

**INFLUENCE OF MONITORING AND EVALUATION PROCESS ON PERFORMANCE
OF URBAN DRAINAGE SYSTEMS: A CASE OF NAIROBI COUNTY**

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DECLARATION

I declare that this applied research project is my original work and that it has not been presented in any other university for academic credit.

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This research was conducted under my supervision and is submitted with our approval as university supervisors.

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DEDICATION

I dedicate this work to my parents Dr. Evans Kituyi and Ms. Beatrice Wangusi who have continuously encouraged me and supported me both emotionally and financially towards completion of this Research, my siblings; Emma, Tracy, Trevor, Amanda and Tiffany, and my colleagues at Africa Nazarene University, who without their contribution I would not have successfully compiled this project proposal.

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ABSTRACT

Nairobi, Kenya's capital City, experienced periods of heavy rainfall that disclosed a major gap in the City's drainage system. The drainage situation in the city had become a major problem and there was need for the generation of a sustainable solution. This study sought to investigate and find out whether the Monitoring and Evaluation process had an impact on the performance of the drainage systems within Nairobi. This research focused on establishing the influence of the Monitoring and Evaluation process on the performance of urban drainage systems within Nairobi County. The Researcher identified three independent variables which included planning for monitoring and evaluation process, implementation of monitoring and evaluation process and utilization of monitoring and evaluation process results. The main objective of this study was to determine the influence of Monitoring and Evaluation process on the performance of urban drainage systems within Nairobi County. This was guided by three specific objectives; to establish the extent to which planning for Monitoring and Evaluation process influences the performance of urban drainage systems in Nairobi County; to establish the extent to which implementation of Monitoring and Evaluation process influences performance of urban drainage systems in Nairobi County; and to assess whether implementation of Monitoring and Evaluation process findings influenced the performance of urban drainage systems within Nairobi County. The study was carried out within Nairobi County. The study was conducted by descriptive research design including both qualitative and quantitative data collection procedures. Data was collected by questionnaires; desk review of previous research documents and key informant interviews. A total of 150 respondents were targeted. Data was analyzed descriptively using advanced Microsoft Office suite. The findings were represented in form of tables. The main beneficiary of the findings will be Nairobi County management. The findings indicated that the Monitoring and Evaluation process has little influence on the performance of urban drainage systems. Planning for M&E process, implementation of M&E process and utilization of findings of the M&E process were identified to have little influence on the performance of urban drainage systems. The study also found out that females and young people were greatly involved in the management of urban drainage systems. The study noted that it was important to have a well-organized and adequately staffed unit whose purpose is to coordinate the M&E process in the management of urban drainage systems. In resource allocation, it was emphasized that there should be adequate resources channeled towards the M&E process. The study established that there was equal representation of either gender in the various departments within Nairobi County. The study recommends that this trend be maintained for successful management of the urban drainage systems. This study further recommends training of all stakeholders and the public on the M&E process, their key indicators and how they can be used in the management of urban drainage systems, adoption of a more inclusive and wider consultation between the stakeholders and County staff and finally the study recommends that the Nairobi County management should make program monitoring and evaluation an inherent part of program implementation and thus a mandatory exercise. For further reading, this study recommends studies on how M&E approaches influence the performance of urban drainage systems.

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DEFINITION OF TERMS

Monitoring is the collection and analysis of information about a project or program, undertaken while the project/program is ongoing.

Evaluation is the periodic, retrospective assessment of an organization, project or program that might be conducted internally or by external independent evaluators.

Sustainable Urban Drainage Systems (SUDS) are methods and techniques that mimic natural ecosystem's ways of handling storm water runoff.

Planning for Monitoring and Evaluation includes identifying information that will be collected throughout the project and the indicators that shall be used to evaluate this information

Implementation of Monitoring and Evaluation activities mainly involves gathering and managing information through informal as well as more structured approaches.

Utilization of Monitoring and Evaluation Findings involves considering how the generated information can be used to check progress and make improvement as the project proceeds.

CHAPTER ONE

INTRODUCTION AND BACKGROUND OF THE STUDY

1.1 Introduction

This study investigated the influence of the Monitoring and Evaluation process on performance of urban drainage systems in Kenya. The dependent variable was Performance of Urban Drainage Systems, which was important for maintaining the required public health standards within urban centers. Monitoring and Evaluation which was the independent variable was defined in terms of the key indicators identified, tools selected for the monitoring and evaluation process and the personnel used to collect the information. This chapter covered the Background of the study, Problem statement, Study objectives, Research questions, Significance of the study, Scope of the study, Limitations, Delimitations and the Conceptual framework.

1.2 Background of the Study

Nairobi borders Central Kenya, whose highlands act as major catchment areas for the city's drainage networks. It also borders flat plains that also provide a tropical feel to the city. These two surroundings give Nairobi a hot and wet climate hence it's famously been dubbed as being 'The City under the Sun'. The rainy season often times saw Nairobi receiving so much rainfall that led to flooding of its roads (Mansour et al., 2017). Most sections that got flooded were those that bordered the flat plains. The drainage situation in the city had become a major problem and there was need for the generation of a sustainable solution. This study sought to investigate and find out whether the Monitoring and Evaluation process had an impact on the performance of the drainage systems within the urban areas.

1.2.1 Performance of Urban Drainage Systems

While incorporating the monitoring and evaluation process in the performance of urban drainage systems, the specific areas the Researcher considered depended on the M&E indicators, and their stated outcomes. The key concerns included; the relevance, whether the set objectives and goals matched the problems or needs that were being addressed; the efficiency, whether the project was being delivered in a timely and cost-effective manner; the effectiveness, the extent to which the intervention achieved its objectives and any contributing factors or obstacles encountered during the implementation; the impact, which was any intended or unintended effects of the project; and sustainability, which was whether there were lasting benefits after the intervention is completed.

1.2.2 Planning for Monitoring and Evaluation process

Monitoring and Evaluation planning included identifying information that would be collected throughout the project and the indicators that would be used to evaluate this information. The project manager completed a final evaluation report by analyzing the information provided in the plan to present the results of the project (Makivic, 2015). This involved listing the objectives of the Monitoring and Evaluation process, establishing SMART indicators, sources of information, the tools and instruments to be used during the whole process and the personnel and resources that would be required for the entire process. When planning for Monitoring and evaluation of urban drainage systems, it was important that indicators that depicted the true drainage situation be identified, sources of information or key informants about the drainage systems be established early enough and all the personnel, tools and resources that would be involved be planned for before commencement of the study.

1.2.3 Implementation of Monitoring and Evaluation process

Implementation of monitoring and evaluation activities mainly involved gathering and managing information through informal as well as more structured approaches. Information came from tracking which outputs, outcomes and impacts were being achieved and checking project operations (ECCSFE, 2017).

1.2.4 Utilization of Monitoring and Evaluation Findings

To ensure that data collected would be used and not just documented, it was important to organize the analysis of information for each research study question. More importantly, there was consideration on how the generated information could be used to check progress and make improvements as the project proceeded. The outcomes of these steps could be summarized in an M&E matrix, commonly known as a logical frame, which contained the following information: Questions on Inputs, outputs, outcomes and projected impacts; Information needs and indicators; Baseline information: Requirements, status and responsibilities; Data-gathering methods, frequency and responsibilities; Implementation Support: Required forms, planning, training, data management, expertise, resources and responsibilities and modes of communication of findings: Analysis, reporting, feedback and change processes and responsibilities (ECCSE, 2017).

1.3 Statement of the Problem

The Government of Kenya has made some conceited efforts towards solving the recurrent drainage situation within most urban centers within the country, more so within the Nairobi Central Business District, which is regarded the largest business hub within the Eastern Africa Region (Wikipedia). Kenya is still predominantly rural, but is experiencing strong urban growth (4.3% per annum). Nairobi's population makes up more than 45% of Kenya's urban residents: with an

estimated 3.9 million people, it is at least three times larger than the second city, Mombasa. An estimated 15% of the country's urban population lives in informal settlements: Kisumu has the highest proportion of population living in informal settlements (47%) followed by Nairobi (36%) (Mansour et al., 2017).

Urban conditions contributed to most of the drainage problems; runoff was increased by impermeable urban surfaces and, due to inadequate development control mechanisms and their incompetent enforcement, settlements were constructed with little consideration for storm water drainage. The poor were disproportionately affected; they often resided in informal settlements located on marginal land – low-lying land, riverbanks, floodplains and steep hillsides – that the formal housing market did not want or need (Main & William, 1994). Although these sites were vulnerable to the impacts of flooding, the benefits of living nearer sources of employment and urban services generally outweighed the disadvantages associated with flooding, which was generally perceived as a natural and seasonal event (Parkinson, 2002).

To assist in the analysis of problems related to storm water runoff and urban drainage, it was prudent that more sustainable options be adopted. Using the monitoring and evaluation process, the Researcher employed the use of variables that included planning for monitoring and evaluation process, implementation of the monitoring and evaluation process and utilization of the findings of the monitoring and evaluation process.

This study emphasized the adoption and establishment of a well-functioning M&E system as being a critical part of good management and accountability. It provided, timely and reliable M&E information; Contributed to organizational learning and knowledge sharing by reflecting upon and

sharing experiences and lessons, gaining the full benefit from “what we do and how we do it”; upheld accountability and compliance by demonstrating whether or not work had been carried out as agreed and in compliance with established standards; provided opportunities for stakeholder feedback, especially beneficiaries; provided input into and perceptions of the executed work, modelling openness to criticism, and willingness to learn from experiences and the ease of adapting to changing needs and promotion; and celebration of accomplishments and achievements which contributed to building morale and resource mobilization (IFRC, 2011).

1.4 Objectives of the Study

1.4.1 Purpose of the study

To determine the influence of the monitoring and evaluation process on the performance of urban drainage systems within Nairobi City County.

1.4.2 Specific Objectives:

- i. To establish the extent to which planning for Monitoring and Evaluation process influences the performance of urban drainage systems in Nairobi City County.
- ii. To establish the extent to which implementation of Monitoring and Evaluation process influences performance of urban drainage systems in Nairobi City County.
- iii. To assess whether utilization of Monitoring and Evaluation process findings will influence the performance of urban drainage systems within Nairobi City County.

1.5 Research Questions:

- i. To what extent does planning for Monitoring and Evaluation process influence performance of urban drainage systems within Nairobi City County?

- ii. To what extent does implementation of Monitoring and Evaluation process influence the performance of urban drainage systems within Nairobi City County?
- iii. What are the effects of the utilization of Monitoring and Evaluation process findings on the performance of urban drainage systems within Nairobi City County?

1.6 Significance of the Study

Within the past few months, several Kenyans had lost their lives as a result of the floods that rocked the City and its environs. Other urban areas within the country also experienced heavy floods and subsequently, people either lost their lives or got displaced from their homes. In other instances, earth dams had collapsed under the force of sudden and extreme inflow resulting from heavy rainfall, and led to lose of lives. It was therefore prudent that a way be formulated to manage the drainage situation in urban centers within the country and prevent such catastrophic occurrences. Monitoring and Evaluation had not been fully utilized to aid management of public facilities such as the urban drainage systems within the large cities.

1.7 Scope of the Study

The study focused on the drainage situation within Nairobi County and the reason as to why the roads within the city always flooded during the rainy season. This included drainage alongside major roads that passed through the City as well as the feeder roads that were found within residential estates.

1.8 Limitations of the Study

The geographical spread of the various regions within Nairobi City which had varying elevations and different types of drainage systems necessitated a lot of movement between the various regions

within the City. To mitigate this, the Researcher focused on collecting data from within the areas around the Nairobi Central Business District which had an easily accessible population. The Researcher experienced a lack of enthusiasm in providing information from some of the respondents and hostility from some local political leaders. The inability to collect information that covered the opinion of most residents within the City was also a notable challenge. These challenges were mitigated by involving Key Informants (KI) within the various sectors that the Researcher sought to collect his data from. This proved worthwhile especially in areas where there was hostility from local political leaders.

1.9 Delimitations of the Study

The study was delimited to the drainage problems within the Central Business District of Nairobi County and not all regions within the County. Since a suitable proportion of residents within Nairobi County, were unwilling to take part in the data collection exercise so that the Researcher could capture the true picture of the drainage situation within the County.

1.10 Theoretical framework

1.10.1 Change Theory

A theory of change is a method that explains how a given intervention, or set of interventions, are expected to lead to a specific development change, drawing on a causal analysis based on available evidence (UNDAF, 2017). Theory of change could also be said as being a theory about how change happens, and how we, through our organization or program, intend to work to influence these changes. It took the form of an ongoing process of reflection to allow iterative learning over time. The process involved bringing together stakeholders and encouraging them to think more critically about the change they wanted to see and the realities of the context in which the program worked. Essential elements of change included vision, strategy, context and key questions (Child et al., 2015).

Theory of Change was said to have emerged from the field of program theory and program evaluation in the mid-1990s as a new way of analyzing the theories motivating programs and initiatives working for social and political change (Weiss, 1995). Theory of change was both a process and a product (Vogel, 2012). To be successful, there was need to develop a theory of change that took into consideration both the historical context in which the existing urban drainage systems were established, challenges and problems, as well as considering new technologies such as the Internet, artificial intelligence (AI), and the block chain.

Therefore, if the theory of change was developed to underpin a program or project, it would be of great help to design and focus the M&E framework in an early stage of the design process; and not

in the early implementation phase as was often the case. In the case of the performance of urban drainage systems in Nairobi City County, the main actors, critical assumptions, intended outcomes and some key indicators were to be made available as a basis for the M&E framework. The sharper focus of the urban drainage program would facilitate the decision whose resulting information would guide on who would collect data and who should be involved. As the theory of change process enhanced the understanding of stakes and stakeholders, this assisted in thinking through the utilization of the M&E data and lessons and increase the consequence awareness (Mayne, 2008).

There was therefore a great need to observe and understand the change processes that already existed within a particular living social system, in this case within Nairobi City County. This could be done before rushing into doing any needs analyses and crafting projects to meet these needs, the Researcher could then choose how to respond more respectfully to the realities of existing change processes rather than imposing external or blind prescriptions based on assumed conditions for change (Reeler, 2007).

1.10.2 Evaluation Theory

Ralph W. Tyler chaired the committee that developed the National Assessment of Educational Progress (NAEP). He had been called by some as "the father of educational evaluation and assessment" (Wikipedia). According to Shadish, Cook, & Leviton (1991), the fundamental purpose of evaluation theory was to specify feasible practices that evaluators could use to construct knowledge about the value of social programs.

Michael Quinn Patton, was credited with developing the Utilization-Focused Evaluation (UFE) on the premise that "evaluations should be judged by their utility and actual use" (Patton, 2013). These citations sought to explain the need for evaluation in projects and their subsequent importance.

Shadish, 1998, argued that all evaluators should know the evaluation theory due to its importance in professional identity. He claimed that evaluation is what we talked about more than anything else, it seemed to give rise to our most trenchant debates, it gave us the language we used for talking to ourselves and others, and perhaps most important, it is what made us different from other professions. Especially in the latter regard, it was in our own self-interest to be explicit about this message, and to make evaluation theory the very heart of our identity. Every profession needed a unique knowledge base. For us, evaluation theory was that knowledge base (Shadish, 1998).

King, 2014, brought forth several arguments that sought to emphasize the importance of this evaluation theory. He argued that fields that had the theory could conduct research and advance purposefully and that it could help to enable evaluation to become a profession sooner.

1.10 Conceptual Framework

Independent Variables: Monitoring and Evaluation Process

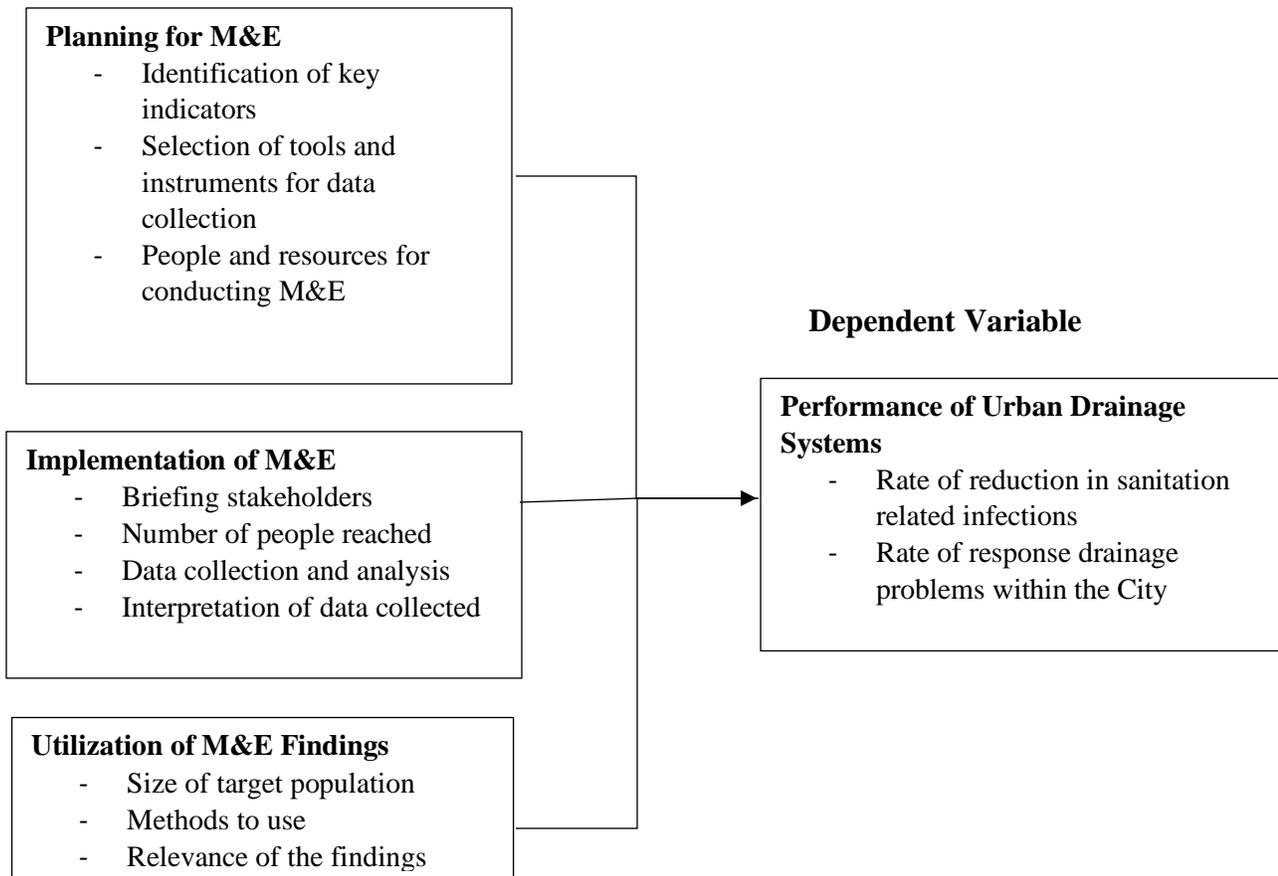


Figure 1 .1 Conceptual Framework (Source: Author, 2019)

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter outlined the empirical review of the existing literature that supported this study. Literature summary and existing knowledge gaps are also outlined.

Most developing countries in Sub-Saharan Africa, such as Kenya, are found within the tropics. They were classified as developing countries based on a number of socio-economic indicators. Majority of the population living in urban areas in these developing countries live in slums (Armitage, 2015). Such slums like Kibera, Mathare and Mukuru kwa Reuben in Kenya, were often characterized by poor drainage. Kenyan urban centers, like many others in Sub-Saharan Africa, were greatly characterized by lack of sewers and if they existed, they covered only a small proportion of the population that dwelled within them (Satterthwaite, 2017).

There was therefore a great need for development of sustainable urban drainage facilities to counter the increasing population within urban centers in Kenya. There was need to provide proper and adequate drainage and sanitation facilities to match up with the steady rise in population within urban areas in sub-Saharan Africa. There was also lack of integration between roads and urban water drainage which could be attributed to natural causes. Such causes included: Intense rainfall, flat topography and a slow rate of infiltration into the ground surface (Olukanni et al., 2014).

This chapter looked at the empirical literature about my research topic. It also consisted of summary of reviewed literature and the knowledge gap.

2.2 Empirical Review

It was generally accepted by all that sustained development hinged on good governance and accountability. In order to achieve this, stakeholders looked for evidence-based decision-making. They believed in the crucial role of M&E systems for doing this (UNESCO, 2016). Acknowledging its mandate to support Member States in this regard, UNESCO had taken up a Comparative Review of M&E systems of the Education Sector with the help of country case studies obtained from different regions.

The Sustainable Urban Drainage Systems (SUDS) are methods and techniques that mimic natural ecosystem's ways of handling storm water runoff. Sustainable urban drainage systems (SUDS) were widely understood as 'green' engineering techniques and design solutions that mimicked natural processes of rain water drainage. They included such techniques as rain sewers, surface drains, swales, rain gardens, filtration strips, open streams and ponds, detention basins, green roofs and filtration strips (Handbook on Sustainable Urban Drainage Systems).

The European Union's Water Framework Directive set a framework that should provide substantial benefits for the long-term water quality management of waters. The increasing urbanization of the world's population was constantly creating new challenges for urban storm water management. Although rain is vital for both human beings and their environment (to replenish rivers, water points and groundwater, grow vegetation, etc.), rainfall events generated flows and volumes of water that could be difficult to control and that accumulated in the lowest parts of towns, flooding residential areas and creating pools of stagnant water (Le Jalle et al., 2013).

There was an increased need for adoption and development of Sustainable Urban Drainage Systems in Africa, to improve the overall performance of urban drainage, more especially in Kenya. The techniques of sustainable drainage systems were widely recommended and applied in many parts of the world. In Europe, Sustainable Urban Drainage System (SUDS) were used with its main focus on maintaining good public health, protecting valuable water resources from pollution and preserving biological diversity and natural resources for future needs (Zhou, 2014). Some effort had been put into the development of urban drainage systems in African cities. However, there still existed significant drainage problems that affected mainly the urban poor and women. The problems of poor drainage and flooding of domestic properties tended to have a disproportionate effect upon women. Women had to deal not only with the economic devastation and disruption of livelihood systems but were also often left to cope with the social and emotional upheaval that came from dealing with death, disease and food shortages that invariably occurred in the aftermath of floods (Parkinson, 2003).

2.2.1 Planning for Monitoring and Evaluation and Performance of Urban Drainage Systems

Studies sought to explain that a monitoring and evaluation (M&E) plan was a document that outlined how an implementation research project was monitored and evaluated, and that linked strategic information obtained from various data collection systems to decisions about how to improve the project on an ongoing basis. The M&E plan served several main purposes, including: stating how achievements of the project would be measured; documentation of collected data, encouraging transparency and responsibility; guiding implementation of M&E and preserving institutional memory (UNESCO, 2016).

An M&E plan was built on the key parameters of a project, which included the desired change or effect; primary beneficiaries of the project; assumptions that could link the project objectives to specific project interventions; project scope and size; the extent of participation in and capacity for M&E; project duration and the overall project budget. Each project had different M&E needs, depending on the operating context, implementing agency capacity, donor requirements, and other factors. In preparing an M&E plan, it was important to identify these needs and coordinate the methods, procedures and tools used to meet them; this conserved resources and streamlined M&E planning (WHO, 2014).

During planning, design and review of the project Logical framework was done. The log frame was a summary of the project operational design, based on the situation and problem analysis conducted during the project's design stage. It summarized the logical sequence of objectives to achieve the project's intended results, the indicators and means of verification measured these objectives, and any key assumptions (IFRC, 2011).

2.2.2 Implementation of Monitoring and Evaluation and Performance of Urban Drainage Systems

During Implementation of M&E activities, Results Based Monitoring (RBM) was commonly adopted. This was an approach to project management that was based on clearly defined results, and the methodologies and tools to measure and achieve them (IFRC, 2011). It supported better performance and greater accountability by applying a clear, logical framework to plan, manage and measure an intervention with a focus on the desired results.

Both the World Bank and IFAD worked with the notion of performance indicators or performance questions. Drawing from IFAD's concept of the Performance Question to aid in developing

indicators and components of the M&E matrix, using performance questions addressed one of the weaknesses of the log frame matrix, the often-overwhelming focus on target based indicators based on numbers of activities or outputs. The emphasis on targets detracted from the key question of what was being achieved, and hence measured for the results (ECCSE, 2017).

Regular collection and analysis of data, during the implementation of M&E, using specific provided indicators, contributed to timely decision making, ensuring accountability and provided the basis for learning. Monitoring was a continuing function that provided management and other stakeholders with valuable feedback on what was working, what wasn't and why, and early indications of progress and achievement of objectives. This ongoing monitoring was integral to a flexible and responsive Community Driven Development (CDD) program, and served as a management tool and as a means for advancing CDD goals of accountability, transparency and inclusion (World Bank Group, 2013).

2.2.3 Utilization of Monitoring and Evaluation Findings and Performance of Urban Drainage Systems

M&E findings could be utilized for accountability, learning and communications. This could happen at different levels by a range of different people. Thus, M&E could be designed so that the primary beneficiaries themselves were involved in a way that supported the development of their own critical thinking and learning, and the use of any resulting data for their own advocacy communication purposes (Chapman, 2014). Depending on the purpose of the M&E it might also be important to communicate the data to relevant stakeholders. This involved deciding key audiences such as specific community groups, community leaders, donors, policy makers and the media, tailoring and packaging the data to key stakeholders, converting data into graphical forms

and drawing out key lessons for key stakeholders. The information could then be incorporated into Annual reports such as the Annual Nairobi City Drainage Report, or provide a useful background document to give people who want to know what your group does (Oxford University, 2014).

2.3 Summary of the Reviewed Literature

The theory of change and the evaluation theories in literature review brought out the importance of M&E approaches, planning and effective management on project implementation. Both theories put high importance on the need to plan, design and focus on projects right from the need assessment. Planning included proper organization, preparation, designing and critical thinking before starting any intervention. Through literature review, it was established that although different organizations carried out monitoring and evaluation, there was need for proper understanding of the key components of the M&E cycle.

2.4 Knowledge Gap

The literature review showed that a lot had been done to understand project management in various sectors of the economy. However, little had been done to show how monitoring and evaluation processes could contribute to sustainable management of urban drainage systems.

CHAPTER THREE

RESEARCH DESIGN AND METHODOLOGY

3.1 Introduction

This section sought to bring forth the methods that the Researcher used in research design and sampling. It clearly outlined the specific methods and their importance to this particular study during its implementation.

3.2 Research Design

Research Design could be considered as the structure of research. It is the “Glue” that holds all of the elements in a research project together, in short it is a plan of the proposed research work (Akhtar, 2016). The Researcher employed the use of descriptive savvy research design which involved characteristics of both qualitative and quantitative methods of data collection. This approach enabled the Researcher to describe various drainage phenomena without actually interfering with their existent state and also collect figurative data to back up the study with measured quantities. This Research Design provided an estimate of the true conditions of the urban drainage systems within the Nairobi Central Business District.

3.3 Research Site and Rationale

The research site was Nairobi County. The site was chosen because it is arguably the most urbanized city within the Republic of Kenya. It also has the most number of urban drainage systems, being Kenya’s largest urban Centre. From existing studies and the Researcher’s work experience in urban water management sector, the researcher felt that Nairobi County had a gap in

management of its drainage systems. The gap needed to be addressed using Monitoring and Evaluation for social programs that were in line with the Sustainable Development Goals (SDGs).

3.4 Target Population

Vonk (2017) defined target population as the group of people to whom we wanted our research results to apply, while the study population as the people who met our operational definition of the target population. The target population for this study were those people who worked or lived within Nairobi County. Since studying every single Urban Centre in Kenya would have been tedious and time consuming, the Researcher intended to use the population within Nairobi County as the study population. The target population was obtained from the Nairobi City Council, Department of Environmental Management and the Department of Public Works. This was done by simple random sampling that was found using the proportionate formula proposed by Krejcie & Morgan (1970).

3.5 Sampling Procedures

The Researcher adopted the use of probability sampling methods by adopting systematic random sampling method during the research. This provided every variable with a non-zero chance of taking place.

3.6 Sample Size

The study population included a total of 150 probable respondents. The Krejcie and Morgan table was used for sample size determination. This provided a total of 94 respondents (Krejcie & Morgan, 1970). The sample size in each category was calculated using the proportionate formula.

Proportionate formula = $\frac{x}{N} * S$

Where:

x = Intended number of respondents under the given category from the population distribution table

N = Total sum of distributed population

S = sample size for the total population as per the Krejcie and Morgan table

Table 3. 1 Sample Size

Department	Number of respondents (100%)	Sample Size Using Proportionate Formula
Department of Environmental Management	20	15
Department of Public Works	20	15
General Public	110	78
	150	108

(Source: Author, 2019)

Where; x = Number of students in a particular school. N = Total population of respondents in all departments and S is the sample size.

3.7 Data Collection Procedures

The Researcher sought permission from the relevant authorities within Africa Nazarene University then used it to acquire the required license from the Nairobi City Council and the Ministry of Water, Environment and Natural Resources in order to conduct the Research.

3.8 Research Instruments

Data collection instruments were means by which primary data was collected in social research (Kothari, 2010). The Researcher employed the use of questionnaires guide, interview guides and observation guides throughout the study.

3.8.1 Piloting of Research Instruments

The Research Questionnaires were pretested using a small representative sample selected from within Nairobi County, based on convenience. This enabled the Researcher to discover the objectivity of the chosen questions and subsequently correct any noted inconsistencies.

3.9 Data Analysis and Presentation

The Researcher applied descriptive statistical methods in the analysis of data collected. Such may include percentages that may enable him/her to generate logical conclusions. Analyzed data shall be tabulated.

3.10 Ethical Considerations

The Researcher managed to abide by all the legal requirements within Nairobi County. The Researcher did this by seeking permission from the various departments within the Nairobi City County Government, before embarking on the data collection exercise. The Researcher also

ensured that the respondents from the members of the public provided information on the questionnaires willingly

CHAPTER FOUR

DATA ANALYSIS AND PRESENTATION OF FINDINGS

4.1 Introduction

This chapter contains data analysis of all data collected from the respondents and interpretation of the various results. The Researcher used both open ended and closed questionnaires together with Likert scales to collect the data from the respondents. Data collected was analyzed using advanced MS Excel for both data analysis and visualization.

4.2 Response rate

Table 4.1 shows the response rate of the questionnaires.

Table 4.1 : Average Response rate

Category	Administered Questionnaires	Successfully completed questionnaires	Response Rate
Department of Environmental Management	30	30	100%
Department of Public Works	24	20	83.3%
General Public	40	35	87.5%
Total	94	85	90.3%

Source: Author (2019)

Table 4.1 above shows a satisfactory questionnaire response rate (90.3%). This can be accredited to the method used by the Researcher to administer the questionnaires. With guidance from Mugenda & Mugenda (2003) on data collection, the Researcher adopted a one on one approach in the administration of the questionnaires to the respondents, this allowed the Researcher to provide any clarifications regarding the questions raised by the respondents.

4.3 Demographic Characteristics

The study sought to incorporate demographic data from the respondents. This study specifically included gender, age, and the level of education of the respondents. These characteristics were important because they helped the researcher to understand the influence of the M&E process on the population depending on the various demographic characteristics. The findings on these are summarized in Table 4.2

4.3.1 Age and gender

Table 4.2 below shows that male respondents were 38.3% and female respondents were 61.7%. Most respondents fell under the age bracket of 30-39 years. The information in this table shows that the young people in the age bracket of 19-29 years are actively involved in the management of urban drainage systems within Nairobi City County. The high percentage of female respondents indicates that a lot of progress has been done towards gender mainstreaming within the various departments within Nairobi City County.

Table 4.2: Age and Gender of the respondents

Age/ Gender	19 – 29 years	30 – 39 years	40 – 49 years	50+ years	Percentage (%)
Male	8	8	8	6	35.3
Female	15	19	15	6	64.7
Percentage (%)	27.1	31.8	27.1	14.1	100.0

Source: Author (2019)

4.3.2 Education Level

The respondents' level of education was analyzed and the result are as indicated in Table 4.3 below

Table 4.3: Level of education of the respondents

Level of Education	Number of Respondents	Percentage (%)
Primary school or less	8	9.4
Secondary school	12	14.2
Diploma	22	25.9
Tertiary	8	9.4
Vocational	7	8.2
Degree or Higher	28	32.9
Total	85	100.0

Source: Author (2019)

As indicated in Table 4.3 above, it is evident that majority; 50% of the staff are well educated with majority of them having qualifications that are beyond a Diploma. The Researcher was interested in knowing how well the staff understands the operations of the drainage systems with and the technical knowledge of continually maintaining and rehabilitating the drainage facilities within Nairobi City County.

4.4 Influence of Planning for Monitoring and Evaluation process on the performance of urban drainage systems within Nairobi City County.

The study sought to establish the perception of the state of Urban Drainage systems in Nairobi City County. The respondents were requested to comment on the existing state of the drainage systems and the results were as shown in Table 4.4.

4.4.1 Management of Nairobi Drainage System

The study sought to establish whether the drainage systems in Nairobi were well managed. The respondents were asked to say what they thought the drainage system within the Nairobi City County was well managed and the results were as indicated in table 4.4.

Table 4.4 Management of Nairobi Drainage System

Drainage Systems were well Managed	Frequency	Percentage
Yes	17	20.0
No	45	53.0
Not Sure	23	27.0
Total	85	100.0

Source: Author (2019)

The study established that majority of the respondents that is (45) accounting for 53% perceived that the drainage system in Nairobi City was not well managed, (23) respondents accounting for (27%) felt that the drainage Systems were not sure whether the systems were well managed while (17) accounting for (20%) felt that the systems were well managed. This could be attributed to majority of the respondents having education qualifications of below a university degree and higher. This could have impacted their understanding of the questions being asked and respond to them correctly. The age and gender of the respondents did not have any great effect on how the respondents felt on the management of drainage systems within Nairobi County.

4.4.2 Frequency of Drainage overflows

In regard to the frequency of drainage overflows, the study sought to establish how often the residents experienced overflows. The respondents were asked to state how often they witnessed drainage overflows within Nairobi City County and the results were presented in table 4.5

Table 4.5: Frequency of Drainage overflows

Frequency of Drainage Overflows	Frequency	Percentage
Never	0	0.0
During Rainy Season	55	64.7
Everyday	10	11.8
Other	20	23.5
Total	85	100.0

Source: Author (2019)

The study established that majority of the respondents that is (55) accounting for 64.7% perceived that the drainage system in Nairobi City overflows during the rainy season while (10) respondent accounting for 11.8% acknowledged that there were overflows everyday while those who had a mixed opinion accounted for (20) respondents representing (23.5%). The findings could be attributed to majority of the respondents being middle-aged female respondents. This particular demographic group is attributed to be the keenest members within any society and would easily take into account the moments when the frequency of drainage flows within the City increased. This could also be attributed to most of the respondents having educational qualifications that were below a Bachelors' Degree or higher. This could have affected their objectivity while giving their responses.

4.5 Inferential statistics

The study sought to establish the influence of monitoring and evaluation process on performance of urban Drainage systems in Nairobi County. The study focused on establishing the extent to which planning for Monitoring and Evaluation process influences the performance of urban drainage systems in Nairobi City County, establishing the extent to which implementation of Monitoring and Evaluation process influences performance of urban drainage

systems in Nairobi City County and to assess whether utilization of Monitoring and Evaluation process findings influence the performance of urban drainage systems within Nairobi City County.

4.5.1 Extent to which planning for Monitoring and Evaluation process influences the performance of urban drainage systems in Nairobi City County

Respondents were required to indicate the extent to which they agreed to the perceived aspects of the extent to which planning and monitoring process influences the performance of urban drainage systems in Nairobi City County. Items that were measured on a three point Likert-Type scale ranging from 1 being “Very little”, 2 being average and 3 being “Very high” and the result were presented in table 4.6

Table 4.6 Monitoring and Evaluation Process

Monitoring and Evaluation Process	Mean	Std. Dev	N
Identification of Key Indicators	1.21	1.31	85
Tools and instruments for Data Collection	1.28	1.10	85
People and other resources for Data Collection	1.37	1.30	85
Aggregate Score	1.29	1.24	85

Source: Author (2019)

Means of between 1.21–1.37 and standard deviations of between 1.10- 1.30 were registered. Generally, the study findings revealed that majority of the respondents were not in agreement to a great extent to various aspects of the Monitoring and Evaluation process with an average mean (M=1.29). Specifically, the findings revealed that people and other resources for Data collection were not considered with a mean (M=1.37) followed by those who felt that tools and infrastructure for data collection were with a mean of (M=1.28) while those who felt that identification indicators were not considered had a mean of (M=1.21). The findings could be attributed to majority of the respondents having qualifications below a Bachelors’ degree. This could have affected their understanding of the Monitoring and Evaluation process and what it entails. The age of the

respondents could also have been a contributing factor, since most respondents are middle –aged. Monitoring and Evaluation process was introduced in the recent years and they probably had little or no understanding of what it entailed.

4.5.2 Extent to which implementation of Monitoring and Evaluation process influences performance of urban drainage systems in Nairobi City County

In regard to the extent to which implementation and evaluation process influences performance of urban drainage systems in Nairobi County, the respondents were required to indicate the extent to which implementation of monitoring and evaluation processes influenced the performance of urban drainage systems in Nairobi County. Items that were measured on a three point Likert-Type scale ranging from 1 being “Very little”, 2 being average and 3 being “Very high” and the result were presented in Table 4.7.

Table 4.7 Implementation of Monitoring and Evaluation Process

Implementation of Monitoring and Evaluation Process	Mean	Std. Dev	N
Briefing Stakeholders on Projects	1.11	1.01	85
Number of Respondents Reached	1.20	1.03	85
Data collection and Analysis	1.35	1.06	85
Aggregate Score	1.22	1.03	85

Source: Author (2019)

The study findings revealed that majority of the respondents were in agreement that the selected items of implementation of monitoring and evaluation process had a little influence to the performance of urban drainage systems in Nairobi County with an aggregate mean (M=1.22) with standard deviation (SD=1.03). Specifically, the study established that Data collection and analysis had a mean of (M=1.35) followed by the number of respondents reached with a mean of (M=1.20) and briefing of stakeholders on projects with a mean of (M=1.11). The findings could be attributed

to majority of the respondents being middle-aged and therefore were mature enough to understand the questions being asked and respond to them correctly.

4.5.3 Influence of Utilization of Findings of the Monitoring and Evaluation process on the performance of urban drainage systems within Nairobi City County.

In regard to the influence of the findings of the monitoring and evaluation process on the performance of urban drainage systems within Nairobi City County, the respondents were required to indicate the extent to which utilization of findings of the monitoring and evaluation processes influenced the performance of urban drainage systems in Nairobi County. Items that were measured on a three point Likert-Type scale ranging from 1 being “Very little”, 2 being “average” and 3 being “Very high” and the result were presented in table 4.8

Utilization of the finding of Monitoring and Evaluation Process	Mean	Std. Dev	N
Size of the Target population	1.22	1.10	85
Methods used in Utilization	1.33	1.30	85
Relevance of findings to the project	1.31	1.14	85
Aggregate Score	1.29	1.18	85

Source: Author (2020)

The study findings revealed that majority of the respondents were in agreement that the selected items of utilization of the findings of monitoring and evaluation process had little influence to the performance of urban drainage systems in Nairobi City County with an aggregate mean (M=1.29) with standard deviation (SD=1.18). Specifically, the study established that methods used in utilization had a mean of (M=1.33) followed by relevance of these findings to the projects with a

mean of (M=1.31) and size of the target population with a mean of (M=1.22). The findings could be attributed to majority of the respondents being middle-aged and therefore were mature enough to understand the questions being asked and respond to them correctly. The education level of the respondents could also have affected their responses. There is a probability that the respondents could have submitted their responses in this way because they had little or no understanding of the monitoring and evaluation process and its impact on the urban drainage systems within Nairobi City.

CHAPTER FIVE

SUMMARY OF FINDINGS DISCUSSION CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter gives a summary of the findings, conclusions and recommendations on influence of monitoring and evaluation approaches in program implementation.

5.2 Summary of Findings

The study sort to determine the influence of the Monitoring and Evaluation process on the performance of urban drainage systems within Nairobi City County. The study was guided by the following objectives: to establish the extent to which planning for Monitoring and Evaluation process influences the performance of urban drainage systems in Nairobi County; to establish the extent to which implementation of Monitoring and Evaluation process influences performance of urban drainage systems in Nairobi County and to assess whether utilization of Monitoring and Evaluation process findings will influence the performance of urban drainage systems within Nairobi County.

Based on the findings the monitoring and evaluation process has great influence on the performance of urban drainage systems. This collaborates with the lack of integration between roads and urban water drainage which could be attributed to natural causes. Such causes include: Intense rainfall, flat topography and a slow rate of infiltration into the ground surface (Olukanni et al., 2014).

Planning for M&E process, implementation of M&E process and utilization of findings of the M&E process were identified to be key influences in the performance of urban drainage systems.

The study also found out that females and young people were greatly involved in the management of urban drainage systems.

5.3 Discussion

The results of this study showed that there was a significant relationship between the monitoring and evaluation process and the performance of urban drainage systems. Despite the fact that the relationship could be influenced by other factors that could influence the performance of urban drainage systems such as the level of stakeholder involvement and the level of education of the staff that are involved in the maintenance of the urban drainage systems. This collaborates with the theory of change process, which enhances the understanding of stakes and stakeholders, therefore assisting in thinking through the utilization of the M&E data and lessons and increase the consequence awareness (Mayne, 2008)

5.3.1 Influence of Planning for Monitoring and Evaluation process on the performance of urban drainage systems

Existence of an M&E plan served several main purposes, including: stating how achievements of the project would be measured; documentation of collected data, encouraging transparency and responsibility; guiding implementation of M&E and preserving institutional memory (UNESCO, 2016). Findings from the study indicated that there was insufficient planning for M&E process within Nairobi County and this had a significant influence on the performance of urban drainage systems.

The study established that majority of the respondents perceived that the drainage system in Nairobi City was not well managed. These results could be attributed to inexistence of a department that is solely mandated with planning for Monitoring and Evaluation of the Drainage

systems within Nairobi County. The study results agreed with the knowledge that stated that in preparing an M&E plan, it was important to identify the needs and coordinate the methods, procedures and tools used to meet them; this conserved resources and streamlined M&E planning (WHO, 2014).

5.3.2 Influence of Implementation of Monitoring and Evaluation process on the performance of urban drainage systems

The study findings revealed that majority of the respondents were in agreement that the selected items of implementation of monitoring and evaluation process had a little influence to the performance of urban drainage systems in Nairobi County. These results showed that most respondents did not understand the need for implementation of the Monitoring and Evaluation process and therefore felt that it had little influence in the performance of urban drainage systems within Nairobi County. This was actually in agreement with the study report from IFAD's concept of the Performance Question to aid in developing indicators and components of the M&E matrix. Using performance questions addressed one of the weaknesses of the log frame matrix and the often-overwhelming focus on target based indicators based on numbers of activities or outputs.

This would be instrumental for the Department responsible for managing the Drainage Systems within Nairobi County once they decide to implement the Monitoring and Evaluation process in manage the drainage systems. Mainly because M&E is an approach to project management that is based on clearly defined results, and the methodologies and tools to measure and achieve them (IFRC, 2011).

5.3.3 Influence of Utilization of Findings of the Monitoring and Evaluation process on the performance of urban drainage systems

Most respondents from the study showed little understanding of the Monitoring and Evaluation process on the performance of urban drainage systems. This was clearly expressed in the results where the study findings revealed that majority of the respondents were in agreement that the selected items of utilization of the findings of monitoring and evaluation process had little influence to the performance of urban drainage systems in Nairobi City County.

These results supported the argument that M&E could be designed so that the primary beneficiaries themselves were involved in a way that supports the development of their own critical thinking and learning, and the use of any resulting data for their own advocacy communication purposes (Chapman, 2014). Adoption of this mantra would lead to more residents within Nairobi County taking part not only in maintaining of the drainage systems but also in the M&E process for the systems once they understood its importance.

These findings also sought to agree with previous studies that encouraged the involvement of the residents as key stakeholders in the management of the urban drainage systems in Nairobi County; as this could contribute to gathering of useful information from them. That could then be incorporated into Annual reports such as the Annual Nairobi City Drainage Report, or provide a useful background document to give people who want to know what your group does (Oxford University, 2014).

5.4 Conclusion

The study established that there was need to establish a robust department that dealt with Monitoring and Evaluation within Nairobi County. This department could then start by educating all the

stakeholders involved about Monitoring and Evaluation; the planning, implementation and utilization of the M&E data. This could contribute to the stakeholders' understanding of the need for Monitoring and Evaluation and how they can be able to use it to improve the situation of the urban drainage systems within Nairobi County.

It was established that lack of adequate information about the planning for M&E process, implementation of M&E process and utilization of findings of the M&E process, contributed to the respondents feeling that the various components of the M&E process had little influence on the performance of urban drainage systems. It was therefore important to have a well-organized and adequately staffed unit whose purpose is to coordinate the M&E process in the management of urban drainage systems. In resource allocation, it was emphasized that there should be adequate resource channeled towards education of the various stakeholders and the General public on the M&E process. This could encourage them to actively participate in the management of the urban drainage systems within Nairobi County.

5.5 Recommendations

The study established that there was equal representation of either gender in the various departments within Nairobi City County. The study recommends that this trend be maintained for successful management of the urban drainage systems. It was noted that most staff members within the various departments were not well versed with the M&E process. This study recommends training to the departmental heads on the M&E process, their key indicators and how they can be used in the management of urban drainage systems.

The study also established that stakeholder engagement wasn't regarded highly among the respondents. The study hence recommends a more inclusive and wider consultation between the stakeholders and County staff. This will go a long way in ensuring that they all understand their roles and expectations in the management of urban drainage systems. Finally the study recommends that the Nairobi City County management should make program monitoring and evaluation an inherent part of program implementation and thus a mandatory exercise.

5.6 Suggestion for areas for Further Studies

The study focused on the influence that the monitoring and evaluation process has on the performance of urban drainage systems. The study looked at three variables that is: planning for M&E process; implementation of M&E process and utilization of findings of the M&E process. From the literature review, the researcher established that there exists various other components of monitoring and evaluation approaches that can influence the performance of urban drainage systems. This study therefore recommends further study on how M&E approaches influence the performance of urban drainage systems. The study also recommends similar study comparing two or more state departments or with private and civil society sectors.

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APPENDICES:**APPENDIX 1: TRANSMITTAL LETTER**

Dear Respondent,

RE: REQUEST FOR DATA COLLECTION

You have been selected to participate in this study which is investigating — **“Influence of Monitoring and Evaluation on Performance of Urban Drainage Systems: A Case of Nairobi City County”**. I kindly request you to fill the attached questionnaire. This data shall only be used for academic purpose and shall be handled with utmost confidentiality. Please do not indicate your name on this questionnaire. Your assistance and cooperation will be highly appreciated.

Yours Sincerely

Medrin Naliaka Kituyi

Africa Nazarene University

School of Business, Monitoring and Evaluation Department

APPENDIX II: QUESTIONNAIRE

INFLUENCE OF MONITORING AND EVALUATION ON PERFORMANCE OF URBAN DRAINAGE SYSTEMS IN NAIROBI CITY COUNTY.

INSTRUCTIONS:

Kindly fill in the questionnaire by ticking and writing where appropriate. Any information provided will be treated as confidential and will only be used for purposes pertaining to this research.

SECTION A: GENERAL INFORMATION

1.0 Gender Male [] Female []

2. Age 19 – 29years [] 30– 39 years [] 40 – 49 years [] above 50 years []

3. What is your highest level of completed education?

SECTION B: URBAN DRAINAGE SYSTEMS

1. Would you say the drainage systems within the Nairobi City County are well managed?

Yes No Depends on the season

2. How often do you witness drainage overflows within Nairobi City County?

Never During Rainy Season

Everyday Other (Explain)

3. In your own opinion with relation to the county M&E management system, what can be done to improve access sustainable urban drainage systems? -----

SECTION C: M&E PROCESS

On a scale of 1 to 3 where 1 = Very little, 2 = Average, 3 = Very high please indicate by ticking how you feel on what is currently being done about the following attributes	1	2	3
A. M&E Planning Process			
Identification of Key Indicators			
Tools and Instruments for Data Collection			
People and other resources for conducting M&E			

1. In your own opinion please indicate what can be done to improve the planning process of M&E in the urban drainage sector?-----

On a scale of 1 to 3 where 1 = Very little, 2 = Average, 3 = Very high please indicate by ticking how you feel on what is currently being done about the following attributes	1	2	3
B. Implementation of M&E			
Briefing stakeholders on the project			
Number of respondents reached			
Data collection and analysis			

2. In your own opinion please indicate what can be done to improve implementation of M&E process in the urban drainage sector?-----

On a scale of 1 to 3 where 1 = Very little, 2 = Average, 3 = Very high please indicate by ticking how you feel on what is currently being done about the following attributes	1	2	3
C. Utilization of M&E process results			
Size of target population			
Methods used in utilization			
Relevance of findings to the project			

3. In your own opinion please indicate what can be done to improve utilization of M&E process findings in the urban drainage sector.

APPENDIX III: KREJCIE AND MORGAN TABLE*Table for Determining Sample Size from a Given Population*

<i>N</i>	<i>S</i>	<i>N</i>	<i>S</i>	<i>N</i>	<i>S</i>
10	10	220	140	1200	291
15	14	230	144	1300	297
20	19	240	148	1400	302
25	24	250	152	1500	306
30	28	260	155	1600	310
35	32	270	159	1700	313
40	36	280	162	1800	317
45	40	290	165	1900	320
50	44	300	169	2000	322
55	48	320	175	2200	327
60	52	340	181	2400	331
65	56	360	186	2600	335
70	59	380	191	2800	338
75	63	400	196	3000	341
80	66	420	201	3500	346
85	70	440	205	4000	351
90	73	460	210	4500	354
95	76	480	214	5000	357
100	80	500	217	6000	361
110	86	550	226	7000	364
120	92	600	234	8000	367
130	97	650	242	9000	368
140	103	700	248	10000	370
150	108	750	254	15000	375
160	113	800	260	20000	377

170	118	850	265	30000	379
180	123	900	269	40000	380
190	127	950	274	50000	381
200	132	1000	278	75000	382
210	136	1100	285	1000000	384

APPENDIX IV: RESEARCH TIME PLAN

May 2018	Proposal Writing
June – July 2018	Corrections on Proposal
August 2018	Submission of draft proposal for grading
September 2018	Initial Proposal Defence
	Data Collection, analysis and representation
	Project Presentation
	Submission of final project report

APPENDIX V: RESEARCH BUDGET

Item	Quantity	Per Unit Cost(KES)	Total Cost (KES)
Laptop	1	75,000	75,000
Modem	1	3,000	3,000
Internet services			3,000
Travelling Costs			5,000
Printing services			25,000
Miscellaneous Expenses			15,000
Stationery Expenses			
Full scaps	1 ream	800	800
Pens	1 dozen	200	200
Stapler and staple pins	2	150	150
Total cost (KES)			127,150