

**COMMUNITY PARTICIPATION AND OUTCOMES OF SELECTED
COMMUNITY BASED DEVELOPMENT WATER PROJECTS IN THE
INFORMAL SETTLEMENTS OF NAIROBI CITY COUNTY, KENYA**

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**A RESEARCH PROJECT SUBMITTED TO THE DEPARTMENT OF APPLIED
ECONOMICS IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR
THE AWARD OF THE MASTER OF ECONOMICS (COOPERATION AND
HUMAN DEVELOPMENT) DEGREE OF KENYATTA UNIVERSITY**

2020

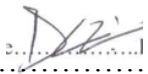

DECLARATION

This research project is my original work and has not been presented for award of a degree in any other University or any other award.

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This research project has been submitted for presentation with my approval as University Supervisor.

Signature..... ..... Date..... .....

Dr. Duncan O. Ouma

DEDICATION

Dedicated to the Almighty God for the divine wisdom, to my parents, family and friends for their support throughout the entire duration of the course your encouragement and guidance is priceless.

ACKNOWLEDGEMENT

My gratitude goes to my supervisor, Dr. Duncan Ouma. I can only offer my sincerest gratitude. Dr. Ouma has supported me all through my research project with patience, wisdom and optimism.

I am very grateful to Dr. Emmanuel Manyasa, Dr. Omolo and Dr. Perez Onono for their support in every step of the way. I appreciate the entire team of the School of Economics and the Kenyatta University library. They are friendly which made it easier for me to complete my research project.

To everyone who contributed in actualizing this milestone, I acknowledge and appreciate your efforts.

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ABBREVIATIONS AND ACRONYMS

BNA	Basic Needs Approach
CBD	Community Based Development
NGOs	Non-Government Organizations
OBP	Overall Beneficiary Participation
OPO	Overall Project Outcome
SGDs	Sustainable Development Goals
UN	United Nations
UNDP	United Nations Development Program
VIF	Variance Inflation Factor
WSP	Water and Sanitation Program

OPERATIONAL DEFINITION OF TERMS

Participation: combined efforts towards increasing and exercising control over resources and establishments of those excluded from control.

Community participation: refers to the process by which individuals, families, or communities assume responsibility for their own wellbeing and build capacity to contribute towards their own and the community's development by being involved in making decisions in determining goals and pursuing issues of importance to them for example, the direction of services and the allocation of funds.

Informal settlement: an overcrowded and squalid urban street settled by very poor people.

Empowerment: Improvement of people's ability to make or influence decisions that affect their well-being in a positive way.

Project Outcomes: An outcome is an alteration at an individual, family, neighborhood or community level or some other entity such as a school or a service such as water that comes about as a result of something else. A project outcome in community development refers to changes that occur due to the presence and activities of a community development project.

Effective community participation: participation that is defined by people themselves leading to self-realization and empowerment.

ABSTRACT

A great proportion of the population living in urban areas of Kenya especially in Nairobi City County reside within the informal settlements. These informal settlements are prone to water related challenges such as failure to access piped and safe water. It is this situation that has continued to attract attention of governmental and non-governmental organizations which have kept on supporting water related projects to solve such menace. Available information revealed that over 50 percent of the water projects within the informal settlements are non-operational. This is what motivated the study. This study sought to assess how various factors affect community participation in community based development water projects in the informal settlements of Nairobi City County and how such participation impact on the project outcome. The study was guided by two specific objectives which were to investigate the determinants of community participation in community based development water projects in Nairobi County and to determine the effect of community participation on project outcome in community based development water projects in Nairobi County. Primary cross-sectional data used in this study was collected using questionnaires administered to 48 respondents selected from three slum areas of Nairobi County which are Kibra, Mathare and Korogocho. Three water projects, one from each slum were randomly selected. The logistic regression estimation for achieving the first objective was conducted using five different levels of participation as dependent variable. The results showed a negative effect of sex on participation in project identification; sharing of ideas; deciding on location of the project and monitoring but positive on labor provision. Age influences all the five participation levels negatively except labor provision and monitoring. The effect of marital status is only positive on labor provision but negative to the rest while education has negative effect only on identification of water project as a need. The number of children has negative effect on participation at all levels. Moreover, the effect of employment is negative on labor provision but positive on all other participation levels. In regard to the second objective, it was noted that training as well as factoring in all ideas of members in decision making is very influential in ensuring that water projects meet the needs of the community. Furthermore, the higher the quality of the staff used to implement and manage the projects, the higher the likelihood of the water projects meeting the needs of the community.

CHAPTER ONE

INTRODUCTION

1.1 Background

Water is a natural resource that is essential for sustenance of life, ecological systems and an important resource both for social and economic development. Individuals, societies, governments, Non-governmental organizations, local and international organizations across economies have implemented water projects to promote safe urban water supply and sanitation over the years. However in most project areas, water infrastructures and water supply systems are not operational as most of the communities don't own the projects (Harvey & Reed, 2007).

Experts have proposed varied management mechanisms targeted at improving access to water in the developing world (Gleick, 2000;Pahl-Wostl, 2007). The most notable among the suggested models is the demand responsive approach as opposed to the traditional supply driven interventions (Naiga et al, 2015). The demand-responsive approach was popularized in Africa in the 1990s by major development organizations such as the World Bank. The concept is anchored on the idea of Community Participation (CP) which advocates for greater beneficiary involvement in water service production and management (Nicole, 2000). It includes beneficiaries taking the initiative to demand improved water services while at the same time taking a leading role in project design, implementation, development and sustainability. The demand-responsive approach requires beneficiaries to own the system by constantly making meaningful contributions either in the form of cash or labor to community-based water projects (Sara & Katz,

1998). It is premised on the belief that such involvement ultimately leads to better designed projects, better targeted benefits and more cost-effective and timely delivery of water. Most significantly, CP is seen as effective in terms of equitable distribution of water and in curtailing corruption and other rent-seeking activities (Kleemeier, 2000).

Several water projects in rural villages in Africa and Asia have been established based on the demand-responsive model with the following studies heralding its success (Kleemeier, 2000; Narayan, 1995; Prokopy, 2005). Few studies have attempted to determine the tenability of CP theory in explicating water production and management dynamics in urban informal settlements. Consequently, several gaps exist in knowledge of the value of this all important theory for efforts to improve water service delivery in such settlements. The main purpose of this study is to contribute to efforts addressed to filling these gaps. It accomplishes this objective mainly by exploring and evaluating the effectiveness of CP theory in improved water project outcomes in urban informal settlements.

In African countries, statistics show that operational failure rates range from 30 to 60% (Sutton, 2005). In Kenya, provision of water services in urban areas is by water and sanitation program (WSPs). Provision of water services in urban areas' informal settlements of Kenya is greatly hampered by planning challenges due to a high density of unplanned structures. This makes water kiosks as the preferred means of serving the informal settlement population.

Most of the informal settlements face water infrastructure and water treatment challenges. Maintenance of the water supply infrastructure and distributions neglected. This in turn affects successful implementation of water projects in the informal settlements. As a result, majority of the water projects have ceased to function or are operating at very low capacities affecting provision of water services to the community.

This phenomenon is common in Kenya whereby it's normal to observe nonfunctional water systems just a few years after implementation. One of the reason explaining the high failure rate of the water supply projects in developing countries is the exclusion of the community in managing their water systems (World Bank, 2002).

The conventional development approaches put more emphasis on inputs and technical services. This is because people are perceived too primitive and ignorant to effectively participate in solving their problems. The task of development is left exclusively to the development experts. Poverty is considered coming from people's illiteracy, lack of skills, ignorance and laziness. It's believed that high population Growth, disasters and depleted soils are the cause of poverty. Consequently, the blame is laid on the poor themselves and on the environmental and or natural conditions (Mulwa, 2004).

Participatory methods focus on approaches for identifying the poor people's concerns and ensuring they are involved in decision making. The community is faced with various challenges including poverty and lack of access to goods and services. In an attempt to provide services to the community, both the government and the donor community designs and implements projects to meet specific goals and achieve anticipated change.

Participation aims at correcting modernization development anomalies which have dominated the development era for decades. Both development planners and managers have come to a consensus that neither increased economic growth nor increased foreign aid can provide Solutions to the deepening poverty in developing nations.

Community participation is an important component in the design and implementation of development projects. The purpose of community participation in Community Based Development projects is to allow the poor to have more control over development assistance. In addition, community participation aims to reverse the existing power relations so as to create voice for the poor. This is expected to result in the allocation of development resources in a way that is more responsive to the needs of the poor, better targeting of poverty programs, more receptive government and improved delivery of public goods and services (Rao, 2003).

There are various models of participation such as extractionist, vertical, handout-induced and authentic model of participation. Community participation has faced many challenges including project planners involving people in projects that are already predetermined. People are persuaded or forced to contribute money, labor or material resources towards the cost of the project. The development planners are able to do this since there's no universally accepted definition of what entails participation. There is lack of consensus on the components of participation. Participation involves decision making processes and those in positions of power will always take advantage to exploit this vacuum.

Public participation is one of the national values and principles of governance under the Constitution of Kenya 2010. This is in keeping with the national aspirations expressed

into the preamble to the Constitution in which Kenyans commit themselves to establishing ‘a government based on the essential values of human rights, equality, freedom, democracy, social justice and the rule of law’. Such a government would not be possible without public participation. Under the Constitution, the relationship of the people and the state has been redefined. The Constitution clearly states that all sovereign power belongs to the people and can be exercised by them directly or through their democratically elected representatives. The Constitution further states that the power exercised by state agencies is delegated and can only be exercised in accordance with its provisions.

1.1.1 Community Participation in Water Projects

The first form of community participation in water and sanitation projects was of the extractive type and could be found in any project utilizing the traditional top-down or supply driven approach (SDA). The SDA was developed and implemented by international organizations such as WHO, UNICEF, and IDRC and by donor agencies, and national governments trying to provide basic services and help improve the situation of many developing countries around the world. It was thought that systems designed by engineers from developed countries would meet the needs of people in the developing world. The idea was not completely wrong. Indeed, these systems worked just fine for the better-off communities living in the cities of developing countries, where the service was highly subsidized by the local government. These governments set tariffs that were not sufficient to cover the real costs involved with the provision of the services, thus inadvertently creating a dependency on state funds to ensure the adequate operation and maintenance of the systems.

However, this approach was not successful in the rural and marginal communities of developing countries due to the lack of basic infrastructure and the limited economic resources the governments provided. Organizations tried, efforts were made, and money invested but the situation did not improve because after the withdrawal of the donor agency the system would soon fall into disrepair (Manyasa, 2009). There was no local organization, commitment, or true community involvement in project activities. Local inhabitants thought that the organization that designed, built, and implemented the system would take care of its operation and maintenance because in the end it was not their water and sanitation system. They did not have input in the planning and implementation stages of the projects at all.

Due to the negative results obtained with the SDA, international organizations and donor agencies including the World Bank and the UNDP realized the need for a more effective and responsive approach for the provision of water and sanitation. These organizations started to utilize a series of participatory methodologies that focus on getting intended beneficiaries actively involved in all stages of the project cycle. The fundamental principle is that community participation increases the probability of success and the sustainability of the projects implemented (World Bank, 1998). Participatory approaches evolved from other disciplines such as anthropology, sociology, research on farming systems among others and have tried to bridge the gaps between available technologies (hardware) and communities in need (Chambers, 1994). These approaches were developed during the International Drinking Water Supply and Sanitation Decade (1980s) and during the early and mid-1990s based upon the flaws identified and the lessons

learned while implementing the supply driven approach for the provision of safe water and sanitation services. The underlying principle was and continues to be the involvement of all stakeholders, especially the main users of the system, in all the phases of water and sanitation projects with the intention of improving their sustainability and probability of success. The primary objective was to be more responsive to the needs and preferences of the users and more sensitive to given local conditions and the surrounding environment. Another important characteristic of these participatory methodologies was the significant change in the role that users of the system played during the design, implementation, construction, operation, and maintenance of the systems. Participatory methodologies were developed to facilitate the process of empowerment and capacity building of the communities benefited by development interventions (World Bank, 1998). Good examples of participatory methodologies that have been used in the water and sanitation sector include the demand responsive approach (DRA); self-esteem, associative strength, resourcefulness, action planning, and responsibility (SARAR); participatory hygiene and sanitation transformation (PHAST); participatory learning and action (PLA); and participatory rural appraisal (PRA). In addition to the methodologies mentioned, there are four other participatory methods of great relevance, which are beneficiary assessment (BA), social assessment, stakeholder analysis and rapid rural appraisal (RRA). These four methods can be used in combination with the five methodologies or the other methods and will generate crucial information for the design and implementation of water and sanitation projects and programs.

Community participation in water projects involves an act of allowing participants as stakeholders in the water project development. In this case, the participants are directed towards a common goal, which is shared by others within the development process. This is what is referred to as popular participation in the development process, and which has been thought to be a positive move in the running of affairs that directly concern and affect people (Rostow, 1990). Internationally, there have been some attempts to operationalize and extend the participation of people in water projects' development process. Over the years, participatory development approach has been a major concern for United Nations Agencies such as the International Labor Organization (ILO), World Health Organization (WHO), Food and Agriculture Organization of the United Nations (FAO) and United Nations Educational Scientific and Cultural Organization (UNESCO).

Apart from the United Nation's systems, championing of people's involvement in the water project process has been adopted by Non-Governmental Organizations (NGOs) and Community and Faith Based Organizations. In Africa, the participatory theme in the development process has become very prominent, such that development is virtually defined in terms of people's participation. In Kenya, as in most other African countries, development policies seek to improve the conditions of the majority of poor communities. The Sessional Paper No. 10 of 1965 developed after independence on African Socialism and its Application to Planning in Kenya, under scored the importance of participation by all Kenyans in the development process. The paper defines community participation in terms of social responsibility by society and its members in the struggle for prosperity. Additionally, the Kenya Development Plan of 1989-1993 carried the theme,

“Participation for Progress” and emphasized on the importance of tapping the energies of individuals and various socio-economic entities and institutions in the economy.

Attempts have been made to build institutions beyond the nation state using the concept of the community in abroad sense since the 1980s such as the East African Community (EAC), the Southern African Development Community (SADC) and the Economic Community of West African States (ECOWAS). In Kenya, attempts have also been made in building communities at the national level on the basis of regions such as the Mount Kenya region, the Western region, the Coastal region etc, in addition to creating communities at the local grass root level such as wards, villages, clans, tribes etc. All this processes of incorporation have tended to ignore and bypass the opinions of the citizens. Majority of the people do not feel they live in their nation, rather they see themselves living in their communities. There is a strong attachment to their communities since this is where they seek and find work and raise their families. Some of them are forced to migrate and become part of the new urban communities as they seek jobs, education and fortune elsewhere (Graaff, 2001).

According to Mutisya (2010), water is an important resource and a key ingredient for growth and prosperity of mankind. The Sustainable Development Goals (SDG) aims at safeguarding accessibility and sustainable management of water and sanitation for all by 2030 (Arnesson, 2014).

Despite universal acknowledgement of the role of safe water in alleviating poverty and economic development, access to this commodity is still low. One of the reasons for this is inappropriateness of water supply systems. Globally, over two million people lack

access to safe water daily (Smith & Marin, 2005). Africa is the most affected region with over 48% of its population lacking access to this precious commodity. Moreover, among the 55 countries recording domestic water supply of below 50 liters per capita daily, 35 of them are from Africa (Yahaya, 2004).

Rao and Ibanez (2001) in a study on operational failure rates of water projects in African countries found out that it ranges from 30% to 60%. In another study, it was found that 35% of improved community water supply projects in Sub-Saharan Africa are non-operational and this scenario is no exception for Kenya (Ababa, 2013). Other studies including by Mwakila (2008) established existence of a strong relationship between participatory approaches and sustainability of water services. According to Galasso (2003), 55% of all the water supply projects in Tanzania, Uganda and Kenya are non-operational.

Kenya experiences serious challenges with regard to water services (water and sanitation). Despite the government and development partners' efforts of investments provided in the past years, the existing facilities have continued to deteriorate. Furthermore, the facilities cannot meet the increasing demand caused by the rising population both in rural areas and in the rapidly growing settlements of the urban poor. Although safe water and basic sanitation should be regarded as a basic human right implying water should be accessible and affordable to all, the reality on the ground is not so (Republic of Kenya, 1989).

While the Kenyan government has set ambitious targets to offer access to safe drinking water and sanitation facilities to 85 percent of the population by 2015 and 100 percent by

2025 in line with Sustainable Development Goals (SDGs), the country still faces significant challenges in attaining the water and sanitation SDGs (USAID, 2012). For example, nearly all funds for water development are committed to communal water points (e.g., bore wells) yet over 36 percent of these are dysfunctional at any given time (Roy, 2007).

In Kenya, estimates of piped water coverage stand at 47% nationally (The Republic of Kenya, 2007). Despite Kenya having about 680 systems of piped water which supply to over 740,000 water connections across the country, majority of these connections are inactive as a result of poor maintenance and management (Republic of Kenya, 2007). Over 41 percent of the Kenyan population lack access to safe drinking water. They rely on unprotected wells, springs or unofficial water providers (Institute of Economic Affairs, 2007).

Vanloon and Droogers (2002) in their evaluation of water supply systems in Kitui, found out that people are hostile to future water projects because of previously experiencing unsuccessful water projects. Hence for successful sustainability of the community water project, there is need to educate and train the community on the type of technology used and how to use it. It's also important to involve the community in choosing the location of the water project.

Rimbera (2012) in a study of the determinants of water projects sustainability in Nyeri County, Kenya found out that all the independent variables: community participation in project implementation, community training, technology used in extraction of water and

the distance to water access point significantly influenced sustenance of community water projects.

It's common in Kenya for water systems not to function fairly a few years after implementation. According to Roy (2007), involving the community strongly impacts on the sustainability of projects. Community members' involvement can be in terms of money, labor, material, equipment, participation in decision making, and expression of demand for water and selection of management structures within the community (Roy, 2007).

Over 2 million people live in Nairobi's informal settlements, making up over half of the capital's population (Amnesty International, 2009). One of the reasons for the rapid growth of informal settlements in Kenya is urbanization (Aida, 2011). The informal settlements suffers from a host of fundamental challenges including poverty, lack of access to clean water, poor sanitation, poor housing, human and solid waste management, poor health care, insecurity and lack of energy. In 2007, access to water dropped to 20 percent in the informal settlements (Republic of Kenya, 2007).

Ninety percent of the residents in Nairobi informal settlements have no access to piped clean water, or essential sanitation services. Out of those with access, 20% access water from the community based water supply projects established by community organizations through support from government and donors while 80% are served by private water vendors. Furthermore, majority of these community water projects are not functioning

yet donors and the government continues to build additional water projects without finding out why the existing ones are non-functional (Mompoti et. al., 2000)

Most of these water projects are water kiosks or piped water that is managed by project committees or leaders from communities. While these projects have helped to meet the demand, there is still a problem of sustainability since majority of the projects operate below full potential with some breaking down and not being fixed (Mutisya, 2010). This are some of the questions that the study seeks to answer by evaluating the factors impacting successful water project outcomes in the informal settlements after withdrawal of external support.

1.1.2 Water Projects Management in Nairobi City County

Project management is a key factor in the success of any project (Binder, 2012). Project managers employ various management tools to plan and implement water projects with the objective of optimizing the probability of success. There are several factors that influence effective water project management such as type of controls communication, planning activities, organization's structure, feedback mechanisms, quality of the project and the overall managerial actions.

Deployment of project management techniques is critical in the water projects construction in Nairobi City County for effective coordination and utilization of labor, skills, material resources used in the setting up of water projects require application of proper project management techniques. As a result, project management is a key ingredient in water project sustainability (Phua and Rowlinson, 2013). Sustainability of

water projects is a major issue for communities particularly in middle and low income countries (Gruen, 2012).

The sustainability of water projects is usually understood as a complex and tenacious problem facing societies, governments and international development partners (Gebrehiwot, 2012). According to UNICEF, about half of the developing world's population of about two and half billion people do not have enhanced water facilities, and over eight hundred million people still use water that is unsafe for consumption. This is attributed to the unsustainable water and sanitation projects that are initiated by both government and private organizations.

The government of Kenya, local and international organizations and the community has made concerted efforts to address the water shortage by implementing water projects mostly in the informal settlements which experience water shortage. The focus aims at building the capacity of communities to build, operate and manage their water facilities sustainably.

1.2 The Statement of the Problem

Donor agencies and the Kenyan government are using community participation approach to implement water projects in the informal settlements. Under the approach, the community is supposed to participate in the water project identification, implementation and maintenance either autonomously or with the support of the funding organization's staff. It's expected that the benefits accruing from the water project is enjoyed by the community, scaled up and sustained. According to Nturibi (2006), there is evidence that

either the water projects are not meeting the anticipated outcomes or not in operation at all with the community completely relying on the project financier.

An analysis of datasets in Nairobi County by Nturibi (2006) indicate that just 50% of the implemented water projects are functional. This is attributed to the fact that the Government and other development agencies do not consult local people on long term sustainability constructs such as operations and maintenance and financial management after termination of financial support. Majority of the water project implementing organizations have an assumption that illiterate communities cannot possibly follow the proceedings of participatory planning and therefore cannot possibly make any meaningful contribution. In most cases, the initial projects budgetary allocations do not normally cater for the participation of a broad constituency such as beneficiary communities. As a result, communities continue to be excluded and pushed further into the periphery (World Bank, 2010).

The fact that the community lacks a sense of ownership in the water projects and in many instances, the community approaches the project financiers for more financial support to be injected into the water projects. In addition, majority of the water projects are non-operational. Possible explanations for the low project outcomes can be attributed to lack of effective community participation. This study sought to evaluate the factors affecting community participation in community based development water projects in Nairobi County and their impact on project outcomes. Specifically, the study sought to investigate the determinants of community participation in community based development water projects in Nairobi County, establish the effect of community participation on project

outcomes in community based water development projects in Nairobi County and derive policy recommendations based on the findings.

1.3 Research Questions

The study sought to answer the following research questions:

- i. What are the determinants of community participation in community based development water projects in Nairobi County?
- ii. What are the effects of community participation on project outcomes in community based development water projects in Nairobi County?

1.4 Objectives of the Study

The overall objective of this study was to assess the factors affecting community participation in community based development water projects in Nairobi County and their impact on project outcomes. The specific objectives were:

- i. To investigate the determinants of community participation in community based development water projects in Nairobi County.
- ii. To determine the effect of community participation on project outcome in community based development water projects in Nairobi County.

1.5 Significance of the Study

This empirical analysis of community participation and project outcomes in Kenya is valuable in several ways. The findings of this study form a basis upon which prevailing efforts at promoting participatory community development approaches in Kenya can be assessed and refocused. Recommendations drawn from the findings may assist planners

and stakeholders in community development in Kenya, to formulate more effective interventions. This may in turn promote improved project outcomes and economic development for individuals, households and communities. The study findings also provide a basis for additional research on the under-researched subject of community participation as a factor in community development in Kenya.

1.6 Scope of the Study

This study was undertaken in six water projects in Nairobi County. The choice of this County was motivated by several factors. First, Nairobi County typifies rapid urbanization and population explosion growing from a population of 266,794 in the census of 1962 to 3,375,000 in the census of 2009. Secondly, Nairobi County exhibits relative homogeneity in climatic, political and demographic characteristics. This was an important consideration for control purposes in data analysis. Thirdly, the County is largely urban with 60 to 70 percent of the residents approximated to be living in informal settlements. This population is faced with abject poverty, overcrowding, lack of water, lack of proper housing, and poor drainage systems among other challenges. Projects in the water sector have been implemented to address water challenges in the informal settlements. In addition, the researcher's familiarity with the area was expected to be leveraged to minimize communication challenges and facilitate smooth and efficient data collection in addition to researcher's resource constraints. This made it an ideal ground for this study, whose main focus was on water projects in Nairobi County.

1.7 Organization of the Study

Chapter one of this paper presents the background to the study whereas theoretical and empirical literature are presented in chapter two. The research methodology is covered under chapter three. Chapter four presents and discusses the empirical findings. Chapter five which marks the end of this paper summarizes the paper, concludes it and presents policy recommendations.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter presents a review of literature on participatory approaches. It also provides theoretical literature on community participation and project outcomes. Both theoretical and empirical literature is reviewed and an overview of literature is also presented.

2.2 Theoretical Literature

Towards the end of the 60s theorists recognized that strategies for poverty alleviation had been largely ineffective in providing for the poor and that poverty was intensifying in many Third World countries. Natal(2000) argued that planned strategies aimed at transforming the poor intrinsically by educating them in new techniques and values had failed as a result of local elites taking the community-workers positions, lack of monetary support from the government to the communities, disruption of traditional practices and failure of new ones to work properly.

Participatory approach to development arose in response to the failures of top-down development methods. According to Chambers (2004), the main objective of the participatory paradigm to development is to empower the poor to allow them control their livelihoods (Narayan, 2014).

2.2.1 Basic Needs Approach (BNA)

This approach stresses the necessity to prioritize the basic needs of the people and the importance of involving the people in project implementation to ensure that their needs

are identified. Originally, Basic Needs was understood as food, clean drinking water, health, education, clothing, and housing. Later, non-material needs such as security, self-determination, and cultural identity were also included. The BNA recognizes these needs by focusing on community participation and effective involvement of direct beneficiaries in projects. The BNA approach became so influential in policy planning and was adopted by most of the development agencies as a tool for project implementation.

Within the BNA, there emerged the radical and liberal approaches. Radicals emphasized on local people participation especially the poor and powerless as central to influencing their own development. Liberals perceived participation as a way of giving voice to the people in the decision making process. They however ignored everything that related to the redistribution of wealth. Their main interest was in increasing the long-term cost-effectiveness through local community financing and volunteering labor. The World Bank and other development agencies followed this approach (Sadiullah, 2006).

2.2.2 Beneficiary Participation Approach

This approach reduced the differences between “radical” and “liberal”, as scholars from both sides began to agree that beneficiary participation was desirable for increased social welfare and improved democracy. The radical supposed that this would make people more self-dependent liberating people from servitude (Rao, 2003, Mulwa, 2004). For the liberals, it was the ideal way of getting relevant information from beneficiaries and thus making projects more efficient. This would also lead to local economic development, creating an entrepreneurial attitude and cultural change. Both groups in spite of their

differences saw participation as a tool for fighting poverty, improving the quality of life for the poor and bringing psychological benefits to participants (Chambers, 2007).

2.2.3 Alternative Development Approach

The actualization of development that is people driven as opposed to government-donor-Non-Governmental Organization (NGO) led to a more radical view (Ife, 2002). An ideal alternative approach to development should assume bottom-up development as opposed to top-down development Chambers, (2005) and Durlauf (2001), emphasize that people driven development can be achieved through redesigning practices and thinking associated with development aid. Development has to begin with the people who understand their livelihood systems better. The purpose of alternative development is to empower the disadvantaged masses over the structures that govern their lives. This will build their capacity to be able to assume their rights and obligations to drive their own future (Freire, 2013).

2.2.4 Arnstein's Ladder for Citizen Participation

Arnstein typology of participation (1969) is one of the earliest and most cited. The ladder has eight participation levels sub divided into three levels: non-participation, degrees of tokenism and degrees of citizen power (Table 2.1). For the first two tiers, there is no participation as power holders make majority of the decisions. At the degree of tokenism, there is limited participation with people only notified. However, consideration of their views is not guaranteed when decisions are made. Local people are involved in decision-making at the degree of citizen power which is the highest level of participation. Fisher (2000) disputes that rarely does this stage occur as participation occurs mostly at the lower levels of the ladder.

Table 2.1: Citizen Participation Ladder by Arnstein

8	Citizen control	
7	Delegated power	Degree of citizen power
6	Partnership	
5	Placation	
4	Consultation	Degrees of tokenism
3	Informing	
2	Therapy	No participation
1	Manipulation	

Source: Arnstein (1969)

2.2.5 Cohen and Uphoff's Theory of Participation

Cohen and Uphoff (1980), suggest that participation can be assessed on the basis of who participates and how participation occurs (Table 2.2). Participation can involve planning and decision making, implementation and evaluation. Some of the factors that affect participation include the plan, the incentives, the arrangement, the scope and period for participation, and the empowerment level of the people (Cohen & Uphoff, 1980).

Table 2.2: Participation framework by Cohen & Uphoff

Types of participation	Decision-making	Initial, on-going decisions and operational
	Implementation	Resource contribution, administration, coordination & mobilization
	Benefits Evaluation	Personal, material and social
Who participates	Local residents, local leaders, Government personnel & Foreign Personnel	Characteristics: Age, Sex, Family Status, Education, Social divisions, Income Level, Length of residence, Land tenure status
How participation occurs	Basis participation	Impetus, Incentives
	Form of participation	Organization Direct/Indirect
	Extent of participation	Time involved Range of activities
	Effect of participation	Empowerment Interactions

Source: Cohen and Uphoff (1980)

2.2.6 Ife's Theory for Community Development

Ife (2002) came up with a more advanced view of development by defining participation as equality stressing the political nature of development. To achieve development, the interventions should engage with the systems and structures that govern people, their development process, and project outcomes.

Ife (2002) proposed employing various approaches to realize development. The approaches included policy and planning, social and political action, and education and consciousness raising. In the context of CBD water projects, participation is needed to bring the disadvantaged groups into taking control of their own development. The community has to manage and make decisions moving from the implementation level (Table 2.3). Studies demonstrate that interactive participation is more effective as compared to participating in information sharing /self-mobilisation (Narayan, 1995).

Table 2.3: Typology of participation

Level of Participation	Characteristics
Nominal	People access membership, and legal access
Passive	Participation is by being informed or attending meetings without being allowed to speaking up
Consultative	Locals are consulted. No guarantee of taking decisions based on local people's opinions
Activity-specific participation for material incentives	People form groups and contribute resources. Participation is either interactive but decisions are already made by external agents
Active	Participation is by people expressing opinions or initiating projects.
Interactive	People's voice their opinions and influence decisions. They manage and maintain resources and structures
Self-mobilisation	People take initiatives autonomous from external agents.

Source: Adapted from Agarwal (2001)

2.2.7 Stakeholder Theory

This theory was recommended by Miles and Friedman (2006). According to the theory, there are two factors that affect stakeholder involvement in the project, the association authenticity and partner trustee standards. The association authenticity is guided by the project administration contending for association by putting into consideration the benefits to the partners, the privileges of various stakeholders and additionally their preferences in making choices that influences their welfare significantly. Jensen (2002) considers the connection between target capacity and partner hypothesis as influenced by the esteem positively. Project administrators should therefore focus on building the esteem of the community and project stakeholders.

2.2.8 Legitimacy Theory

Legitimacy theory is developed from the idea of authoritative authenticity, which is a condition that exists when a substance's esteem framework is compatible with the esteem arrangement of the bigger social arrangement of which the element is a section (Cedric, 2013). Genuineness proposes perceptions on the basis of nearness, activities and project impact while putting into consideration the central social regards and establishments. There exists a relationship between the regard game plan of both the affiliations and the overall population. Genuineness exists at the legitimate level when there is likeness among affiliation and a general public's esteem framework.

According to Brown (2007), authenticity depends on partners' recognition. Edwil (2009) alludes that authenticity is the association of man in the general public doing lawful and worthy things in line with a given strategy. Maintaining project activities in associations

can be accomplished if the project administrators focus on training the community on project administration. Consequently, project viability is affected by the level of staffing and planning.

From the above hypotheses, it can be reasoned that supportability of ventures in associations, must be accomplished by the way administration adheres to the standards of administration. As it were, adequacy will dependably rely upon the degree of association, staffing and planning. These are the components that are the center in the examination under this investigation.

2.3 Empirical Literature

Empirical evidence indicates that that forty percent of new projects fail within the first few years after coming to an end of the initial funding (Savaya et al., 2008). Programs that are not unsustainable have little impact on the local communities in the long term, they do not satisfy community needs, are a waste of human, financial, and start-up investments, and can reduce the trust and support of the community for other future projects.

A study examining the role of local participation in water projects conducted by Imboden (1977) studied 11 projects in seven African countries and found out that repairs took less time in projects that had high community participation. However, there was no relationship between the level of participation and the aggregate percentage of facilities out of order (Miller, 1978). Barra (1978) in examining the effect of participation in water projects studied 137 rural water supply systems in Mexico. The study found out that there

exists a relationship between participation and functional facilities. In addition, schemes where users offered capital cost contributions recorded a high rate of timely tariff payment as compared to schemes where they had not contributed (Bennel, 1979).

The Philippines National Irrigation Authority (NIA) ran irrigation projects simultaneously: one was developed with the component of participation of farmers while other one excluded farmers' participation. The project which involved participation of farmers had higher productivity, improved resource conservation and significant commitment of local groups. In addition, participatory projects recorded yields of between 10-22 percent higher as compared to the ones which had no participation. Overall, farmers' participation led to the irrigation projects being more likely to be maintained resulting in more functional systems (Roy, 2007).

Isham, Narayan, and Pritchett (2003) in an effort to determine whether participation leads to project outcomes studied one hundred and twenty one water supply projects in rural areas and case studies in Kenya and Indonesia. The findings showed that increasing participation leads to better project outcomes. Khwaja (2003a) sort to find out the effect of increasing community participation in non-technical project decisions on project maintenance. The results suggest that there exists a positive relationship between community participation in nontechnical decisions and project outcomes. Also, the reverse is true for community participation in technical decisions.

Figures from a study on water projects from different African countries reveal operational failure rates of ranging from 30 to 60 percent (Rao and Ibanez, 2001). A study on local

participation in water supply and basic sanitation services in rural regions of Tanzania by Mwakila (2008) indicated a strong association between participation approach and sustenance of water services. Rimbera (2012) in an attempt to evaluate factors that determine sustainability of water projects in Nyeri County, Kenya found out that community participation in project implementation significantly influenced sustainability of community water projects.

Building on Narayan's work, Sara and Katz (2011) using a regression model to estimate the relationship between project rules and sustainability of water supply systems in ten projects in six countries in 2010 found out that demand-responsiveness affects sustainable service delivery positively. Other factors that affected sustainability included involving house hold members directly as opposed to using representatives (Sara, 2011).

A practical implication of participatory approach is it has to begin with the people who know most about their own livelihood systems. It will have to value and develop their knowledge and skills, and put into their hands the means to achieve self-development. This requires a reshaping of all practices and thinking associated with the development assistance. (Pretty and Guijt, 1992).

2.3.1 Community Development Project Outcomes

Participation of the community in the project selection, design, execution and maintenance is critical to the sustainability of CBD projects. Members of the community may make contributions in monetary form, labour, raw materials and equipment. The

community may also be involved in decision making meetings related to the projects (Davis & Lyer, 2002).

An analysis of available literature shows that effective community participation leads to projects that satisfy the needs of the poor as a result meeting the government and donor requirements. This leads to improved public service delivery, well maintained assets, and a more knowledgeable and informed citizenry (Mansuri & Rao 2003). Participation makes it possible to access project information. A study by OECD, (2002) highlights some of the benefits of community participation including the projects the ability to obtain project information and make informed choices based on the needs of the community. This results in increased project benefits and better development project outcomes.

Harvey and Reed (2007) argue that the best way the community can obtain bargaining power and exert influence in the decision making process is participation. If the community actively participates in the project, they create a greater impact. This is explained by the fact that participation guarantees high motivation for participant leading enhanced benefits for all community members.

In Pakistan, the Orangi Pilot Project was instituted to address sanitation problems in Karachi, one of the largest slums. The community was grouped into committees and advanced credit to purchase raw materials for building their sewage facility. Approximately one hundred thousand (100,000) households are currently beneficiaries of these sewage facilities. Other benefits accruing from this project include family

planning, health, housing and community-funded education system. Furthermore, the community has established micro-enterprises, work centers, reforestation, and other activities (Gebrehiwot, 2012). These projects have reduced infant mortality rate in the district from 130 per 1,000 live births in 1980 to 37 in 2011 (Binder, 2012).

In Bangladesh, Grameen Bank, a pioneer community-based bank, lends loans to the landless and poor people. The bank's unmatched success is anchored on the notion that no matter how poor borrowers are, they understand both their needs and potential more than any other person (Chowdhury, 2006). The Bank has helped change the lives of peasants by providing loans to acquire livestock as well as farm. The Grameen Bank clients who in essence lack collateral have borrowed about \$1,662 million, and in spite of their small revenues, they have repaid an astounding 98 % of the money (Fuglesang & Chandler, 2011).

An investigation by Narayan (2011), demonstrates that support was the biggest factor influencing achievement and upkeep of 121 country water supply projects in 49 nations in Africa, Asia and Latin America. According to the study, the best outcomes were accomplished in groups that associated with basic leadership in all project phases. An assessment of 25 World Bank supported projects revealed that 13 of them had failed a couple of years after bringing the project funding to an end. The inability of project implementers to involve local community in selection and execution of the project was identified as the primary cause for this water project failure (Yang & Jackson 2011).

Studies have established that project management affects project outcomes. How the project implementers manage a project determines how the community treats the project especially after project completion. Mulwa, (2014), emphasized the significance of strengthening the sense of ownership among the beneficiaries of the project in the community with a view to increasing their motivation to sustain it. It is critical to have a robust sense of ownership and honest participation in the project design, implementation, monitoring and evaluation to ensure successful implementation and sustainable benefits.

2.4 Critique of the Literature Reviewed Relevant to the Study

Despite empirical evidence supporting community participation as key to project sustainability, there is much lesser agreement on whether community participation leads to improved project outcomes.

Isham, Narayan, and Pritchett (1995) study on water supply projects in Sub Saharan Africa find out that despite communities being successful initially in establishing community projects, in most cases, the community does not have material resources and the networks to carry on. The findings indicate that sustenance of community services relies on external agents most of the time. It seems to suggest that active community involvement cannot influence project outcome positively.

2.5 Research Gaps

While projects are initiated and implemented by outsiders, external agents cannot recognize the priorities of the local people accurately. Neither can they understand the most effective ways of meeting the identified priorities. This leads to creation of highly

inefficient systems depriving the local people of their responsibilities. This is a key factor that should have been put into consideration. (Pritchett 1996).

In addition, the studies did not consider how community participation affected project outcomes in technical and non-technical decisions.

CHAPTER THREE

METHODOLOGY

3.1 Introduction

This chapter focuses on the research methodology employed in the study. The sections covered include: the design of the research, conceptual and theoretical framework, empirical model, definition and measurement of variables, site of the study, target population, sampling technique and sample size, research instruments, data types and sources, pilot study, data processing and data analysis.

3.2 Research Design

The study employed a non-experimental qualitative research design using cross-sectional primary data. The data was collected using structured questionnaires administered to respondents who were or are participants in the selected community based development water projects in the informal settlements within Nairobi County, Kenya. The study used non-experimental research design since this design denies the researcher an opportunity to influence the outcome. That is the researcher lacks the ability to control and manipulate the variables like in the case of experimental research design.

3.3 Conceptual and Theoretical Framework

The theoretical and empirical literature reviewed present various theories and empirical works that created a framework for understanding the relationship that exists between community participation and project outcomes. Participation theories advanced by Cohen and Uphoff (1980) was used in this study. Cohen and Uphoff (1980) in their analysis of the role of participation on development projects classified participatory activities into

decision making, implementation, benefits and evaluation. The areas encompass who participates, type of participation, how does participation take place and when and where does it occur. Figure 3.1 represents the conceptual framework which was developed for this paper.

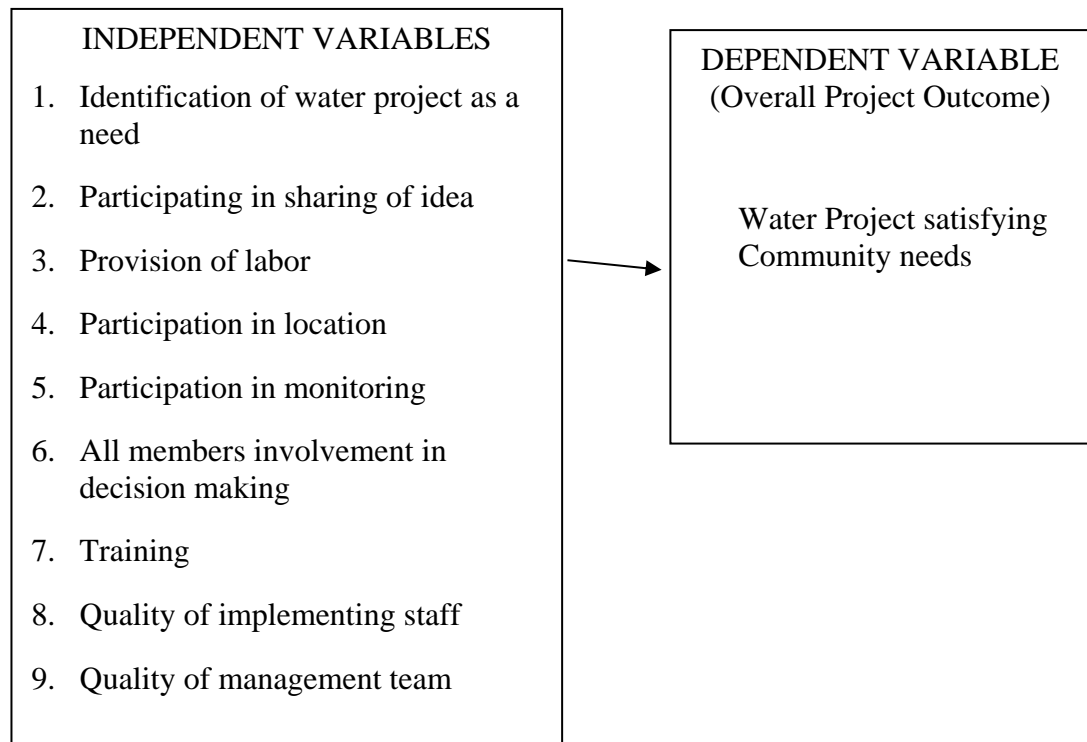


Figure 3.1: Conceptual Framework for the Relationship between project outcome and participation

Source: Researcher 2019

From Figure 3.1, the first seven independent variables relate to participation while the last two are non-participation variables. Ideally, three project phases which are planning, implementation and maintenance were identified. The nine exogenous variables considered in Figure 3.1 fall in the aforementioned three phases. Participation at the planning phase takes the form of coming up with the original project idea and designing the project. At the implementation stage, the community participates in the redesign and

implementation of the project while at the maintenance stage, the community is involved in the maintenance of the project. The general approach we followed was intended to explain why a particular project outcome was successful or unsuccessful. The focus of the study was on the determinants of community participation and how the determinants affect project outcomes in CBD projects in Nairobi County.

In conceptualizing the model, the study treated project outcome majorly as a discrete variable with two major outcomes; that is if the project was satisfying the water needs of the communities or not. The relationship between the various independent variables on project outcome was established using frequencies and percentages. This was focused on achieving the second objective. Before considering how the various variables as conceptualized in Figure 3.1 affect project outcome, the author estimated in the first objective how different attributes of individuals affect their participation in the projects at different levels. Herein, only the five levels captured by the first five independent variables in Figure 3.1 were investigated.

To achieve the first objective, which was to estimate how various variables affect community participation at different levels, participation was modelled as discrete variables with two choices and thus modeled to suit estimation using binary choice model. Consequently to achieve the first objective, this study used a logit model (otherwise a probit model could have yielded the same results) to estimate how various features of respondents affect participation in different activities/levels of water projects. The specification of the binary model is given by:

$$P(D = 1 | x) = G(X\beta) \quad \text{where } 0 < G(X\beta) < 1$$

$$G(X\beta) = G(\beta_0 + \beta_1 x_1 + \dots + \beta_k x_k)$$

$$\text{Where } X\beta = \beta_0 + \beta_1 x_1 + \dots + \beta_k x_k \quad (3.1)$$

In equation (3.1), X is an $n \times k$ vector of observations on explanatory variables with $x_1 + \dots + x_k$ capturing different characteristics of individuals that affect participation. β is a $k \times 1$ vector of coefficients. Equation (3.1) is the theoretical model upon which an empirical model for achieving the first objective was developed. Notice that the paper as specified in the first objective does not focus on just participation in general but on participation at a particular level since all the respondents were participants.

3.4. Empirical Model

The empirical model estimated was developed from the theoretical model represented by equation (3.1). In order to achieve the first objective, the paper identified five major participation levels which are the equivalent of the first five independent variables in Figure 3.1. These five variables were exogenous while assessing how different factors affect project outcome but endogenous during the estimation of how such participation is affected by respondents' characteristics. It is worthwhile noting that only a single empirical model was developed for estimating participation but actual estimation was done five times using the same model where each case involved a different participation level. As mentioned earlier, in estimating participation, the paper treated it as a variable with two possible outcomes (participated at certain level or did not). This is what led to the theoretical model captured by equation (3.1). Based on equation (3.1) and assuming a logistic distribution, the logit model estimated can be expressed as:

$$G(X\beta) = \frac{\exp(X\beta)}{1+\exp(X\beta)} = \Lambda(X\beta) \quad (3.2)$$

Where β is a $K \times 1$ vector of coefficients while X is an $n \times K$ vector of exogenous variables affecting participation

Through substitution of variables specific to this study into equation (3.2) where $k = 7$ gives equation (3.3) expressed as:

$$\Lambda(x\beta) = \frac{\exp(\beta_0 + \beta_1 x_1 + \dots + \beta_7 x_7)}{1 + \exp(\beta_0 + \beta_1 x_1 + \dots + \beta_7 x_7)} \quad (3.3)$$

$$\text{where } 0 < \Lambda(x\beta) < 1$$

In equation (3.3), x_1 to x_7 represent *SEX, AGE, AGESQUARE, MARITAL, CHILDREN, EDU and EMPLOYMENT*.

Estimation of equation (3.3) helped to achieve the first objective.

Achieving the second objective which directly relates to the conceptual framework in Figure 3.1 involved use of frequencies and percentages to draw a link between project outcome measured as to whether the project satisfied the needs of the community or not (NEEDSMET) and the nine independent variables namely: *IDENTIFY, SHAREIDEA,*

LABOR, LOCATIONDECISIONMONITORING, ALLMEMBERSDECISION, TRAINING, IMPLEMENTINGSTAFFQUALITY and MANAGEMENTTEAMQUALITY. All the

variables are described in the next sub-section.

3.5 Definition and Measurement of Variables

Table 3.1 presents a summary of the definition and measurement of variables used in this study.

Table 3.1: Definition and Measurement of Variables

Variable	Description/measurement
<i>ALLMEMBERSDECISIO</i>	It's a measure of if all project participants were involved in decision making and project activities (dummy 0=No, 1=Yes).
<i>TRAINING</i>	Indicates if participants were trained in any water project related activity (Dummy 0=No, 1=Yes)
<i>IMPLEMENTINGSTAFFQUALITY</i>	Quality of the staff that is implementing the project (Dummy 1=Very skillful, 2=Average, 3=Poor, 4=Very poor)
<i>MANAGEMENTTEAMQUALITY</i>	Overall quality of the team managing water project (Dummy 1=Very good, 2=Good, 3=Average, 4=Poor, 5=Very poor)
<i>SEX</i>	Sex of the respondent (Dummy 1=Male 0=Female)
<i>AGE</i>	Age of the respondents in years
<i>AGESQUARE</i>	It is the age squared
<i>MARITAL</i>	Marital status of the respondent (Dummy 1=single, 2=Married 3=Separated 4=Divorced 5=widow/widower)
<i>CHILDREN</i>	No of children the respondents has (1, 2, ...)
<i>EDU</i>	Highest Level of formal education completed (Dummy: 1=No education, 2=primary, 3=Secondary, 4=Tertiary/University 5=Other)

<i>EMPLOYMENT</i>	Economic activity of the respondent (Dummy 1=Unemployed 2=wage employment 3=Casual employment 4=Business person 5=Other)
<i>IDENTIFY</i>	Respondent participated in identification of water project as a need (Dummy 0=No, 1=Yes)
<i>SHAREIDEA</i>	Respondent participated in sharing of water project ideas (Dummy 0=No, 1=Yes)
<i>LABOR</i>	Respondent participated by providing labor for water project (Dummy 0=No, 1=Yes)
<i>LOCATIONDECISIO</i>	Respondent participated in deciding the location for water project (Dummy 0=No, 1=Yes)
<i>MONITORING</i>	Respondent participated in monitoring the water project (Dummy 0=No, 1=Yes)
<i>NEEDSMET</i>	Water projects satisfied the need of the community (Dummy 0=No, 1=Yes)

3.6 Study Area

This study was undertaken in Nairobi County, which is one of the forty seven counties in Kenya. Nairobi is the smallest and also the most populated county in Kenya. The headquarters are in Nairobi, which is also the capital and the largest city of Kenya. The County is divided into nine sub counties and thirteen constituencies. Nairobi County has an estimated population of 3,138,369 people.

The choice of this County was motivated by several factors. First, Nairobi County typifies rapid urbanization and population explosion with a population of 266,794 as per the 1962 census and a population of 3,375,000 according to the 2009 census. Secondly, the researcher's familiarity with the area was expected to be leveraged to minimize

communication challenges and facilitate smooth and efficient data collection. Thirdly, the County exhibits relative homogeneity in climatic, political and demographic characteristics. This is an important consideration for control purposes in data analysis. Fourthly, the County is largely urban with approximately 70 percent of the city residents estimated to be living in informal settlements. This population is faced with abject poverty, overcrowding, lack of water, lack of proper housing, and poor drainage systems among other challenges. Projects in the water sector have been implemented to address water challenges in the informal settlements. This made it an ideal ground for this study, whose main focus was on water projects in Nairobi County.

3.7 Target Population

The study was conducted targeting the various water projects that existed within the informal settlement of Nairobi. Information on the exact number of water projects available in the informal settlements of Nairobi was so scanty making it difficult to establish the true population size.

3.8 Sampling Technique and Sample Size

To identify the sampled out project for investigation, the study applied simple random sampling where three informal settlements (Kibra, Mathare and Korogocho) were selected. One water project was also selected randomly from the three slums implying that a sample size of three water projects was arrived at. These projects were Olympics, Laini Saba and Nairobi Clean from Kibra, Mathare and Korogocho respectively. To collect data on the three water projects, the researcher identified at least one of the participants in each project and through referral other participants who formed the

research respondents were identified. In total, the study collected data from 48 respondents distributed as: 20 from Olympic connection (Kibra), 16 from Laini Saba (Mathare) and 12 from Nairobi Clean (Korogocho).

3.9 Data Type and Source

In order to achieve its objectives, this study relied on cross-sectional primary data pertaining water projects found in informal settlements of Nairobi. To qualify as a respondent an individual must have participated or is participating in the project at least at some level.

3.10 Research Instruments and Data Collection

To obtain the purely primary data required for this study, the researcher used questionnaires with both open and close ended questions. The questionnaires were successfully filled and collected from 48 respondents with the help of research assistants.

3.11 Pilot study

A pilot study was undertaken one month before the main study. It was used to test reliability, validity and practicability of the research instruments. The pilot study findings helped to refocus the questionnaires to ensure that they facilitated collection of adequate and reliable data.

3.12 Data Processing and Analysis

The collected data was cleaned, coded (for qualitative data) and refined before inputting into the computer package for analysis. To achieve the first objective which involved determining the effect of community participation on project outcomes in community based development water projects in Nairobi County, equation (3.3) was subjected to a

logistic regression estimation and supplemented with descriptive statistics. The second objective which was to investigate the determinants of community participation in community based development water projects in Nairobi County was achieved through the logistic estimation of equation (3.5). In the estimation of equation (3.5) several levels of participation as indicated in section 3.4.2 were considered, giving rise to eight nearly identical estimations with the only difference being on the endogenous variables but similar exogenous variables were used all through.

CHAPTER FOUR

EMPIRICAL FINDINGS

4.1 Introduction

In this chapter, the paper presents empirical findings. The chapter starts with a presentation of the characteristics of the study respondents. Thereafter, the study presents the results which is organized based on the two study objectives outlined in chapter one. In addressing the two study objectives, the author presents results from both logistic regressions and descriptive statistics.

4.2 Characteristic of the Respondents

Under this section, the author discusses the social demographic and economic features which are sex, age, employment status, number of children and education of the respondents from which the study collected the data. Table 4.1 summarizes all these characteristics.

Table 4.1: Characteristic of the Respondents

characteristics of the Respondents	Frequency	Percentage	
Sex	Male	33	68.75
	Female	15	31.25
Age category (In years)	18 – 29	24	50.00
	30 – 39	19	39.58
	40 – 49	1	2.08
	50 – 59	3	6.25
	60 and above	1	2.08
Education level	None	7	14.58
	Primary	19	39.58
	Secondary	13	27.08
	Tertiary/University	9	18.75
Employment Status	Unemployed	23	47.92
	Wage employment	8	16.67
	Casual employment	7	14.58
	Business person	4	8.33
	Work & business	6	12.50
Number of children	0	6	12.50
	1	4	8.33
	2	11	22.92
	3	12	25.00
	4	6	12.50
	5	4	8.33
	6	5	10.42

Table 4.1 shows that out of the total 48 respondents sampled, 33 of them which translates to 68.75 percent were male while the remaining 15 (31.25 percent) were female respondents. In terms of age, the study grouped the respondents into different age groups as shown in Table 4.1. The statistics as revealed in Table 4.1 shows that the highest proportion of respondents were within the 18 – 29 age category which accounted for 50.00 percent of the entire sample size. The second largest proportion (39.58 percent) of respondents fell in the 30 – 39 age category. Generally, 89.58 percent of the respondents

fell between 18 and 39 years of age. Respondents aged 40 years and above accounted for only 10.42 percent and distributed as shown in Table 4.1.

From Table 4.1, it can be noted that out of the 48 respondents, 14.58 percent had not attained any formal education. 39.58 percent of the respondents had attained only primary education. The remaining respondents 27.08 percent and 18.75 percent had completed secondary education and tertiary/university education respectively. In regards to economic activities, the highest proportion of respondents (47.92 percent) were unemployed; 16.67percent were in wage employment;14.58 percent were in casual employment while 8.33 percent were purely business persons with the remaining 12.50 percent being involved in a combination of employment and business. The last part of Table 4.1 shows that one quarter (25 percent) of the respondents had three children while 22.92 percent had two children. Furthermore, respondents with no child accounted for 12.50 percent, a proportion equal to those with 6 children each. Those with one child and 5 children were approximately 8.33percent for each category. Notice also that none of the respondents had more than 6 children. Those with 6 children were approximately 10.42 percent.

4.3 Determinants of Community Participation in Community Based Water

Projects

In order to achieve the first objective, the author separated participation into eight participation levels and analyzed factors affecting them separately. Both logistic regression results and descriptive results for the eight participation results are presented under this sub-section.

4.3.1 Determinants of Participation in Identification of Water Project as a need

To estimate the determinants of community participation in identification of water project as a need, a logistic regression based on equation (3.3) was estimated with the binary dependent variable being involvement in the identification of water project as a need. The results are presented in Table A1 in the appendix. From the Table, the estimated coefficients indicate a negative relationship between sex; age; marital status; number of children and level of education with participation in identifying water project as a need. However, the relationship of this dependent binary variable with employment and age square is positive. Although Pseudo R² =0.2991 shows that about only 30 percent of the variation in the endogenous variable are explained within the model, the Prob> chi² = 0.0082 indicated that on overall, the model is significant in explaining the variations in this endogenous variable. For a more meaningful discussion, marginal effects as displayed in Table 4.2 were predicted.

Table 4.2: Marginal Effect after Logit Estimation Involving Participation in Identification of Water Project as need

Binary Dependent Variable: Identification of Water Project as a Need (y = Pr(IDENTIFY))			
Independent Variables	Marginal effect (dy/dx)	z-value	P-value
SEX	-0.0825434 (0.20361)	-0.41	0.685
AGE	-0.0529428 (0.07428)	-0.71	0.476
MARITAL	-0.1499012 (0.12006)	-1.25	0.212
CHILDREN	-0.064022 (0.06001)	-1.07	0.286
EDU	-0.0383726 (0.09473)	-0.41	0.685
EMPLOYMENTT	0.2834733*** (0.0941)	3.01	0.003
AGESQUARE	0.0008128 (0.00102)	0.8	0.424

Standard errors in parenthesis

dy/dx is for discrete change of dummy variable from 0 to 1

***significant at 1%

Table 4.2 shows that the probability of an individual participating in the process of identifying a water project as a need within the informal settlement in Nairobi is 0.0825 higher among women female than male residents holding other factors. Table 4.2 also indicates that as age of a resident increases by one year with other factors being invariant, the probability that such an individual will take part in identification of water project as a need reduces by 0.0529. Notice also that from Table 4.2, the marginal effect corresponding to marital status is -0.1499 which suggests that moving from one marital status to another reduces the probability of participation by 0.1499. In particular, single respondents who are used as a reference category have a higher probability of

participating in identification of a water project as a need as compared to individuals who are either married, separated, divorced or widowed.

Furthermore, Table 4.2 revealed that going up a single level in academics while other factors remain unaltered reduces the probability of an individual participating in identification of water project as a need with the respective informal settlement. The results in Table 4.2 also suggests that as the number of children an individual has increase by one, the probability that such an individual will participate in this water project stage falls by 0.064 holding other factors constant. Generally, sex; age; marital status; number of children and education level affect participation in identification of the water project negatively and insignificantly at 10 percent, 5 percent and 1percent levels of significance as shown by the p-values greater than 0.1.

The effect of employment and age square on participation in identification of water project as need is positive with the effect of the former exogenous variable being statistically significant at 1 percent level of significance while the effect of the latter being statistically insignificant at 10 percent, 5 percent as well as at 1 percent. The marginal effect of 0.2835 corresponding to employment can be thought of to suggest that the probability of an individual to participate in identification of the project as a need increases by 0.2835 as employment status changes from unemployed to wage employment; casual employment; business person and finally to a combination of business and other forms of employment.

4.3.2 Determinants of Participation in sharing of ideas on water projects in the community

While investigating the factors that affect community/respondents' participation in sharing of ideas on water projects, the author fitted the binary dependent variable "SHAREIDEA" in equation (3.3) and estimated using a logistics regression. The results are presented in Table A2 which revealed that sex; age; marital status and the number of children have negative effect on community participation in sharing of ideas on water projects while the effect of education, employment and age square on the same binary dependent variable was noted to be positive. Nevertheless, it is the marginal effect which is more meaningful and that is what is presented in Table 4.3.

Table 4.3: Marginal Effect after Logit Estimation Involving Participation in sharing of ideas on Water Project

Binary Dependent Variable: sharing of ideas ($y = \text{Pr}(\text{SHAREIDEA})$)			
Independent Variable	Marginal effect (dy/dx)	z-value	P-value
SEX	-0.3510734** (0.15299)	-2.29	0.022
AGE	-0.1299069* (0.06832)	-1.9	0.057
MARITAL	-0.095995 (0.10908)	-0.88	0.379
CHILDREN	-0.0518146 (0.05459)	-0.95	0.343
EDU	0.0088418 (0.08923)	0.1	0.921
EMPLOYMENT	0.163084** (0.07633)	2.14	0.033
AGESQUARE	0.0018924* (0.00096)	1.96	0.05

Standard errors in parenthesis

dy/dx is for discrete change of dummy variable from 0 to 1

**significant at 5%, *significant at 10%

From Table 4.3, it can be noted that, holding all factors constant, men have a probability of 0.3511 less than women to take part in sharing of ideas pertaining water projects. This effect of sex is statistically significant at 5 percent and 10 percent levels of significance as shown by the p-value of 0.022 which is less than 0.05 but insignificant at 1 percent. The results also show that as the age of an individual increases by a year while holding all other factors constant, his/her probability of participating in sharing of ideas falls by 0.1299. This change is statistically significant only at 10 percent. Moreover, the findings in Table 4.3 indicate that as an individual who is single is 0.096 more probably of participating in sharing of ideas than a married one and as marital status changes further to separated, divorced and finally to widowed, the probability of participating in sharing of ideas tends to fall. The marginal effect corresponding to the number of children shows that when an individual gives birth to an extra child, the probability of such an individual participating in sharing of ideas fall by 0.0518. The effect of number of children and that of marital status is statistically insignificant at 1 percent, 5 percent and 10 percent levels of significance.

Results in Table 4.3 revealed further that as education standard raises from one level, say from no formal education to primary, the probability of an individual participating in sharing ideas increases by 0.0088. This effect of education is statistically insignificant at 1 percent, 5 percent and 10 percent significance levels. Employment level was also noted to positively influence participation in sharing of ideas on water projects. This effect of employment was statistically significant at 5 percent but insignificant at 1 percent. In particular, what the marginal effect corresponding to employment shows is that an individual who is not employed has a probability of 0.1630 lower than the one on wage

employment to participate in sharing of ideas. This trend is assumed to be approximately the same as you move further to those casually employed then to business persons and finally to those combining business and other forms of employment.

4.3.3 Determinants of Participation through Labor Provision for the Water Project

Estimation of the various factors that determine whether an individual participated through the provision of labor for the water project or not involved treating labor provision as a binary variable and fitting it in equation (3.3). The estimated results showing the coefficients for a logistic regression is captured in Table A3. The results in Table A3 show that sex, age, marital status and level of education have positive influence on the participation of community in water projects through provision of labor. On the contrary, the influence by both employment status and number of children was noted to be negative. Table 4.4 displays the marginal effects that were predicted after the logit estimates of Table A3.

Table 4.4: Marginal Effect after Logit Estimation Involving Participation through provision of labor for Water Project

Binary Dependent Variable: Labor Provision ($y = \text{Pr}(\text{LABOR})$)			
Independent Variable	Marginal effect (dy/dx)	z-value	P-value
SEX	0.220626 (0.15191)	1.45	0.146
AGE	0.0277529 (0.05412)	0.51	0.608
MARITAL	0.0607849 (0.10151)	0.6	0.549
CHILDREN	-0.0519368 (0.05048)	-1.03	0.304
EDU	0.0322552 (0.07878)	0.41	0.682
EMPLOYMENT	-0.1335407* (0.07051)	-1.89	0.058
AGESQUARE	-0.0003779 (0.00075)	-0.51	0.613

Standard errors in parenthesis

dy/dx is for discrete change of dummy variable from 0 to 1

*significant at 10%

From the results in Table 4.4, several arguments are justified. First, it is evidenced that male individuals in the community within the informal settlement of Nairobi have a probability of 0.2206 higher than their female counterparts to offer labor needed in the water projects. Second, age is also noted to be a positive driver of labor provision. Marginal effect of 0.0278 corresponding to age shows that as an individual's age goes up by a year, the probability that such an individual will provide labor in water projects within the informal settlements of Nairobi rises by 0.0278 holding all other factors constant. Thirdly, it can be argued from Table 4.4 that a single individual has a probability of 0.0608 less than a similar but married individual when it comes to providing labor to be used in water projects. Table 4.4 shows further that as an individual ascends academically, his/her likelihood of providing labor in the water project also goes up. For example, the probability that an individual with no formal education will provide labor for water project is 0.0323 lower than a similar individual who completed primary education. In general, age, sex, marital status and the level education have positive but insignificant influence on labor provision.

The results contained in Table 4.4 revealed further that as the number of children an individual has increases by one, there is a fall by 0.0519 in the probability that such an individual will take part in the labor provision in water projects within the informal settlement of Nairobi County in Kenya. This effect is statistically insignificant at 1 percent, 5 percent and 10 percent levels of significance. Finally, as an individual's employment status moves from unemployed to wage employment, the probability that such a participant will provide labor in the water project falls by 0.1335. This effect is

statistically insignificant both at 1 percent and 5 percent levels of significance but significant at 10 percent. Ideally, as individuals get more and more involved in the job market, it becomes increasingly difficult to get time of directly providing labor in the water project.

4.3.4 Determinants of Community Participation in Deciding the Location of Water Project

Analysis of the various factors that affect participation of the community members in making decisions on where to locate a water project initiated within the Nairobi's informal settlement involved estimation of equation (3.3). In this estimation, the binary dependent variable was whether a respondent participated in making decision on where the water project will be located or not while similar exogenous variables as for previous sections were used. The first stage logit estimation results are displayed in Table A4 in the appendix while the results for the marginal effect estimation after logit is given in Table 4.5.

Based on the results shown in Table A4, sex, age, marital status and number of children all have inverse relationship with the likelihood of a participant taking part in making decision on where the water project will be located. Positive effect was noted on education, employment and age square. Similar results are shown in Table 4.5 for marginal effect estimates.

Table 4.5: Marginal Effect after Logit Estimation Involving Participation in Making Decision on the location of Water Project

Binary Dependent Variable: Location decision (y = Pr(LOCATIONDECISIO))			
Independent Variable	Marginal effect (dy/dx)	z-value	P-value
SEX	-0.1662176 (0.19759)	-0.84	0.4
AGE	-0.0606426 (0.0657)	-0.92	0.356
MARITAL	-0.0647928 0.10745	-0.6	0.547
CHILDREN	-0.046417 (0.0548)	-0.85	0.397
EDU	0.0978693 (0.09367)	1.04	0.296
EMPLOYMENT	0.1857438** (0.07345)	2.53	0.011
AGESQUARE	0.0010267 (0.00091)	1.12	0.261

Standard errors in parenthesis

dy/dx is for discrete change of dummy variable from 0 to 1

**significant at 5%

From Table 4.5, a female participant has a probability of 0.1662 higher than a similar male respondent to take part in decision making on where the water project in informal settlement of Nairobi should be located. Moreover, as age of a participant increases by one year, the probability that such a participant will take part in making decision on where the water project should be located falls by 0.0606. Results for the marital status shows that as the marital status of an individual changes say from single to married, his/her probability of taking part in deciding where the water project will be located falls by 0.0648. The finding in Table 4.5 further indicated that whenever the number of children an individual has increases by one, the probability that such a participant will take part in making decisions on where the water project will be located falls by 0.046417. P-values

corresponding to sex, age, marital status and number of children are all greater than 0.1 suggesting that the null hypothesis should not be rejected which leads to a conclusion that all these variables were statistically insignificant at 99 percent, 95 percent and 90 percent confidence levels.

The marginal effect in Table 4.5 provides evidence that as a participant's level of education goes up by one step say from no formal education to primary school graduate, the probability that such an individual will be involved in making decisions on where to locate the project will go up by 0.0979. Even though this effect is positive, it is statistically significant at 1 percent, 5 percent and 10 percent levels of significance. Employment status was also noted to have a positive influence on the locational decision making. In particular, the results show that as a participant move from one employment status to another; for example from unemployed to wage employed, his/her probability of playing a role in deciding where the water project will be located rises by 0.1857. This effect is statistically significant at 95 percent level of confidence but insignificant at 99 percent confidence level. Finally, the square of participants' age also had a positive but insignificant effect on the participation in decision making on where to set up a water project.

4.3.5 Determinants of Community Participation in Monitoring Water Project

In order to investigate the effect of various factors on whether an individual will participate in monitoring of a water project or not, the study estimated equation (3.3) with the endogenous variable being whether a project participant took part in monitoring of the project or not. The results from the logit estimate is presented in Table A5 in the

Appendix. The only meaningful information from Table A5 is the signs of the coefficients which is identical to the signs of marginal effect. Thus much discussion is based on marginal effect which is of much econometric sense and is presented in Table 4.6.

Table 4.6: Marginal Effect after Logit Estimation Involving Participation in Monitoring of Water Project

Binary Dependent Variable: Labor Provision (y = Pr(MONITORING))			
Independent Variable	Marginal effect (dy/dx)	z-value	P-value
SEX	-0.1748141 (0.14811)	-1.18	0.238
AGE	0.0003599 (0.03286)	0.01	0.991
MARITAL	-0.0043668 (0.06333)	-0.07	0.945
CHILDREN	-.0097536 (0.02943)	-0.33	0.74
EDU	0.1020424* (0.05239)	1.95	0.051
EMPLOYMENT	0.0241517 (0.03699)	0.65	0.514
AGESQUARE	-0.0000169 (0.00045)	-0.04	0.97

Standard errors in parenthesis

dy/dx is for discrete change of dummy variable from 0 to 1

*significant at 10%

The marginal effect results as shown in Table 4.6 indicate that a female water project participant had the probability of 0.1748 higher than a similar male one to take part in monitoring the project. The result for age as in Table 4.6 suggested that increase in age of a participant by one year raises the probability of such an individual participating in monitoring of the project by 0.0004. The findings revealed further that as marital status of a participant changes such as from single to married, his/her probability of being involved in monitoring of water project drops by 0.0044. The marginal effect results as

displayed in Table 4.6 revealed further that as a participant's number of children increases by one with all other factors held constant, his/her probability of being involved in monitoring falls by 0.0098

From Table 4.6, it can also be noted that as educational standard of a participant rises from one level to another; for example from no formal education to primary education, the probability that such a participant will take part in water project monitoring will go up 0.1020. Similarly, a positive relationship was noted between participation in monitoring and employment. Ideally, as employment status of a participant changes for example from unemployed to wage employment, his/her probability of participating in water project monitoring rises by 0.0242. With the P-values corresponding to sex, age, marital status, number of children and employment being greater than 0.1 it is a probable evidence that all these variable were not important influencers of participation in water project monitoring. Nevertheless, it was only education which was statistically significant even though at 10 percent level of significance but was also insignificant at 1 percent and 5 percent significance levels.

4.4 Effect of Community Participation on Project Outcome.

After discussing under the first objective how various factors affect different participation levels as presented in sub-sections 4.3.1 all through to 4.3.5, achievement of the second objective involved examining how the various participation variables affect project outcome. Other than participation levels considered under sections 4.3.1 to 4.3.5, other participatory variables that were included in the analysis were: if all members were involved in making decisions (ALLMEMBERSDECISIO) and if members were trained

on matters concerning the project (TRAINING). The dependent variable under consideration was if the water project was satisfying the needs of the community or not. The relationships between the dependent and participation variables were established using frequencies and percentages which are presented in Table 4.7.

Table 4.7: Frequencies and Percentages indicating how various Participation Variables affect Project Outcome

Participation variables affecting community satisfaction of water needs		Satisfaction of water needs (NEEDSMET)	
		No	Yes
IDENTIFY	No	30 (100.00)	0 (0.00)
	Yes	0 (0.00)	18 (100.00)
SHAREIDEAS	No	18 (81.82)	4 (18.18)
	Yes	12 (46.15)	14 (53.84)
LABOR	No	18 (60.00)	12 (40.00)
	Yes	12 (66.67)	6 (33.33)
LOCATIONDECISIO	No	28 (93.33)	2 (6.67)
	Yes	2 (11.11)	16 (88.89)
MONITORING	No	29 (72.50)	11 (27.50)
	Yes	1 (12.50)	7 (87.5)
ALLMEMBERSDECISIO	No	30 (71.43)	12 (28.57)
	Yes	0 (0.00)	6 (100.00)
TRAINING	No	30 (100.00)	0 (0.00)
	Yes	0 (0.00)	18 (100.00)

Figures in parenthesis represent percentages indicating whether the needs were satisfied or not for a given category of a participation variable

From Table 4.7, only 18 participants were involved in identification of water as need within their respective informal settlement in Nairobi while the remaining 30 did not take part in this activities. As indicated by figures in parenthesis, all participants (100%) who were not involved in identifying water as a need were of the view that the project did not satisfy the needs of the community whereas it was unanimously agreed among those who

participated at identification stage that the water projects met the needs of the community. This paints a clear picture that the community should be involved highly during identification of the water project as one of their needs if such a project has to satisfy their needs. Statistics in Table 4.7 suggest that 81.82 percent of the respondents who did not take part in sharing of ideas concerning the water projects were for the opinion that the needs of the community were not being met with approximately 18.18 percent having the contrary opinion. Surprisingly, out of 26 respondents who took part in sharing ideas, less than one half (only 46.15%) were contended that the needs of the communities were being satisfied by the water project.

The results in Table 4.7 further indicate that 30 out of 48 respondents did not provide labor for water projects, 60 percent of whom had the feeling that water needs of the community were not being satisfied by the projects. A similar opinion was held by 66.67 percent of the respondents who took part in the provision of labor for the water project. This may imply that labor provision by the community in water projects does not guarantee satisfaction of the community needs by such projects. From the same Table 4.7, it can be noted that 93.33 percent of the respondents who failed to take part in deciding where the project will be located were of the view that these water projects never satisfied the needs of the informal settlement communities. Among those who played a role in deciding where to locate these projects, 88.89 percent had the opinion that the water needs of the communities were being satisfied by these projects.

The findings in Table 4.7 reveal that only 8 out of 48 respondents were involved in monitoring of the water projects, among whom 87.50 percent were for the opinion that

the water projects were satisfying the needs of the community. In the category of the 40 respondents who did not get involved in project monitoring, 72.50 percent regarded the projects as having failed to satisfy the water needs of the community. The respondents were also asked to state whether decision making process involved all members or not and only 6 of them agreed that all members were involved with all the six advancing the view that the projects were satisfying the community needs. On the other hand, 42 respondents argued that not all members were involved in decision making, with roughly 71.43 percent of them holding the opinion that the projects were not satisfying the needs of the community. The study also sought to know if the respondents had participated in any form of water project related training and only 18 out the entire sample size of 48 had participated in at least some form of training. In reference to training, Table 4.7 shows that 100 percent of those respondents who received at least some form of training believed that the projects were satisfying the needs of the respondents. Similarly, 100 percent of those who did not get any form of training related to water projects supported the view that water projects had failed to satisfy the needs of the informal settlement communities.

In addition to participatory variables, some other relevant factors were considered and these were the quality of the staff that implemented the water project (IMPLEMENTINGSTAFFQUALITY) and the quality of the team that manages the water (MANAGEMENTTEAMQUALITY). The results for these two non-participatory variables are presented in Table 4.8.

Table 4.8: Frequencies and Percentages indicating how selected Non-participation Variables affect Project Outcome

Non-Participation variables affecting community satisfaction of water needs		Satisfaction of water needs (NEEDSMET)	
		No	Yes
IMPLEMENTINGSTAFFQUALITY	Very Skilful	0 (0.00)	12 (100.00)
	Average	18 (75.00)	6 (0.25)
	Poor	12 (100.00)	0 (0.00)
MANAGEMENTTEAMQUALITY	Good	2 (18.18)	9 (81.82)
	Average	15 (71.43)	6 (28.57)
	Poor	7 (70.00)	3 (30.00)
	Very poor	6 (100.00)	0 (0.00)

Figures in parenthesis represent percentages indicating whether the needs were satisfied or not for a given category of a non-participation variable

From Table 4.8, it can be deduced that 25 percent (12 out of 48) of the respondents ranked the water project implementing staffs as very skillful. The results suggest that all the respondents who considered the implementing staff to be very skillful were for the opinion that the projects were satisfying the water needs of the communities. Among the respondents who perceive the implementing staff to be average quality, 25 percent of them had the opinion that the needs of the communities were being met by the water projects. Moreover, none of the respondents who considered the quality of implementing staff to be poor supported the opinion that these water projects were meeting the needs of the communities.

In regards to the quality of the teams that were responsible for managing the water projects, 11 out of the 48 respondents considered such teams to be of good quality. Moreover, it was noted that 81.82 percent of these 11 respondents regarded the selected

water projects to be satisfying the needs of the water projects. In the class of the respondents who believed that the teams managing the water projects were of average quality, only 28.57 perceived the water projects as satisfying the needs of the community. For those who considered the same teams to be of poor quality, 30 percent were for the opinion that the water projects were meeting the needs of the communities. Finally, an opinion that the water projects failed to satisfy the needs of the community was unanimously held by those who considered the water project managing teams to be of very poor quality.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND POLICY IMPLICATIONS

5.1 Introduction

In this chapter, the author provides a summary of the study. In addition, this chapter gives the paper's concluding remarks as well as policy recommendations drawn from the study findings. The chapter ends by giving suggestions on areas of research future studies should consider. .

5.2 Summary

This research was conducted with the general objective of assessing how various factors affect community participation in community based development water projects in the informal settlements of Nairobi County and how such participation impact on the project outcome. The study was guided by two specific objectives which were to investigate the determinants of community participation in community based development water projects in Nairobi County and to determine the effect of community participation on project outcome in community based development water projects in Nairobi County. A great proportion of the urban population especially in Nairobi County is found within the informal settlement where different water challenges are inherent. This common phenomena has been behind the moves by different agencies from national and county government as wells as by Non-governmental organization among others to strive towards solving the menace. Nevertheless, the existing empirical works indicated that nearly 50 percent of water projects within these settlements are not operational yet water is a highly valuable commodity. It is this interlink of events that motivated this study.

In order to achieve the two objectives specified in chapter one, this study used questionnaires to collect primary cross-sectional data from 48 respondents who participated in selected water projects within three randomly selected slums of Nairobi County. These projects were Olympics, Laini Saba and Nairobi Clean from Kibra, Mathare and Korogocho slums respectively. The first objective of this study which was to investigate the determinants of community participation in community based development water projects in Nairobi County was attained by the use of logit estimation which is a binary choice model. On the other hand, the second objective of the study was to determine the effect of community participation on project outcome in community based development water projects in Nairobi County and was achieved by subjecting data to descriptive analysis where frequencies and percentages were estimated.

To achieve the first objective, participation was categorized into five levels which were: participation in identification of the water project as a need; participation in sharing of ideas; participation through provision of labor; participation in deciding the location of a water project and finally the participation in monitoring of the project. Sex and marital status were noted to have negative influences on the first, second, fourth and fifth levels of participation but positive only on the third level. At all the five levels, the effect of sex was statistically insignificant at 1 percent, 5 percent and 10 percent levels of significance except at second level where it was significant at 5 percent while the effect of marital status was statistically insignificant at all the five participation levels considered. The influence of age was noted to be negative on the first, second and fourth levels of participation but positive on the third and fifth levels. The effect of age on the second

level of participation (sharing of ideas) was statistically significant at 1 percent but insignificant at all other participation levels. The number of children was noted to negatively and insignificantly affect all the five levels of community participation considered. Education level was estimated to positively influence all the levels of participation except identification of the water projects as a need where the effect is negative. Lastly, the effect of employment level was only negative on participation through labor provision while the effect on the remaining levels of participation being positive. The effect of employment was statistically significant at 1 percent on project identification; statistically significant at 5 percent on sharing of ideas as well as on deciding on the location; statistically significant at 10 percent on labor provision and monitoring of the water projects.

The statistics tailored towards achieving the second objectives showed that 100 percent of respondents who take part in identification of the water project; 100 percent of those trained on the project and those who were for the opinion that all the suggestions by the participants were considered while making decisions believed that the water projects were satisfying the community needs. Moreover, approximately 66.67 percent of the respondents who took part in labor provision perceived the projects as failing to satisfy the needs of the community. The results further showed that as the quality of the staff responsible for implementation and management increase, there is a high possibility the water projects satisfy the community needs.

5.3 Conclusion

Based on the empirical findings, several conclusions can be arrived at. First, sex affects all the participation levels negatively except for labor provision. Notice also that age has a negative effect on the participation in identification of the project, sharing of ideas and deciding on the location of the project but the effect is positive on monitoring of the project and labor provision. Marital status was estimated to influence all the participation levels negatively except in labor provision while the number of children was found to have negative effect on all the participation levels. The findings also revealed that education drives positively all levels of participation except in the identification of water projects as a need. It can also be concluded that a positive relationship exist between employment and all levels of participation except for the case of labor provision.

Relying on the results of how various factors affect project outcome some conclusions can be deduced. Participation in identification of the project; training as well as factoring in all ideas of members in decision making is very influential in ensuring that water projects meet the needs of the community. Furthermore, the higher the quality of the staff used to implement and manage the projects, the higher the likelihood of the water projects meeting the needs of the community.

5.4 Policy Recommendations

Guided by the study findings, if the water projects have to meet the needs of the community, this paper advocates for increased participation in identification of such projects as a need as well as in training of the participants. Moreover, it is necessary to

take into account views of all community members participating in the projects. The study further recommends for ensuring that duties of implementing and managing the water projects rests on highly skilled staffs.

5.5 Areas for Further Research

- I. For purposes of replication, there is need for researchers to carry out further research to establish the application of various measures of community participation employed by this study in a variety of contexts. This is important for theorization, which is currently one of the main limiting factors in effective use of community participation as an input in economic development, generally and in project outcome in particular.

- II. It is also necessary that a similar study to the current one be undertaken on a larger scale in order to establish the determinants of community participation at the national level and its effects on project outcome. This will give incentive to the government to develop a policy that enhances project outcome and further refine its community development strategies accordingly.

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APPENDICES

Appendix I: Questionnaire for Households

Dear respondent, my name is Caleb Wasilwa. I am a student at the Kenyatta University conducting a research study on the “Community participation and outcomes of community based development selected water projects in the informal settlements of Nairobi City County, Kenya”.

You have been selected to be one of my respondents. I have a set of questions that I would like you to answer with the aim of coming up with data that will be useful to this study. The information will **NOT** be used for any other purpose apart from this study. Confidentiality of the information given will be strictly observed. Please do not indicate your name.

General Information

Date of Interview: _____ Respondent Name _____

Sub County _____ County of Origin _____

Name of Project _____ Date of Project Start of Project _____

Date of Project Completion _____

SECTION A: RESPONDENT ATTRIBUTES

1) Sex: Male [1], Female [2]. 2) Age _____ years.

3) Marital Status: Single [1], Married [1], Separated [3], Divorced [4], Widow/Widower [0]

4) Number of children 0 to 19 years_____

5) Level of Education: No formal education [] Primary Education [] Secondary education [] Tertiary education []

Other (Specify).....

6) What economic activity are you engaged in?

Unemployed [] Wage employment [] Casual employment [] Business Person []

Other [], specify _____

SECTION B: LEVEL OF PARTICIPATION OF COMMUNITY IN WATER PROJECT.

7) General Questions

A. How did you become aware of the project?

B. When did you join the project?

C. How is the project?

8) Participation

a) List the kind of activities you engaged in the project?

b) What activities were you not involved in and why?

c) Did you hold meetings
If yes, how frequent were the meetings?

d) How often did you attend the meetings?

e) Did you make any contributions to the project?
If Yes, what did you contribute to the project?

f) Who decided on the kind of project activities in your meeting?

Were your views/group member's views considered every time it had been given?

Give reasons for your answer

g) Were all members involved in making decisions in the project activities?

h) Did you receive any training related to the project?

If yes, what kind of training did you receive?

Was the training important?

i) Do you have any suggestions for improving beneficiary participation in the project?

j) How do you think about the project outcome? Did the project achieve its outcome? If it did not, why?

9) Are you using the water? (Tick one)

Yes No

10) Is the water project satisfying the communities' needs? (Tick one)

Yes No Others (Specify) -----

11) How many users on average are relying on the water project? _____

12) a. Are spare parts for the water system available?

Yes No

b. If Yes, Are they locally available on the market or they have to be imported?

13) Below are various levels of community participation (Tick the appropriate answer).

Statements	Yes	No
Identification of the water project as a need		
Sharing of the idea in the community		
Taking decision to carry out the project/planning		
Financial contributions		
Organizing of fund raising		
Provision of labour		
Deciding the project location		
Monitoring of the project		

14) (i) What was the source of funding for the project?

A. Community [], B. County Government [] C. National Government []

D. NGO [], E. Private Sector [] F. Other (Specify) _____

(ii) Specify the Mode A. Part funding [], B. Full funding [], C. Other (Specify)

15) If you made financial contributions, how much (Kshs.) _____

16) Other types of financial contributions (Indicate all that apply)

Contributions Type	Amount (Kshs)
a) Supply of needed materials	
b) Monitoring of the project	
c) Others (Specify)	

17) If you provided labour, how many hours _____

SECTION C: RESPONDENTS' PERCEPTION ON PARTICIPATION IN THE WATER PROJECT IN THEIR COMMUNITIES.

18) Below are some of the questions relating to how the community was organized during their participation in the water project?

Please study each statement carefully and Tick the appropriate answer.

Method of community organization (Tick all that apply)

Statements	Yes	No
Formation of community development committee		
Regular (weekly meeting)		
Institution of sanction/reward		
Formation into social groups		
Regular conference		

19) How do you rate the staff that implemented the project? (Tick one)

A. Very skillful [] B. Average [] C. Poor [] D. Very Poor []

20) Who is managing the water project? _____

21) How is the overall quality of management of the water project ?(Tick one)

A. Very Good [] B. Good [] C. Average [] C. Poor [] D. Very Poor []

22) In your opinion, how would you rate the overall success of the water project? (The scale is from 0-10; 0-3(unsuccessful), 4-6 (moderate), 7-10 (successful)

.....

Thank you for your time and input

APPENDIX II: Subsidiary Tables for Empirical Results

Table A1: Logit Results for the Factors Determining Community Participation in Identification of the Water Project as a Need

Iteration 0:	log likelihood = -31.755035					
Iteration 1:	log likelihood = -22.49907					
Iteration 2:	log likelihood = -22.260968					
Iteration 3:	log likelihood = -22.258635					
Iteration 4:	log likelihood = -22.258634					
Logistic regression	Number of obs = 48					
	LR chi2(7) = 18.99					
	Prob > chi2 = 0.0082					
Log likelihood = -22.258634	Pseudo R2 = 0.2991					
IDENTIFY	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
SEX	-.3579967	.8725381	-0.41	0.682	-2.06814	1.352147
AGE	-.2336599	.3238572	-0.72	0.471	-.8684084	.4010886
MARITAL	-.6615806	.5294899	-1.25	0.211	-1.699362	.3762005
CHILDREN	-.2825576	.2669525	-1.06	0.290	-.8057748	.2406596
EDU	-.1693552	.4200554	-0.40	0.687	-.9926486	.6539382
EMPLOYMENT	1.251093	.4031035	3.10	0.002	.461025	2.041162
AGESQUARE	.0035872	.0044237	0.81	0.417	-.0050832	.0122575
_cons	3.176872	6.106004	0.52	0.603	-8.790675	15.14442

Table A2: Results for the Determinants of Community Participation in sharing of ideas on water projects in the community

```
. logit SHAREIDEA SEX AGE MARITAL CHILDREN EDU EMPLOYMENT AGESQUARE
```

```
Iteration 0: log likelihood = -33.104205
Iteration 1: log likelihood = -27.26445
Iteration 2: log likelihood = -26.906043
Iteration 3: log likelihood = -26.904184
Iteration 4: log likelihood = -26.904184
```

```
Logistic regression                                Number of obs =          48
                                                    LR chi2(7)           =         12.40
                                                    Prob > chi2          =         0.0881
Log likelihood = -26.904184                        Pseudo R2           =         0.1873
```

SHAREIDEA	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
SEX	-1.604739	.834355	-1.92	0.054	-3.240044	.0305671
AGE	-.5330635	.284269	-1.88	0.061	-1.090221	.0240935
MARITAL	-.3939087	.4475185	-0.88	0.379	-1.271029	.4832114
CHILDREN	-.2126177	.2248513	-0.95	0.344	-.6533182	.2280828
EDU	.0362816	.3662224	0.10	0.921	-.6815011	.7540642
EMPLOYMENT	.6692034	.3188915	2.10	0.036	.0441876	1.294219
AGESQUARE	.0077654	.0040164	1.93	0.053	-.0001067	.0156374
_cons	9.76643	5.332247	1.83	0.067	-.6845816	20.21744

Table A3: Logit Results for Factors affecting Participation in Water Projects through Labor Provision

```

. logit LABOR SEX AGE MARITAL CHILDREN EDU EMPLOYMENT AGESQUARE

Iteration 0:  log likelihood = -31.755035
Iteration 1:  log likelihood = -25.969269
Iteration 2:  log likelihood =  -25.7656
Iteration 3:  log likelihood = -25.764721
Iteration 4:  log likelihood = -25.764721

Logistic regression                                Number of obs =          48
                                                    LR chi2(7)      =         11.98
                                                    Prob > chi2     =         0.1012
Log likelihood = -25.764721                       Pseudo R2      =         0.1886

```

LABOR	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
SEX	1.092719	.8489609	1.29	0.198	-.5712139	2.756652
AGE	.1255966	.246197	0.51	0.610	-.3569407	.6081338
MARITAL	.2750845	.4591995	0.60	0.549	-.6249301	1.175099
CHILDREN	-.235042	.2274408	-1.03	0.301	-.6808178	.2107338
EDU	.1459723	.355393	0.41	0.681	-.5505852	.8425297
EMPLOYMENT	-.6043431	.3342681	-1.81	0.071	-1.259497	.0508104
AGESQUARE	-.00171	.0034005	-0.50	0.615	-.0083748	.0049548
_cons	-2.595109	4.710653	-0.55	0.582	-11.82782	6.637601

Table A4: Logit Results for Factors affecting Community Participation in Decision Making concerning Water Projects Location

```
. logit LOCATIONDECISIO SEX AGE MARITAL CHILDREN EDU EMPLOYMENT AGESQUARE
```

Iteration 0: log likelihood = -31.755035
Iteration 1: log likelihood = -25.525658
Iteration 2: log likelihood = -25.341569
Iteration 3: log likelihood = -25.340878
Iteration 4: log likelihood = -25.340878

Logistic regression

Number of obs	=	48
LR chi2(7)	=	12.83
Prob > chi2	=	0.0764
Pseudo R2	=	0.2020

Log likelihood = -25.340878

LOCATIONDECISIO	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]
SEX	-.6997206	.8260546	-0.85	0.397	-2.318758 .9193166
AGE	-.2609293	.2793439	-0.93	0.350	-.8084333 .2865748
MARITAL	-.2787864	.4614189	-0.60	0.546	-1.183151 .6255781
CHILDREN	-.1997203	.2362225	-0.85	0.398	-.662708 .2632673
EDU	.4211057	.40323	1.04	0.296	-.3692106 1.211422
EMPLOYMENT	.7992066	.3100422	2.58	0.010	.191535 1.406878
AGESQUARE	.0044178	.0038707	1.14	0.254	-.0031686 .0120041
_cons	1.814656	5.228366	0.35	0.729	-8.432753 12.06207

Table A5: Logit Results for Factors affecting Community Participation in Monitoring of Water Projects

```
. logit MONITORING SEX AGE MARITAL CHILDREN EDU EMPLOYMENT AGESQUARE

Iteration 0:  log likelihood = -21.626938
Iteration 1:  log likelihood = -19.132945
Iteration 2:  log likelihood = -18.91113
Iteration 3:  log likelihood = -18.910134
Iteration 4:  log likelihood = -18.910134

Logistic regression                               Number of obs   =          48
                                                    LR chi2(7)      =          5.43
                                                    Prob > chi2     =         0.6072
Log likelihood = -18.910134                       Pseudo R2      =         0.1256
```

MONITORING	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
SEX	-1.288896	.9618305	-1.34	0.180	-3.17405	.5962566
AGE	.0031909	.2913364	0.01	0.991	-.5678179	.5741997
MARITAL	-.0387129	.5610239	-0.07	0.945	-1.138299	1.060874
CHILDREN	-.0864686	.2599678	-0.33	0.739	-.5959962	.423059
EDU	.9046391	.5192203	1.74	0.081	-.1130139	1.922292
EMPLOYMENT	.214113	.32874	0.65	0.515	-.4302056	.8584315
AGESQUARE	-.0001501	.0039843	-0.04	0.970	-.0079591	.0076589
_cons	-3.354084	5.714215	-0.59	0.557	-14.55374	7.845573