

**FACTORS INFLUENCING COMPLETION OF WATER AND SANITATION
PROJECTS IN INFORMAL SETTLEMENTS IN KENYA: A CASE OF
MUKURU KWA-NJENGA SLUMS, NAIROBI COUNTY**

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DECLARATION

This research proposal is my original work and has not been submitted to any University for any academic award.

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DEDICATION

This study is dedicated to my parents: Mr. Julius Onyancha and Joyce Onyancha, my husband Gerrick Ananda Lihanda and my lovely son Wayne Fabian.

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ABBREVIATIONS AND ACRONYMS

CDF:	Constituency Development Fund
EAP:	East Asia and the Pacific
GOK:	Government of Kenya
IWRM:	Integrated Water Resources Management
KENSUP:	Kenya Slum Upgrading Program
KES:	Kenya Shillings
MDGs:	Millennium Development Goals
NGOs:	Non-Governmental Organizations
NCWSC:	Nairobi City Water and Sewerage Company
NCST:	National Council for Science and Technology
NWP:	National Water Policy
UN:	United Nations
UN-HABITAT:	United Nations Human Settlement Program
SDGs:	Sustainable Development Goals
SPSS:	Statistical Package for Social Sciences
SSA:	Sub-Saharan Africa
UNDP:	United Nations Development Program
WASH:	Water, Sanitation and Hygiene
WHO:	World Health Organization

ABSTRACT

This study seeks to examine factors influencing the completion of water and sanitation projects in informal settlement in Kenya. The project shall be undertaken in Mukuru kwa Njenga slums in the vast Embakasi South Constituency of Nairobi County. This study shall seek to examine the following objectives: determine how community participation influences the completion of water and sanitation projects in informal settlements in Kenya, to assess how project funding influences completion of Water and Sanitation projects in informal settlements in Kenya, to examine extent to which security issues influences the completion of water and sanitation projects in informal settlements in Kenya and finally to establish extent to which management decisions influences the completion of water and sanitation projects in informal settlement in Kenya. The study shall seek to test four hypothesis derived from the research questions. The study has a target population of 1,000 individuals who include project managers, local leaders and project beneficiaries. Using simplified Yamane formula of proportions, and corroborated by Krejcie and Morgan Table, (1970) a sample size of this study will be 278 respondents. This study will employ descriptive survey design since triangulation of data is desirable. Close-ended questionnaires will be used to collect quantitative data while key informant interviews with scheme managers will be used to collect qualitative data. Two research assistants will help the researcher to collect quantitative data while the researcher will collect qualitative data by herself. Proportionate random sampling will be utilized in sampling individuals to be interviewed in each cluster. The questionnaire will be pilot-tested two weeks prior to actual data collection process so as to refine its content and remove any ambiguities in questions asked. Content and construct validity will be used to measure the appropriateness of research instrument while split-half methodology will be used to measure the reliability of research instruments. Regression and correlation models will be used to show the extent of relationships between the four independent variables. A multiple regression model: $Y = \beta_0 + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \beta_4X_4 + \varepsilon$ will then developed to exemplify the extent of relationships between four independent variables against the dependent variable. It is hoped this study will inform policy and effectively contribute to new knowledge in the project management discipline.

CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

Globally, the provision of sanitation services in deprived informal settlements is a challenge faced by many countries. The growth of towns and cities together with the rapid increase in urban populations has meant that informal areas are growing much more quickly than formal urban centres (McGranahan, 2007). Low levels of services such as sanitation are the result. Hence, globally, the challenge of providing basic water and sanitation persists in informal settlements. A report by the United Nations Development Programme points out that by the year 2009, the population's access to safe water and sanitation in urban informal settlements of Sub-Saharan Africa (SSA) was only 34%, while the average for countries in East Asia and the Pacific (EAP) stood at 67% and in Latin America and the Caribbean was reported to be 65% (UNDP, 2009).

The report adds that even where water supply systems and sanitation facilities were installed by the 2009 in the said regions, they were often inadequate, unsafe and in disrepair. Therefore, despite the vital role played by adequate safe drinking water in development, most towns and cities are still facing numerous water shortages in informal settlements (Hoevel, 2008). Hoevel says that globally, by the year 2008, 27% of the informal settlements' dwellers in urban areas in the developing world, did not have access to piped water and proper sanitation. In Africa, the problem of sanitation is mostly felt, where many people have limited access to clean water. Most countries in Africa, which a large proportion of the urban population lives in informal settlements, that are marked by limited sanitation projects (Dagdeviren & Robertson, 2009). The situation of water access is by day worsening in informal settlements since appropriate measures by relevant stakeholders such as local authorities and governments are not being put in place to address the existing and upcoming challenges (UN-HABITAT, 2011).

In his exploration of the perceptions of Diepsloot informal settlers in Johannesburg, South Africa, Mporetji (2008) examined factors that promote citizen engagement in sanitation issues in informal settlements and concludes that community cohesion led to better environment outcomes. Mporetji scrutinizes the role of the South African Government in providing services to Diepsloot informal settlement and argues that ‘the major constraints leading to incomplete sanitation projects were the poor legal policies and framework and less involvement of community residents.

Similarly, in Africa, in a research conducted in two South African urban informal settlements, Mulenga, Manase and Fawcett (2004) note that the questionable and potentially illegal nature of land tenure in these settlements is often a major stumbling block to improving water supply and sanitation conditions. This has dire long term impacts as ‘the lack of tenure or title deeds not only discourages sanitation agencies from providing services but also discourages households from investing, themselves, in good sanitation facilities, because of their fear of being moved on to other locations. Mulenga thus considers that having weak claims to land tenure is a major constraint to the establishment and completion of water and sanitation services in these communities. In Zimbabwe’s Harare city, a major challenge facing informal settlements is the lack of access to adequate sanitation in comparison to formal settlements which are serviced by local authorities (Marongwe, 2010; World Bank, 2011). The explicit and implicit costs of limited or no access to sanitation in informal settlements in Harare in terms of illness are substantial, as evidenced by the 2008-2009 cholera epidemic that killed more than 4,000 people in Zimbabwe (Brocklehurst, Malik, Sebunya & Salama, 2013). Brocklehurst et al., attributed poor government policies and inadequate funding for sanitation systems to the problems faced in Harare’s informal settlements.

Out of 175 wells, about 39 percent of the wells were less than 15 meters from the latrines, about 59% were located within 15 and 30 meters and only about 3% were located 30 meters or more to pit latrines. All the samples taken from shallow wells were positive for total coliforms, which is fecal contamination, three out of four samples taken from the deep wells were contaminated and none of the tap water samples were contaminated

(Kimani & Ngindu, 2007). In Kenya, the provision of water and sanitation services is poor in informal settlements. In a study, Kimani and Ngindu (2007) provides an explanation for the severe contamination of drinking water in Kenya urban informal settlements. The study found out that the severe contamination is largely due to the close distance between pit latrines and wells, where most people (91%) used wells as their main source of water and pit latrines for waste disposal, and 30% of children emitted in open fields.

A large population of Nairobi's residents' lives in informal settlements, that is about 60% in sub-standard living conditions, where congestion has proved to be a challenge for Nairobi City Water and Sewerage Company (NCWSC) to provide access to water and sewerage services to the residents (Kiva, 2012). Nairobi's informal settlements are mostly unplanned, resulting in inadequate critical infrastructure such as water and sanitation including poor sewerage and drainage systems. Clean water, adequate sanitation, and hygiene are visibly substandard (UN-HABITAT, 2010). In Nairobi's informal settlements, by the year 2006, an estimated 24 percent of residents had access to household toilet facilities - a ventilated improved pit (VIP) latrine, an ordinary pit latrine, or a flush toilet. Sixty-eight percent relied on shared facilities, while 6 percent had no access to toilets (Gulyani, Debrata & Potter, 2006). Lack of public action and easements in the wake of population growth and congested land use has led to the situation worsening where most of Nairobi's informal settlements residents rely on over-crowded and sub-standard pit latrines, open spaces and flying toilets (UN-HABITAT, 2010).

1.1.1 Water and Sanitation Projects in Informal Settlements

Mukuru is one of the many existing informal settlements in Nairobi. It is located in the eastern side of the city. It is one of the largest informal settlements in Kenya's capital city with a population that exceeds 600,000 (UN-HABITAT, 2010). Mukuru has three major Wards namely: Kwa Reuben, Kwa Njenga and Kayaba (Sanergy, 2011). With funding from the European Union, a project to increase access to sanitation facilities for the Mukuru Kwa Njenga residents was implemented under Community Development Trust Fund (CDTF) between July 2005 and December 2006. The interventions were designed

to establish reliable and sustainable arrangements for the provision and management of sanitation services. The main feature of the project included provision of ablution blocks, with combined toilet, bathing, laundry and water selling facilities; as well as training and social marketing to create behavior change and stimulate demand for sanitation services (Ruhii et al., 2009). However, some of the project's programs were not implemented and therefore left incomplete, and the complete ones are not currently sustainable

In 2009, the Kenyan Government published the Vision 2030 for Water and Sanitation, in which it declared that water and sanitation were basic rights for Kenyan citizens (UN-HABITAT, 2010). Nairobi's City Council adopted a pragmatic approach to achieving the goal. Instead of relocating residents of Mukuru Kwa Njenga to model villages, they opted to work with existing informal sanitation facilities (World Bank, 2010). These informal facilities were created by local non-governmental organizations (NGOs). Each center contained compartmentalized toilets and bathing facilities, as well as a water tanks (UN-HABITAT, 2011). These projects aimed to address the water and sanitation crises in the informal settlement, making the services accessible, affordable, and sustainable.

As a result of the still projects, Mukuru Kwa Njenga informal settlement is plagued with poor sanitation. Its environment is characterized by dumpsites, lack of running water, a poor and almost non-existent system for managing human excreta, lack of infrastructure and a river full of raw sewage and other liquid and solid wastes (Kiva, 2012). Water and sanitation infrastructure in Mukuru Kwa Njenga is either broken down, lacking or grossly inadequate. The informal settlement is crossed by aging sewerage pipes with frequent burst and overflows. Latrine emptying and sludge removal are handled by small scale operators working under unsanitary conditions. Sludge is disposed haphazardly either in the rare sewer inlets or in rivers and drainage ditches. Like sludge, solid waste is also lacking a structured collection, transport and disposal chain. Drainage is also insufficient. Natural drainage ditches and storm water gullies carry liquid and solid waste but not in an environmentally friendly or hygienic path. Rain water sometimes flows into latrine structures, forming pools and flowing into footpaths and nearby rivers. These appalling conditions have led to infectious water-borne diseases.

1.2 Problem of the Statement

Many donor and development agencies continue to spend millions of shillings in order to provide basic services such as water and sanitation in informal settlements in Kenya. European Commission has spent over Five billion shillings in donor funds towards upgrading water and sanitation services in Mukuru Kwan Njenga slum for the last five years alone (CCN Report, However, thousands of hundreds of slum dwellers in this slum cannot access quality, reliable and enough water to date and sanitation services including toilets are hard to come by.

In an informal settlement such as Mukuru, with a staggering population of well over 600,000 people (Likoko, 2013), sanitation conditions almost constitute a humanitarian crisis. The conditions in Mukuru Kwa Njenga are appalling, lacking basic drainage, waste disposal facilities and clean water supply. This state of affairs continues unabated despite massive investments by many donor agencies. Solid waste from the slum is deposited in Ngong River, which traverses right through the middle of the settlement, leaving it choked with litter and highly contaminated substances (Likoko, 2013), Flying toilets are a common occurrence in this slum.

These issues therefore beg the following questions; are these approaches as utilized by various donors effective? Does the management constraints, funding arrangements, insecurity etc., and hence impeding effective implementation of these projects hence severely constraining their completion? This has brought a sharp focus on project implementation architecture, management and the environment within which these interventions are implemented. Most of the interventions in this informal settlement experience time, cost and schedule overruns by up to 53% (Oruko, 2015). On this basis, these study therefore attempts to establish factors that influence the completion of these water and sanitation projects in the context of informal settlement. Despite availability of empirical and theoretical literature on the concept of project completion, very few studies have attempted to examine these parameters in informal settlement context. This study differs therefore from previous works in terms of scope and methodology deployed.

1.3 Purpose of the Study

The purpose of this study is to examine factors influencing the completion of water and sanitation projects in informal settlements in Kenya.

1.4 Objectives of the Study

This study shall be guided by the following objectives:

1. To determine how community participation influences the completion of water and sanitation projects in informal settlements in Kenya.
2. To assess how project funding influences completion of water and sanitation projects in informal settlements in Kenya.
3. To examine the extent to which security issues influences the completion of water and sanitation projects in informal settlements in Kenya.
4. To establish extent to which management decisions influences the completion of water and sanitation projects in informal settlement in Kenya.

1.5 Research Questions

The study shall seek to answer the following research questions:

1. How community participation does influences the completion of water and sanitation projects in informal settlements in Kenya?
2. At what level does project funding influences the completion of water and sanitation projects in informal settlements in Kenya?
3. To what extent does security issues influences the completion of water and sanitation projects in informal settlements in Kenya?
4. How does management decisions influence completion of water and sanitation projects in informal settlement in Kenya?

1.6 Research Hypothesis

The study shall seek to test the following research hypotheses:

1. H₁: There is a significant influence between community participation and the completion of water and sanitation projects in informal settlements in Kenya.
2. H₁: There is a significant influence between project funding and completion of water and sanitation projects in informal settlements in Kenya.
3. H₁: There is a significant influence between security issues and completion of water and sanitation projects in informal settlements in Kenya.
4. H₁: There is a significant influence between management decisions and completion of water and sanitation projects in informal settlement in Kenya?

1.7 Significance of the Study

It is hoped, findings from this research will inform future policy making, contribute significantly to new knowledge and become a critical reference material in libraries and contribute immensely to the body of knowledge in project planning and management particularly in the field of project monitoring and evaluation. It is hoped, this study shall be significant to both private and public stakeholders involved in the implementation of sanitation projects in informal settlements in Kenya.

It is also hoped that information obtained in this study will be significant to the policy makers mainly the Ministry of Water and Irrigation as well as Nairobi County Government. Study findings will provide a rational evaluation of reasons for non-completion of water and sanitation projects in Mukuru informal settlements hence provide recommendations or accelerate the completion. The information collected will give valuable insight to the policy and decision makers even as they identify critical areas that have been ignored, hence being more vigilant in future projects. It is finally hoped that the study findings will be helpful to the Mukuru Community, by enhancing their insights on factors that hinder them from accessing proper sanitation facilities. The information obtained will stimulate their need for active participation in sanitation projects to enhance sustainability.

1.8 Limitations of the Study

First and foremost, the validity of the data source in this study might be affected by respondents giving inaccurate information due to nature of respondents envisaged. This may lead to inappropriate conclusions to the study. To ensure the information collected is valid, multiple source of the same data will be used to offer checks on data collected. In this study, information from the primary source which is surveys, will be compared and complimented by other sources such as key informants and focus groups and desk reviews.

Secondly, the statistical tests may not be able to identify significant relationships within data set, if the sampling size is small. To mitigate this limitation, relatively large sampling size will be used to generate more accurate results. Finally, percentage as a unit of measure is based on approximations rather than the actuals. This will definitely affect the results and conclusions. To remedy this limitation, the researcher will use more actual figures as opposed to relying on percentages.

1.9 Delimitations of the Study

This study shall be delimited to the geographical boundaries of Mukuru Slum of Embakasi Sub- County in Nairobi County alone. The study shall also be delimited to study respondents who include project managers, beneficiaries and community elders. The study shall finally be delimited to the five variables which include community participation, project funding, management decisions, security and completion of water and sanitation projects as obtained from the study objectives

1.10 Assumptions of the Study

The study assumes that the information gathered from Mukuru informal settlements can be used to portray generally, the state sanitation projects in informal settlements in Kenya. The study also assumes that respondents will understand the importance and magnitude of this project hence give valid data.

1.11 Definition of Significant Terms Used in the Study

Community Participation:	These are approaches used to by various development agencies to get project buy-in so as to effectively implement said development projects.
Completion of Water & Sanitation Projects:	This is the process of finalizing the project interventions within the set time and budget. Complete projects are usually handed-over to beneficiaries for use.
Management Decisions:	These are deliberate steps undertaken by project implementers to ensure the project achieves desired results within set time schedules
Project Funding:	This constitutes provision of financial support by government, NGOs, private institutions or individuals to assist in water and sanitation projects in informal settlement
Informal Settlements:	These are areas popularly known as slums. They constitute shanty/tin-walled structures where households or individuals with lowest levels of incomes thrive, live and do business

Security Issues:

Refers to malpractices such as theft, vandalism, muggings and robberies that are a common occurrence in most urban informal settlements.

Water and Sanitation Projects:

This refers to projects that support water supply, ablution blocks and general hygiene to the residents of urban informal settlements.

1.12 Organization of the Study

This study is organized in five chapters. Chapter one discusses the background to the study including the statement of the problem, the purpose of the study, objectives of the study, research questions and hypotheses, significance of the study, limitations and delimitations of the study and definitions of significant terms.

Chapter two entails empirical and theoretical literature organized according to study themes, the theoretical underpinnings, theoretical and conceptual frameworks and a matrix on research gap identified after the review of literature.

Chapter three covers research methodology that includes the research design, target population, sampling procedure, research instruments, data analysis techniques and operationalization of variables.

Chapter Four shall entail the analysis, presentation, interpretation and discussion of findings while Chapter Five shall entail the summary of study findings, conclusions, recommendations for theory, policy and practice and the contribution of the study to knowledge and suggestions for further research.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter focuses on both empirical and theoretical literature obtained from the study themes of the study. The study themes include community participation and completion of water and sanitation projects; project funding and completion of water and sanitation projects; management decisions and the completion of water and sanitation projects and security issues completion of water and sanitation projects. The chapter also contains the theoretical literature and conceptual frameworks and a matrix on research gap identified after the review of literature.

2.2 The Concept of Completion of Water and Sanitation Projects

One of the most critical challenges inhibiting sustainable development in many countries is the provision of safe drinking water and basic sanitation. Sustainable development requires that people have access to safe drinking water supply services (Admassu, Kumie & Fantahun, 2004). Access to clean water is the single most important global crisis of the 21st century. At the beginning of 2000, 1.1 billion (17%) people of the world's population were without access to improved water. The majority of these people live in Asia and Africa (WHO, 2005). The two reports however have no information on the factors influencing completion of sanitation projects in informal settlements.

In developing countries' towns and cities, water shortage is highly attributed to high rate of urbanization. The fast pace of urbanization is clearly evident by change in percentage of urban population from 29% in 1950 to approximately 51% in 2010 and expected to rise to 60% by 2030. With 60% of the world's population, Asia faces tremendous challenges providing clean potable water to a rapidly urbanizing population. According to the United Nations, almost half of the region's forecast 4.5bn people are expected to live in urban areas by 2020 (WHO, 2005). A briefing note by UN-HABITAT (2007) observes that high rate of urban growth is most rapid in the developing world, cities gain an average of 5 million residents every month.

The rising urban population growth creates unprecedented challenges, among which provision for water and sanitation have been the most pressing and painfully felt when lacking. Consequently, there is an enormous need for water investment to supply and support water use in major metropolitan areas to treat water and provide filtration services (UN-HABITAT, 2010). This justifies a study to determine the factors influencing completion of sanitation projects in an informal settlement.

For decades, water scarcity has been a major issue in Kenya, caused mainly by years of recurrent droughts, poor management of water supply, contamination of the available water, and a sharp increase in water demand resulting from relatively high population growth. There are over 40 million people living in Kenya, of which about 17 million (43 percent) do not have access to clean water. Most of the Kenyans in informal settlements in urban centres only have access to polluted water, which has caused cholera epidemics and multiple other diseases that affect health and livelihoods (World Bank, 2010). It is for this reason that a study to determine the factors influencing completion of sanitation projects in an informal settlement is relevant.

Kenya's water resources have been mismanaged through unsustainable water and land use policies, laws and institutions, weak water allocation practices, growing pollution, and increasing degradation of rivers, lakes, wetlands, aquifers and their catchments (Government of Kenya, 2006). Kenya's government devised a plan in 1974 to ensure safe water to all households by the year 2000. The government established many different plans along the way to manage water effectively, such as the National Water Conservation and Pipeline Corporation (NWCPC). By the year 2000 the NWCPC was managing piped water systems in urban and rural areas, which served about 3.8 million people. Other people benefited from the NWCPC, but it was not enough, in that in urban areas only two thirds of the population had access to clean water (Ngigi & Macharia, 2006). This is a clear reason that justifies a research to determine the factors influencing completion of sanitation projects in Mukuru as a major informal settlement in Nairobi.

Recent demographic trends reveal a pattern of urban demographic growth which most urban authorities are ill equipped to cope with. The migrants in Nairobi and long-standing

residents aspire for improved livelihood but instead are often trapped in congested informal settlements, where housing costs may be lower but living conditions are precarious (Ruhii, Ogendo, Kamundi, Kaseve, Owuocha & Mbachia, 2009). Additionally, rising costs in Nairobi's formal areas result in some residents shifting to informal settlements. Already, an estimated 60 percent of Nairobi's inhabitants live in these informal settlements, which constitute only five percent of the city's residential land (Ruhii et al., 2009). This congestion is worsened by the prevailing conditions of poor water supply and sanitation services. The poor conditions are contributed by incomplete sanitation projects. A study to determine the factors influencing completion of sanitation projects in Mukuru Kwa Njenga as a major informal settlement in Nairobi is therefore, critical.

2.3 Community Participation and Completion of Water and Sanitation Projects

Members of a community develop a capacity to contribute to their own and the community's development by being involved in the decision-making processes of projects in their locality (Srinivasan, 2004). In this case, they are involved in determining goals and pursuing issues of importance to them for example, the direction of services and the allocation of funds on water and sanitation projects in an urban informal settlement (Bosch, 2010). Therefore, it is under the established knowledge by Srinivasan (2004) and Bosch (2010) on the importance of community involvement in projects, coupled with the prevailing conditions of poor sanitation in Mukuru informal settlement that this study seeks to determine the influence of residents' participation on projects' completion.

Participation of the community in development projects leads to capacity building which enables the community to be more effective and efficient in the process of identifying, implementing, monitoring and evaluating of developmental projects (David, 2009). By continuously fulfilling their needs, people learn to realize their objectives more easily (De Beer, 2008). It is a mechanism that enables local people to determine their own values and priorities and act on their own decisions. Full potential of individuals is realized after they have been made aware; then, depending on their capabilities, they act in order to

achieve their goals and objectives (Freire, 2003). Community participation is therefore key for completion of sanitation projects in informal settlements. Given the number of incomplete sanitation projects in Mukuru, Nairobi County, it is thus critical to describe community participation in projects with the informal settlement. The proposed research will probe on whether the residents of Mukuru have been involved in any of the phases (planning, implementation and evaluation) of sanitation projects and its influence on the incomplete and stale projects in the informal settlement.

Community participation enhances the sustainability of the community development projects and this can only be achieved through a people centered development (World Bank, 2002). Community participation may lead to social and personal empowerment, economic development, and socio-political transformation (Srinivasan, 2004). For sustainable development to be realized, the community must play a role (Shaheen, 2014). Sustainable development should be defined by people themselves, to represent an ongoing process of self-realization and empowerment. The community is supposed to be brought into focus through participation. Without the community becoming both the architects and engineers of the concept, sustainability of the project may not be achieved since the community is unlikely to take responsibility for something they do not own themselves. (Redclift, 2007). Given the number of sanitation projects in Mukuru informal settlement that are dormant, it becomes critical to research on whether the unsustainability has been caused by community participation issues.

A study of 121 rural water supply projects in 49 countries of Africa, Asia and Latin America, (Narayan, 2003), found out that participation was the most significant factor contributing to project effectiveness and maintenance of water systems. The study also found out that where the community was involved in decision-making during all stages of the project, from design to maintenance, the best results occurred. Further, the study reported that where the beneficiaries were only involved in information sharing and consultations, the results were much poorer (Narayan, 2003). Given the scope of the study, and its focus on rural areas, there exists different contextual realities between where the study was conducted and an informal settlement in a major urban centre.

Therefore, with the prevailing conditions of poor sanitation in Mukuru Informal settlement, and the presence of incomplete projects in the region that are dormant and unsustainable, it calls for a probe on the involvement of the residents.

In Pakistan, the Orangi Pilot Project established to address sanitation problem in Karachi, one of the largest informal settlement, organized local people into committees and lent them money to buy the raw materials to build their own sewage facility (Uphoff, 2002). The results of the projects led to over 100,000 households being equipped with sewage facilities in addition to developing local management capabilities which provided the foundation for housing, health, family planning, community-financed education, women's work centers, micro-enterprises, reforestation, and other activities. The Orangi Pilot Project brought the infant mortality in Karachi down from 130 per 1,000 live births in 1980 to 37 in 1991 (World Bank, 2010). However, there exists different contextual realities between where the study was conducted and Mukuru Informal settlement, in Nairobi County. The prevailing poor sanitation and the presence incomplete projects justifies a research to determine the influence of community participation in projects.

In an examination on water projects in Sub Saharan Africa, a study found out that where communities were successful in creating a project, they were unable to sustain it (Guijt, 2008). Similarly, an in-depth examination of tank management in South India found out that maintenance of community sanitation infrastructure was crucially dependent upon external agents and not the beneficiaries (Mosse, 2007). The studies by Guijt (2008) and Mosse (2007) therefore recommended the need for a well-functioning state apparatus that is guided by active community involvement in sanitation projects. This study will probe on community participation in sanitation projects in Mukuru informal settlement describe the influence of the involvement in project completion.

Following the 2002 Water Reform in Kenya, European Union (EU) funded water projects was set up in order to improve the coherence of the water and sanitation efforts. Through the Nairobi Informal Settlements Water and Sanitation Improvement Program, the projects were implemented by Athi Water Services Board (AWSB), the European

Commission was working to establish long term, reliable and sustainable solutions for the provision and management of sanitation services and water supply. Under this initiative, in the year 2011, twelve ablution blocks, each comprising 10 toilets and bathrooms, and 10 communal water selling points (kiosk) were being constructed in Mukuru (International Cooperation and Development, 2011). With these sanitation blocks, people had a chance to keep themselves and their surroundings clean. This meant that the use of flying toilets that are infamous in Mukuru could slowly disappear. However, five years down the line, the envisaged dream was not realized. The project is still stalled. It is under this backdrop that this study seeks to determine whether community participation is a factor.

2.4 Project Funding and Completion of Water and Sanitation Projects

Sanitation projects are vital to urban health and slum upgrading yet are given a low priority by both donors and aid recipient governments. Aid spent in the water and sanitation sector is not going to the poorest regions or countries. Since the mid-1990s, aid spending going to health and education has doubled. Over that same period, the share of aid going to water and sanitation has contracted. Even within the aid spending that is going to the housing and urban development sector, it is estimated that only 1% of aid budgets get to sanitation programmes in informal settlements (World Bank, 2010).

A joint report by World Health Organization and United Nations Children Emergency Fund posits that by the year 2012, there were over 670 million informal settlement dwellers worldwide. The joint report also established that the annual funding in informal settlements for sanitation programmes, through WHO and UNICEF in the year 2011 and 2012, was equivalent to just 8% of the annual funding for Organization for Economic Co-operation and Development (OECD, 2012). Donor aid is largely targeting large-scale water and sanitation schemes in urban areas, usually missing out the urban poor, and only upgrading existing connections (WHO/UNICEF, 2011). An analysis of the World Bank sanitation-related commitment by region showed that between 2000 and 2005, East Africa, the Pacific, the Middle East and North Africa received most of the money committed to waste water treatment, representing 26% of the World Bank's lending in

sanitation-related activities. When analyzed by settlement pattern, the figures show formal urban areas received 65% of funds while informal settlements received only 6% of sanitation-related investments (UN-HABITAT, 2010). However, the above reports only give a comparison of the discrepancies between the funding for programmes in the formal settlements versus the informal ones. The reports do not describe or link the discrepancies to incompleteness of sanitation projects in informal settlements.

The Nairobi City Water and Sewerage Company through the Informal Settlements Department initiated several projects in partnership with various NGOs and other development partners to improve access to clean water and sanitation in informal settlements. This was in pursuit of achieving the MDGs of access to clean water and sanitation by the year 2015. In the year 2009, the World Bank gave a grant of \$3,000,000 under the Water and Sanitation Improvement Program (WASSIP) to improve sanitation services in informal settlements of major cities in East African Countries (Ruhii et al., 2009). The funding foresaw the implementation of water and sanitation project programmes in all the informal settlements of the major cities in East Africa including Nairobi. However, some of the projects started in Mukuru informal settlement as a result of this funding are still incomplete and the complete ones are unsustainable (Kiva, 2012). A study to determine the influence of funding versus the incomplete projects is therefore critical.

With funding from the European Union (EU), a project to increase access to sanitation facilities for the Mukuru residents was implemented under Community Development Trust Fund (CDTF) between July 2005 and December 2006. The interventions were designed to establish reliable and sustainable arrangements for the provision and management of sanitation services. The main feature of the project included provision of ablution blocks, with combined toilet, bathing, laundry and water selling facilities; as well as training and social marketing to create behaviour change and stimulate demand for sanitation services (Ruhii et al., 2009). The aim of the EU intervention through funding was to set up replicable, reliable and sustainable arrangements for the management of human waste and promotion of hygiene within the slum through

partnerships with the local residents. Eight latrines, each with a capacity of handling 400 - 450 users were to be constructed in eight different villages to increase access to sanitation facilities, concurrent with sanitation improvement awareness campaigns and social marketing of the sanitation services to create a demand for the services.

To ensure sustainability the sanitation blocks were to be based on a pay-for-use service model (European Union, 2008). Some of the projects initiated are still incomplete and the complete ones are unsustainable (Likoko, 2013). This creates a need for a study to describe the influence of the funding to the issue of the incomplete sanitation projects.

Considerations on the communities' capacity to support both project execution and long term operation of the project once the donor assistance is withdrawn, should be put in place to avoid project failure (De Beer, 2008). In many projects, affordability of the service is not factored into a scheme at the planning stage. Many schemes developed have been very expensive to maintain resulting in their collapse (Rockstrom, 2003). Water projects especially for low income population such as informal settlements should be designed in a way to ensure sustainability of the projects. Particularly, the maintenance cost of the project should be within budget limits of target population to ensure sustainability of such project even when donor funds have ceased (De Beer, 2008).

According to water and sanitation for health project, a sustainable water supply projects maintains or expands a flow of benefits at a specified level for a long period after external funding has been withdrawn (WASH, 2009; Cited in Likoko, 2013).

2.5 Security Issues and Completion of Water and Sanitation Projects

Water and sanitation utilities commonly experience vandalism and theft of their property. In a study on poverty, jobs, housing, and services in Nairobi's informal settlements Gulyani, Debrata and Potter (2006) found out that the acts of vandalism are widespread in informal settlement settings taking a number of forms which include water theft, leading directly to a loss of revenue for the utility, and the vandalism and theft of

valuable metal pipes, fittings and manhole covers leading to an increase in the utility's maintenance costs. Therefore, the extent of vandalism and theft experienced in a sanitation project can have a direct and significant impact on its performance, and where the service is negatively affected, this will ultimately impact on the well-being of beneficiaries (Dagdeviren & Robertson, 2009).

The studies by Gulyani, Debrata and Potter (2006) and Dagdeviren and Robertson (2009) only gives a description of what happens to complete sanitation projects in informal settlements but does not determine how the security issues contribute to incomplete projects. Therefore, they do not describe whether security issues such as vandalism and theft contribute to incomplete sanitation projects, hence this study.

Sanitation security issues listed in literature as faced by dwellers in informal settlements include, water leakages due to poor quality pipes, unplanned construction above water and sewerage pipes, uncoordinated interventions by different sanitation players, land tenure issues, and the unplanned nature of the urban informal settlements (Bosch, 2010). Further, due to low tenure security, because informal settlements lack land tenure, providing water and sanitation services through investments in large infrastructure is difficult. In some cases, utilities are not allowed to expand their services to illegal settlements (Corcoran et al., 2010). However, the listed security issues do not expound on the cases where sanitation projects are well planned, funded, implemented but remain incomplete and dormant over the years. This study will establish the link between security issues in an informal settlement to incomplete sanitation projects.

In a research paper describing access to water in the developing world, Dagdeviren and Robertson (2009) pointed out that most utilities tasked with sanitation programmes view the financing of extensions in informal settlements as high-risk. This perception is often based on their experience of standpipes that prove difficult to manage in such areas. For instance, in many cases water is not paid for, standpipes are vandalized, water is misused and the installation of networks feeding the standpipes enable illegal house connections.

Given the perceived difficulty of recovering costs in such projects for sustainability due to such insecurities in these areas, grant financing from NGOs, communities and donors have become a key source of financing for water supply and sanitation services to the informal settlements. Withdrawal of donors leaves the communities unable to cater for maintenance costs. However, the research paper by Dagdeviren and Robertson (2009) does not describe the problem of incomplete projects in an informal settlement in relation to security issues, but only deals with unsustainability of the complete projects.

Literature establishes that security issues in informal settlements are obstacles to proper water and sanitation projects. However, research describing the influence of security issues to incomplete sanitation projects in informal settlements remains very scarce. This study seeks to establish the extent to which security issues influences the completion of sanitation projects in Mukuru informal settlement.

2.6 Management Decisions and Completion of Water and Sanitation Projects

Management decisions influence completion of projects to a high extent. High rate of urban growth is most rapid in the developing world, where cities gain an average of 5 million residents every month (UN-HABITAT, 2010). The problem of adequate safe water provision is mostly felt in developing countries. Around the world, 1.1 billion people lack water and 2.4 billion lack sanitation with 300 million of these living in Africa. Poor access to adequate water and sanitation is a main reason to stagnant development for many regions in Sub-Saharan Africa (Dagdeviren and Robertson, 2009). The situation of water access is by day worsening in informal settlements since appropriate measures by relevant stakeholders such as local authorities and governments are not being put in place to address the existing and upcoming challenges. Although the number of informal settlements' dwellers is predicted to reach over two billion by 2030, access to safe water in urban slums does not seem to be improving (Limido, 2011).

Major government's institutional constraints to the provision of water and sanitation are primarily the result of ineffective public works systems (Davids, 2009). Public works systems have long been recognized as complicated and disorganized, two conditions that

make the provision of satisfactory service and expanded coverage difficult (DeBeer, 2008). Government institutions for public service delivery in less developed countries follow the model of public works companies from developed countries: they are set up to receive and operate water and sanitation systems but they are not equipped to get new systems built on their own (Guijt, 2008). Public works in any country can be highly susceptible to corruption and politicization (DeBeer, 2008).

Developing countries face a broader set of risks than those in richer nations. African governments, like most countries in the developing world, face a daunting task in their attempts to provide effective and equitable public services (Davids, 2009). In African countries, especially the Sub-Saharan Africa, there is the failure of the governments to meet basic human needs for clean water and sanitation services (UN-HABITAT, 2007). In this case, there is widespread water related diseases, inadequate expertise and institutional capacity, and major economic problems finding the capital necessary to deal with these problems (UN-HABITAT, 2010).

Appropriate regulatory frameworks and institutions at national level to oversee water and sanitation services provision are essential to operationalize national policies in informal settlements. This is with a view to protect property rights, and generate equitable returns on private investments through efficient tariff structures and levels, service standards, and expansion targets (Botchway, 2001). When responsibility is delegated to local bodies for provision of water and sanitation services, an appropriate distribution of roles between national and local authorities is essential and should be clearly defined (Lyons, Smuts, & Stephens, 2001). Partnering with private sector leads to a stable and predictable regulatory regime that promotes essential values, such as independence in legislation, accountability, transparency and professionalism in the process (Brett, 2003).

Kenya faces serious challenges with regards to provision of sanitation services since the existing facilities have continued to deteriorate and fail to meet the demand of the increasing population particularly in the rapidly growing informal settlements of the urban poor (Bosch, 2010). In Kenya, the water Act 2002 enacted in March 2003 was an

attempt to recognize water as an important commodity for all. The act laid the foundation regarding governance arrangement by separating policy, regulation and service delivery (Kazungu, 2008). In 2008 the NCWSC formed a department solely responsible of improving access to water and sanitation services in the informal settlements of Nairobi (Kiva, 2012). The 2002 Water Act brought about reforms in the Water Sector that were aimed at facilitating access to clean water and sewerage services to all Kenyans. The reforms saw the creation of regional Water Boards which were tasked with the responsibility of overseeing the operations of water and sewerage/sanitation utilities in their respective areas of jurisdiction, besides major asset development (Kazungu, 2008).

Over the years, provision of water and sanitation services has been seen as the work of any nation's government. However, like in other projects, there is an experience in paradigm shift of focus to community based approach (Botchway, 2001; Brett, 2003; Bigdon & Korf, 2002; Lyons, Smuts, & Stephens, 2001). In the case of Kenya, the introduction of Water Act 2002, introduced a revolutionary approach to water management in the country. It created the provision for water service providers (WSPs) who could be private, public or community so long as such entity had the capacity to provide water under the Water Regulatory Oversight Board (Republic of Kenya, 2005). Equally important is the introduction of the Constituency Development Fund (CDF) Act in the year 2003 which emphasized on the projects to be funded under it as being community based project (Ruhii et al., 2009). This therefore means that Community based water projects would get a major boost from the Government through CDF.

The National Water Policy of 2012 (NWP 2012) has been developed in response to the mandate, vision and mission of the Ministry of Water and Irrigation in Kenya. It is informed by the gains made during the implementation of reforms in the water sector anchored on the National Water Policy of 1999 (NWP 1999) also referred to as Sessional Paper No. 1 on National Policy on Water Resources Management and Development, the Water Act 2002, existing related policy documents, and the globally recognized Integrated Water Resources Management (IWRM) approach. These reforms have culminated into the development of NWP 2012, which is designed to institutionalize a

stakeholder and participatory approach to the management of water affairs in the country (Republic of Kenya, 2012). To substantiate the fundamental role played by water and sanitation in development, universal developmental goals and plans have also had it included. For instance, Universal Access to Clean Water and Sanitation is the 6th goal that make up the 2030 schema for Sustainable Development Goals (SDGs) (UNDP, 2016). The *Kenyan vision 2030* also acknowledges the pivotal role of water in development by capturing it in environment (water and sanitation sector); the vision is to ensure water and improved sanitation availability and access to all by 2030 (Republic of Kenya, 2007).

The implementation of the new Constitution of Kenya 2010, which transfers the responsibility for water and sanitation to the county level, provides new challenges and opportunities. To realize government's goal of providing all Kenyans with access to water and sanitation by 2030, significant financial and institutional efforts must still be undertaken. Lack of access to water and sanitation is at the heart of the problems facing urban informal settlement dwellers. In 2013, the Nairobi City Council reported that 48% of the city's population is served by a conventional sewer system while 42% of the population is served by informal sanitation facilities. This state is coupled with poor solid waste management and poor drainage, which cause overflows from the pit latrine, and pollution of water in the city (Likoko, 2013).

In the year 2000, the United Nations Human Settlement Programme (UN-HABITAT) which is mandated to halve the number of informal settlements dwellers and improve their sanitary conditions began to persuade the Kenyan Government to plan demonstration projects and face its cities' informal settlement conditions (UN-HABITAT, 2007). At the end of 2002, the Kenya Slum Upgrading Program (KENSUP) was launched, with substantial financial support from the World Bank's Cities Alliance. However, the initiative did not achieve the envisaged results (UN-HABITAT, 2010).

The failure of the Kenya Slum Upgrading Program of 2002 led to the Kenyan government taking a different approach. In 2007, it published the *Vision 2030 for Water and Sanitation*, in which it declared that water and sanitation were basic rights for Kenyan citizens (UN-HABITAT, 2010). In 2008, Nairobi's City Council adopted a pragmatic approach to achieving the goal, whereby instead of relocating residents to model villages, they opted to work with existing informal sanitation facilities (World Bank, 2010). These informal facilities were called "biogas sanitation centers" and were created by local non-governmental organizations (NGOs) in Nairobi's informal settlements. Each center contained compartmentalized toilets and bathing facilities, as well as a water tanks (UN-HABITAT, 2011).

However, in Nairobi's Mukuru informal settlement, some of the implemented projects are incomplete and dormant. The projects were aimed at addressing the water and sanitation crises in the informal settlements of Nairobi by making the services accessible, affordable, and sustainable. Nevertheless, the improvements would have had a positive impact on the environment, human health and general living conditions of the informal settlement dwellers. The incomplete projects beg the question whether the Kenyan Government has supported fully the implementation of these projects in policy; and if yes, how come some of them are still incomplete after many years.

2.7 Theoretical Framework

This study is grounded on the Theory of Change developed by Carol Weiss in 1995. This theory grounds this study since its parameters focus on effective completion of project interventions. The theory articulates the need of participatory process whereby groups and stakeholders in a planning process articulate their long-term goals and identify the conditions they believe have to unfold for those goals to be met (Weiss, 1995). According to Weiss, these conditions are modeled as desired outcomes, arranged graphically in a causal framework. Theory of Change as reported by Clark and Taplin (2012), is essentially a comprehensive description and illustration of how and why a desired change is expected to happen in a particular context.

The theory is focused in particular on mapping out what has been described as the “missing middle” between what a program or change initiative does (its activities or interventions) and how these lead to desired goals being achieved. It does this by first identifying the desired long-term goals and then works back from these to identify all the conditions (outcomes) that must be in place (and how these related to one another causally) for the goals to occur (Clark & Taplin, 2012).

Further in this theory, it is assumed that if governments are aware of the importance of access to WASH services for sustainable economic development, and if they know and acknowledge their role in this WASH service system, they are more willing to develop sound policies and clear regulations and to implement existing good policies. They will be prepared to make enough budget available for WASH, know how to use this budget effectively and efficiently and know how to monitor WASH facilities and services functions well. Very importantly, governments that are aware of their roles and responsibilities will cooperate well with the private sector, its citizens and the civil society. Consequently, a functioning WASH public sector will be of great support for the realization of a functioning WASH market and invites empowered and organized citizens to enter equal dialogue (WASH Alliance, 2014). Theory of change can be both a planning and issue-framing tool, and a monitoring and evaluation tool (Weiss, 1995). As an evaluation tool, data can then be collected to evaluate progress toward the stated goals.

2.8 Conceptual Framework

The interrelationships in study variables are as depicted in the framework in Figure 2.1.

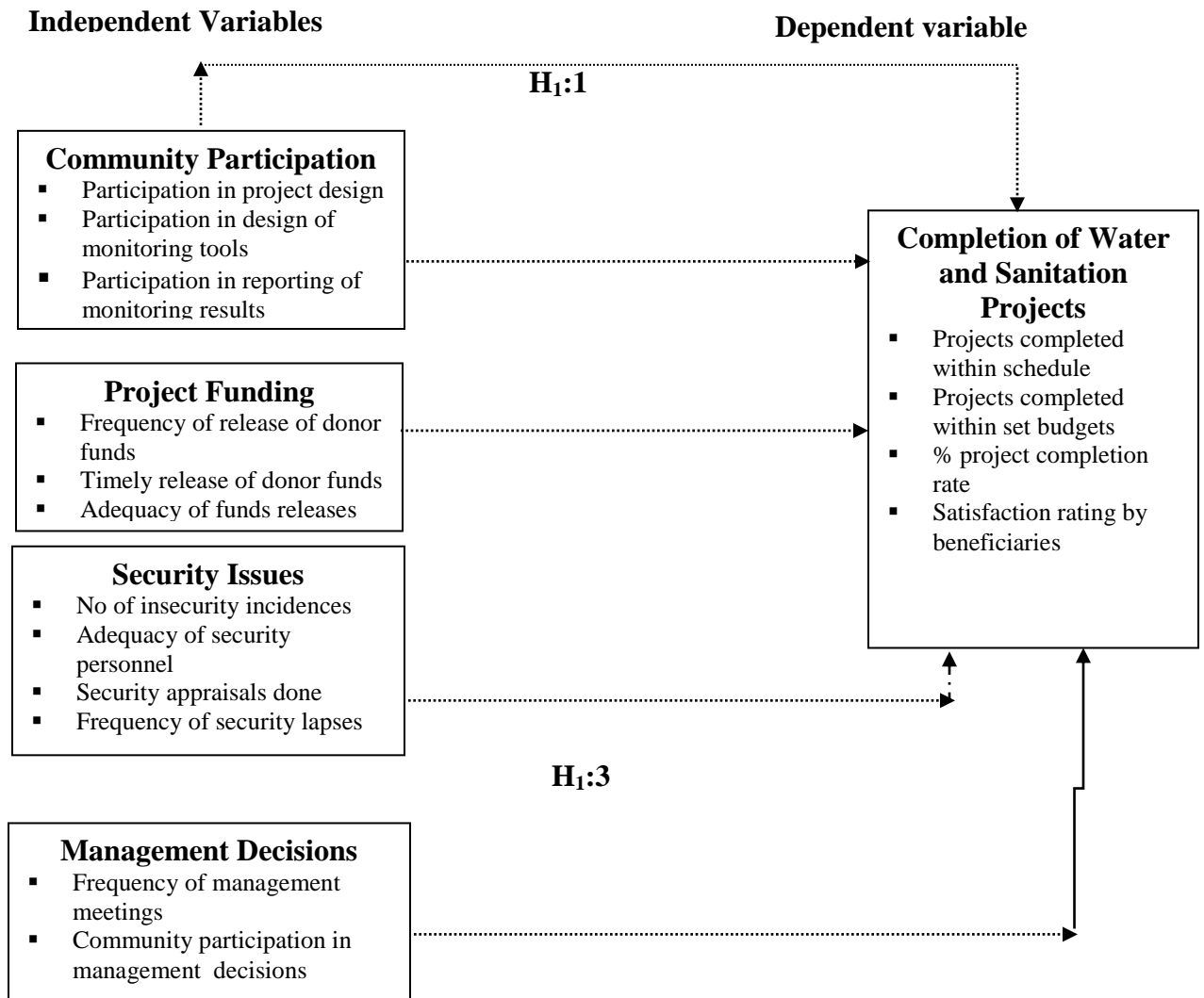


Figure 2.1: Conceptual Framework for Factors Influencing Completion of water and sanitation Projects in Informal Settlements in Kenya

Conceptual framework is a model of presentation where researcher represents the relationship between variables in the study and shows the relationship graphically or diagrammatically (Orodho, 2005). The independent variable attempts to indicate the total influence in a study (Mugenda & Mugenda, 2003). In this research, the conceptual framework is the concise description of the phenomenon under study accompanied by visual depiction of the variables under study (Jackson, 2009). This research will adopt the conceptual framework illustrated in Figure 2.

The independent variables in this study include community participation, project funding, security issues and management decisions while the dependent variable is completion of water and sanitation projects in informal settlements. Government support translates into the implementation of laid down policies on water and sanitation, and capacity building entailing availing the necessary skills, through training and empowerment, that are critical for completion of such projects. Community participation among the resident of urban informal settlements in water and sanitation projects is determined by the perceived benefits accrued and need prioritization which influences the people's attitude. Community participation in such projects that affects completion, is also influenced by its involvement in the planning and implementation.

Project funding as an independent variable that affects the completion of water and sanitation projects in urban informal settlements, is influenced by the availability of donors for the provision of financial aid required such as the government, NGOs, private institutions and individuals. A security issue that affects such projects includes vandalism, theft and corruption that reduce the material resources required. The outlined independent variables act under the influence of a moderating variable, that is, government policies related to water and sanitation projects that entails their viability. Politics as an intervening variable in turn determines the extent of the influence of the independent variables discussed above on the completion of water and sanitation project in urban informal settlements. However, this study will not deal with the intervening and moderating variables, but will focus on the relationship between the independent and the dependent variables

2.9 Summary of the Literature Reviewed

Reviewed literature reveal that community participation is essential for both completion and sustainability of water and sanitation projects in informal settlements. Participation of the community in projects leads to capacity building which enables the community to be more effective and efficient in the process of identifying, implementing, monitoring and evaluating of developmental projects (David, 2009). Community participation also enhances the sustainability of projects, achieved through a people centered development

(World Bank, 2002). The studies by Guijt (2008) and Mosse (2007) recommended the need for a well-functioning state apparatus that is guided by active community involvement in sanitation projects. The proposed research will probe on whether the residents of Mukuru have been involved in any of the phases (planning, implementation and evaluation) of sanitation projects and its influence on the incomplete and stale projects in the informal settlement.

Even within the aid spending that is going to the housing and urban development sector, it is estimated that only 1% of aid budgets get to sanitation programmes informal settlements (World Bank, 2010). As portrayed in literature, in the year 2009, the World Bank gave a grant of \$3,000,000 under the Water and Sanitation Improvement Program (WASSIP) to improve sanitation services in informal settlements of major cities in East African Countries (Ruhii et al., 2009). The funding foresaw the implementation of water and sanitation project programmes in all the informal settlements of the major cities in East African including Nairobi. However, some of the projects started in Mukuru informal settlement as a result of this funding are still incomplete and the complete ones are unsustainable (Kiva, 2012). A study to determine how funding influences on completion of sanitation projects in informal settlements is therefore critical.

From the literature, the study by Gulyani, Debrata and Potter (2006) only gives a description of what happens to complete sanitation projects in informal settlements but does not determine how the security issues contributes to incomplete projects. The research paper by Dagdeviren and Robertson (2009) does not describe the problem of incomplete projects in an informal settlement in relation to security issues, but only deals with unsustainability of the complete projects. Research describing the influence of security issues to completion of sanitation projects in informal settlements therefore remains very scarce. This study seeks to establish the extent to which security issues influences the completion of sanitation projects in Mukuru informal settlement.

In Kenya, the introduction of Water Act 2002, created the provision for water service providers (WSPs) who could be private, public or community so long as such entity had the capacity to provide water under the Water Regulatory Oversight Board (Republic of Kenya, 2005). As a result of this policy, at the end of 2002, the Kenya Slum Upgrading Program (KENSUP) was launched, but did not achieve the envisaged results (UN-HABITAT, 2010). In 2008, Nairobi's City Council adopted an approach to achieving the *Vision 2030 for Water and Sanitation* goal, by working with existing informal sanitation facilities (World Bank, 2010). These reforms culminated into the development of National Water Policy of 2012, which was designed to institutionalize a stakeholder and participatory approach to the management of water affairs in the country (Republic of Kenya, 2012). However, in Nairobi's Mukuru informal settlement, some of the implemented projects as a result of these policies are incomplete and dormant. This study seeks to determine the extent to which government policies influences the completion of sanitation projects in Mukuru Kwa Njenga informal settlement.

2.10 Research Gap

The gap in research identified after review of literature is as shown on Table 2.1.

Table 2.1: Research Gap

Variable	Year and Author	Focus of the Study	Methodology	Findings	Knowledge Gap
Community Participation and Completion of Water and Sanitation Projects	Phillip et, al (2008)	Influence of Community participation in implementation of rural development projects	Descriptive survey design with proportionate random sampling on all respondents sampled	Found significant existent relationships between variables	This study focuses on the extent to which community participation influences the completion of water and sanitation projects
Project Funding and Completion of Water and Sanitation Projects	Rietbergen, (1998)	Project financing arrangements and Performance of ICT-based interventions	The study adopted a comparative analysis using 200 self-administered questionnaires	Found significant existent relationships between variables	This study focuses on the extent to which project funding influences completion of water and sanitation projects
Management Decisions and Completion of Water and Sanitation Projects	Gaither, (2015)	Influence of Management styles on project performance	Cross-sectional survey design with proportionate random sampling on 500 respondents sampled randomly	The study exemplified significant existent relationships between the variables under study	This study focuses on the extent to which project management decisions influence the completion of water and sanitation projects in informal settlements
Security and Completion of Water and Sanitation Projects	Papke-Shields (2010)	How security arrangements influence project performance in the Horn of Africa region	The study adopted a comparative analysis using 500 self-administered questionnaires and key informants	The study found significant existent relationships between variables	This study focuses on the extent to which security influences the completion of water and sanitation projects in informal settlements

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter focuses on research methodology that includes the research design, the target population, sample size selection and sampling procedures, data collection techniques, pilot testing, validity and reliability of research instruments, data analysis techniques, operational definition of variables and ethical considerations.

3.2 Research Design

The descriptive survey design will be adopted for this study for its advantage in ensuring high quality data was collected and a wide and inclusive coverage (Denscombe, 2007). According to Moore and McCabe (2006), descriptive research attempts to describe systematically a situation, problem or a service and provides information about, for example a living condition of a community at the time of the research. A structured questionnaire will be used to collect quantitative data while focus group discussion will be used to collect qualitative data. The research will be conducted in Mwea Irrigation scheme, Kirinyaga County.

3.3 Target Population

Target population for this study shall constitute 1,000 respondents that includes: project beneficiaries, project managers and select community members who are part of the project implementation committees. Target population refers to entire specific population that will take part in the study survey. Krishnaswami, (2002) defines population as the target group to be studied in a place. Kothari (2004) on the other hand defines population as the set of all objectives that possess some common set of characteristics with respect to marketing problem. According to Mugenda and Mugenda (2003) population can be termed as a well-defined or set of people, service, elements, event and group of things or households that are being investigated. Target population in this study will include all the 1000 community members and project implementers. The unit of analysis will be an individual water and sanitation project within the informal settlement.

Table 3.1: Target Population

Cluster	Target Population	Sample Size
Project Beneficiaries	642	178
Project Managers	28	8
Management Committee Members	330	92
Total	1000	278

3.4 Sample Size and Sampling Procedure

In this study, individual sample sizes for project beneficiaries, project managers and project management committee members will be determined by proportionate sampling method followed by simple random sampling. The sampling unit for study will be individual farmers. Shields, (2013) argue that precision rate and desired confidence level are crucial determinants of sample size.

3.4.1 Sample Size

Sample size for this study will be 278 individuals determined by the use of the simplified Krejcie and Morgan, (1970) Table.

3.4.2 Sampling Procedures

According to Orodho and Kombo (2002) sampling is a process of selecting a number of individuals or objects from a population such that the selected group contains elements representative of the characteristics found in the entire group. Singleton, (1998) further explains that it is the process of selecting a few cases from a large population for studying them and generalizing on the large population.

From the target population of 1,000 respondents, a sample of this study will be selected using proportionate random sampling where different projects within the informal settlement will be put in three different strata accordingly and then a sample size selected from each of the stratum.

3.5 Research Instruments

The questionnaire will be used to collect quantitative data while focus group discussions will be used to collect qualitative data. Key informant interviews will be conducted to collect expert information from professionals who have had direct and indirect engagement with the project beneficiaries. The key informant interviews will be held with the 28 project managers who are currently running the water and sanitation projects in the slum. The structured questionnaire will have 5 sections. Section A will entail questions on community participation, section B will have questions on project funding, section C will have questions on management decisions and section D will have questions on security issues while section F will entail questions on completion of water and sanitation projects. A likert scale generated will conform to the following connotation (1) strongly disagree, (2) disagree, (3) neutral, (4) agree, (5) strongly agree.

3.5.1 Pilot-Testing of the Research Instrument

A pilot study will be conducted to examine the appropriateness, reliability and validity of all research instruments. To pretest the research instruments, 10% of the study respondents will be used (Mugenda and Mugenda, 2003). This means the research shall use 27 project beneficiaries from Kibera slum which has similar conditions to Mukuru kwa Njenga slum will be picked and used. This process will be done in order to identify and rectify any errors in the data collections instruments. Pilot testing for research instruments to be used in this study will be held 2 weeks prior to the main study.

3.5.2 Validity of the Research Instrument

Validity refers to how well a test measures what it is purported to measure (Cozby, 2001). Content and construct validity will be adopted in this research. Validity is used to refer to the appropriateness, meaningfulness and usefulness of the inferences a researcher makes, while reliability is a measure of degree to which a research instrument yields consistent results or data after repeated trials (Mugenda, 2008).

3.5.3 Reliability of the Research Instrument

In this research, split-half methodology of determining reliability will be utilized. Cozby (2001) defined reliability as the ability of an apparatus, machine, or system to consistently perform its intended or required function or mission, on demand and without degradation or failure. The reliability of a research instrument concerns the extent to which the instrument will be consistent in relaying the same information. Reliability is consistency and dependability of data collected through repeated use of a scientific instrument or data collection procedure under the same conditions (UNDP, 2002).

3.6 Data Collection Procedures

This research shall utilize primary data which refers to data originally collected for the very first time. The use of primary data has been demonstrated by numerous authors who postulated that primary data has revolutionized growth of social science discipline. The unit for data collection will be individual respondents. Two college students from a reputable university will be recruited as research assistants to help collect quantitative data from farmers. This data will be by use of a structured questionnaire.

The two research assistants will be trained on research ethics, field data management and data operations before deployment. Prior to data collection, letters of transmittal of data expressing the desire to undertake research will be dispatched and posted in strategic locations within the scheme. A research permit authorizing this study will also be obtained, photocopied and given to the two research assistants. A total number of 278 questionnaires will be printed and distributed equally to the two research assistants for onward distribution.

3.7 Data Analysis Techniques

Data analysis is the process of inspecting, cleaning, transforming, and modelling of data with the goal of discovering useful information, suggesting conclusions, and supporting decision-making (Cozby, 2001). Data analysis will involve reducing the accumulated data to a manageable size, developing summaries, looking for patterns, and applying statistical techniques to generate information that was used to answer the research

questions of the study and present results in understandable and convincing manner. Data from questionnaires will first go through the process of data management. This process involved data cleaning, sorting, identification of missing data. (IBM, 2017).

The collected data will be analyzed using both quantitative and qualitative data analysis methods. Quantitative method will involve descriptive analysis. Descriptive data will be analyzed for mean, frequencies, variances and the results will be presented in tables. Quantitative data will be analyzed using a statistical software called Statistical Package for Social Science (SPSS) to get the statistical mean to determine the overall trend of data set, standard deviation to measure spread of data around the mean. Regression analysis may also be used to determine the relationship between dependent and independent variables as well measure whether those relationships are strong or weak. The qualitative data will be entered in data entry matrix that will reflect different categories. This information will then be tabulated according to frequency of events. The qualitative data will be tabulated and interpreted in relation to project objectives.

3.8 Ethical Considerations

In this study, confidentiality will be of concern as the information relevant to the study will be of strategic importance. In this regard, the names of the respondents will not be disclosed. Secondly, the researcher will obtain a research permit form the National Commission for Science, Technology and Innovation so as to authorize this study.

Information will not be made available to anyone who will not be directly involved in the study. The strict standard of anonymity will be employed which means that the participant will remain anonymous throughout the study even to the researcher. The researcher will also strive to maintain truthfulness in reporting data results by ensuring that there is no fabrication, falsehood, or any misrepresentation of data. The researcher will avoid bias in research design, data analysis, and data interpretation among others and honor patents and other forms of intellectual property.

3.9 Operationalization of Variables

The operational definition of study variables is as shown in Table 3.1

Table 3.2: Operationalization of Variables

Variable	Variable	Indicator(s)	Measurement of Indicator	Measurement Scale	Data Collection Instruments	Data Analysis
Completion of Water and Sanitation Projects in Informal Settlements	Dependent Variable	Projects completed within schedule Projects completed within set budgets % Project completion rate Satisfaction rating by beneficiaries	No of projects completed within schedule No of Projects completed within set budgets % completion rate of projects No of project beneficiaries satisfied with project intervention	Interval	Structured Questionnaire	Quantitative
Project Funding	Independent Variable	Frequency of release of donor funds Timely release of donor funds Adequacy of funds releases	Amount of money release Number of times the money is released Processes in the release of project funds	Interval	Structured Questionnaire	Quantitative
Management Decisions	Independent Variable	Frequency of management	No of donor meetings held	Interval	Structured Questionnaire	Quantitative

		meetings Community participation in management decisions	No. of community members present Community views incorporated			
Security Issues	Independent Variable	Insecurity incidences Adequacy of personnel Security appraisals done Frequency of security lapses	Insecurity incidences Vandalism of projects' property Security patrols Community involvement in security matters	Interval	Structured Questionnaire	Quantitative
Community Participation	Independent Variable	Participation in project design Participation in monitoring tools Participation in reporting of results	No of stakeholders involved No of participants Level of participation	Interval	Structured Questionnaire	Quantitative

CHAPTER FOUR

DATA ANALYSIS, PRESENTATION AND INTERPRETATION OF FINDINGS

4.1 Introduction

This chapter discussed the interpretation and presentation of findings. It began with the presentation of demographic information of the respondents followed by presentation of the findings as per the objectives in relation to the topic on Factors influencing completion of water and sanitation projects in informal settlements in Kenya: A Case of Mukuru Kwa-Njenga Slums, Nairobi County.

4.2 Questionnaire Response Rate

The study targeted a sample size of 278 respondents out of which 263 were filled and returned giving a response rate of 94.6% (Table 4.1). This response rate was good and representative and conforms to Mugenda and Mugenda (1999) stipulation that a response rate of 50% is adequate for analysis and reporting; a rate of 60% is good and a response rate of over 70% is excellent. This method also ensured that the respondent's queries concerning clarity were addressed at the point of data collection. However, caution was exercised so as not to introduce bias in the process it also reduced the effects of language barrier, hence, ensuring a high instrument response and scoring rate. According to Mugenda and Mugenda's recommendation, this can be equated to excellent.

Table 4.1: Response Rate

Response rate	Frequency	Percentage
Responded	263	94.6
Non-response	15	5.4
Total	278	100

4.3 Demographic Data Analysis

This section discusses the demographic characteristics of the respondents in the study. These include, distribution of respondents by their gender, age, level of education and occupation and the results are presented in terms of the study objectives

4.3.1 Distribution by Gender

To establish the gender of the respondents, they were asked to indicate them in the brackets. The findings of this were as in Table 4.2

Table 4.2 Gender Distribution

Gender	Frequency	Percentage
Male	150	54
Females	128	34.20
Total	278	100

According to the findings in Table 4.2, majority of the respondents at 150(54%) were female while 128 (46%) of them were male.

4.3.2 Distribution of Respondents by Age

To establish the ages of the respondents, they were asked to indicate their age brackets. The findings of this were as in Table 4.3

Table 4.3 Distribution of Respondents by Age

Age Bracket	Frequency	Percentage
Below 20	48	17.3
20 – 25 years	123	44.2
26 – 30 years	54	19.4
31 – 35 years	18	6.43
36-40 years	13	4.7
Above 40 years	22	7.9
Total	278	100.00

On the age of the respondents, the study found that the majority of the respondents were between 20-25years 123(44.2%), 54(19.4%) were aged between 26-30years while 48(17.3%) were aged below between 20 years. 22 of the 2978 respondents were above the age of 40 years. This shows that majority of the respondents were of an adequate/informative age and therefore have enough experience on the subject being researched on.

4.3.3 Distribution of Level of Education

The study sought to determine the level of education of the respondents as shown in the table below

Table 4.4 Level of Education

Level of Education	Frequency	Percentage
No formal Education	5	1.8
Primary School	28	10.2
Secondary School	45	16.2
Certificate	40	14.4
Diploma	76	27.3
Degree	50	20.9
Others	26	9.4
Total	278	100

From the findings, 76(27.3%) of the respondents had a Diploma as their highest level of education, a majority 58(20.9%) of the respondents had a bachelors degree as the highest level of education while another 45(16.2%) had secondary school as the highest level of education. 28(10.2%) of the respondents had a primary school education while 26 (9.4%) of them had other level of education. 5(1.8%) of the respondents had no formal education This shows that majority of the respondents were adequately equipped with the required education level and intelligence to understand the intricacies of completion of water and sanitation projects

4.3.4 Distribution of Occupation

The study sought to determine the occupation of the respondents as shown in the table below.

Table 4.5 Occupation of respondents

Occupation	Frequency	Percentage
Small Scale trader	107	38.5
Employed	35	12.6
Boda boda rider	45	16.2
Grain trader	45	16.2
Others (Specify)	46	16.5
Total	278	100

Finally, responses on occupation showed that, all the respondents who answered the questions had some form of employment in one way or the other. From the responses, 35 (12.6%) of the respondents were employed, a majority of the respondents 45 (16.2%) were boda boda riders while the other were grain traders. 46 (16.5%) of the respondents fell under the others category while 107(38.5%) were small scale traders.

4.4 Community Participation

The respondents were asked a number of questions in relation to the influence of community participation in water and sanitation projects in Mukuru –Kwa Njega slum. In this question, the respondents were asked to indicate the extent to which they agreed or disagreed with the following statements in relation to community participation in water and sanitation projects in the Slums. Scale of use was 1-5; where 1= strongly disagree, 2= Disagree, 3= Neutral, 4= Agree, 5= strongly agree

Table 4.6 Response on community participation in water and sanitation projects

Statement	Mean	Standard Deviation
I was involved in the design of this project	4.57	0.50
Many consultative meetings were held during the design phase of this project	4.50	0.58
Stakeholders were involved in designing this project	3.75	0.96
Design of monitoring tools of this project was consultative	3.50	0.89
The community members developed the project monitoring tools themselves	3.55	0.92
Community members participated in formative monitoring of this project	3.75	0.96
Community members were involved in mid-term review of this project	3.65	0.78
The evaluation process for this project was all-inclusive	3.95	1.09
Community members accessed the project evaluation report	3.90	1.02

Responses to the statements had means ranging from 3.50 to 4.57 as shown in table 4.7 Respondents from Mukuru Kwa -Njenga agreed with the statement I was involved in the design of this project which had a mean of 4.57. As to whether consultative meetings were held during the design phase of this project, the respondents agreed with the statement as it had a mean of 4.50. The respondents also agreed that the evaluation process for this project was all-inclusive as it had a mean of 3.95. Community members accessed the project evaluation report had a mean of 3.90 while both community members participate in formative monitoring of this project and stakeholders being involved in designing the project had a mean of 3.75.

Although the respondents considered community members involved in mid-term review of this project as being important, the statement obtained a mean of 3.65. The community members developed the project monitoring tools themselves and design of monitoring tools of this project was consultative obtained a mean of 3.55 and 3.50 respectively.

4.5 Project Funding

The researcher found it important to establish how effective project funding is in relation to water and sanitation projects. A scale of 1-5 was used to measure the level at which the respondents agreed with the statement listed in Table 4.8 where (Where 1-Strongly disagree, 2-Disagree, 3Neutral, 4 -Agree and 5 –Strongly Agree)

Table 4.7- Respondents response on project funding

Statement	Mean	Standard Deviation
The manner in which our donors release cash impacts our projects negatively	3.83	1.059
Donor conditions on fund release are fair	3.67	1.009
Conditions for fund release discourages many stakeholders	4.09	0.929
Project donors release project funds on a timely basis	4.23	0.823
The process of fund release is so bureaucratic	4.15	0.874
Community members are not aware of fund acquisition process	3.83	1.059
Community members are never consulted on fund acquisition process	3.67	1.009
Project funds received are never adequate for our project needs	4.09	0.929
Our bank has placed too many conditions for us to access our project funds	4.23	0.823

The study sought the respondents' opinion regarding project funding. The results of the responses from Table 4.7 confirm project funding is positively related to completion of water and sanitation projects in informal settlements. The study identified that project donors release project funds on a timely basis and banks have placed too many conditions to access project funds as they both had a mean of 4.23. The process of fund release is as bureaucratic as it had a mean of 4.15. The respondents observed that the conditions for fund release discourages many stakeholders and that Project funds received are never adequate for project needs both having a mean of 4.09. The statements the manner in which our donors release cash impacts projects negatively and community members are not aware of fund acquisition process both also had a mean of 3.83. Furthermore the respondents were also in agreement that donor conditions on fund release are fair and that community members are never consulted on fund acquisition process as these statements achieved a mean of 3.67.

4.6 Security Issues

The researcher also found it important to establish how security affects completion of water and sanitation projects. A scale of 1-5 was used to measure the level at which the respondents agreed with the statement listed in Table 4.8 where (Where 1-Strongly disagree, 2-Disagree, 3Neutral, 4 -Agree and 5 –Strongly Agree)

Table 4.8 Security Issues

Statement	Mean	Standard Deviation
Insecurity incidences in this area are very high	4.16	0.755
Most of our idling youth are the cause of insecurity	4.2	0.727
All insecurity incidences are reported to relevant agencies	4.05	0.645

Generally, respondents were observed to agree with most of the statements on security and its influence in completion of water and sanitation projects in informal settlements. However, most of idling youth are the cause of insecurity was rated as the highest security issue that influences completion of water and sanitation projects with mean

scores of 4.2. Insecurity incidences in the area are very high was rated second with a mean of 4.16 while all insecurity incidences are reported to relevant agencies was ranked third with a mean of 4.05. From the above analysis the respondents unanimously agreed that security issues influences completion of water projects in the slums which slows down the project.

CHAPTER FIVE
SUMMARY OF FINDINGS, DISCUSSIONS, CONCLUSION AND
RECOMMENDATION

5.1 Introduction

This chapter presents the summary of the findings, discussions of the research outcome, conclusions and recommendations of the study based on the objectives of the study. The main objective of the study was to determine the factors influencing the completion of water and sanitation projects in informal settlements in Kenya: A case of Mukuru Kwa-Njenga Slum, Nairobi County

5.2 Summary of Findings

The summary of the findings are organized based on the order of the study objectives and presented as follows,

5.2.1 Community participation influence on the completion of water and sanitation projects in informal settlements in Kenya

The study established that the community participates in water and sanitation projects. Respondents from Mukuru Kwa-Njenga indicated the community participated in the projects as they are part of the consultative meetings which are held during the design phase of the projects. The study also gave importance to evaluation of the project which was all inclusive as most of the respondents agreed to this. The study also established that community members are involved in formative monitoring and that stakeholders are involved in designing the project. The research also unveiled that the community members are not fully involved in the mid-review of the projects as majority of the respondents agreed to the statement. In developing the project monitoring tools, the respondents agreed to this that that the process is also consultative which seemed to be an important aspect to them.

5.2.2 Project funding influence on completion of water and sanitation projects in informal settlements in Kenya

The study also sought to establish the opinion regarding funding of water and sanitation projects. The results of the responses confirmed that funding is positively related to project completion. The study identified that project donors release project funds on a timely basis but banks have placed too many conditions to access those funds. This in turn delays the completion of these projects in the slum. The study also established that process of fund release is so bureaucratic and also the conditions for fund release discourage many stakeholders. The project funds received are never adequate for project needs and the manner in which donors release cash impacts projects negatively and community members are not aware of fund acquisition process. Furthermore the respondents were also in agreement that donor conditions on fund release are fair and that community members are never consulted on fund acquisition process hence this affects the completion rates for the projects.

5.2.3 Extent to which security issues influences the completion of water and sanitation projects in informal settlements in Kenya

The study established that security is a major determinant of project completion in the slum. The study established that the idling youth are the cause of insecurity in the slum and also, insecurity incidences in the area are very high. Furthermore the respondents agreed that all insecurity incidences are reported to relevant agencies. These factors have a huge influence on the completion of water and sanitation projects in the slum.

5.3 Discussions

The research tried to understand that factors that influence completion of water and sanitation projects in informal settlements. The study established that community participation impacts project completion. These findings affirm the findings of Musa (2002), Barasa and Jelagat (2013) and Mulwa (2008) that community participation in projects improves sustainability of community based projects. According to Musa (2002), there ought to be genuine demand by a community for all projects as this eliminates the

tendency to abandon the projects when they are half-way completed and sustains the interest of communities or groups within them in maintenance and protection of those projects. Barasa and Jelagat (2013) argue that if the community does not participate in need identification, even if the need is identified with the assistance of the outside world, they will not legitimize it leading to a greater chance of the project stalling at the implementation stage. According to Mulwa (2008), community participation in need evaluation provides a solid foundation for finding ways of solving the problem, helps to clarify the scope of the problem at hand and the resources available and enables the community to set the objectives, goals and how the intended development will proceed.

Another factor that was found to have an impact on completion of water and sanitation projects is project funding. According to Binder (2008) and Odhiambo (2010), the financing process which involves raising and maintaining adequate funding for water facilities is of critical importance for sustainability. Insufficient funding is a major factor for poor maintenance, which is often cited as the main reason for failure. Failure to address funding issues is a main obstacle to achieving water supply and sanitation goals in many countries. There is usually a significant underfunding even for basic costs of operating and repairing facilities in operation. Particular problems exist in slum areas, where the cost of water services is higher while affordability is lower as tariffs rarely cover operation, maintenance, repair and replacement, and attracting small-scale private sector investment is often difficult. Additionally, cost estimates do not always accurately reflect all capital maintenance expenditures, on-going support costs and indirect support costs.

Another factor that the project established is the influence of security on completion of projects. Insecurity generally disrupts development of projects and societies. Denney (2013) observed that the relationship between insecurity and underdevelopment is much stronger than the relationship between peace and development. That is, where there is insecurity, there is often underdevelopment. This view was shared by Dike (2013) when he asserted that lack of security of lives and property of citizens is a major hindrance to meaningful development.

5.4 Conclusion

Based on the findings of the study, the researcher concludes that, the community participation, project funding and security issues influence the completion of water and sanitation projects in Nairobi County's slums. Community participation has a significant influence in the completion of water and sanitation projects in Nairobi County's slums.

Project funding is another factor that is central in the successful completion of water and sanitation projects in the slums. The sources of resources, the amount of resources, and governance are all tied to funding and this influences the completion of these projects. Finally, the research concludes that the rate of insecurity within the slums also will negatively affect the completion of these projects in the slums.

5.5 Recommendations

Based on the findings of the study, the researcher recommends that, for effective, successful and sustainable completion of water and sanitation projects in the slums in Nairobi County just like any other slums in the world:

1. A similar study should be done in other urban areas in different counties for comparison purposes and to allow for generalization of findings.
2. There should be sufficient funds allocated to the projects by both the donors, national government, county government and other stakeholders.

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APPENDICES

APPENDIX I: LETTER OF TRANSMITTAL OF DATA COLLECTION INSTRUMENTS

Janet Nyarinda Onyancha
P.O Box 30197-00100,
Nairobi, Kenya

2nd June, 2019

Dear Respondent,

RE: REQUEST FOR INFORMATION

I am a student undertaking a degree of Master of Arts in Project Planning and Management at the University of Nairobi conducting research study “Factors Influencing Completion of Water and Sanitation Projects in Informal Settlements in Kenya”. The study is being undertaken in Mukuru kwa Njenga slums in Nairobi county.

You have been selected as one of the respondents to assist in providing the requisite data and pertinent information for this research. I kindly request you to spare a few minutes and answer the attached questionnaire. The information you shall offer will be used for academic purposes. Your identity will be kept in utmost confidence.

Kindly do not append your name anywhere on this questionnaire. I request for your cooperation in this endeavor.

Yours Sincerely,

Janet Nyarinda Onyancha
Mobile: 0723765929

APPENDIX II: QUESTIONNAIRE FOR COMMUNITY MEMBERS

This questionnaire is designed to gather information regarding the completion of Water and Sanitation Projects in Mukuru Kwa Njenga slums in Embakasi South constituency. Kindly respond as appropriate. Your identity shall be kept in utmost confidence.

Date..... Village.....

Mobile Number (if any).....

SECTION A: Demographic Characteristics of Respondents

Questions	Codes	Response
Gender of Respondent	1=Female; 2= Male	
Age of Respondent	Below 20 1=20-25 2=26-30 3=31-35 4=36-40 5=Above 40	
Highest Level of Education	1= No Formal Education 2=Primary School Level 3=Secondary School Level 4= Certificate Level 5=Diploma Level 6=Degree Level 7= Others (Specify)	
Literacy of Respondent	1=Can Read 2=Can Write 3=Can Read and Write 4=None of the Above	
Occupation	1=Small scale trade 2=Employed 3=Boda boda rider 4=Grain Trader 5= Others (Specify)	

SECTION B: Community Participation

To what extent do you agree or disagree with the following? Select one option using the following measurement scale:

5=Strongly Agree,

4=Agree,

3=Neutral,

2=Disagree

1= Strongly Disagree

	Statement	5	4	3	2	1
1	I was involved in the design of this project					
2	Many consultative meetings were held during the design phase of this project					
3	Stakeholders were involved in designing this project					
4	Design of monitoring tools of this project was consultative					
5	The community members developed the project monitoring tools themselves					
6	Community members participated in formative monitoring of this project					
7	Community members were involved in mid-term review of this project					
8	The evaluation process for this project was all-inclusive					
9	Community members accessed the project evaluation report					
	Summary Statistic (For official use only)					

SECTION C: Project Funding

To what extent do you agree or disagree with the following? Select one option using the following measurement scale:

5=Strongly Agree,

4=Agree,

3=Neutral,

2=Disagree

1= Strongly Disagree

	Statement	5	4	3	2	1
10	The manner in which our donors release cash impacts our projects negatively					
11	Donor conditions on fund release are fair					
12	Conditions for fund release discourages many stakeholders					
13	Project donors release project funds on a timely basis					
14	The process of fund release is so bureaucratic					
15	Community members are not aware of fund acquisition process					
16	Community members are never consulted on fund acquisition process					
17	Project funds received are never adequate for our project needs					
18	Our bank has placed too many conditions for us to access our project funds					
	Summary Statistic (For official use only)					

SECTION D: Security Issues

To what extent do you agree or disagree with the following? Select one option using the following measurement scale:

5=Strongly Agree,

4=Agree,

3=Neutral,

2=Disagree

1= Strongly Disagree

	Statement	5	4	3	2	1
19	Insecurity incidences in this area are very high					
20	Most of our idling youth are the cause of insecurity					
21	All insecurity incidences are reported to relevant agencies					
	Summary Statistic (For official use only)					

Thank You

APPENDIX III: INTERVIEW SCHEDULE FOR KEY INFORMANTS

1. Are there any started but incomplete water and sanitation projects in Mukuru?
Describe the state of the projects?
2. Do you think that participation issues of Mukuru residents have led in any way to incompleteness of water and sanitation projects?
3. Bearing in mind the state of water and sanitation in this area, do you think that Mukuru community is well involved or actively participate in projects undertaken?
4. Highlight some of the phases you think that the Mukuru community has actively participated in water and sanitation projects.
5. Do you think lack or inadequate involvement of Mukuru residents has led in any way to incomplete water and sanitation projects?
6. Who is/are the main funders of water and sanitation projects in Mukuru?
7. Do you think funding has anything to do with completion of water and sanitation projects in Mukuru?
8. What are the main funding-related barriers that you think has impeded the completion of water and sanitation projects in Mukuru?
9. Highlight some of the security concerns that you think influences completion of water and sanitation projects in Mukuru.
10. To what extent do you think that security issues you have identified influences on the completion of water and sanitation projects in Mukuru?
11. Which body or bodies are involved in the installation of water and sanitation systems in Mukuru?
12. To what extent do you think that the body or bodies you have identified influences on the completion of water and sanitation projects in Mukuru?
13. In your own opinion, which body or bodies do you think would meet the water and sanitation needs of Mukuru residents if mandated with the installation?

APPENDIX IV: RESEARCH WORKPLAN

ACTIVITY	MONTHS OF THE YEAR 2019											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Idea generation and literature review												
Selection of research topic												
Proposal writing												
Review and approval of proposal												
Sampling												
Piloting												
Data collection												
Analysis and interpretation of data												
Reporting												
Submitting draft report												

APPENDIX V: RESEARCH BUDGET

Item/Activity	Cost (KES)
Stationary (Books, pens, Government documents etc.)	5,000
Internet	5,000
Typing of research proposal	10,000
Designing and printing research questionnaires	7,000
Transport cost	5,000
Data collection	
a) Subsistence	5,000
b) Field assistants allowance	5,000
Typing of researcher thesis, printing and binding	5,000
Total	50,400

APPENDIX VI:TABLE FOR DETERMINING SAMPLE SIZE FOR A GIVEN POPULATION

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