EFFECTS OF INFORMAL SETTLEMENT ON THE SURROUNDING ENVIRONMENT AT MAJENGO SLUMS, NAROK COUNTY

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DECLARATION

This research project is my original work and to the best of my knowledge, this paper has never been submitted to any University or College for award of any academic qualification.

Signature……………………………… Date…………………………………….

TB07/SR/MN/2522/2016

Nyoro Ruth Nduta

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

Signature……………………………… Date…………………………….

Mrs. Diana Atieno

Maasai Mara University

DEDICATION

It's with great pleasure that I dedicate this research to my lovely mom Mary Wangui and dad Benson Nyoro her great support throughout my academic life up to this juncture and her sacrifice to ensure that I get proper education. Moreover, am grateful to my brother Jimben Karanja and classmates for the motivation, moral and material support they offered me towards the completion of this research project.

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ABSTRACT

People residing in informal settlements face challenges of service delivery. This is mainly due to the fact that land was occupied illegally, thus impacting negatively on the environment. It was in the background of the above problem, that this study sought to establish the influence of informal settlement on the surrounding environment. The study was guided by the following specific objectives: To establish the extent of informal settlement in Majengo Slums, Narok County, to find out the causes of informal settlement in Majengo Slums, Narok County, to assess the effects of informal settlement on the environment in Majengo Slums, Narok County and to determine the policy measures to reduce informal settlements in Majengo Slums, Narok County. The study will be of great value to the government in the formulation of policies and strategies for controlling informal settlement and in addition researchers and scholars will use the study to provide the basis of future studies. To provide the basis of the study findings, the researcher relied on the following theories: Malthusian Theory of Population Growth, The Optimum Theory and Theory of Demographic Transition. Data was collected using questionnaires and guides from 96 household heads obtained through cluster sampling in Majengo Slum and 5 key informants purposively selected. It was then analyzed using Microsoft Excel Package presented in tables percentages. The study found out that 40.4% majorly agreed with the various causes of the informal settlement, further 42.8% of the settlers in Majengo, agreed with various causes of the informal settlement. The study also determined that averagely 55% of the Majengo settlers agreed with the various measures of curbing informal settlement. Finally, on the effect of informal settlement, it was determined that 43.2% of the Majengo settlers strongly agreed with these statements. The study recommended the inclusion zoning, land readjustment and expropriation as some of the strategies and policies required by the government to reduce informal settlement in Majengo Slum.

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LIST OF ACCRONYMS

ILO:	International Labour Organization Non-Governmental
NGO:	Organization United Nations
UN:	United Nations
UNEP:	United Nations Environmental Program
UNPD:	United Nations Population Division

DEFINITION OF OPERATIONAL TERMS

Industrialization: It is the process of social and economic change that transforms a human group from an agrarian society into an industrial one.

Population Growth: The relative extent of size of the population or number of people in an area compared to the recommended optimum size.

Poverty: It is the lack of basic human needs such as clean and fresh water, nutrition, health care, education, clothing and shelter because of the inability to afford them.

Unemployment: This refers to the state of being without a job or income generating activity in spite of being willing to work. In this study this will refer to the levels of joblessness in the community.

CHAPTER ONE

INTRODUCTION OF THE STUDY

1.1 Introduction

The world state of settlements shows that more than 50 percent of people live in informal settlement especially in cities of developing countries with the expanding population due to rural-urban migration and natural birth rate (UN-Habitat, 2015). African countries are facing serious situation of informal settlements, about 70 percent of the African population is living in informal settlements (Masika. de Haan & Baden, 2017). As continuing economic hardship forces a growing number of migrants to urban areas in search of employment and better life, an even greater strain is placed on urban pressure points like housing. This has led to the development of informal settlement in the urban environment (Peters, 2018).

Informal settlement has been defined in various ways depending on the planning and legal framework of a country where it exists. For the purposes of this discussion, informal settlements are defined as residential buildings built on "planned" and "unplanned" areas which do not have formal planning approval. They are characterized mostly by the low-quality houses and the lack of, or inadequate infrastructure and social services. Informal Settlement (IS) has been perceived both as a problem and solution to housing needs in speedily growing cities of many developing countries. (Srivinas 2015; Todaro 2014).

Globally, the research on informal settlement tends to focus overwhelmingly in developing countries ignoring and downplaying entirely the presence of informality in developed countries (Dust & Wegmann, 2017). In the United States for instance, there has been a longstanding and widespread tradition of informal housing exists in the country but is typically disregarded by scholars. IS in the country has been focusing in particular on five institutions that govern housing market activity in the country: property rights law, property transfer law, land-use and zoning, subdivision regulations, and building codes (Dust & Wegmann, 2017).

In the Latin America, studies have indicated that indicated that between 2014 and 2016 nearly 150,000 people were evicted from in 15 Latin American countries, with the largest numbers in Brazil (70,637), Peru (42,728), Mexico (10,374), and Venezuela (6,848) (COHRE 2016). Informal urban settlements, which have long characterized the urbanization process in Latin America, expanded dramatically during the 1970s and 1980s. By the 1990s, large South American cities housed from 25% to over 50% of their inhabitants in informal settlements (Portes & Walton, 2011).

In Europe, there are more than 20 countries in the region with informal settlement and it affects the lives of over 50 million people. The critical factors affecting the formation of informal settlements are related to several major interrelated changes: rapid urbanization and influx of people into select urban areas; wars, natural disasters and earthquakes leading to massive movement of people to places of opportunity and safety and poverty and the lack of low-cost housing and serviced land (ECE, 2018). Vienna Declaration (2014) opined that the informal settlements in South Eastern Europe identifies the issue as a priority and invites policies to legalize and improve informal settlements in a sustainable way. It argues that the prevention of future settlements formation is critical through sustainable urban management, principles of good governance, and capacity building.

According to unofficial data, total housing in urban China amounts to 18.6 billion m², of which 6.6 billion m² are IS (Sina, 2019). Shenzhen is regarded as the city with the highest ratio of IS in China, accounting for 49.27% of its total housing in 2010 (Peoplenet, 2012). Although the phenomenon of IS has only become widely recognized in China in recent years, it has been common practice for a long span in many other developing countries. Globally, between 30% and 50% of residents in urban areas lack legal security of tenure (UN-Habitat, 2016). More than one billion people live in informal settlements, and this number is estimated to grow to 1.4 billion by 2020 (UN-Habitat, 2013).

In India, the periods of 2000 to 2013, 51461 houses were destroyed in Delhi under "slum clearance" plans. From 2014 to 2017 alone around 45000 homes were destroyed. Less than 25% of the family units removed after 2017 got any elective resettlement location. Pushta was the first loss in a progression of casual settlement eviction. Pushta was a settlement site on the banks of the Yamuna River, comprised around 35000 families-in excess of 150000 individuals. In February on April 2014, more than 24 hour long operation including many outfitted cops and Bulldozer teams, every one of the homes and community housing in Pushta were flattened to the ground (Bhan, 2019).

In African continent is rich in its diversity of forms of informal settlement. Sub- Saharan Africa particularly has the highest percentage of people living in situations of poverty (UNCHS, 2011). In South Africa for instance, number of data sources and surveys, and an estimated figure of the number of households living in shacks in informal settlements was provided as 1.2 million (Housing Development Agency, 2012). The report further showed that 23% of households living in informal settlements comprise a single individual; however, there are also many larger households, and 38% of households comprise four or more persons. Futher it was determined that over one third of those living

in informal settlements are under the age of 18 years, and over 50 percent of households living in shacks in informal settlements comprise one or more children (Housing Development Agency, 2012).

In Nigeria, there are well over 200 informal settlements in Lagos (Oduwaye and Olajide, 2010), 143 in Ibadan (Wahab, 2013), 15 in Abuja, 10 in Port-Harcourt and 26 in Jos, among others. Between 2009 and 2013, the slums in Ibadan increased from 72 to 143 (almost 100% increase) giving an average of 18 slums per year. But the informal settlements are not peculiar to Nigeria, as they are a common phenomenon in Africa and in many other developing countries. It is in recognition of the great contributions which the residents of informal settlements make to the socio-economic, physical, political and cultural growth and development of states and the need to improve the conditions of these settlements to enable them to provide a healthier and wholesome environment for living, working and recreation that the Nigerian Institute of Town Planners (NITP) decided to conduct the 2017 (Wahab, 2017).

Closer home, Tanzania is one of the countries in Sub-Saharan Africa within which the highest proportion of its urban population lives in informal settlements. The proportion ranges between 50 to 80% and the informal housing shares more than 50% of the whole urban housing stock. Informal settlements have covered most of the urban landscape, and have been proliferating both in terms of density and expansion. It can also be recalled that in Dar es Salaam, for instance, the number of informal settlements increased from 40 in 1985 to over 150 in 2003, which tripled while the population nearly doubled in the specified time span (Kombe, 2015).

Locally, in Kenya the largest slum in Sub-Saharan Africa is Kibera, Kenya just outside Nairobi. 1 out of every 5 Nairobians lives in Kibera, and the estimated population density is 750,000 people per square mile. (Affordable Housing Institute,2011). Urbanization continues in Kenya and it is estimated that by 2015 urban dwellers will constitute over 50 percent of the total population. Existing figures are compelling evidence demonstrating the dire situation in many of Kenya's cities and towns.

Depending on the city, 60-80% of Kenya's urban population lives in slums that are characterized by lack of access to water and sanitation, insecure tenure, lack of adequate housing, poor environmental conditions, and high crime rates. For instance, in Narok Town a, about 40 percent of the population lives in slums that occupies only 5 percent of the total land area and the growth of Narok's slums is unprecedented; the population living in slums is expected to double within the next 15 years. Indeed these figures present the grim realities

facing the city and they provide a justification for various slum upgrading initiatives in the country that are aimed at improving the living conditions in Kenya's slums.

Slums like Majengo in Narok County have been notoriously difficult to measure because they often serve as a conduit for people shifting from the countryside to the town. A large population of the towns's population lives in over 10 slums and settlements like Majengo within the town, with little or inadequate access to safe water and sanitation. Most of the land in these slums is actually owned by the government hence those who occupy it are squatters on it. However, even though the land is not owned by the inhabitants legally, they take ownership of its structures, which are bought sold and rented just as in every other neighborhood in the town.

The homes, most of which are just shacks are made of mud, plastered over sticks and boards or made from mabati (corrugated iron sheets). Few, if any, are plastered over with cement. The roofs are all made from mabati (corrugated iron), which, looking out over the top of the area, gives it a great rusted checkerboard appearance. Some of the homes are divided into two rooms, often by a sheet, each room approximately 8 feet by 8 feet. Each home may house anywhere from two to a dozen people. The paths leading through the homes are narrow, so narrow in places that you can actually touch the buildings on both sides of the path if you stretch out your arms. Many of the pathways are divided right down the middle by smelly ditches which help drain both rain and waste water away. After any amount of rain, the paths and walkways become muddy and slippery, rendering them almost impassable.

1.2 Statement of the Problem

People residing in informal settlements face challenges of service delivery. This is mainly due to the fact that land was occupied illegally, thus impacting negatively on the environment. A lack of basic needs and services leads to informal settlements having impacts on the environment. These impacts include inadequate sanitation, which leads occupants to pollution, the use of coal and biomass fuel for lighting, causing air pollution which in turn contributing to the emission of greenhouse gases (Napier, 2017). Waste removal is an issue with which informal settlers struggle. Inadequate waste removal causes land pollution and emerging and re-emerging infectious disease hazards (Napier, 2017).

Due to poverty, lack of basic services and job opportunities, people are immigrating to the city from rural areas in search of better opportunities to sustain their livelihoods. This means undesirable urbanisation which is driven less by economic growth and more by rural-urban migration of the poor and the jobless (Sexwale, 2013). This results in people settling informally

and impacting on the environment which informal settlers occupy by walking on grass as there are no demarcated foot paths. This causes soil erosion and land degradation. Secondly, people do their washing in rivers and pollute rivers by throwing their waste in and around such water sources. There is a lack of waste management, so land pollution is the end factor as informal settlers are not registered and do not pay for waste management services (Herero, 2018).

Debate on informal settlements has been a centre of concern for many researchers mostly addressing issues related to the adequate provision of public infrastructure in informal settlements (United Nations-Habitat, 2016). In their findings, researchers have linked the problems of informal settlements with inadequate provision of public infrastructures, including water supply and sewage systems (Srivves, 2010 ; World Bank, 2010). It is in the backdrop of these research gaps and existing problems, that influenced the researcher to examine the effects of informal settlement on the surrounding environment in Majengo Slums, Narok County.

1.3 Research Objectives

1.3.1 General Objectives

The main purpose of this study was to establish the effects of informal settlement on the surrounding environment in Majengo Slums, Narok County.

1.3.2 Specific Objectives

The study will be guided by the following specific objectives:

  i.   To establish the extent of informal settlement in Majengo Slums, Narok County.

 ii.   To find out the causes of informal settlement in Majengo Slums, Narok County

iii.   To assess the effects of informal settlement on the environment in Majengo Slums, Narok County

 iv.   To determine the policy measures to reduce informal settlements in Majengo Slums, Narok County.

1.4 Specific Objectives

  i.   What is the extent of informal settlement in Majengo Slums, Narok County?

 ii.   What are the causes of informal settlement in Majengo Slums, Narok County

iii.   How does informal settlement affect the environment in Majengo Slums, Narok County?

iv. What are policy measures taken to reduce informal settlements in Majengo Slums, Narok County?

1.5 Significance of the Study

The research findings are expected to contribute to a better settlement in Narok County. The study will be useful to the following groups: The report will aid the government in formulation of policies and especially related to water supply and sanitation to the poor. The findings of this study will also be invaluable to the Narok County Government as it will be able to understand vividly the factors that affect the performance of the Narok County Government. The recommendations given in the study will help the Narok County Government as by equipping them with adequate tools to get the solutions to the problems posed by the identified factors; it will also help the company's management in laying the base for their long term strategic positioning and ensure the company's long-term survival. The development partners who are usually interested at helping the Narok County Government as prosper will have an understanding of a wide variety of factors that affect the Informal Settlement Department at Narok County Government as. Equipped with the right information, they will be able to know how best to come in and help the Narok County Government. The investors can use the report to carry out preliminary studies and due diligence before setting up informal settlement projects. The scholars and researchers who would like to debate or carry out more studies on Informal Settlement Department at Narok County Government as will find this study useful as a basis of carrying out more studies in Kenya.

1.6 Limitations of the Study

The major limitation of this study was the issue of availability of time. This was overcome by distributing and filling in questionnaires during weekends when the respondents and the researcher were off duty from work.

Another limitation was to establish boundaries of the villages in the slum. This was overcome by requesting community leaders to help in showing the boundaries. There were also limitations in obtaining data from the respondents, who thought that the information collected would be used to evict them from the slum area. This was however overcome by assuring them that the research was purely academic and that the information they provided would not be used against them.

1.7 Scope of the Study

This study focused on the effects of informal settlement on the surrounding environment in Majengo Slums, Narok County, where the following three objectives will be used: To establish the extent of informal settlement in Majengo Slums, Narok County, to find out the causes of informal settlement in Majengo Slums, Narok County, to assess the effects of informal settlement on the environment in Majengo Slums, Narok County and to determine the policy measures to reduce informal settlements in Majengo Slums, Narok County. The study will be carried out in Majengo Slums the largest slum in the county, where structured questionnaires will be used as the data collection instrument.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter rod on various studies that have been undertaken by different authors on issues related to informal settlements and environmental management. Basically, the study focused on the theoretical and empirical literature review, conceptual framework as well as a research gap.

2.2 Empirical Review

This part presents the information on various studies in respect to causes of informal settlement, effects of informal settlement on the environment and policy measures to curb informal environment.

2.2.1 Causes of Informal Settlement

Ali, Salim and Sulaiman (2016), examined the causes of and consequences of the informal settlement in Zanzibar. The study adopted a desk review where possible causes were described. The study identified urbanization, land related issues, poverty and socio-cultural factors and as the major causes of informal settlement. The study recommended Comprehensive rural development policies backed up with a sound decentralization programme (with a strong institutional set up) offer a glimmer of hope for the deceleration of rural-urban influx and eventually the slow growth of the urban informal settlement.

Sakala (2016), studied the causes and consequences of informal settlement planning in Lusaka District in Zambia. The study adopted cross-sectional research design, where snow ball sampling technique where one house-owner was selected. The study determined the following as the factors which influence unauthorized structures: low level of income, low level of education, rural urban migration, high rent charges elsewhere, employment and social contacts. The study suggested that the Government of Zambia should expand its affordable housing scheme to include informal settlement. The study further recommended that meausres should be taken by the government to curb unemployment.

Mwacharo (2012), examined the factors influencing growth of informal settlement, case study of Bangladesh Slum in Changamwe Constituency, Mombasa County. The study was conducted through survey method. Data was collected using questionnaires and guides from 90 household heads obtained through cluster sampling in Bangladesh slum and 10 key informants

purposively selected. The study revealed that informal settlements were the product of rapid urbanization and industrialization in that, most of the people who were living in the slums worked in the many factories and industries surrounding the area. The study also revealed that the levels of poverty in the community were high and this played a major role in the choice of housing for community members, most of whom could afford cheap, informal settlements. The study recommended that the government should monitor industrialization levels in the various counties in the country so that housing development can be made and developed in tandem with the growth of these industries.

2.2.2 Effects of Informal Settlement on the Environment

Amao and Ogunlade (2015), examined the effects of urban informal settlement and outdoor advertisement on the quality-built environment and urban upgrading in Nigeria. The study relied on secondary data from census data, official documents, case studies and reports from UN-HABITAT and State of the World Cities Reports. The study concluded that although the urban upgrading possesses great potential for improving quality of built environment in informal settlements, there is a need to repackage the upgrading exercise so that majority can benefit from it. It is necessary to incorporate community participation and outdoor advertisement into the urban upgrading in order to assist the very poor that cannot take care of their housing consumption needs. Therefore, government is encouraged to see informal settlements as a solution to new city planning rather than problem to the urban areas.

Devi, Lowry and Weber (2017), conducted an empirical case study in Suva, Fiji the global environmental impact of informal settlement and perceptions of local environmental threats. The study adopted a questionnaire for data collection with 35 questions to gather information from three neighborhoods. The study found out that concerns about sewage, deforestation, clean water and poor sanitation were of particularly high concern in one informal settlement, but not the other, suggesting that perceptions of threat can be very different even among informal settlements.

Mwambaga (2013), studied the effects of informal settlement on environmental management in Temeke Municipality. Primary data were collected through structured questionnaires from 102 respondents and 95 households while secondary data were collected through interview. The study concluded that socioeconomic effects of informal settlements have contributed negatively to environmental management. It was further concluded that community role was ineffective to manage environments in informal settlements. The study recommended the adoption of strategies such as provision of environmental education, public and private sector

partnership creation of dumping sites and adequate supply of facilities for environmental management through clearly organized programmes, plans and projects should be used to improve the sustainability of environmental resources at the household.

Msimang (2017), examined the negative impacts of informal settlements on the environment at Pietermaritzburg in South Africa. This study used qualitative research methods using both questionnaires and interviews. The study found that informal settlements do pose negative impacts on the environment which desperately needed the development of recommendations for change. The study recommended that the need of resolving and eradication of informal settlements, composting, the implementation of relocations and the creation of boundaries to name a few.

2.2.3 Policy Measures taken to Reduce Informal Settlements

Ngetich, Opata, Mwasi, Obiri and Meli (2015), studied the policies and strategies for tackling informal settlement in Kenya. The study adopted a desk review of various literatures and reports on the topic. The study concluded that the strategies that have been adopted in dealing with the informality include a combination of both preventive and curative instruments including; expropriation, inclusionary zoning, land readjustment, community land trusts land and utilities, land sharing and street led upgrading. The study recommended that the County Management Authorities should generate more resources through land value capture of unearned increments in urban areas served with infrastructures packages such as roads and other public utilities.

Collar, Glaeser, Venables, Blake and Manawaring (2016), conducted an economic and cross-country experience on policy options for informal settlements. The report indicated that large-scale 'public housing' schemes have not helped matters. The study further revealed that One cost-effective option for forward planning is to simply provide the core infrastructure required for productive and livable neighborhoods before they form. This was the approach adopted by the city of New York as it faced rapid urbanization the early 19th century with a very limited municipal budget.

Denis and Ababsa (2018), examined public policies and legal practices towards informal settlments in the Middle East and Egypt. The proposed workshop brought together an international group of scholars from various fields of social sciences. The study reported that delayed World Bank programs threatened the legitimacy and with the passing of time on upgrading programs have included regularization of informal settlement.

2.3 Theoretical Review

The effect of population growth factors can be explained by three theories namely: the Malthusian theory (Malthusian, 1798), The Optimum theory (Edwin, 1924) and Theory of Demographic Transition (Warren, 1929).

2.3.1 The Malthusian Theory on Population Growth

In his 1798 work, An Essay on the Principle of Population, Malthus examined the relationship between population growth and resources. From this, he developed the Malthusian theory of population growth in which he wrote that population growth occurs exponentially, so it increases according to birth rate. According to Malthus, there are two types of 'checks' that can reduce a population's growth rate. Preventive checks are voluntary actions people can take to avoid contributing to the population. Because of his religious beliefs, he supported a concept he called moral restraint, in which people resist the urge to marry and reproduce until they are capable of supporting a family. This often means waiting until a later age to marry. He also wrote that there are 'immoral' ways to check a population, such as vices, adultery, prostitution, and birth control. Due to his beliefs, he favored moral restraint and didn't support the latter practice.

Positive checks to population growth are things that may shorten the average lifespan, such as disease, warfare, famine, and poor living and working environments. According to Malthus, eventually these positive checks would result in a Malthusian catastrophe (also sometimes called a Malthusian crisis), which is a forced return of a population to basic survival.

2.3.2 The Optimum Theory

It is also called modern theory of population. In recent years, Prof. Robbins, Dalton and Carr-Saunders have refined and polished the theory and put it in a more presentable form. This theory is an improvement over the Malthusian Theory. The founders of the theory state it as "Given the natural resources, stock of capital and the state of technical knowledge, there will be a definite size of population with the per capita income. The population which has the highest per capita income is known as optimum population".

The economists like Carr Saunders considered 'optimum population' as that which produces maximum welfare. On the other hand, Prof. Cannan defined this theory in terms of 'return to labour'. He remarked, "Knowledge and circumstances remaining the same, there is what may be called maximum return when the amount of labour is such that both an increase and decrease

in it would diminish proportionate return." Similarly, Bounding has rightly observed, "Optimum population is that at which standard of living is maximum.

2.3.3 Theory of Demographic Transition

Demographic transition (DT) is the transition from high birth and death rates to lower birth and death rates as a country or region develops from a pre-industrial to an industrialized economic system. The theory was proposed in 1929 by the American demographer Warren Thompson, who observed changes, or transitions, in birth and death rates in industrialized societies over the previous 200 years. Most developed countries have completed the demographic transition and have low birth rates; most developing countries are in the process of this transition. The major (relative) exceptions are some poor countries, mainly in sub-Saharan Africa and some Middle Eastern countries, which are poor or affected by government policy or civil strife.

The demographic transition model, in isolation, can be taken to predict that birth rates will continue to go down as societies grow increasingly wealthy; however, recent data contradicts this, suggesting that beyond a certain level of development birth rates increase again. In addition, in the very long term, the demographic transition should be reversed via evolutionary pressure for higher fertility and higher mortality.

The existence of some kind of demographic transition is widely accepted in the social sciences because of the well-established historical correlation linking dropping fertility to social and economic development. Scholars debate whether industrialization and higher incomes lead to lower population, or whether lower populations lead to industrialization and higher incomes. Scholars also debate to what extent various proposed and sometimes inter-related factors such as higher per capita income, higher female income, lower mortality, old-age security, and rise of demand for human capital are involved.

2.4 Research Gap

From the reviewed literature, it was found that there is more concern of informal settlements and services provisioned by many researchers in urban areas of developing countries by focusing much on the provision of public infrastructure such as roads and water supply. There were limited studies in the field of environmental management in the informal settlement as more researchers are concentrating in settlements upgrading, especially in issues of infrastructure. More research is required to focus on environmental management at household level as an integral part of the settlements.

2.5 Conceptual Framework

A conceptual framework is a summary in a diagrammatical manner of all the variables that a research problem is interested in investigating in a systematic way. The conceptual framework is born out of review of the documented literature in the area of interest to the researcher (Oseno, 2012). Sekaran and Bougie (2013) explain that a conceptual model helps the researcher to structure his discussion of the literature. The conceptual framework was developed through explaining and ascertaining the relationships and interconnectivity of the objectives of this study.

Independent Variables   **Intermediate Variable**   **Dependent Variable**
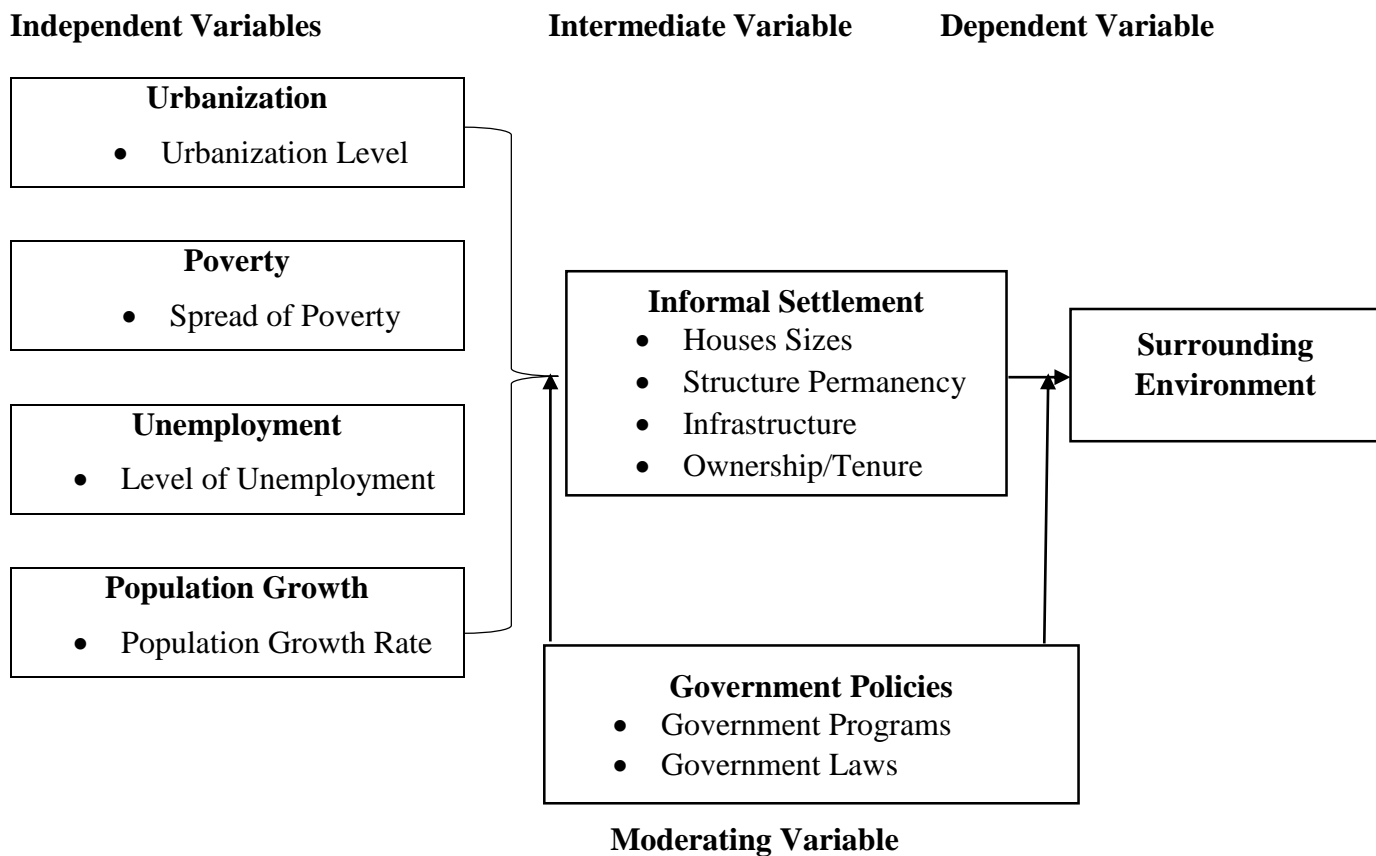
Adopted from Barton and Tsourou (2010) and modified by the researcher (2020)

Figure 2. 1: Conceptual Framework

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter covered the following: research design, study area, target population, sample and sampling technique, research instrument, data collection procedure and finally data analysis and presentation.

3.2 Study Area

The study was conducted at Majengo Slum, Narok County as figure 3.1 below illustrates the study area. The reason for selecting the proposed study area was due to the fact that Majengo Slum is information rich based on observations by the researcher and supported by Ngugi (2011), who suggested areas for further study on Community Initiatives in Addressing Resettlements and environmental quality in Majengo Ward. He added that, the magnitude of environmental quality was highly deteriorated to the extent that no one knows the environment quality could be in the future due to rapid expansion of informal settlements in the study area and Narok County at all.

3.3 Research Design

Research design refers to the method used to carry out a research (Mugenda & Mugenda, 2013). The study adopted a cross-sectional survey design as a blue print to guide the research process. In cross-sectional survey, a researcher collects information from a sample drawn from a population and involves collecting data at one point in time or over a short period of time to provide a 'snapshot' of the variables of interest at a specific. (Churchill *et al*., 2012). Cross-sectional studies investigate the relationships between variables and involves the selection of a relatively large sample of respondents from a pre-determined population (the target population) followed by the collection of data from the respondents. It can provide information about what is happening in a population to describe what happening at the present moment.

3.4 Study Population

A population is the total of all the individuals or items that have certain characteristics which are of interest to a researcher. Mugenda and Mugenda (2013) describes study population as a complete set of individual cases object with some common characteristics from which researchers want to generalize the result of the study. In this the population of 2,510 households from which individuals of 18 years old and above, both sex male and female was systematically being selected. In addition, the study consulted governmental and officials such as streets

leaders as well as a village elders, and ward health and environment committee as key informants.

3.5 Sample Population

A sample is a portion or part of the population of interest. Wiersma (2010), states that an ideal sample should be large enough so that the validity and reliability of the data is achieved. Cohen, Manion and Morrison (2011), states that there is no exact size of the sample but these depend on the purpose of the study and the nature of the population under scrutiny. In general, though, the larger the sample the more reliable it is Wiersma (2010).

To minimize errors, Nassiuma (2000) standard formula was used to select the required sample size to represent the respondent population.

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

Where:

n = Sample Size

N= Households Population (2510)

C=Coefficient of Variation (10%)

e= Sampling Error 1%

Hence,

$$n = \frac{2510 * 0.1^2}{0.1^2 + (2510-1)0.01^2}$$

n = 96

Therefore, the study included 96 household respondents and 5 key informants from streets leaders ward health and environment committee as well as a village elders, thus, made a total of 101 respondents.

3.6 Sampling Procedures

Both probability and non-probability sampling techniques were deployed to select appropriate respondents. With probability sampling, simple random sampling was used to pick the respondents from households, while with non-probability sampling; purposive sampling was used to select respondents from key informants such as streets leaders and village elders.

3.7 Data Collection Methods

The study used both primary and secondary data and the main instrument for data collection was a questionnaire, with both open ended and closed questions. According to Kothari (2013) the closed questions in a questionnaire are majorly used in limiting the respondents to the study variables while the open-ended questions enable free response and opinions from the respondents. The questionnaire was designed to address each of the variable of the study and was divided into two sections. Section A covered general information about the respondents and the contextual factors, section B covered the effect of informal settlement on the surrounding environment was addressed, where each objective was addressed.

3.8 Data Processing and Analysis

Collected data was first checked for accuracy before analysis is done. Only fully filled questionnaires was considered so as to help in testing for the distribution of data. Data was analyzed using both descriptive statistics. The descriptive statistics used included percentages and frequencies. According to Kothari (2013) the clustering tendency and describing of data characteristics can be done using descriptive statistics. Microsoft Excel Package was used to compute, analyze and present the research findings. The collected data was first coded to enable the categorization of the responses. Data was also be cleaned by checking for any errors that may have been committed during entry.

3.9 Ethical Consideration

The following ethical considerations was taken into account during the study; the need for approval of the research proposal by the school of environmental studies, agriculture and geography, Maasai Mara University was essential and mandatory to give validity to the document and to show that the study was done according to approved research standards and practices. Informed consent from the participants was sorted before hand and the maintenance of confidentiality was vital especially for participants who preferred to remain anonymous for either official or personal reasons for fear of reprisals or otherwise.

4.1 Introduction

This study investigated the effects of informal settlement on the surrounding environment in Majengo Slums, Narok County.This section begins with a brief description of the study respondents and the rest of the chapter presents the findings of the study.

4.2 Response Rate

The researcher distributed 96 questionnaires and all the questionnaires were returned and all the 5 key informants returned their questionnaires. This represented a response rate of 100% of the sample size and falls within the confines of a large sample size (n ≥30). This provides a smaller margin of error and good precision (Anderson, Sweeney and Williams, 2013). According to Zikmund, Babin, Carr and Griffin (2012) a 50% response rate is adequate, 60% is good and 70% and above is very good. In addition, the sample size was deemed large enough making up the response rate which was deemed sufficient for the study and its generalization according to Curtin, *et, al.* (2015). Mwacharo (2012) on his study on the factors influencing growth of informal settlements, case study of Bangladesh Slum, Mombasa County relied on the 100%. Nyambura (2012), study on the influence of institutional factors on the performance informal settlement department at Nairobi City, relied also on the response rate of 100%

Table 4. 1: Response Rate

Category	Returned Questionnaires	Response Rate
General Respondents	96	95.05
Key Informants	5	4.95
Total	**101**	**100.0**

4.3 General Information

In this section, the researcher sought to determine the gender, marital status, age bracket, highest education level and occupation.

4.3.1 Gender of the Respondents

On the general information, the respondents were asked to indicate the gender in which they belong and the findings were depicted on table 4.2.

Table 4. 2: Gender of the Respondents

Gender	Frequency	Valid Percent
Male	63	62.4
Female	38	37.6
Total	**101**	**100.0**

In this study, 62.4% (63) of the respondents were male while 37.6% (38) of them were female. A large number of the households in this study were male headed households meaning that the men were the ones mostly associated and concerned with matters to do with housing and settlement. It is them who decided where their families lived and in this case they chose Majengo Slum.

4.3.2 Marital Status

The respondents were asked to indicate their marital status and the findings were depicted on table 4.3.

Table 4. 3: Marital Status

Marital Status	Frequency	Valid Percent
Married	45	44.5
Single	13	12.9
Divorced	15	14.9
Widowed	28	27.7
Total	**101**	**100.0**

In this study, 44.5% (45) of the respondents were married, 12.9% (13) of them were single, while 14.9% (15) of them were divorced and 27.7% (28) of them were widowed. It was evident that a large portion of household heads in the study was married as compared to those from other categories in this section. It also was a sign that a majority of those interviewed had families and therefore matters of housing were important to them and their families thereby finding shelter for them in the current houses they lived in.

4.3.3 Age Bracket of the Respondents

Still on the general information, the respondents were asked to indicate the age bracket in which they belong.

Table 4. 4: Age Bracket of the Respondents

Age Bracket	Frequency	Valid Percent
18 to 25 Years	30	29.6
26 to 35 Years	22	21.8
36 to 45 Years	15	14.9
46 to 55 Years	20	19.8
Above 56 Years	14	13.9
Total	**101**	**100.0**

The respondents' ages were distributed in the following manner; about 51.4% (52) of them were under 35 years, while 14.9% (15) of them were in the 36-45 years age bracket. A further 19.8% (20) of them were between 46-55 years, whereas 13.9% (14) of them were above 56 years. The population in this study was relatively young with the mean age of the respondents being about 36 years, implying that they were able-bodied and independent to make decisions on where to live with their dependants.

4.3.4 Level of Education

The respondents were asked to indicate their highest level of education and the findings were depicted on table 4.5

Table 4. 5: Level of Education

Level of Education	Frequency	Valid Percent
Primary School Certificate	57	56.4
Secondary School Certificate	30	29.7
Diploma Certificate	11	10.9
Undergraduate	3	3.0
Total	**101**	**100.0**

Among the respondents in this study, the highest level of education for about 56.4% (57) of them was primary school certificate, 29.7% (30) of them had secondary school certificate and 10.9% (11) of them had a diploma certificate or equivalent. Only 3% (3) had university degree certification. Majority of the respondents in this study were semi-literate with large percentage of them having had various levels of formal education. This implied that they were able to understand the various aspects of informal settlements hence they were expected to give appropriate and accurate information on the issue.

4.4 Effects of Informal Settlement on the Surrounding Environment in Majengo Slums

To achieve the main purpose of the study, the respondents were asked to indicate the extent in which they agree with the various statements on study objectives.

4.4.1 Extent of Informal Settlements

The respondents were asked to indicate the extent in which they agree with the various variables on determining extent of informal settlement in Majengo. The following scale was used: 5=Much Better, 4=Somewhat Better, 3=Stayed the Same, 2=Somewhat Worse, 1=Much Worse.

Table 4. 6: Extent of Informal Settlements

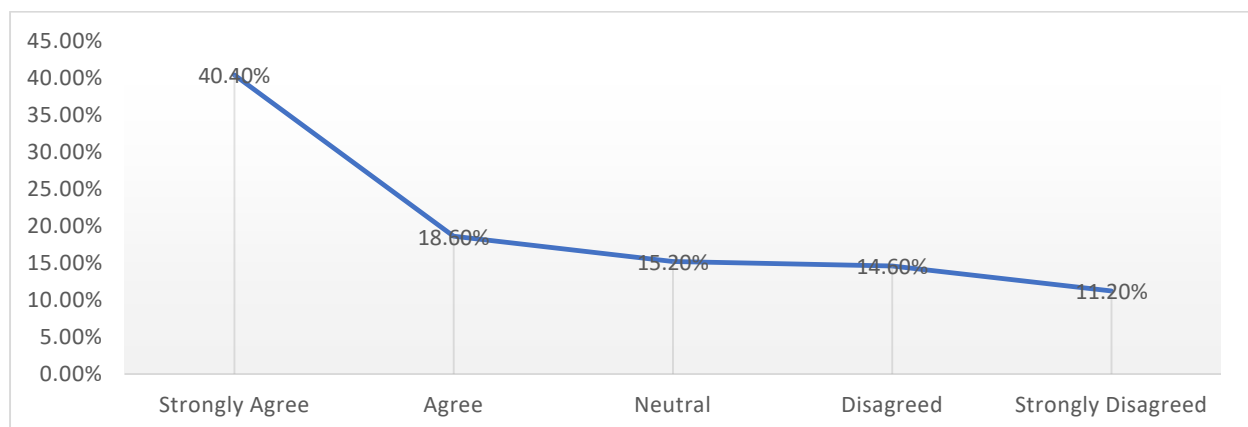| Variable	5	4	3	2	1
Street road accessibility	8%	9%	20%	13%	50%
People attitude of environmental management	13%	10%	16%	45%	16%
Waste collection	14%	15%	9%	19%	43%
Infrastructure for environmental management	19%	18%	16%	3%	44%
Housing	2%	21%	15%	13%	49%
Mean	**11.2%**	**14.6%**	**15.2%**	**18.6%**	**40.4%**

Figure 4. 1: Extent of Informal Settlement

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It was evident that 40.4% of the respondents agreed that informal settlement has caused much worse environment on the environment, followed by 18.6% of the respondents indicated that it causes somewhat worse, followed by 15.2% of the respondents indicated that it stayed the same, followed by 14.6% of the respondents who indicated somewhat better and finally 11.2% of the respondents who indicated it was much better.

Majengo Slum

4.4.2 Causes of Informal Settlement

The respondents were further asked to indicate the extent in which they agree with the various statements on the causes of informal settlement. The following scale was used: 1=Strongly Disagree, 2= Disagree, 3 =Neutral, 4= Agree and 5= Strongly Agree.

Table 4. 7: Causes of Informal Settlement

| Statements	1	2	3	4	5
Most workers of the industries in the county stay in the slum	11%	11%	15%	12%	51%
Urbanisation has contributed to the informal settlement	18%	16%	9%	17%	40%
Poverty play a role in the type of housing in Majengo	12%	15%	21%	9%	43%
The size of the family contributes to poor housing	5%	30%	19%	25%	21%
The problem of unemployment in the county contributes to informal settlement	31%	1%	5%	4%	59%
Mean	**15.4%**	**14.6%**	**13.8%**	**13.4%**	**42.8%**
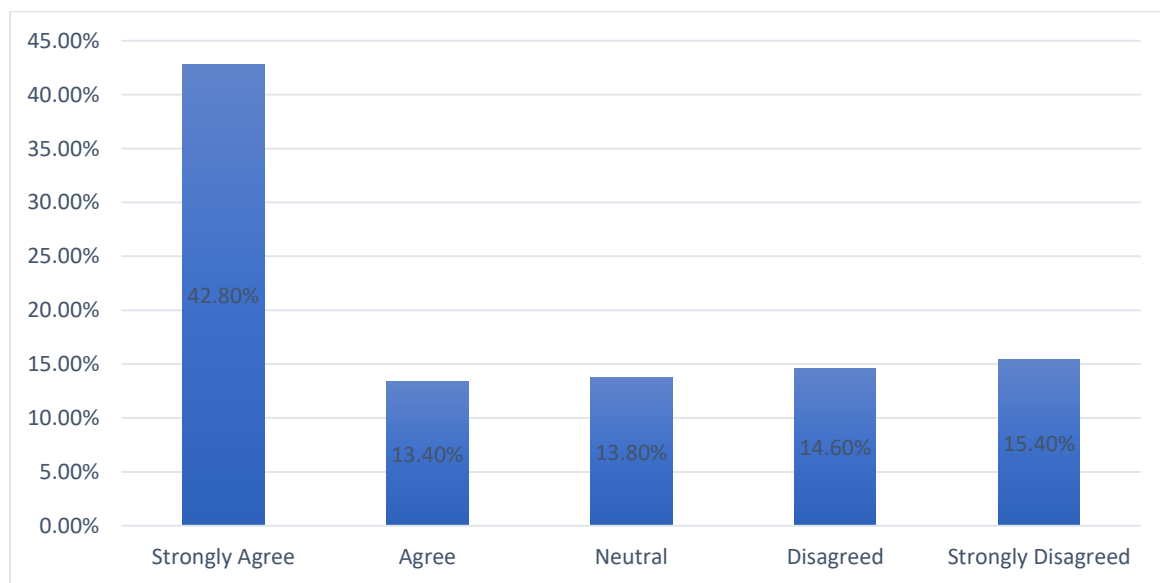
Figure 4. 2: Causes of Informal Settlement

The analysis showed that 42.8% of the respondents strongly agreed on the causes of informal settlement, followed by 15.4% of the respondents who strongly disagreed, followed by 14.6% of the respondents who disagreed, followed by 13.8% of the respondents who were neutral and finally 13.4% of the respondents who agreed.

4.4.3 Effects of Informal Settlement on the Environment

The respondents were asked to indicate the extent in which they agree with the various statements on the effects of informal settlement on the environment. The following scale was used: 1=Strongly Disagree, 2= Disagree, 3 =Neutral, 4= Agree and 5= Strongly Agree.

Table 4. 8: Effect of Informal Settlement on the Environment

| Statements	1	2	3	4	5
Informal settlement has contributed to poor county environmental planning	13%	17%	16%	35%	19%
Informal settlement has contributed to environmental degradation	8%	6%	19%	14%	53%
Socioeconomic effects of informal settlements have contributed negatively to environmental management	17%	5%	16%	13%	49%
There is poor community involvement in the management of environment	12%	13%	5%	20%	50%
Environmental education can be used in the management of the environment	9%	20%	15%	11%	45%
Mean	**11.8%**	**12.2%**	**14.2%**	**18.6%**	**43.2%**
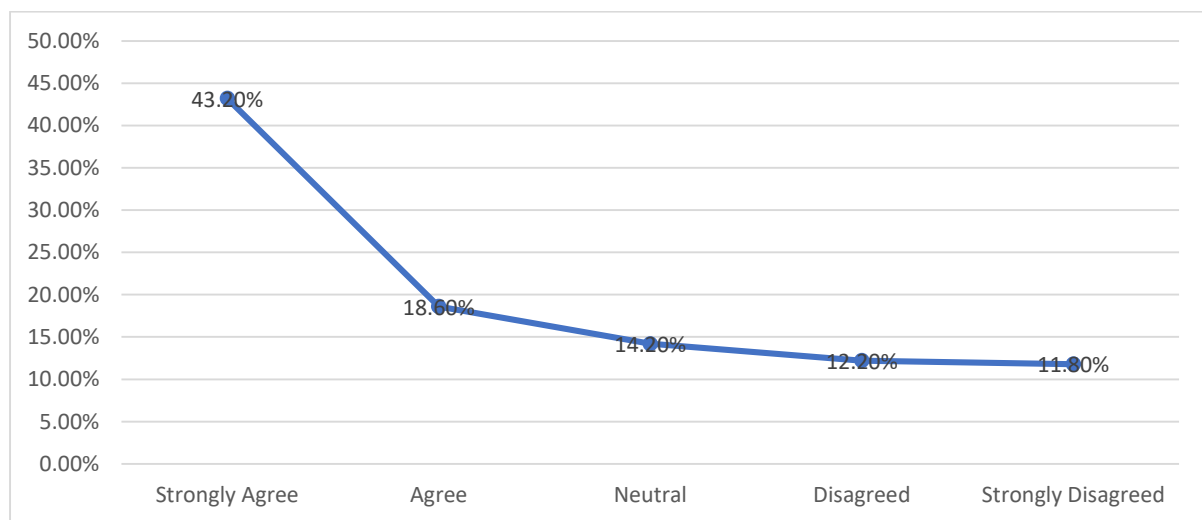
Figure 4. 3: Effect of Informal Settlement on the Environment

Table 4.8 showed that 43.2% of the respondents strongly agreed with the effects of informal settlement on the environment, followed by 18.6% of the respondents who agreed, followed by
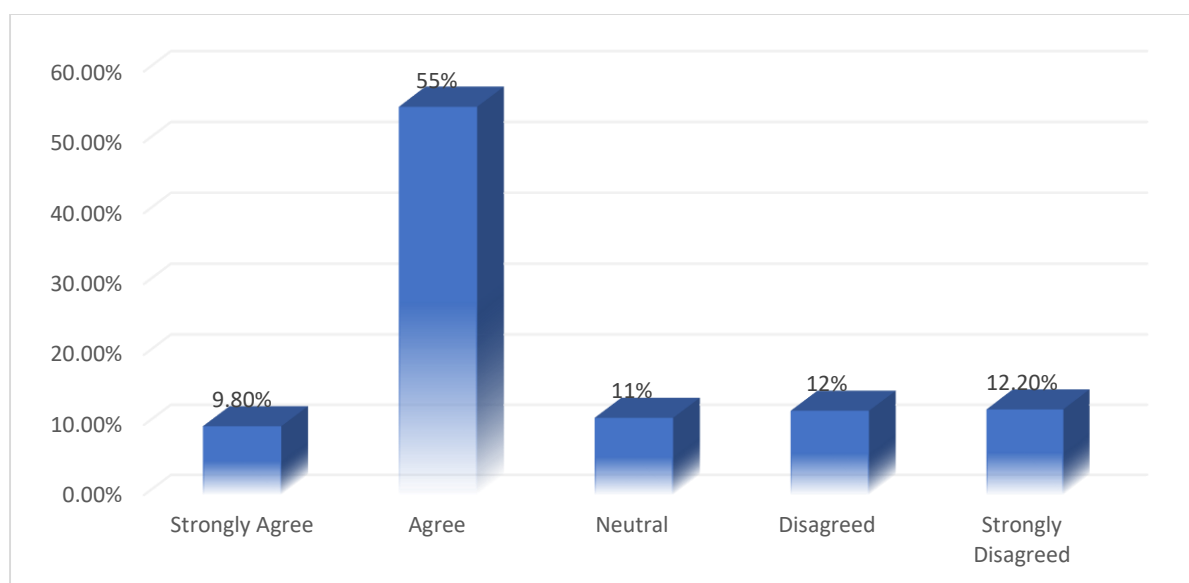
14.2% of the respondents who were neutral, followed by 12.2% of the respondents disagreed and finally 11.8% of the respondents strongly disagreed.

4.4.4 Policy Measures to Reduce Informal Settlements

On the final objective the respondents were asked to indicate the extent in which they agreed with the various statements policy measures. The following scale was used: 1=Strongly Disagree, 2= Disagree, 3 =Neutral, 4= Agree and 5= Strongly Agree.

Table 4. 9: Policy Measures to Reduce Informal Settlement

Statements	1	2	3	4	5
The government should generate more resources through land value capture of unearned increments	13%	6%	19%	51%	11%
Cost-effective option for forward planning is necessary to simply provide the core infrastructure	18%	15%	14%	49%	4%
There are strategic guidelines/policies the informal settlement and the environment	9%	17%	11%	55%	8%
There are policies and Procedures governing the implementation of Water and Sanitation Services in the slum	10%	18%	8%	59%	5%
Most of the slum dwellers do not obey government policies and procedures.	11%	4%	3%	61%	21%
Mean	**12.2%**	**12%**	**11%**	**55%**	**9.8%**

It was evident that 55% of the respondents agreed on the various policy measures to reduce informal settlement, followed by 12.2% of the respondents who strongly disagreed, while 12% of the respondents disagreed and finally 11% of the respondents were neutral on the policy measures.

CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATION

5.1 Introduction

This chapter presents the summary of the findings, conclusions, recommendations and suggestions for further studies.

5.2 Summary of Findings

On the extent of the informal settlement, 40.4% majorly agreed with the various causes of the informal settlement, data analysis and questionnaire responses from the key informants of the study revealed that informal settlement contributed to street road accessibility and people attitude of environmental management. It was further revealed that waste collection and infrastructure for environmental management has been affected by the informal settlement in Majengo Slums. Housing in the slums has been affected by the informal settlement.

On the causes of informal settlement it was determined that 42.8% of the settlers in Majengo, agreed with various causes of the informal settlement, it was revealed that most workers of the industries in the county stay in the slum and urbanisation has contributed to the informal settlement. The study found out that poverty play a role in the type of housing in Majengo and the size of the family contributes to poor housing. Finally, on this objective, it was determined that the problem of unemployment in the county contributes to informal settlement.

On the effect of informal settlement, it was determined that 43.2% of the Majengo settlers strongly agreed with these statements. It was determined that informal settlement has contributed to poor county environmental planning and informal settlement has contributed to environmental degradation. The study determined that socioeconomicdmic effects of informal settlements have contributed negatively to environmental management and there was poor community involvement in the management of environment. Finally, on the third objective, it was determined that environmental education can be used in the management of the environment.

On the measures which should be taken, it was determined that averagely 55% of the Majengo settlers agreed with the various measures of curbing informal settlement, it was determined that the government should generate more resources through land value capture of unearned increments and cost-effective option for forward planning is necessary to simply provide the core infrastructure. The study also found out that there are strategic guidelines/policies the informal settlement and the environment and there are policies and procedures governing the

implementation of Water and Sanitation Services in the slum. Finally, on the it was determined that most of the slum dwellers do not obey government policies and procedures.

5.3 Conclusion

The study concluded that the urbanization and industrialization of Narok County has a great impact on the growth of informal settlements at Majengo. This is due to the fact that with the growth of industries in the County, majority of the workers in these industries get to live in the informal settlements surrounding the industries. It is recommended that while industries are being established, they should put in place programs to ensure that their workers housing needs are also taken care of, by means of building staff quarters for them.

The study also established that poverty plays a major role in the growth of informal settlements. This is due to the fact that majority of the residents of Majengo Slums could not afford better accommodation due to high poverty levels. Therefore for the problem of the growth of informal settlements in Majengo Slum to be adequately tackled, then the problem of poverty in the community must be tackled effectively. This study also established that unemployment plays a major role in the growth of informal settlements. This is owing to the fact that majority of the residents of Bangladesh are either in temporary forms of employment or are not employed.

5.4 Recommendation

To tackle informal settlement informal settlement, the study recommends the following policies and strategies to both county and national government:

1. Expropriation: Expropriation may be viewed in terms of; expropriating land owners to build a road; Expropriating a large land owner to distribute the land to poor peasants; Expropriating a peasant to regularise land tenure of urban settlers; and Expropriating a peasant to distribute plots to poor migrants so they can build their houses. Expropriation is done by way of current use value. The infrastructure is built on stages and is paid by land holders as development charges for development right.

2. Inclusion zoning: this will involve using planning to create affordable housing and foster social inclusion capturing resources created through the market place. Inclusionary Zoning promotes economic integration of the city which is undergoing new development.

3. Land readjustment: It involves instigated land for land swapping, or property exchanges. Land readjustment generally has four components, project initiation, community support development, land re-subdivision and servicing, and land

reallocation. The use of eminent domain or compulsory purchase is used to deal with unwillingly owners into selling their property. In Majengo Slum, Land Readjustment can be used to make areas which were poorly planned to be attractive and vibrant.

5.5 Suggestions for Further

This study was on the influencing the growth of informal settlements on surrounding in Majengo Slum. With the decentralization of government services to the county level, further research needs to be carried out to investigate the impact of devolution and the establishment of devolved units on the growth of informal settlements.

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APPENDICES

APPENDIX I: QUESTIONNAIRE

You are kindly requested to answer a set of questions by giving relevant information. The study is purely for academic purpose only. Your contribution towards smooth realization of the indented purpose is highly appreciated.

Section A: General Information

1**.** Indicate your gender

Male   ( )   Female   ( )

2. Marital Status

Married   ( )   Single   ( )   Divorced   ( )   Widowed   ( )

3. Age Bracket

18 to 25 years ( )   26 to 35 years   ( )   36 to 45 years   ( )

46 to 55 years ( )   Above 56 years   ( )

4. Highest Education Level

Primary School Certificate   ( )   Secondary School Certificate ( )

Diploma Certificate   ( )   Undergraduate Certificate   ( )

Others   ( ) Please indicate…………………………

5. Occupation

Student   ( )   Employed   ( )   Self Employed   ( )

Non   ( )

Section B: Effects of Informal Settlement on the Surrounding Environment in Majengo Slums, Narok County

Extent of Informal Settlement in Majengo Slums, Narok County

Please indicate the extent of informal settlement on the following variables. Use the following scale: 5=Much Better, 4=Somewhat Better, 3=Stayed the Same, 2=Somewhat Worse, 1=Much Worse.

Variable	5	4	3	2	1
Street road accessibility					
People attitude of environmental management					
Waste collection					
Infrastructure for environmental management					
Housing					

Causes of Informal Settlement in Majengo Slums, Narok County

Please indicate the extent in which you agree with the following statements on the causes of informal settlement. Use the following scale: 1=Strongly Disagree, 2= Disagree, 3 =Neutral, 4= Agree and 5= Strongly Agree.

Statements	1	2	3	4	5
Most workers of the industries in the county stay in the slum					
Urbanisation has contributed to the informal settlement					
Poverty play a role in the type of housing in Majengo					
The size of the family contributes to poor housing					
The problem of unemployment in the county contributes to informal settlement					

Effects of Informal Settlement on the Environment in Majengo Slums, Narok County

Please indicate the extent in which you agree with the following statements on the effects of informal settlement on the environment. Use the following scale: 1=Strongly Disagree, 2= Disagree, 3 =Neutral, 4= Agree and 5= Strongly Agree.

Statements	1	2	3	4	5
Informal settlement has contributed to poor county environmental planning					
Informal settlement has contributed to environmental degradation					
Socioeconomic effects of informal settlements have contributed negatively to environmental management					
There is poor community involvement in the management of environment					
Environmental education can be used in the management of the environment					

Policy measures to reduce informal settlements in Majengo Slums, Narok County.

Please indicate the extent in which you agree with the following statements on the policy measures to be taken to reduce informal settlement in Majengo. Use the following scale: 1=Strongly Disagree, 2= Disagree, 3 =Neutral, 4= Agree and 5= Strongly Agree.

Statements	1	2	3	4	5
The government should generate more resources through land value capture of unearned increments					
Cost-effective option for forward planning is necessary to simply provide the core infrastructure					
There are strategic guidelines/policies the informal settlement and the environment					
There are policies and Procedures governing the implementation of Water and Sanitation Services in the slum					
Most of the slum dwellers do not obey government policies and procedures.					