy in urban areas not only for the poor households but also for the non-poor households. Electricity accounts for the lowest share of the household energy budget with households spending the minimum on electricity while spending more on cheaper sources such as charcoal (Paolo, Marco, Kongens, 2008). This was supposed to act as an impetus for the Kenya Power marketing teams as they strived to shift the customer energy demands from use of fossil fuel to use of electricity. However evidence indicates that as incomes increase, households shift to efficient sources of energy such as electricity but still adopt a mixing strategy by maintaining charcoal as the primary source for

cooking.

2.8 The domestic and small commercial electricity tariff

The schedule of tariff which is a document issued by the Energy Regulatory Commission (ERC) that prescribes the tariffs, charges, prices and rates to be charged by Kenya Power to consumers for electricity consumed. The current issue is the Schedule of Tariff 2013 that has guidelines of rates to be charged up to the year 2015. For domestic customers the guide states that the customer should pay a fixed charge of Kshs 150 and an energy charge of kshs 2.50 per unit for 0 – 50 units, kshs 13.68 per unit for 51 – 1,500 units consumed and kshs 21.57 for all units above 1,500. For small commercial the guide states that the customer is charged a fixed charge of kshs 150 and an energy charge of kshs 14.00 for all units consumed. The electricity tariff as described above formed the moderating variable in the conceptual framework.

2.9 Theoretical Framework

2.9.1. Modernization theory

The study which seeks to establish the influence the slum electrification programme has had on electricity use in the urban slums is informed by the modernization theory. Slums have traditionally been portrayed as a transitional phenomenon associated with modernization a natural by-product of the complementary processes of industrialization and urbanization. Slum-dwellers, though they can constitute a large proportion of a city's population in play only a small role in the society at large. They are marginalized and ignored by the political, economic, and social systems that surround them. Efforts to incorporate them into the society around them, such as by extending ordinary electrical services to them, are not always seen as unambiguously positive. (Frankenhoff 1967) suggested that 'slums necessarily belong to the process of economic growth in a developing country' by acting as 'the staging area for the migrating poor' as they work to integrate themselves into the economic life of cities in expanding economies. In addition according to (Turner 1969), slums are 'both the product of and the vehicle for activities which are essential in the process of

modernization'. Based on this perspective, poor rural migrants initially cannot afford to build, buy or rent decent housing and opt instead for cheap, substandard units close to employment opportunities. As they become integrated into the urban economy and their incomes rise, these migrants eventually enter the formal housing market or invest in upgrading their existing dwellings, thereby ameliorating slum conditions. In other words, modernization theory portrays slums as a natural and temporary manifestation of a market failure arising from the dynamics of structural change in labour markets.

The understanding as stated above is based on the following assumptions. It assumes that slum settlements grow to accommodate labour migrants, but the link between urban population growth and urban economic growth is tenuous. It also assumes that economic growth will trickle down to those living in informal settlement, allowing them to improve their lot. This is questionable given abundant research indicating low degrees of intergenerational socio-economic mobility for households living in slum settlements (Buckley and Kalarickal 2005). Lastly it assumes that slums provide cheap housing for cheap labour, but the costs of living vary widely in informal settlement, with residents often paying a premium for both the housing and provision of social amenities electricity included (Gulyani and Talukdar 2008).

The assumptions as stated above also imply that given the temporary nature of the slums and the huge infrastructure cost associated with extending the electricity network to them becomes economically un-viable. In addition since slum-dwellers often have no legal status it can become very hard for utility companies to deal with them. If, for instance, a company wanted to pursue judicial action against a slum-dweller for non-payment of a bill, it is unclear whether courts would in fact be able to accommodate this possibility. In addition, slum-dwellers are typically squatters. That is, there is no official connection between slum-dwellers residences and themselves, and consequently, utility companies would find it extremely difficult to bill a slum-dweller successfully. Without mail service in the slums, companies would be obliged to set up their own

collection service at great expense. Finally, the very physical structure of the slums makes extending traditional service there difficult. The streets tend to be narrow and are rarely straight, making vehicular access, such as would be necessary to maintain Power cables, either impossible or dangerous.

In line with these theory, the study, therefore, investigates the influence that the slum electrification programme to finance the huge upfront infrastructure cost related to slum electrification on the various uses to which the slum dwellers use electricity.

2.10 Conceptual Framework

The main focus of this study is on investigating the influence that the programme has had on use of electricity in urban slums, the case of Muniyaka slum. The independent, moderating and dependent variables will be measured.

The dependent variable in the study is electricity use in in urban slums. On the other hand, the independent variables in the study include the programme subsidised funding, the programme implementation standards, the electricity marketing strategy employed and customer training. The moderating variable that will be studied is the electricity tariff as charged by Kenya Power on domestic and small commercial customers as directed by the Energy Regulatory Authority (ERC).

In electricity use as an independent variable, the parameter considered for study include number of customers connected and using the electricity for domestic functions such as lighting, heating cooking and any other application and the number of customers using the electricity for commercial applications such as welding food vending and any other commercial applications.

The parameter considered in the programme funding includes the total number of customers who paid the required amount of KSHS 1,160 to secure the electricity connection.

The parameter considered in programme implementation standards include, position of meter installation, type of meter (pre-paid or post-paid).

The parameters considered in marketing strategy as a variable include, identification of need and potential electricity usage, How to apply for electricity efficiently and economically.

The parameters considered in customer training how to buy tokens or unit based on different platforms, how to apply for the supply by filling the necessary forms and safe wiring and use of electricity. Figure 1 on the next page is the conceptual framework of the study, which shows the relationship between the variables.

Figure 1 Conceptual Framework

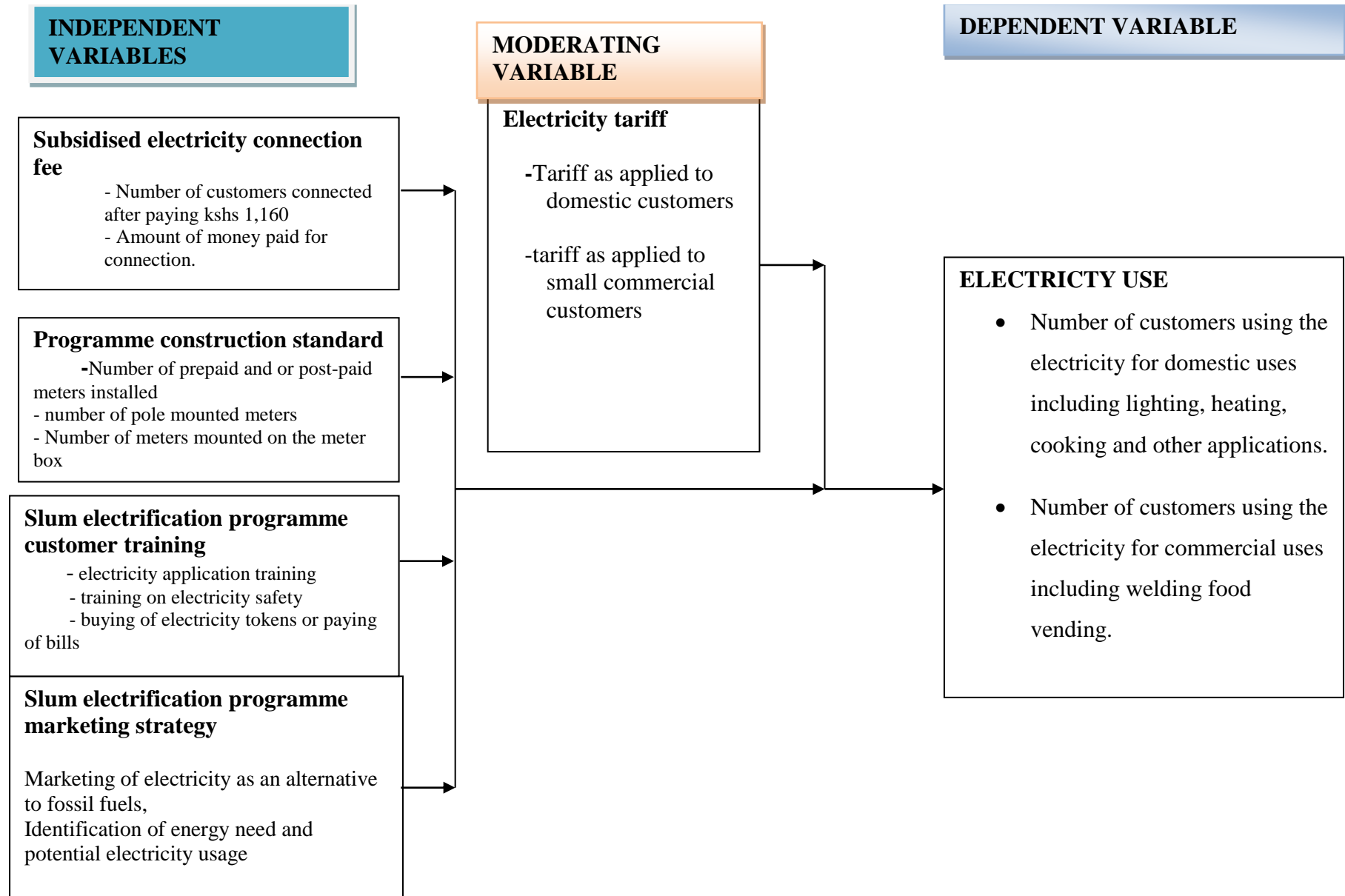


Figure 2.1: Conceptual Framework

2.11 Summary

This chapter has provided an in-depth literature review. Related studies in Kenya and others countries have been analyzed and reveal that there exists a knowledge gap in understanding how exactly electricity is used in domestic and commercial entities in urban slums in Kenya. According to the conceptual framework, the study investigated electricity use as a dependant variable, programme funding, and programme implementation standard, customer training and marketing strategy as independent variables. Electricity tariff as applied to domestic and small commercial customers will be studied as a moderating variable.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter contains a discussion of various components of the research methodology as will be applied in the study. These include research design, target population, sample procedures and methods of data collection. The chapter further provides an operational definition of variables of the study and the methods of data analysis. A summary of the contents of this chapter is provided at the end of the chapter.

3.2 Research Design

The study will employ a Survey Research Design. The concept of the Output Based Aid as applied to subsidising electricity supply connection in Kenyan slums is fairly new and therefore this research design is the most ideal as it is a method of sociological investigation that uses question based or statistical surveys to collect information about how people think and act. (Brown, 2006). According to (USC, 2015) Survey research is one of the most important areas of measurement in applied social research. The broad area of survey research encompasses any measurement procedures that involve asking questions of respondents.

The focus of such a research design is on gaining insights and familiarity for later investigation and thus will enable the identification of the various uses to which the slum dwellers in Kenya use electricity for. It will also assist to analyse the energy needs and challenges associated with energy access of the slum dwellers enabling future researchers to further address them in a bid to

address the particular needs identified.

By employing this research design, the study will identify the major factors that influence electricity use in urban slums. This design will be used because the target population consists of various categories of electricity consumers being domestic and commercial who will be instrumental in providing information. Furthermore, exploratory design will enable the study to be undertaken at a relatively lower expense.

Both quantitative and qualitative data will be collected, thus, the research will employ the mixed mode. Quantitative data to be obtained by the study will be associated with the number of new connections since programme rollout and to analyse the different functions that the slum dwellers use electricity for. Qualitative data on the other hand will be associated with the feelings and opinions of stakeholders. They include parameters associated with the one to one customer training done by Kenya Power marketing staff on issues to do with safe use of the electricity, how to apply for the electricity and providing all the required documentation for contracting, how to ensure that a safe wiring has been carried and availing the wiring certificate. Opinions also related to the Kenya Power marketing strategy employed to encourage the customers to apply for the electricity and also identify potential uses and benefits of electricity will also be researched upon.

3.3 Target Population

According to Saravanel (1992), a population is an aggregate of all units possessing certain specified characteristics on which the sample seeks to draw inferences. In other words it is the totality or the universe of units from which samples of various sizes may be drawn. The study targets slum dwellers using electricity in Munyaka slums and connected under the World Bank

financing scheme. The scheme to connect these customers begun in June 2014 with the first customer under the scheme making a payment for connection on 21.06.2014 (KPLC ICS). Based on the delimitation of sturdy, only customer paid up and connected by 31st January 2015 will be considered. This is based on one of the assumptions that the customer has been connected and thus has been using and enjoying the electricity for a relatively long period of time for the research to be carried out on the various uses that the customer has applied the electricity. From the Kenya Power Integrated Customer Service System (ICS), the number of customer paid up and connected to this date was 1,565, which will therefore form our sturdy population.

According to Uasin Gishu County Integrated Development Plan 2013-2018, the informal settlement in the county include Munyaka, Huruma, Kamukunji, YaMumbi, King'ong'o, Kimumu and Mwiwenderi. The targeted areas identified by Kenya Power to benefit from the World Bank funded program in Usin Gishu County are Munyaka, Bahati, Kamkunji, Moi's Bridge, Mwenderi, Huruma, Langas and Saroiyot in Uasin Gishu.

3.4 Sampling Procedures

Kothari (1990) defines sampling as the selection of part of an aggregate or totality on the basis of which a judgment of inference about the aggregate or totality is made. It is the process of drawing samples that would be representative of the population of the study. Its objective is to secure a sample which subject to limitations of size will produce the characteristics of the population as closely as possible.

Systematic sampling from the Kenya Power ICS was employed. The starting point of the sampling will be the first customer who applied and thus connected under the scheme and subsequently every fifth customer arrived at by dividing 1568/311. The Morgan and Krejcie

(1970) table (Appendix V) will be used to determine the sample size for this study. With a target population of 1,565, the corresponding sample size is 311 respondents distributed according to their ratio samples as shown in table 3.1 below.

Table 3-1 Sampling table

Target Group	Target Population	Sampling Procedure	Sample Size
Connected Customers	1,565	$(1,565/1,568)*311$	310
Marketing Field Staff	3	$(3/1,568)*311$	1
	1,568		311

3.5 Methods of Data Collection

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 thus assisted in getting the required data.

A Combination of methods which include personal interviews, questionnaires, and document analysis was use to collect data. Personal interviews were used because of its advantages as advocated for by Fletcher (1988) as they allow for a face-to-face contact with the respondents thus enabling provision of in-depth data. This method also allowed the interviewer a chance to clearly explain to the respondents the purpose of the study. An interview schedule was developed for use during the personal interview and greatly offered the interviewer adequate opportunities to clarify the objectives of the questions in line with the general objectives of the sturdy.

Questionnaires were developed and to collect data from the slum residence. As pointed out by

Bailey (1987) they were very instrumental data collection instruments in terms of time saving on the part of the respondents and also allowed the respondents ample time to think and fill the questionnaires at their free time, hence minimizing errors. The questionnaires were used to collect both quantitative and qualitative data on the uses of electricity and also the nature of use of the electricity, that whether for domestic or commercial applications. The qualitative data that was also by use of the questionnaire was mainly associated with the feelings and opinions of the slum dwellers on the customer training and marketing strategy employed by the Kenya Power employees.

Document analysis is a method of data collection from documented sources. The Kenya Power Integrated Customer Service System (ICS) system was greatly queried and specifically the register of customers connected under the programme. Data on the customers connected under the World Bank funded scheme in Munyaka was obtained and from the register, systematic sampling of the customers was done.

The researcher trained and recruited one research assistants to assist in data collection and data entry especially entry of the data in the Statistical Package for Social Sciences (SPSS) software package for ease of data analysis. The research assistant was taken through the training to clearly understand the purpose of the research and also the ethical considerations of the research.

3.6 Validity and Reliability of the study

The study will put into consideration the validity and reliability of the research instruments and the results.

3.6.1 Validity of the study

Validity is the accuracy and meaningfulness of inferences which are based of the research results. It is the strength of the conclusions, inferences or propositions, a degree to which results obtained from the analysis of data actually represents the phenomenon understanding. Validity is whether an instrument is measuring what is required to measure. (Algina, 1986). Content validity was achieved by seeking expert opinion of the supervisor. The data collected was checked while still in the field to ensure that all questions are answered, however some respondents did not respond to some questions.

3.6.2 Reliability of the study

Reliability means consistency. It is the degree to which an instrument will give similar results for the same individuals at different times. Reliability can take on values of 0 to 1.0, inclusive. Test-retest reliability was employed in this study whereby the research questionnaire was administered on two occasions to a group of 10 respondents who were not involved in the main research. The test yielded two scores for each person and the test-retest reliability coefficient was computed as shown below. Appropriate modifications were then made to the questionnaire before administering them to the whole sample. The interview schedule was also pre-tested on one marketer and appropriate amendments made. The test-retest reliability for this measure over a 10 day's period illustrated by the Cronbach Alpha coefficient was: $r = 0.947$.

Table 3-2 Test retest reliability results

		Day one test analysis results	Day two test analysis results
Day One	Cronbach Alpha	1.000	0.947(**)
	Sig. (2 tailed)		0.00
	N	10	10
Day Two	Cronbach Alpha	0.947(**)	1.000
	Sig. (2 tailed)	0.00	
	N	10	10

** Correlation is significant at the 0.01 level (2-tailed).

3.7 Operational Definition of Variables

This section provides an explanation of the variables to be investigated in this study. Table 3.3 provides a summary of the operational definition of variables.

3.7.1 Independent variables

Independent variables of the study include the Kenya Power Slum electrification programme subsidised connection cost, programme construction standard, programme customer training and marketing strategy.

3.7.1.1 Programme subsidised connection cost

The indicators of this objective were the number of new customers connected since the programme inception segregated from domestic and commercial customers.

3.7.1.2 Programme construction standard

The indicators of this variable were the number of metering on prepaid and or postpaid and number of meters mounted on the poles.

3.7.1.3 Programme customer training

The training was mostly a one on one training on the application procedure, proper wiring of the premise and required documents for contracting. Indicators for this variable were electricity application training and availing of the necessary documents, training on electricity safety and buying of electricity tokens or paying of the electricity bills

3.7.1.4 Programme electricity marketing strategy

The marketing strategy employed was supposed to increase the level of connectivity as well as assist the customers to use the electricity safely and efficiently. Indicators of this parameter were marketing of electricity as an alternative to fossil fuels and Identification of energy need and potential electricity usage.

3.7.2 Dependent variable.

The dependent variable of the study is electricity use in urban slums. The sturdy parameters are the customers using the electricity for domestic uses including lighting, heating, cooking and other applications and the customers using the electricity for commercial uses including welding food vending and any other commercial application.

3.7.2.1 Electricity use

The indicators are of this variable were the number of customers using the electricity for domestic uses including lighting, heating, cooking and other applications and the Number of customers using the electricity for commercial uses including welding food vending and any other commercial application. The data was obtained by the use of document analysis guide and questionnaire administered to the slum residents.

Table 3-3 Summary of operational definition of variables

Objective	Indicator	measure	Approach of analysis	Research instrument
To establish the extent to which the Kenya Power Slum Electrification Programme subsidized connection fee has influenced electricity use in Munyaka informal settlement.	Customers connected after paying the required minimum fee of kshs 1,160.	Number of customers connected after paying the required minimum fee of kshs 1,160.	Inferential Statistic	Questionnaire
To determine how the Kenya Power Slum Electrification Programme construction standard have influenced electricity use in Munyaka informal settlement.	prepaid and or post-paid meters installed pole mounted meters meters mounted on the meter box	Number of prepaid and or post-paid meters installed - number of pole mounted meters - Number of meters mounted on the meter box	Inferential Statistic	Questionnaire
To access the extent to which customer training on electricity under the Kenya Power Slum Electrification Programme has influenced electricity use in Munyaka informal settlement.	electricity application procedure electricity safety vending electricity tokens or paying of bills	electricity application training training on electricity safety buying of electricity tokens or paying of bills	Inferential Statistic	Questionnaire Interview Schedule
To establish whether the marketing strategy employed under the Kenya Power Slum Electrification Programme has influenced electricity use in Munyaka settlement.	Electricity as an alternative to fossil fuels. Energy need and potential electricity usage.	Marketing of electricity as an alternative to fossil fuels. Identification of energy need and potential electricity usage.	Inferential Statistic	Interview guide Questionnaire
	Customers using the electricity for domestic uses including lighting, heating, cooking and other applications. customers using the electricity for commercial uses including welding food vending	Number of customers using the electricity for domestic uses including lighting, heating, cooking and other applications. Number of customers using the electricity for commercial uses including welding food vending.	Inferential Statistic	Questionnaire Interview Schedule

3.8 Data Analysis Techniques

Quantitative and qualitative methods were used in the analysis of data. The analysis included

both the use of descriptive and inferential analysis. Descriptive analysis was used for variables which were described in terms of frequency distributions, percentages, the mean as a measure of central tendency and standard deviation were used in the analysis. This method therefore enabled inferences to be made from the sample statistic to the population parameter through sampling distributions. Pearson's coefficient of correlation was calculated to measure the relationship between the variables of the study. The relationship between independent variable and dependent variable as well as the relationship among the independent variable was thus obtained. On the other hand, inferential analysis which does not require data to follow a particular distribution, was used to analyse non-numerical data and qualitative data especially the data obtained from the interview guide.

3.9 Ethical Consideration

The participants were guaranteed that their identities will not be made available to anyone who was not involved in the study and it will remain confidential. The researcher sought permission to carry out the research from the County Manager, Usin Gishu County. The participants were fully informed about the Procedures involved in the data analysis and that the data provided will be used purely for research purposes. The participants remained anonymous throughout the study and even to the Researchers themselves to guarantee privacy.

3.10 Summary

The study took an exploratory research design. A mixed mode where both quantitative and qualitative approaches was used in the study. The targeted population was 1,565 connected customers in the programme and 3 Kenya Power marketing. A total of 311 respondents constituting the sample were involved in the study with a systematic random sampling being

used to select them. The study relied on the use of questionnaires to collect data from the slum and a personal interview guide to collect data from the marketing staff. Document analysis from the Kenya Power ICS system was queried to obtain the register of the customers connected with the consent of the County Manager, Uasin Gishu. The dependent variable in this study was electricity use while the independent variables included the programme subsidised cost, programme construction standards, customer training and the marketing strategy employed. The moderating variable was the billing tariff as set out by the ERC. The study made use of both descriptive and inferential analysis.

CHAPTER FOUR

DATA ANALYSIS, PRESENTATION AND INTERPRETATION

4.1 Introduction

This chapter covers data analysis, presentation and interpretation of the findings. The study aimed to investigate the influence that the Kenya Power slum electrification programme has had on people living in Munyaka informal settlement in Eldoret Uasin Gishu County. It therefore sought to determine the influence of the subsidized connection fee, electrification programme construction standard, customer training and marketing strategy has had on electricity usage. The data is summarized and presented in the form of proportions, means, and tables. Data was collected from slum dwellers that applied for electricity and connected under the slum electrification programme. The collected data has been analysed and interpreted in line with the aims of the study.

4.2 Response rate

The researcher sort to collect data from the slum dwellers by use of a research questionnaire. A sample of 310 questionnaires were printed and distributed. 297 questionnaires were correctly filled and returned representing 95.8% response rate while 13 questionnaires were never returned on time for the sake of the data analysis. The response rate was quite high as statistical scholars including Nachmias and Nachmias (2006) as well as Kothari 1990 have recommended a response rate of at least 51% in an open study.

4.3 Demographic Information of the respondents

The study put into account the demographic information of the respondents since the background information of the respondents is crucial for the authenticity of the results. The demographic information of the respondents includes their age, gender, month and year for connection to electricity and also sort to determine whether the respondent was a landlord or tenant in their area of residence. The results are presented in table 4.1.

Table 4-1 Demographic information of the connected customers

		Frequency	Percent
Age category	21-30 years	12	4
	31-40 years	93	31.3
	41 and above years	192	64.6
	Total	297	100
Gender	Male	238	80.1
	Female	59	19.9
	Total	297	100
Month and year for connection to electricity	June	41	13.8
	July	2	0.7
	Aug	53	17.8
	Sep	148	49.8
	Oct	8	2.7
	Nov	16	5.4
	Dec	25	8.4
	Jan	4	1.3
Tenant or the owner of the premises that you reside in	Tenant	40	13.5
	Landlord	257	86.5
	Total	297	100

As evidenced in the results, majority 64.6% (192) are over 41 years, 31.3% (93) of them are between 31-40 years while the least 4% (12) being those between 21-30 years. This tentatively implies that majority of the respondents comprised of the elderly as evidenced by those that were over 41 years. In terms of gender, majority 80.1% (238) are male while 19.9% (59) are female.

In relation to the month and year for connection to electricity, most 49.8% (148) of the respondents got electricity connection within the month of August while the least 0.7% (2) got electricity connection in the month of December. Further, majority 86.5% (257) of the respondents were tenants at their place of residence while the rest 13.5% (40) of the respondents noted that they owned the premises.

4.4 Electricity Usage

The researcher found it necessary to establish electricity usage in line with the objectives of the research project. As presented in table 4.2, majority 86.5% (257) of the respondents noted that electricity is majorly for domestic uses, 12.5% (37) of them noted that it is for commercial use while 1% (3) of the respondents noted that electricity is for both domestic and commercial usage.

Table 4-2 Distribution table of the electricity use

	Frequency	Percentage (%)
Domestic uses	257	86.5
Commercial uses	37	12.5
Both	3	1
Total	297	100

4.5.1 Nature and type of Business

The natures of business the residents have been able to operate as a result of electricity connection are as presented in figure 4.3. The results indicate 57.5% of the residents have adopted the use of electricity in general merchandise shops, 15% posho mills, 10% welding, 10% barbershop/salon and 7.5% video show theatre.

Table 4-3 Nature and type of business

	Frequency	Percentage (%)
GENERAL MARCHADISE	23	57.5
POSHO MILLS	6	15
WELDING	4	10
BARBER SHOP/SALOON	4	10
VIDEO SHOW	3	7.5

Total	40	100
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4.5.2 Electricity for domestic household applications

The study further established how electricity is used for domestic household applications. As shown in table 4.4, 223 persons constituting 75.1% of the respondents noted that electricity is used for both lighting and radio or television entertainment.

Table 4-4 Electricity for domestic household applications

	Frequency	Percentage
Lighting	223	75.1
Cooking	0	0
Radio and/or TV entertainment	223	75.1
Cooling	0	0
Others	0	0

4.5.3 Challenges experienced in electricity use.

As presented in table 4.5, majority 72.05% (214) of the respondents noted that frequent and unannounced blackouts were the major challenges that they have experienced that have significantly constrained their use of the electricity. Others identified low Power in the Power lines and problems in vending as the other challenges that they have experienced.

Table 4-5 challenges experienced in electricity use

	Frequency	Percentage
Frequent and un-announced blackouts	214	72.05
Low Power/dimming of lights	57	19.19
Challenges in buying tokens/units	26	8.75
Total	297	100

4.5.4 Electricity use

This section presents the results on electricity use. As evidenced in table 4.6.

Table 4-6 Electricity use Likert table data analysis

		SD	D	N	A	SA	Mean	Std. Deviation
I often use electricity in my business premises	Freq.	0	0	257	1	39	2.4	1.019
	%	0	0	86.5	0.3	13.1		
I often use electricity for my domestic applications such as radio, TV, lighting etc	Freq.	0	37	12	184	64	3.93	0.867
	%	0	12.5	4	62	21.5		
Currently, I have increased the use of electricity in my daily activities.	Freq.	0	37	100	153	7	3.44	0.738
	%	0	12.5	33.7	51.5	2.4		
As a result of the new installed electricity supply, am now able to perform most of my business activities	Freq.	0	72	165	7	53	3.14	0.982
	%	0	24.2	55.6	2.4	17.8		
I intend to increase the usage of electricity in futures in expanding my business	Freq.	0	37	206	38	16	3.11	0.676
	%	0	12.5	69.4	12.8	5.4		
I intend to increase the usage of electricity in future by acquiring new electrical domestic appliances.	Freq.	0	0	70	212	15	3.81	0.503
	%	0	0	23.6	71.4	5.1		

62% (184) of the respondents agreed that they often use electricity for their domestic applications such as radio and television (mean = 3.93, SD = 0.867). As well, 71.4% (212) of them agreed that they intend to increase the usage of electricity in future by acquiring new

electronic domestic appliances (mean = 3.81, SD = 0.503). Further, 51.5% (153) of the respondents agreed that they have increased the use of electricity in their daily activities (mean = 3.44, SD = 0.738). However, 55.6% (165) of the respondents were not sure whether the newly installed electricity was the reason why they were able to perform most of their business activities (mean = 3.14, SD = 0.982). Similarly, 69.4% (206) of the respondents were neutral as to whether they intend to increase the usage of electricity in future (mean = 3.11, SD = 0.676). In the same way, 86.5% (257) of them were neutral on the use of electricity in their business premises (mean = 2.4, SD = 1.019).

4.5 Subsidized Connection Fee

The researcher examined the effects of subsidized connection fee on electricity usage. The researcher initially found it necessary to establish the number of meters that each respondent applied for in line with the objectives of the research project and the results presented in table 4.7 below; 257 respondents constituting 86.5% applied between one and five meters.

Table 4-7 Frequency distribution table of the number of meters applied for

Number of Meters applied	Frequency
1-5	257
6-10	7
11-15	10
16-20	9
21-25	7
Total	297

Table 4.8 below further shows the analysis of the data with regard to this variable. As shown in the table, 62.6% (186) of the respondents agreed that they have been able to easily afford electricity connection as a result of subsidized electricity connection fee (mean = 4.37, SD = 0.49). On a related item, 62.3% (185) of them agreed that the subsidized electricity connection

fee enables them to increase electricity connection to all their enterprises (mean = 3.65, SD = 0.8). Similarly, 66% (196) of them agreed that the subsidized electricity connection fee has enabled them to acquire more electrical domestic appliances (mean = 3.63, SD = 0.76). However, 47.5% (141) of them were not sure if the subsidized electricity connection fee has enabled them to start a business after the electricity connection (mean = 2.75, SD = 0.72). Finally, 86.5% (257) of the respondents disagreed that they are happy with the subsidized connection fee which has enabled them to reduce meter sharing through meter separation (mean = 2.16, SD = 0.44).

Table 4-8 Subsidized Connection Fee Likert table data analysis

		SD	D	N	A	SA	Mean	Std. Deviation
Due to subsidised electricity connection fee I was able to easily afford electricity connection.	Freq.	0	0	0	186	111	4.37	0.49
	%	0	0	0	62.6	37.4		
The subsidized electricity connection fee enabled me to increase electricity connection to all my premises	Freq.	0	37	52	185	23	3.65	0.8
	%	0	12.5	17.5	62.3	7.7		
Am happy with the subsidized connection fee which enabled me to reduced meter sharing through meter separation	Freq.	0	257	33	6	1	2.16	0.44
	%	0	86.5	11.1	2	0.3		
The subsidized electricity connection fee enabled be to start a business after the electricity connection	Freq.	0	118	141	33	5	2.75	0.72
	%	0	39.7	47.5	11.1	1.7		
The subsidized electricity connection fee enabled me to acquire more electrical domestic appliances	Freq.	0	37	50	196	14	3.63	0.76
	%	0	12.5	16.8	66	4.7		

4.6 Programme Construction Standard

The study examined the influence of programme construction standard. 100% of the respondents sampled indicated that only prepaid meters were installed at their premises and also none of them had a pre-wired ready board installed at their premise. Further results of this study are highlighted in table 4.9.

Table 4-9 Programme Construction Standards Likert table data analysis

		SD	D	N	A	SA	Mean	Std. Deviation
Electricity network as constructed poses no danger to us	Freq.	0	0	1	262	34	4.11	0.33
	%	0	0	0.3	88.2	11.4		
Meters are well installed and secured in such a way that it is difficult for them to be vandalized.	Freq.	0	4	0	284	9	4	0.29
	%	0	1.3	0	95.6	3		
I like the way electricity cables and conductors are far above the houses posing no danger to us	Freq.	0	0	0	293	4	4.01	0.12
	%	0	0	0	98.7	1.3		
Cases of electricity theft have gone down as a result of the manner in which the electricity network was constructed.	Freq.	0	4	9	284	0	3.94	0.29
	%	0	1.3	3	95.6	0		
Cases of electrocution and fires have gone down as a result of the manner in which the electricity network was constructed,	Freq.	0	0	26	271	0	3.91	0.28
	%	0	0	8.8	91.2	0		

88.2% (262) of the respondents agreed that the electricity network as constructed poses no danger (mean = 4.11, SD = 0.33). Further, 95.6% (284) of the respondents agreed that meters are well installed and secured in such a way that it is difficult for them to be vandalized (mean = 4, SD = 0.29). Additionally, 98.7% (293) of them agreed that they like the way electricity cables and conductors are far above the houses posing no danger to them (mean = 4.01, SD = 0.12). As well, 95.6% (284) of the respondents agreed that cases of electricity theft have gone down as a result of the manner in which the electricity network was constructed (mean = 3.94, SD = 0.29).

Finally, 91.2% (271) of them agreed that cases of electrocution and fires have gone down as a result of the manner in which the electricity network was constructed (mean = 3.91, SD = 0.28).

4.7 Programme Customer Training

The study sought to establish whether the respondents have received training on how to safely use electricity. The results reveal that 294 people representing 99% of the respondents had received training on how to safely use electricity with only 4 representing 1% indicating that they never received any training. The researcher went a step further to establish whether the training has been of major assistance. Majority (99%) of the respondents confirmed that the training has been of major assistance to them.

4.8 Programme Customer Training

The respondents were also requested to indicate their level of agreement/disagreement on matters relating to programme customer training. The results are as presented in table 4.10. As evidenced in the table, 94.6% (281) of the respondents agreed that they have received training on the process of the electricity supply application (mean = 4.01, SD = 0.232). Similarly, 93.6% (278) of them agreed that they have received training on availing all the necessary documents required for electricity supply contracting (mean = 3.95, SD = 0.364). Further, 88.9% (264) of the respondents agreed that they have received training on how to safely use electricity (mean = 3.87, SD = 0.407). However, 87.9% (261) of the respondents disagreed that they have received training on how to report to Kenya Power emergency officials any electricity related issues such as blackout (mean = 2.25, SD = 0.665). Likewise, 96.3% (286) of the respondents disagreed that they have received training on the identification of faulty meters cut-outs and electrical devices (mean = 2.07, SD = 0.375).

Table 4-10 Programme Customer Training Likert table data analysis

		SD	D	N	A	SA	Mean	Std. Deviation
I received training on how to pay for the electricity consumed	Freq.	0	4	282	11	0	4.01	0.302
	%	0	1.3	94.9	3.7	0		
I received training on the process of the electricity supply application	Freq.	0		7	281	9	4.01	0.232
	%	0		2.4	94.6	3		
I received training on availing all the necessary documents required for electricity supply contracting	Freq.	0	7	7	278	5	3.95	0.364
	%	0	2.4	2.4	93.6	1.7		
I received training on how to safely use electricity	Freq.	0	7	25	264	1	3.87	0.407
	%	0	2.4	8.4	88.9	0.3		
I received training on the identification of faulty meters cut-outs and any other electrical devises.	Freq.	0	286	2	8	1	2.07	0.375
	%	0	96.3	0.7	2.7	0.3		
I received training on how to report to Kenya Power emergency officials any electricity related issues such as blackout etc	Freq.	0	261	35	1	0	2.25	0.665
	%	0	87.9	11.8	0.3	0		

4.9 Marketing Strategy Employed

The respondents were requested to determine the extent of marketing strategy employed on a five point Likert scale. As presented in table 4.11

Table 4-11 Marketing Strategy Employed Likert table data analysis

		SD	D	N	A	SA	Mean	Std. Deviation
The Kenya Power marketing team introduced me to the slum electrification programme	Freq.	0	4	259	34	0	4.09	0.4
	%	0	1.3	87.2	11.4	0		
The Kenya Power marketing team provided me with the relevant documents to fill for the purpose of the electricity application	Freq.	0	0	0	263	34	4.11	0.32
	%	0	0	0	88.6	11.4		
The marketing strategy employed enabled me to identify new uses of electricity in business.	Freq.	0	144	152	1	0	2.52	0.52
	%	0	48.5	51.2	0.3	0		
The marketing strategy employed enabled me to identify new uses of electricity in domestic applications.	Freq.	0	95	201	0	1	2.69	0.49
	%	0	32	67.7	0	0.3		
After connection of the electricity my use of wood, charcoal or kerosene as fuel has greatly diminished	Freq.	0	45	4	240	8	3.71	0.75
	%	0	15.2	1.3	80.8	2.7		

88.6% (263) of the respondents agreed that the Kenya Power marketing team has provided them with the relevant documents to fill for the purpose of electricity application (mean = 4.11, SD = 0.32). Also, 80.8% (240) of the respondents agreed that their use of wood, charcoal or kerosene as fuel has greatly diminished after electricity connection (mean = 3.71, SD = 0.75). However, 87.2% (259) of the respondents were not sure if the Kenya Power marketing team introduced them to the slum electrification programme. Similarly, 67.7% (201) of the respondents were also not sure if the marketing strategy employed enabled them to identify new uses of electricity in domestic applications (mean = 2.69, SD = 0.49). Finally, 48.5% (144) of them were uncertain as

to whether the marketing strategy employed has enabled them to identify new uses of electricity in business (mean = 2.52, SD =0.52).

4.10 Correlation Results

A study was conducted on the relationship between the independent variables and electricity usage. The analysis applied the statistical package for social sciences (SPSS) to compute the measurements of the correlation statistics for the study.

Table 4-12 Correlation Results

		Electricity Usage	Subsidized connection fee	Programme construction standard	Programme customer training	Marketing strategy employed
electricity usage	Pearson Correlation Sig. (2-tailed)	1	.			
Subsidized connection fee	Pearson Correlation Sig. (2-tailed)	.818**				
		0.000				
Programme construction standard	Pearson Correlation Sig. (2-tailed)	-.146*	-.138*	1		
		0.012	0.017			
Programme customer training	Pearson Correlation Sig. (2-tailed)	.548**	0.097	-.161**	1	
		0.000	0.097	0.005		
Marketing strategy employed	Pearson Correlation Sig. (2-tailed)	.638**	.544**	.147*	.462**	1
		0.000	0.000	0.011	0	

** Correlation is significant at the 0.01 level (2-tailed).
* Correlation is significant at the 0.05 level (2-tailed).

Correlations results in table 4.12 showed that subsidized connection fee was positively and significantly correlated with electricity usage ($r=0.818$, $\rho<0.01$). The marketing strategy employed was also positively and significantly correlated with electricity usage ($r=0.638$, $\rho<0.01$). Additionally, programme customer training was positively and significantly correlated with electricity usage ($r=0.548$, $\rho<0.01$). However, programme construction standard showed a negative and significant relationship with electricity usage ($r= -0.146$, $\rho>0.05$).

4.11 Qualitative analysis of the interview guide

The researcher had also provided for data collection on the feelings and opinions of the Kenya Power marketing field officers who were heavily involved in the implementation of the slum electrification programme. An interview guide as illustrated on appendix 2 was used to collect the mostly qualitative data. From the data obtained the marketing officer sampled indicated that the major challenges experienced in the programme included illiteracy level of the slum dwellers with matters regarding electricity cost and application and also a perception within the slum dwellers that electricity is more expensive to use as compared to the use of fossil fuel. The marketer indicated that the major needs for electricity by the slum dwellers was for mostly lighting and home entertainment as also collaborated by the data obtained from the questionnaires. He also indicated that the programme has greatly contributed toward electricity use in the slum in light of the huge number of applications for electricity by the slum dwellers. Finally the slum residents intimated that to realise even more electricity connection the subsidised electricity cost should be lowed even further and a provision included to allow the amount to be recovered on an instalment basis from the monthly bills.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter provides the summary of the findings from chapter four, and it also gives the conclusions and recommendations of the study based on the objectives of the study.

5.2 Summary of the Findings

The study sought to investigate the influence that the Kenya Power Slum Electrification programme has had on people living in Munyaka informal settlement in Eldoret Uasin Gishu County. This section presents the summary of the findings.

- i. The study established that the programme subsidized connection cost has had a positive influence on electricity usage in Munyaka informal settlement in Eldoret. Specifically, the highly reduced connection cost has enabled the residents to get connected to the national electricity grid as they were now able to afford the capital contribution as set out in the slum electrification program. As such, the residents no longer feel excluded from basic services since they were able to meet the required connection fees. Further, they can use electricity for both lighting and entertainment for the domestic consumers and also for commercial applications as established in the previous chapter. Slum dwellers are therefore not highly exposed to energy-related expenditures related to the purchase of fossil fuels such as kerosene, charcoal or wood fuel as had always been the case. Additionally, the subsidized electricity connection fee has enabled the residents to acquire more electrical domestic appliances such as radio and television and also establish that some are already making provisions for the acquisition of such appliances.

However, despite the benefits that come with subsidized connection fee, the residents were not certain whether the electricity connection will make it possible for them to start a business.

- ii. Further, the results of the analysis indicate that programme construction standard is negatively related to electricity usage. This may be attributable to the dismantling of the initial ad hoc electricity vendors who used to carry out illegal and dangerous wiring. Residents who initially benefitted from these vendors by getting very cheap or free supply are now having to pay for the electricity legally and thus are having to scale down their use or use the Power more efficiently to avoid any high bills. The well-constructed electricity network has also reduced meter vandalism and tampering as the residents were sensitised on taking care of the electricity network infrastructure for the common good of all and thus contributing to the great reduction of cases of electrocution and fires. Also, cases of illegal electricity connections are minimal since concrete electric poles are in place.
- iii. The study also established that the customer training performed by the Kenya Power marketing teams has heightened electricity usage. As a result of training, the residents have knowledge on how to process the electricity supply application and avail the necessary documents required for electricity supply contracting. The training also enabled the residents to use the electricity more safely and therefore minimising incidences of electrocution or slum fires. However the study revealed that few customers were trained or did not comprehend how to identify faulty metering devices or even on how to report electricity related incidences to the Kenya Power emergency personnel an area that can be enhanced in future trainings.

iv. Finally, the study has established that marketing strategy has a positive influence on electricity usage. From the onset the strategy or plan of action was to ensure that as many customers are brought on board and to also ensure that there is a shift in demand by the customers from the high dependence on the use of fossil fuels to the more use of electricity in their daily operations. By providing the necessary documents to the slum dwellers many successful applications were realised and from the data analysis 80 of the respondents sampled admitted to a reduction on the reliance of wood, charcoal or kerosene for fuel.

5.3 Conclusion

A conclusion of the project research is provided below in line with the identified research objectives.

5.3.1 Subsidized electricity connection

Subsidized electricity connection has been of great benefit to the residents of Munyaka informal settlement in Eldoret. Subsidization of electricity connection has addressed the issue of energy access by the slum dwellers. Instead of spending their funds on kerosene, batteries or cooking fuel, residents can now use electricity to provide lighting and entertainment. Additionally, there has been an increase in electricity connection to the residents' enterprises. It can therefore be concluded that provision of subsidized electricity connection has been a worthy course due to the aforementioned benefits.

5.3.2 Programme construction standard

The study has also established that the electricity programme construction standard in place has a significant influence on electricity usage. For instance, meters are well installed and secured, electricity cables and conductors are far above the houses thereby posing no danger to residents and making it difficult for residents to have illegal electrical connections. From the foregoing, the programme construction standard has enhanced safety in access to electric connection making it possible for residents to have access to the benefits that electricity provides. The standards have also led to the dismantling of the illegal electricity vendors and thus guaranteeing some level of revenue to Kenya Power.

5.3.3 Customer training

Further, customer training was instrumental in effective electricity usage as evidenced in the study. Important issues relating to electricity usage such as energy conservation and efficiency measures are acquired through customer training. Training has also enhanced customers' knowledge on how to process electricity applications. However, there was doubt whether training has enhanced customers' knowledge on how to identify faulty meters and report matters such as blackouts to Kenya Power emergency officials.

5.3.4 Marketing strategy

Finally, marketing strategy has been shown to have a positive influence on electricity usage. Specifically, the marketing strategy by Kenya Power has made it possible for customers to fill the relevant documents for the purpose of electricity application. Customers have also been able to use electricity instead of kerosene. Despite the benefits, it is still uncertain whether the marketing strategy has made it possible for the users to identify new uses of electricity in

business.

5.4 Recommendations

In light of the aforementioned findings, the following recommendations are made:

- i. Subsidized electricity connection has been shown to contribute positively to electricity usage. Therefore, a further decrease in the connection fee of electricity would enable more slum dwellers to have electricity connection. This way, they will be empowered economically since they would save energy and at the same time earn income from enterprises such as video show theatre, barber shop/salon, welding and a posho mill.
- ii. In order to reap the benefits of the slum electrification programme, meters need to be well installed and secured. Electric cables and conductors should be above the houses in order to enhance the safety of the consumers. This will also prevent cases of fire and electrocution. Further, the electricity network needs to be constructed in such a way that is difficult to have illegal connections.
- iii. Moreover, there is need for customer training on matters relating to electricity usage. For instance, consumer training on how to process electricity applications is paramount. Also, training on means and ways to efficiently use electricity is required. Additionally, customers need to be trained further on how to identify faulty meters and the communication channels to use to report matters such as blackout and other Power related issues to Kenya Power.
- iv. Finally, a marketing strategy is utmost necessary. There is therefore need for a marketing team that focuses on provision of the relevant documents required for electricity application. The marketing team should also sensitize slum dwellers of the benefits of

electricity compared to wood fuel and kerosene. Additionally, the marketing strategy employed needs to focus on how electricity can be used by residents in their business and also assist slum dwellers discover new uses of electricity.

5.5 Contribution to the body of knowledge

The primary aim of the researcher in this study was to investigate the influence that the World Bank funded electrification programme had on the people of Munyaka informal settlement slums in Uasin Gishu County. From the forgoing research it has been established that subsidization of electricity connection had been able to address the issue of energy access by the slum dwellers, and in addition, there has been an increase in electricity connection to the residents' enterprises. The programme construction standard has enhanced safety in access to electric connection making it possible for residents to have access to the benefits that electricity provides. Training has also enhanced customers' knowledge on how to process electricity applications. This study has illustrated how the slum electrification programme that was carried out by Kenya Power has allowed for innovative ways in assisting the urban poor meet their energy demands by providing access to clean and sustainable electricity for them and in the process this research has highlight the energy needs and uses to which electricity is applied for in the slums.

5.6 Suggestions for further research

The primary objective of the study was to investigate the influence that the Kenya Power slum electrification programme subsidised electricity connection has had on people living in Munyaka informal settlement in Eldoret Uasin Gishu County. The following suggestions are made for further research;

- i. There is need for a similar study after a period of five years or more in order to investigate whether there are any areas of commonalities or unique factors since the level of technology keeps on changing.
- ii. It would also be interesting to conduct a study to establish whether the provision of subsidized electricity for slum dwellers will have an effect on proliferation of slums.

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APPENDICES

Appendix I: Letter of transmittal of data collection instruments

Joseph Wainaina Njoroge,
P.O Box 24422-, 00502
Nairobi.

April 2015

To whom it may concern

RE: DATA COLLECTION ON THE INFLUENCE OF THE KENYA POWER SLUM ELECTRIFICATION PROGRAMME ON ELECTRICITY USE IN MUNYAKA SLUMS

I am Joseph Wainaina Njoroge, National Identity No. 222453213, a student at the University of Nairobi, School of Continuing and Distance Education, registration number L50/73649/2014. I am currently undertaking my research project as a requirement for award of the degree of Masters of Arts in Project Planning and Management. I am therefore carrying out a study on the influence of the slum electrification programme on electricity use in munyaka slums.

The purpose of this letter is to kindly request for your cooperation during my data collection process for this study. I am involving one research assistants whom I would also like to request you to allow in obtaining the necessary data. The data that will be provided by respondents will be treated with utmost confidentiality and only used for the purpose of this research. The details of respondents and other sources of information shall also be kept confidential.

For any more information or clarification, I may be contacted on mobile 0724 344 234 or email ***njorojw@yahoo.com***.

I look forward to your cooperation.

Thank you,

Joseph Wainaina Njoroge

Appendix II: Questionnaire for Slum Residents

INTRODUCTORY REMARKS

I am Joseph Wainaina Njoroge, a student at the University of Nairobi, School of Continuing and Distance Education. I am currently undertaking my research project as a requirement for award of the degree of Masters of Arts in Project Planning and Management. The study is on the influence of the Kenya Power slum electrification programme on Electricity use in Munyaka Slum.

I would like to collect data that will assist in accomplishing the objectives of this study. Kindly answer the question by ticking and/or explaining. Your contribution will be much appreciated and the information provided will be treated with utmost confidentiality.

A. GENERAL INFORMATION.

1. Name (optional): _____

2. What is your age category

Below 20 years 21-30 years 31-40 years 41 and above years

3. What is your Gender

Male Female

4. In which month and year were you connected to electricity?

5. Are you a tenant or the owner of the premises that you reside in? (*Tick only one of the options below which applies in the space provided to the right*)

Tenant	<input type="checkbox"/>
Landlord	<input type="checkbox"/>

B. ELECTRICITY USE

1. Is the electricity supply used for commercial or domestic uses? *(Tick the options below which applies in the space provided to the right)*

Domestic uses	
Commercial uses	
Both	

2. If the electricity is used for commercial uses, state the nature of business? *(Tick only one of the options below which applies in the space provided to the right)*

.....

3. If the electricity is used for commercial application, tick on the table below the functions the electricity is used for.

Lighting	
Entertainment	
Heating	
Freezing	
Ventilation	
Cooking	
Others (Specify)	

4. If the electricity is used for domestic household applications tick on the table below the functions? *(Tick the options below which applies in the space provided to the right)*

Lighting	
----------	--

Cooking	
Radio and/or TV entertainment	
Cooling	
Others	

5. In this section the study is interested in your view about your usage of electricity. Read each of the statements carefully and tick the appropriate choice.

Key SA- Strongly Agree, A- Agree, N- Neutral, D- Disagrees, SD – Strongly Disagree

Electricity Use	SA	A	N	D	SD
I often use electricity in my business premises					
I often use electricity for my domestic applications such as radio, TV, lighting etc					
Currently, I have increased the use of electricity in my daily activities.					
As a result of the newly installed electricity supply, am now able to perform most of my business activities					
I intend to increase the usage of electricity in futures in expanding my business					
I intend to increase the usage of electricity in future by acquiring new electrical domestic appliances.					

6. What challenges have you experienced with regards to the electricity connection that has constrained your use of the electricity?

.....

.....

.....

C. SUBSIDISED CONNECTION FEE

- 7. How many meters did you apply for?
- 8. How much money did you pay while applying for electricity?

9. In this section the study is interested in your view about connection fee. Read each of the statements carefully and tick the appropriate choice.

Key SA- Strongly Agree, A- Agree, N- Neutral, D- Disagrees, SD – Strongly Disagree

Subsidised Connection Fee	SA	A	N	D	SD
Due to subsidised electricity connection fee I was able to easily afford electricity connection.					
The subsidised electricity connection fee enabled me to increase electricity connection to all my premises					
Am happy with the subsidised connection fee which enabled me to reduced meter sharing through meter separation					
The subsidised electricity connection fee enabled be to start a business after the electricity connection					
The subsidised electricity connection fee enabled me to acquire more electrical domestic appliances					

D. PROGRAMME CONSTRUCTION STANDARD

10. What kind of meter was installed at the premise? (*Tick only one of the options below which applies in the space provided to the right*)

Prepaid meter	
Post Paid Meter	

11. Where was the meter installed at the premise? (*Tick only one of the options below which applies in the space provided to the right*)

Up an Electricity pole	
On a meter board in the house	

12. During the installation of the electricity was a pre-wired board with a bulb holder and socket outlet installed inside the house? (*Tick only one of the options below which applies in the space provided to the right*)

Yes	
No	

13. In this section the study is interested in your view about programme construction standard. Read each of the statements carefully and tick the appropriate choice.

Key SA- Strongly Agree, A- Agree, N- Neutral, D- Disagrees, SD – Strongly Disagree

Programme Construction Standard	SA	A	N	D	SD
The electricity network as constructed poses no danger to me					
Meters are well installed and secured in such a way that it is difficult for them to be vandalised.					
I like the way electricity cables and conductors are far above the houses posing no danger to me					
Cases of electricity theft have gone down as a result of the manner in which the electricity network was constructed.					
Cases of electrocution and fires have gone down as a result of the manner in which the electricity network was constructed.					

E. PROGRAMME CUSTOMER TRAINING

14. Did you receive any training on how to safely use electricity? (*Tick only one of the options below which applies in the space provided to the right*)

Yes	
No	

14b) if yes, has the training been of major assistance?

Yes	
No	

15. In this section the study is interested in your view about Customer Training. Read each of the statements carefully and tick the appropriate choice.

Key SA- Strongly Agree, A- Agree, N- Neutral, D- Disagrees, SD – Strongly Disagree

Programme Customer Training	SA	A	N	D	SD
I received training on how to pay for the electricity consumed					
I received training on the process of the electricity supply application					
I received training on preparing, filling and availing all the necessary documents required for electricity supply contracting					
I received training on how to safely use electricity					
I received training on the identification of faulty meters cutouts and any other electrical devises.					
I received training on how to report to Kenya Power emergency officials any electricity related issues such as blackout etc.					

MARKETING STRATEGY EMPLOYED

In this section the study is interested in your view about Marketing Strategy Employed. Read each of the statements carefully and tick the appropriate choice.

Key SA- Strongly Agree, A- Agree, N- Neutral, D- Disagrees, SD – Strongly Disagree

Marketing Strategy Employed	SA	A	N	D	SD
The Kenya Power marketing team introduced me to the slum electrification programme.					
The Kenya Power marketing team provided me with the relevant documents to fill for the purpose of the electricity application.					
The Kenya Power marketing team enabled me to identify new uses of electricity in my business.					
The Kenya Power marketing team enabled me to identify new uses of electricity for domestic applications.					
After connection of the electricity my use of wood, charcoal or kerosene as fuel has greatly diminished.					

Appendix III: In-depth interview guide for the Kenya Power Marketing Team

INTRODUCTORY REMARKS

I am Joseph Wainaina Njoroge, a student at the University of Nairobi, School of Continuing and Distance Education. I am currently undertaking my research project as a requirement for award of the degree of Masters of Arts in Project Planning and Management. The study is on the influence of the Kenya Power Slum Electrification programme on electricity use in Munyaka Slums.

Therefore, I would like to collect data that will assist in accomplishing the objectives of this study. Your contribution will be much appreciated and the information provided will be treated with utmost confidentiality. I wish to conduct an interview with you by asking you some questions.

1. What challenges if any have you encountered during the implementation of these programme?
2. What was the average time taken to complete a customer connection?
3. How was the customer training on safety of use of electricity carried out?
4. How has the marketing strategy employed able to identify energy need and potential electricity usage of the people in the slums?
5. In your opinion, to what extend has these programme contributed towards enhancement of electricity use Munyaka settlement?
6. What do you think should be done in subsequent projects to improve this connectivity?

Appendix VI: Morgan and Krejcie Table for Determining Sample size

Table for Determining Sample Size for a Given Population

N	S	N	S	N	S	N	S	N	S
10	10	100	80	280	162	800	260	2800	338
15	14	110	86	290	165	850	265	3000	341
20	19	120	92	300	169	900	269	3500	246
25	24	130	97	320	175	950	274	4000	351
30	28	140	103	340	181	1000	278	4500	351
35	32	150	108	360	186	1100	285	5000	357
40	36	160	113	380	181	1200	291	6000	361
45	40	180	118	400	196	1300	297	7000	364
50	44	190	123	420	201	1400	302	8000	367
55	48	200	127	440	205	1500	306	9000	368
60	52	210	132	460	210	1600	310	10000	373
65	56	220	136	480	214	1700	313	15000	375
70	59	230	140	500	217	1800	317	20000	377
75	63	240	144	550	225	1900	320	30000	379
80	66	250	148	600	234	2000	322	40000	380
85	70	260	152	650	242	2200	327	50000	381
90	73	270	155	700	248	2400	331	75000	382
95	76	270	159	750	256	2600	335	100000	384

Note: "N" is population size
"S" is sample size.

Source: Krejcie & Morgan, 1970